



Trade SIA on the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the USA

Draft Final Report

Prepared by Ecorys
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Preface

The European Commission (DG Trade) has awarded a contract to Ecorys, signed in December 2013, to conduct the Trade Sustainability Impact Assessment (Trade SIA) in support of the negotiations on a comprehensive trade and investment agreement between the EU and the USA. This is the Interim Technical Report for this Trade SIA.

Ecorys is aware of the important role of this study for the negotiation process as it will provide direct inputs for the negotiators, incorporates a sustainable quantitative analysis, covers opinions and views of civil society, and contains recommendations for policy makers to successfully flank a possible agreement. The negotiations have started in July 2013 and have concluded the fifteenth negotiating round from 3-7 October 2016. Ecorys closely consults with the EC on the planning and scope of this study to ensure optimal input into the process.

This Final Report is based on the terms of reference, the Ecorys proposal that was submitted to DG Trade, the subsequent discussions with the Steering Committee during and after the kick-off meeting, during and after the inception report meeting, during and after the interim report meeting, quantitative economic, social and environmental analysis, and on extensive feedback received from stakeholders.

This Final Report covers the global economic, social (including human rights) and environmental analyses, as well as the in-depth sector study assessments (ESSA Steps 1 to 3). This report also includes the conclusions and policy recommendations for each of the above analyses. Throughout the study we have benefited from inputs from various stakeholders who have voiced their support, worries and viewpoints on TTIP from many different angles.

The Ecorys Team

21 November 2016

This report was commissioned and financed by the European Commission. The views expressed herein are those of the Contractor, and do not represent an official view of the Commission.

List of abbreviations

Abbreviation	Meaning
AALA	American Automobile Labelling Act
ACA	Affordable Care Act
ACC	American Chemistry Council
ACEA	European Automobile Manufacturers' Association
AEO	Authorised Economic Operator
AFL-CIO	American Federation of Labour and Congress of Industrial Organisations
AFME	Association for Financial Markets in Europe
AHJ	Authority Having Jurisdiction
AHWP	Asian Harmonisation Working Party
ANVISA	Agência Nacional de Vigilância Sanitária
ASEAN	Association of South East Asian Nations
AVE	Ad Valorem Equivalent
BIS	Bank of International Settlements
BIT	Bilateral Investment Treaties
BSE	Bovine Spongiforme Encefalopathie
C-TPAT	Customs-Trade Partnership Against Terrorism
CAFE	Corporate Average Fuel Economy
CAP	Common Agricultural Policy
CAPP	Clean Air Policy Package
CBD	Convention on Biological Diversity
CE	Conformité Européenne
CEFIC	European Chemical Industry Council
CEPII	Centre d'Etudes Prospectives et d'Informations Internationales
CEPR	Centre for Economic Policy Research
CEPS	Centre for European Policy Studies
CETA	Comprehensive Economic and Trade Agreement
CFR	Code of Federal Regulations
CFTC	Commodity Futures Trading Commission
CGE	Computable General Equilibrium
CIEL	Centre for International Environmental Law
CITES	Convention on International Trade in Endangered Species
CLP	Classification, Labelling and Packaging
CO ₂	Carbon Dioxide
COD	Chemical Oxygen Demand
CPNP	Cosmetic Products Notification Portal
CPSA	Consumer Product Safety Act
CRS	Congressional Research Service
CSI	Container Security Initiative
CSR	Corporate Social Responsibility
CTF	Customs and Trade Facilitation
CU	Customs Union
DDS	Directive on Dangerous Substances
DG	Directorate General
DMC	Domestic Material Consumption
EBA	European Banking Authority
E3MG	Energy-Environment-Economy (E3) Model at the Global Level
EBF	European Banking Federation
EC	European Commission
ECB	European Central Bank
EDGAR	Emissions Database for Global Atmospheric Research
EE	Energy Efficiency
EEE	Electrical and Electronic Equipment
EFPIA	European Federation of Pharmaceutical Industries and Associations
EFR	European Financial Services Round Table
EFTA	European Free Trade Association
EGSS	Environmental Goods and Services Sector
EIA	Energy Information Administration
EINECS	European Inventory of Existing Commercial Chemical Substances
EIOPA	European Insurance and Occupational Pensions Authority
ELINCS	European List of Notified Chemical Substances
EMIR	European Market Infrastructure Regulation

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Abbreviation	Meaning
EP	European Parliament
EPA	Environmental Protection Agency
EPHA	European Public Health Alliance
EPS	External Power Supply
EPSU	European Federation of Public Service Unions
ERM	Energy and Raw Materials
ErP	Energy-related Products
ESA	Endangered Species Act
ESA	European Supervisory Authorities
ESCB	European System of Central Banks
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
ESSA	Ecorys Sector Sustainability Approach
ESTA	Electronic System for Travel Authorisation
ETS	Emission Trading System
EU	European Union
EUR	Euro
EVD	European Visa Database
F&B	Food and Beverage
FAA	Federal Aviation Administration
FAO	Food and Agriculture Administration
FATCA	Foreign Account Tax Compliance Act
FDA	Food and Drug Administration
FDI	Foreign Direct Investment
FE	Full Employment
FIO	Federal Insurance Office
FLSA	Fair Labour Standards Act
FMRD	Financial Markets Regulatory Dialogue
FMU	Financial Market Utilities
FMVSS	Federal Motor Vehicle Safety Standards and Regulations
FS	Financial Services
FSOC	Financial Stability Oversight Council
FTA	Free Trade Agreement
FTE	Full Time Equivalent
FVC	Financial Vehicle Corporation
GAAP	Generally Accepted Accounting Principles
GATS	General Agreement on Trade in Services
GDP	Gross Domestic Product
GE	Genetically Engineered
GGDS	Government-Government Dispute Settlement
GHG	Green House Gas
GHS	Globally Harmonised System
GHTF	Global Harmonisation Task Force
GI	Geographical Indications
GLP	Good Laboratory Practice
GMO	Genetically Modified Organism
GMP	Good Manufacturing Practice
GOR	Gross-Operating Rate
GP	Government Procurement
GPM	Global Policy Model
GTAP	Global Trade Analysis Project
GVA	Gross Value Added
GVC	Global Value Chain
HR	Human Rights
HSE	Health and Safety Executive
IAS	Invasive Alien Species
ICH	International Conference for Harmonisation
ICS	International Court System
ICT	Information and Communication Technology
IE	Insurance Europe
IEA	International Energy Agency
IEC	International Electrotechnical Commission
IF	Investment Fund
IFRS	International Financial Reporting Standards
ILO	International Labour Organisation

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Abbreviation	Meaning
IMDRF	International Device Medical Regulators' Forum
IMF	International Monetary Fund
IMO	International Maritime Organisation
INDC	Intended Nationally Determined Contributions
IP	Intellectual Property
ISDS	Investor-State Dispute Settlement
ISIC	International Standard Industrial Classification
ITC	International Trade Centre
ITR	Interim Technical Report
ITTA	International Tropical Timber Agreement
IUU	Illegal, Unreported and Unregulated
KP	Kyoto Protocol
LDC	Least Developed Country
LDI	Labour Displacement Index
LM	Labour Mobility
LNG	Liquid Natural Gas
LRTAP	Long-Range Transboundary Air Pollution
LTO	Light Tight Oil
MAD	Mutual Acceptance of Data
MADB	Market Access Database
MEA	Multilateral Environmental Agreement
MEPS	Minimum Energy Efficiency Performance Standards
MFI	Monetary and Financial Institution
MFN	Most Favoured Nation
MiFID	Markets in Financial Instruments Directive
MS	Member State
MSME	Micro, Small and Medium Enterprises
NACE	Nomenclature of Economic Activities
NAFTA	North American Free Trade Agreement
NAIC	National Association of Insurance Commissioners
NCD	Non-Communicable Disease
NEC	National Electrical Code
NECA	Nitrogen Emission Control Area
NGO	Non-Governmental Organisation
NLRA	National Labour Relations Act
NTB	Non-Tariff Barrier
NTM	Non-Tariff Measure
OECD	Organisation for Economic Cooperation and Development
OIE	World Organisation for Animal Health
OLS	Ordinary Least Squares
OR	Outermost Regions
OSHA	Occupational Safety and Health Administration
PBB	Polibrominated Biphenyls
PBDE	Polybrominated Diphenyl Ethers
PEL	Permissible Exposure Limits
PMDA	Pharmaceuticals and Medical Devices Agency
PMO	Pasteurised Milk Ordinance
POP	Persistent Organic Pollutants
PPML	Poisson Pseudo Maximum Likelihood
QMS	Quality Management Systems
RAPS	Regulatory Affairs Professional Society
R&D	Research and Development
RCA	Revealed Comparative Advantage
RCC	Regulatory Cooperation Council
RDP	Regulatory Data Protection
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RoE	Return on Equity
RoO	Rules of Origin
RoW	Rest of the World
RRD	Recovery and Resolution Directive
RTA	Relative Trade Advantage
RWA	Risk-weighted Assets
SEC	Securities and Exchange Commission
SECA	Sulphur Emission Control Area

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Abbreviation	Meaning
SIFI	Systematically Important Financial Institutions
SIGMA	Support for Improvement in Governance and Management
SME	Small and Medium Sized Enterprises
SMI	Solvency Modernisation Initiative
SBS	Structural Business Statistics
SCC	Social Costs of Carbon
SCC	Somatic Cell Count
SPC	Supplementary Protection Certificate
SPS	Sanitary and Phyto-Sanitary
STRI	Services Trade Restrictiveness Index
TABC	Transatlantic Business Council
TABD	Transatlantic Business Dialogue
TBT	Technical Barrier to Trade
TBTF	Too Big To Fail
TCE	Trade Cost Equivalent
TFEU	Treaty on the Functioning of the European Union
TGA	Therapeutic Goods Administration
TiSA	Trade in Services Agreement
TiVa	Trade in Value added
ToR	Terms of Reference
TPI	Technical Progress Indicator
TRQ	Tariff Rate Quotas
TSCA	Toxic Substances Control Act
TSIA	Trade Sustainability Impact Assessment
TTIP	Transatlantic Trade and Investment Partnership
UAA	Utilised Agricultural Area
UDI	Unique Device Identification
UK	United Kingdom
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USD	US Dollar
USCIB	United States Council for International Business
USTR	United States Trade Representative
UV	Ultraviolet
VOC	Volatile Organic Compounds
WB	World Bank
WEEE	Waste Electrical and Electronic Equipment
WFD	Waste Framework Directive
WIOD	World Input Output Database
WITS	World Integrated Trade Solution
WTI	World Trade Institute
WTO	World Trade Organisation

Executive summary

1. Purpose of this Sustainability Impact Assessment

This Sustainability Impact Assessment (SIA) is intended to provide the European Commission with an in-depth analysis of the potential economic, social, human rights, and environmental consequences of a Transatlantic Trade & Investment Partnership (TTIP) in order to inform its negotiating approach and recommend certain measures. It does so through robust quantitative and qualitative analysis, informed by a continuous and wide-ranging consultation process with all relevant stakeholders. This final report is the third of three deliverables in the SIA process, following the publication of the interim report in May 2016, and summarises the work undertaken to date as well as the main results obtained.

2. The EU-US economic relationship: a large and deep one

The EU and US together are the largest, the most open and also bilaterally most integrated economies in the world. A long, shared history of trade and intellectual exchange, and a similar rate of economic development, has led to this close and commercially significant relationship and the proposal to negotiate TTIP.

- **Joint EU and US GDP** stood at around 46 percent of global GDP in 2014;
- **Tariffs** are at very low levels (2.2 percent for the US and 3.3 percent for the EU);
- **Bilateral goods trade** amounted to € 517.1 billion in 2014, and services trade to € 375.7 billion;
- The US is the EU's main extra-EU trading partner for goods and services;
- The US was the EU's main **FDI** destination (€ 225.2 billion) and origin country (€ 421.2 billion);
- US controlled enterprises created **5.9 million jobs** in the EU, equal to 19 percent of all jobs supported by export, and 50 percent of all jobs supported by export of countries outside the EU;
- Around 4.7 million EU jobs are associated with production for **exports** to the US.¹

3. The Transatlantic Trade and Investment Partnership differs from other trade agreements

TTIP is the largest bilateral trade and investment agreement ever to be negotiated. It will be a unique agreement where (traditional) tariff liberalisation is complemented by significant commitments on regulatory cooperation and a joint rules-based framework for bilateral trade and investment, fit for modern globalised commerce. The future agreement will consist of three pillars: market access, regulatory co-operation and rules. Within these three parts respectively, TTIP aims to remove nearly all customs duties, improve EU and US access to each other's services and public procurement markets; address and reduce behind-the-border barriers to trade and investment with full regard and respect for consumer, labour, environmental, health and other public policy goals; and to set new and clear rules on horizontal issues governing bilateral trade and investment, such as sustainable development, competition policy and on how to integrate small business in trade, which may serve as examples to the rest of the world.

4. Quantification of TTIP impacts: CEPR (2013) is the most suitable model

The CEPR (2013) study presents the most suitable approach to date for analysing the potential impact of TTIP. This conclusion is also reached by CEPS (2014) in a comparative study of impact assessments for the European Parliament. The CEPR has updated its 2013 analysis for this TSIA. This included: updating and extending the baseline data by three years, 'splitting out' the effects on Turkey, disaggregating further the sector breakdown, and splitting out macro-economic effects for EU Member States.² The scenarios modelled are presented in the box below. For technical reasons to ensure accurate output, the expected reduction of non-tariff measures (NTMs) in the processed foods' sub-sectors have not been modelled.³ As a

¹ http://trade.ec.europa.eu/doclib/docs/2015/june/tradoc_153502.pdf.

² More details on the modelling, the differences with other studies, and the differences between the CEPR (2013) modelling and the updated modelling are presented in Chapter 1.

³ The subsectors included in the processed food sector are: ruminant meats, other meats, vegetable oils, dairy products, rice, sugar, other processed foods, and beverages & tobacco. NTMs in these subsectors

consequence of all the necessary methodological adjustments listed above, the results of the updated analysis are slightly lower than the CEPR (2013) estimates. Throughout this report, these updated CEPR results are benchmarked against various other studies (both at EU and EU Member State level). We find that the updated results are highly comparable to other studies, except for two outliers (GED Bertelsmann, 2013; Capaldo, 2014), which present rather implausible effects that stem from different methodological approaches.

The CEPR analysis offered two scenarios for TTIP:

Less ambitious scenario:

- 98 percent of tariffs eliminated;
- 10 percent of non-tariff barriers (NTBs) eliminated on both goods and services (20 percent of actionable), except for processed foods, for which a reduction of NTBs has not been modelled;
- 25 percent of procurement NTBs eliminated.

Ambitious scenario

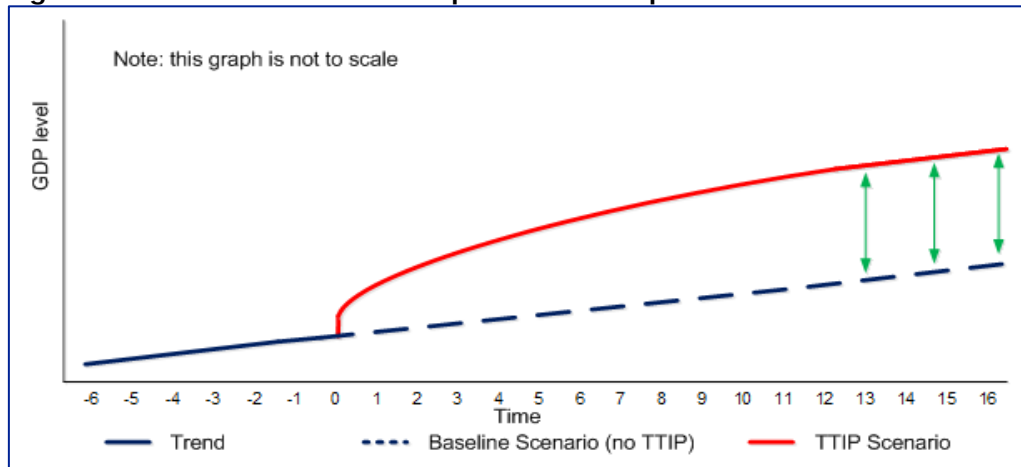
- 100 percent of tariffs eliminated;
- 25 percent of NTBs eliminated on both goods and services (50 percent of actionable), except for processed foods, for which a reduction of NTBs has not been modelled;
- 50 percent of procurement NTBs eliminated.

5. How to interpret the CEPR results

In general, the results for a particular variable are expressed in percentages. In the figure below, the example of GDP is graphically illustrated. The solid blue line indicates the trend of the GDP level over time. In a scenario without TTIP, represented by the blue dotted line, GDP evolution is shown simply as an extension of the trend line. The alternative, represented by the solid red line, is a scenario with TTIP, as modelled by the updated CEPR results. In the analysis, the GDP level in the TTIP scenario is compared with the GDP level in the baseline scenario for a particular year (in this case 2030). Accordingly, the green arrow in the figure shows the estimated impact of TTIP relative to the level of GDP in 2030 without the agreement in place. Note that gains will materialise every year starting from the moment the implementation of the agreement begins. However, the full gains are not expected immediately. The gains from tariff cuts can be felt instantly, whereas the reduction of NTBs and the gradual adjustment of economic structures imply that some benefits will only be incrementally realised over the course of the years. Because of this, it is not accurate to suggest this percentage can be divided up over a number of years (e.g. 0.036 percent per year). Importantly, the estimated impact is permanent and applies to GDP levels (which are represented by the parallel lines after 2030 and the green arrows in the figure below) and not to GDP growth rates. So, after TTIP is fully implemented, the difference between GDP levels with and without TTIP is 0.5 percent, and this is the case for every year after 2030. Note that the graph is for illustrative purposes and not to scale.

are not modelled because of technical reasons as is explained in more detail in Chapter 1. The EU's ambition in the negotiations has not changed regarding the reduction of NTMs in the processed food sector. Note that for the same reason the modelling exercise did not include NTMs in the primary sectors as was also the case in the CEPR (2013) study.

Figure 0.1 Visualisation of the expected GDP impact



6. Main expected economic impacts from TTIP: moderate but annual economic gains, ambitious scenario 2030 impact results

- GDP is set to be 0.5 percent higher each year for the EU and 0.4 percent higher for the US;
- National income is set to be 0.3 percent higher each year for the EU and also for the US;
- Wages for both high- and low-skilled workers are expected to go up by 0.5 percent in the EU, compared with 0.3 percent for high-skilled and 0.4 percent for low-skilled workers in the US;
- Total exports increase for both EU (+8.2 percent) and US (+11.3 percent) and so do total imports for EU (+7.4 percent) and US (+4.6 percent). The EU's terms of trade are expected to increase by 0.5 percent, whereas in the US these are expected to worsen by 0.3 percent;
- Bilateral trade is expected to increase significantly from its already high level, with an increase of 27 percent of EU exports to the US and a 35.7 percent increase in US exports to the EU.

7. Overall sectoral economic impacts of TTIP

In terms of percentage changes, the largest production (and associated employment) gains in the EU are expected in the leather, textiles & clothing, motor vehicles, beverages & tobacco, water transport, and insurance sectors (see Table 0.1). The top three sectors are those that currently still face large tariffs and/or many NTBs that could be reduced through TTIP. The sectors that lose out relatively are electrical machinery⁴, non-ferrous metals, iron and steel products, other meats, and fabricated metals.⁵ It appears that these sectors may be hit harder by the increased competition from third countries after a reduction of tariffs and NTMs.⁶ Because the electrical machinery sector is expected to be impacted negatively we would expect upstream sectors such as iron & steel and fabricated metals to also lose out. For the US, the largest output gains in terms of percentage changes are expected in the non-ferrous metals, other meats, other machinery, rice, and textiles sectors (see Table 0.2). The non-ferrous metals and rice sectors, for example, largely benefit from reductions in tariffs and/or NTMs. Motor vehicles, beverages and tobacco, electrical machinery, iron and steel products, fabricated metals, and insurance are the sectors that show relatively the largest decline. The two tables below show these main sectoral impacts for the EU and US. It should be noted that the top sectors at either end of the scale presented here, are the sectors that will see the largest impact

⁴ The electrical machinery sector concerns sector classification HS 85. This classification includes for example: electric motors and generators, electrical transformers, and electric signaling equipment. A more detailed explanation of the relation between the different sector classifications (GTAP, HS, and NACE) can be found in Chapter 6 and Chapter 10.

⁵ It should be noted that the importance of the leather, textile and clothing sectors, as well as the electrical machinery sector is rather small in the EU and thus the total effect is likely to be only minor. A more detailed analysis can be found in Chapter 3.

⁶ Please see Chapter 10 for more details on this issue regarding the electrical machinery sector.

in terms of percentage changes. It is likely that in terms of absolute changes the top five would look rather different. As can be seen from the third column (share in output), although some sectors might see a large impact they are not as important to the economy as other sectors. A more detailed analysis of the sector impacts can be found in Chapter 3 and in the relevant sector studies.

Table 0.1 Largest positive and negative expected sectoral impact on output for the EU, ambitious scenario

Sector	Declining sectors (% change)	Share in total EU output 2011	Growing sectors (% change)
Leather, textiles and clothing		0.3-0.7%	1.8 - 2.7
Motor vehicles		3.3%	1.5
Beverages, tobacco		1.0%	1.1
Water transport		0.9%	0.9
Insurance		1.2%	0.8
Electrical machinery ⁷	-7.9	1.3%	
Non-ferrous metals	-3.0	0.8%	
Iron and steel products	-2.5	1.2%	
Other meats	-1.0	0.5%	
Fabricated metals	-0.8	2.1%	

Source: Updated results; Note: Estimates to be interpreted as % changes to the baseline scenario (no TTIP) in 2030, 20 per cent direct spill-overs.

Table 0.2 Largest positive and negative expected sectoral impact on output for the US, ambitious scenario

Sector	Declining sectors (% change)	Share in total US output 2011	Growing sectors (% change)
Non-ferrous metals		0.6%	3.2
Other meats		0.3%	2.2
Other machinery		4.2%	1.5
Rice		0.0%	1.1
Textiles		0.6%	0.6
Motor vehicles	-2.9	2.2%	
Beverages, tobacco	-2.6	0.6%	
Electrical machinery	-2.4	2.0%	
Iron and steel products	-1.4	0.8%	
Fabricated metals	-1.1	1.4%	
Insurance	-0.5	2.1%	

Source: Updated results; Note: Estimates to be interpreted as % changes to the baseline scenario (no TTIP) in 2030, 20 per cent direct spill-overs.

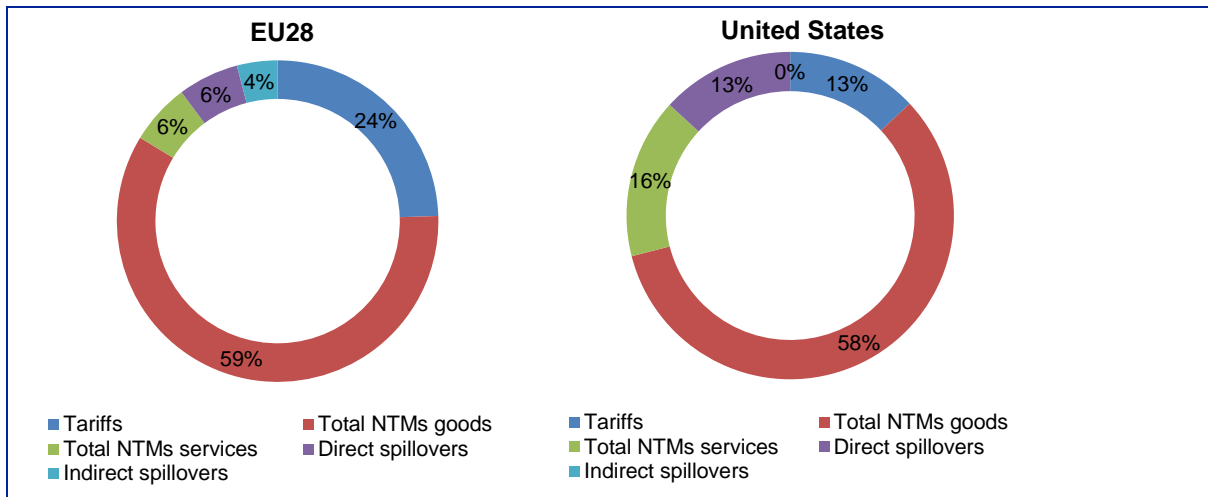
8. Regulatory co-operation in goods drives the bulk of the results, but tariffs and an open TTIP matter

For the EU (see figure below), the bulk of the economic impact from TTIP comes from regulatory co-operation, namely 76 percent (more specifically 65 percent due to the reduction

⁷ The electrical machinery sector corresponds to GTAP40 and HS85, and includes for example: electronic equipment for broadcasting and transmission, manufacture of office machinery, manufacture of television and radio transmitters or sound or video recording. . A more detailed explanation of the relation between the different sector classifications (GTAP, HS, and NACE) can be found in Chapter 6 and Chapter 10.

of NTMs and 11 percent due to spill-over effects⁸), 24 percent of the total effect comes from tariff reduction. For the US (see figure below) regulatory co-operation is also the most important element (87 percent) (74 percent comes from NTM reduction and 13 percent from spill-over effects). The reduction of tariffs counts for 13 percent of the total impact.

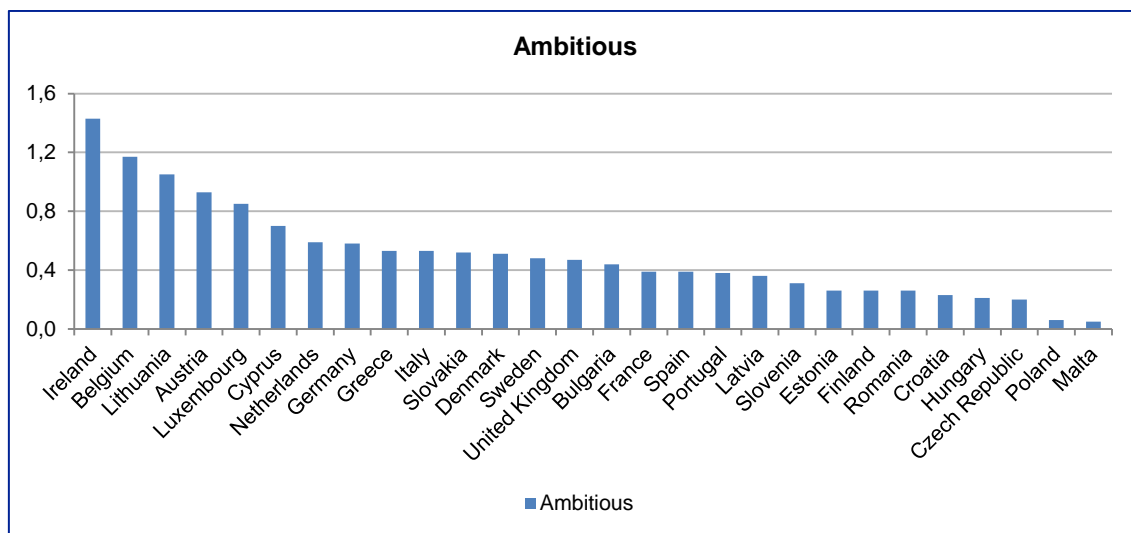
Figure 0.2 Decomposition of the impact of TTIP on GDP, ambitious scenario



9. GDP effects vary by EU Member State: the more integrated with the US, the higher the gains

The positive GDP effect of TTIP is 0.5 percent each year for the EU on average in the ambitious scenario. The figure below shows that all EU Member States are expected to gain from TTIP. However, across EU Member States there is considerable variation. Ireland, Belgium, Lithuania, and Austria stand to gain most, while Malta and Poland gain least. There are several potential explanations for these differences, including the depth of economic integration with the US, the different sectoral strengths of each Member State, and the fact that the results do not take into account any reduction in NTMs for processed foods. This is particularly significant for countries such as Greece, Latvia, Bulgaria, Spain, Croatia, France, Cyprus, Italy, the Netherlands and Poland which could otherwise see significant value added in processed foods exports to the US as a result of NTM reductions in this sector.

Figure 0.3 GDP impacts, ambitious scenario



⁸ I.e. the effect on the EU of third countries benefiting from more aligned EU/US regulation. A more detailed explanation of the spill over effects can be found in Section 3.2.

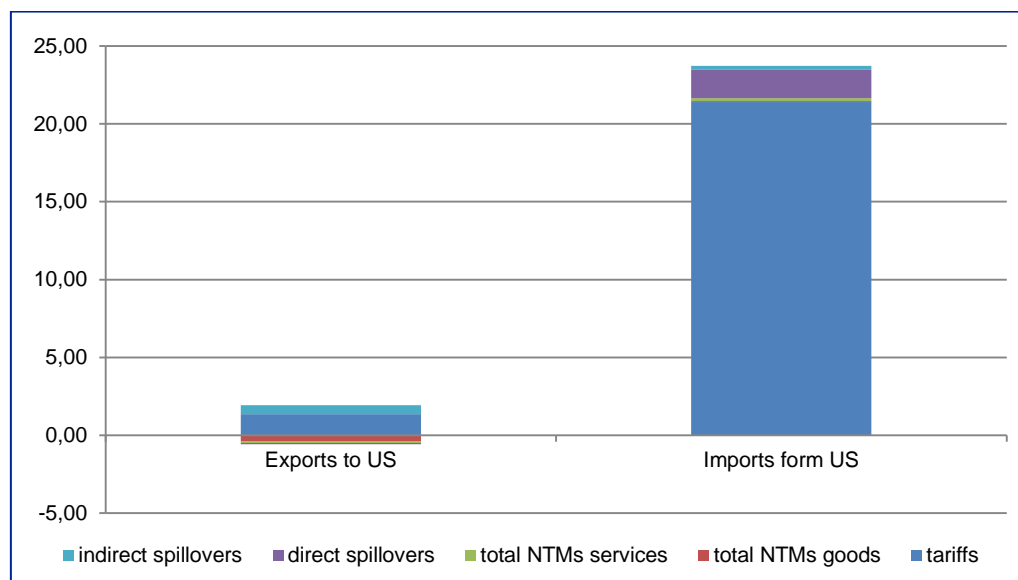
10. TTIP and third countries: an open TTIP would make a (positive) difference for developing countries

Because TTIP is not a traditional trade agreement, traditional trade creation and diversion effects only partially apply. The effects for developing countries depend to a larger extent on the degree of non-discriminatory openness in the final TTIP agreement. If in an 'open' TTIP, some NTMs are reduced in a non-discriminatory way, many developing countries would gain, in particular those which are more integrated in global value chains. CEPR (2013), and the updated results, report zero to marginally positive effects for low-income countries in an ambitious scenario. Their GDP will most likely not be affected by TTIP, whereas the exports and imports of low income countries are expected to increase by 0.3 and 0.4 percent respectively. A recent assessment by Brakman et al. (2015), also reports that most low- income countries are expected to not be impacted or to benefit marginally from TTIP. Mercosur, China and India are also expected to see no change in their GDP. Turkey and OECD countries on the other hand are estimated to see their GDP grow by 0.1 percent, and ASEAN countries by 0.5 percent. As for trade, the largest gains in exports can be found in Turkey (2.0 percent), ASEAN countries (1.3 percent), and in OECD countries (1.2 percent). The largest increase in imports are expected to be found in ASEAN countries, China, and Turkey, where imports will increase by 2.0, 1.6, and 1.4 percent respectively.

11. TTIP and Turkey: major bilateral import surge from the US following TTIP

The potential effect of TTIP on Turkey is positive but limited in terms of GDP, national income and wages (0.1 percent). Turkey's total exports and imports are expected to increase by 2.0 and 1.4 percent respectively. The impact on Turkey's trade with the US in particular is worth highlighting. However, because of Turkey's customs union with the EU, it is obliged to adjust its tariffs in line with any changes to the EU's common external tariff. Tariffs on US exports to Turkey would therefore be eliminated or reduced under TTIP in parallel to the EU's. However, Turkey would not have the same access to the US, since it is not a party to TTIP and does not have any separate trade agreement with the US. Figure 0.4 shows the potential result. In the model, Turkey's bilateral imports from the US surge by 23.7 percent, while Turkish exports to the US go up by only 1.3 percent in the ambitious scenario.

Figure 0.4 Decomposition of Turkey-US bilateral exports, ambitious scenario



12. Small business: addressing practical trade concerns is vital for TTIP impact

Small and medium-sized enterprises (SMEs) are the employment backbone of the EU and US economies. If TTIP can facilitate trade for SMEs by removing trade barriers that are prohibitive for SMEs, its impact would be highly significant. SME barriers are very practical in nature: for example, a lack of clear information about the practical requirements for transatlantic trade, a problem often too complicated and expensive for SMEs to solve in comparison to the resources of larger firms. So for SMEs, TTIP needs to deal with practical trade concerns. Beyond the information gap, these include lengthy customs procedures, unnecessary differences or duplicates in testing requirements, and tariff peaks.

13. Overall real income effects: with an ambitious TTIP all groups gain

Average real household income gains of 0.4 percent in the EU and 0.3 percent in the US do not say much about how effects are spread through society. When disaggregating the real incomes to different household groups, we find the following:

- In an ambitious TTIP agreement, all income groups are expected to experience an increase in their real incomes. The poorest quintiles gain marginally less than the richest quintiles;
- Those who have jobs gain more from TTIP than those that are unemployed, inactive or retired – the latter groups miss the positive wage impact, but could face a small increase in consumer prices;
- The impact of TTIP on countryside households is not different from the impact on city households.

14. Main expected social impacts from an ambitious TTIP: long-term wages and prices rise, short-term and sectoral adjustment

- **Wages** are expected to rise by 0.5 percent (for high- and low-skilled workers) in the EU and by 0.4 percent for low-skilled and 0.3 percent for high-skilled workers in the US;
- **Wage inequality** in the US is expected to decline because of TTIP;
- Wage effects in TTIP are fuelled by regulatory co-operation in goods sectors and by tariff liberalisations;
- **Labour displacement** – the degree to which employment changes across sectors – is higher in the more ambitious scenario and marginally higher for low-skilled workers, though overall the impact is expected to be within market trends;
- **Consumer prices** are expected to go up marginally in the EU (+0.3 percent) and to have no effect in the US (0.0 percent). This is because higher demand from the US market for European goods and services could lead to slightly higher consumer prices in the EU in the long run. However, for all household groups this is more than offset by higher wages. The increase in consumer prices could also, however, be overestimated as a result of the fact that the model did not consider a reduction in NTMs in processed foods. The impact this would have had on prices and the market was not accounted for;
- **Real household incomes** are expected to go up by 0.4 percent in the EU and 0.3 percent in the US.

15. Sectoral employment impacts of TTIP

In some sectors in the EU, employment is expected to go up (e.g. leather products, textiles, clothing, motor vehicles, and insurance) and in others employment declines (e.g. electrical machinery⁹, non-ferrous metals and iron & steel products). For the US, employment gains are expected in non-ferrous metals, other meats, and other machinery, while in motor vehicles, beverages & tobacco and electrical machinery a decline in employment is foreseen. The expected changes in employment are linked to the expected changes in sectoral output. If a sector's output is expected to increase, more labour is needed to bring about this increase in output. The contrary holds for an expected decrease in output. Therefore, it is not surprising that the sectors where employment is expected to rise are also the sectors where output is expected to increase (see section 7). The overall labour displacement effects are marginal and well within normal labour market trends. Using data from Eurostat, CEPR (2013) states that 20 workers in every 1,000 on average changed sectors between 2001 and 2007; a number which increased to 37 workers in every 1,000 after the crisis years. It is estimated that TTIP would mean an additional six workers in every 1,000 will change sectors each year by 2030. Because aggregate wages are expected to rise, the pull effect (i.e. workers choose to move to sectors where more employment opportunities and higher wages are offered) dominates the push effect (i.e. workers lose their jobs).

⁹ The electrical machinery sector corresponds to GTAP40 and HS85, and includes for example: electronic equipment for broadcasting and transmission, manufacture of office machinery, manufacture of television and radio transmitters or sound or video recording. A more detailed explanation of the relation between the different sector classifications (GTAP, HS, and NACE) can be found in Chapter 6 and Chapter 10.

16. Case study 1: TTIP and ILO Fundamental Conventions: no direct effect from TTIP, but competitiveness effects matter and so does an ambitious, legally binding Sustainable Development chapter

The EU has ratified all eight ILO Fundamental Labour Conventions, while the US ratified only two. There will clearly be little impact on the EU, but for the US there are major roadblocks in terms of US law and practice that will impede ratification of these ILO conventions within the context of the TTIP negotiation. TTIP is unlikely to lead to the signing of any other ILO Fundamental Conventions (other than Convention 111, which has already been presented to Congress). This is not to say that the US does not already meet the substantive commitments set out in these core labour standards, but rather that ratification by the Senate, requiring a two-thirds majority, is improbable. The EU proposal for the Sustainable Development chapter includes sustainable commitments on labour standards that are comparable to the ILO's core conventions, as well as very high standards in other areas. These will become legally binding when TTIP enters into force. How this chapter will be enforced is still subject to the negotiations.

17. Case study 2: TTIP and human health: adverse effects from tariff reduction on some commodities can be addressed, and regulatory co-operation could reduce costs and help put new medicines and medical devices on the market more rapidly

This topic was selected to investigate the potential effects of combined tariff and regulatory cooperation elements in TTIP for human health. We looked at impacts of TTIP for a number of food, drinks and tobacco categories, as well as medical innovations and devices.

Table 0.3 EU-US tariffs in selected sectors (2014)

	EU import tariff	US import tariff
Sector and product group (code)	Weighted average tariff in %	Weighted average tariff in %
Tobacco (24)	22.1	120.2
Alcohol (22)	0.6	0.1
Sugars (17)	12.9	8.3
Pharmaceutical industry (30)	0.0	0.0
Other medical apparatus (902229)	2.1	0.8
X-ray tubes (902230)	2.1	0.9
Medical parts and accessories (902290)	2.1	0.9

- *For tobacco, alcohol, sugars:* We find that tariff liberalisation (see table), could lead to increased consumption of these commodities since this may have a price-reduction effect. This potential negative effect would be disproportionately higher for the lower income strata of the population (as food constitutes a larger share of their expenditures). However, we also find that the proposed provisions in TTIP regarding the states' right to regulate in the public interest (e.g. in the area of human health) sufficiently safeguard EU Member States' freedom to address this negative tariff effect on human health if they wish to do so in order to meet their human health obligations;
- *For medical innovation and medical devices:* We find that the impact of removing the tariff on medical devices because of TTIP could be positive because hospital equipment would get cheaper, reducing health care costs. We also find that the potential impact of regulatory cooperation – for medical devices this means removing duplicative testing requirements (e.g. mutual recognition of Good Manufacturing Practices (GMP)) and speeding up the take-up of new innovations in medicines (e.g. through convergence on RPS) – could be still more substantial. TTIP could flank and strengthen the ongoing EU-US dialogue at the International Conference for Harmonisation (ICH) and International Device Medical Regulators' Forum (IMDRF). This work is helping to simplify trade in medical devices while improving patient safety (e.g. regarding Unique Device Identification (UDI)). Finally, there is no evidence that the EU would intend to harmonise the IP regime for medicines with the US, which – some fear – could lead to longer exclusivity periods for patent rights.

18. Case study 3: TTIP and public health services: four (or three) guarantees for the right to regulate at EU Member State level; private sector competition is possible

The EU approach to dealing with public (health) services in trade agreements was established 20 years ago in the context of the GATS in 1995. Within that framework, the EU has negotiated four guarantees for public (health) services:

1. EU Member State governments are free to regulate their public health sector and they can set their own quality standards suppliers need to meet;
2. For public health services, governments do not have to give access to service providers from outside the EU;
3. National, regional, local governments can organise public services as they see fit, for example via a public monopoly, and there is no requirement to privatise these services.
4. EU Member State governments at all levels are free to provide subsidies to the public health sector.

It is expected, but also important for the impact on public health services, that the same guarantees are going to be part of TTIP. Assuming that they are, it is clear that TTIP will have no bearing on public health care services, nor will it lead to changes in national health care legislation.

Healthcare systems vary significantly across EU Member States. In some countries, healthcare systems are partially privatised and this is reflected in the EU offer. Will they be impacted differently? We find that the second guarantee (above) does not apply to fully privatised healthcare providers, unless the EU schedule includes some Member State specific reservations applicable to private health, but that the other three guarantees still do. This means that foreign competition cannot be discriminated against in a fully privatised system, but the health care sector, in all other ways, can still be regulated, organised and supported as an EU Member State wishes. Finally, because of the abovementioned guarantees as well as the clause in Article 2 sub 1 of the EU's proposal on Investor Protection and an Investment Court System, we believe the right to regulate public health services is not going to be affected.

19. TTIP and human rights: some are affected, others are not because they are not part of the negotiations or because they are safeguarded

Trade policy can have an impact on human rights in various ways, directly and indirectly. We look at various HR that may be affected and that are not elsewhere covered (see three paragraphs above on labour standards, human health and public health services). We believe the *human right to an adequate standard of living* to be affected positively by an ambitious TTIP for all income groups, because of increased real household income for all groups. Ambition is important, because for the unemployed, inactive, retired and poorest income quintile, a less ambitious TTIP agreement may reduce standards of living owing to slightly higher prices not offset by higher wages. The *human right to culture* is not likely to be affected, because audio-visual services and broadcasting services have been excluded from the negotiating mandate. The EU has – since GATS in 1995 – upheld four guarantees to protect publicly funded services, no matter how they are delivered. The *human right to education* is an EU Member State competence that is protected by these GATS guarantees. Concerning the *human right to information* we find that the TTIP negotiations have become significantly more transparent and provide the right to take part in the conduct of public affairs. A major contributing factor to this enhanced transparency has been strong and continued pressure from EU civil society and EU citizens. It is possible to further increase transparency. The *human right to the protection of personal data* is not likely to be affected because TTIP will not affect either party's right to legislate in order to protect privacy.

20. Main expected environmental impact from TTIP in the ambitious scenario: marginally more energy demand supplied by coal and gas; CO2 emissions up, other emissions down; and small increase in environmental costs

- Total **energy demand** is expected to go up by 0.2 percent in the EU as a result of TTIP. This is a combination of a reduction in energy demand in engineering and metals, owing to a decrease in output, and an increase in energy demand in all other sectors. However, it should be noted that the model assumes no other policy changes regarding the EU's future energy mix, although the EU is committed to significant action on climate change including via the 2015 Paris Agreement;

- In an ambitious TTIP, demand will increase for **hard coal (0.3 percent)**, **natural gas (0.2 percent)** and **middle distillates (0.2 percent)** owing to higher energy demand. Other gas (-0.2 percent) will decline;
- Absent mitigating policies, **CO2 emissions** are estimated to go up by 0.2 percent in the EU because of TTIP. This is a combination of increased emissions from textile and clothing (2.3 percent), construction (0.5 percent), and food, drink & tobacco (0.5 percent), and a decrease in emissions from non ferrous metals (-2.0 percent), engineering (-1.2 percent) and iron & steel (-0.5 percent). As with energy demand, this is related to changes in output;
- Looking further into the total impacts on CO2 emissions we see that the results are mainly driven by the **composition effect** (i.e. relative change in composition of sectors in the economy);
- In the US, **CO2 emissions** are expected to go up by 0.3 percent because of TTIP, without mitigating policies. Although emissions are expected to decrease in engineering and chemicals by 1.4 and 0.4 percent respectively, the small expected increase in all other sectors causes the total emission of CO2 to rise, as in the case of the EU;
- **Air pollution** in the EU is not impacted significantly. CO and PM10 emissions go up by 0.1 percent. SO2 and NOX emissions by 0.2 percent. VOCs emissions are expected to decline by 0.1 percent;
- For the EU, **overall material use** will increase. This comes from higher demand for construction minerals (0.4 percent). Demand for ferrous (-1.1 percent) and non-ferrous metals (-1.5 percent) decreases. Although this reduction is significantly larger in percentage terms than the increase, due to current levels of material use it only brings about a small absolute change.

21. Case study 4: TTIP and illegal trade in natural resources: TTIP can have a potential positive impact through Sustainable Development chapter and joint EU-US cooperation to combat illegal trade in natural resources

Trade provisions in TTIP could potentially trigger substantial positive impacts on the sustainability of natural resources globally. Illegal trade between, through and destined for the EU and US markets is significant. In combination with the most concrete and detailed provisions proposed by the EU for TTIP's Sustainable Development chapter (Article III.4), the area of IUU fishing is likely to be most significantly (positively) impacted by TTIP through an expected increase in multilateral cooperation. In general, both the EU and the US have developed – or are planning to develop – a very strong and comprehensive legislation in all three areas to tackle the illegal trade in wildlife, timber and fish. The most significant, although more uncertain, impact of TTIP is likely to stem from joint EU-US co-operation towards third countries. Joint warnings ('yellow carding') or import bans could potentially be a very effective instrument because of the combined size of EU and US markets for natural resources.

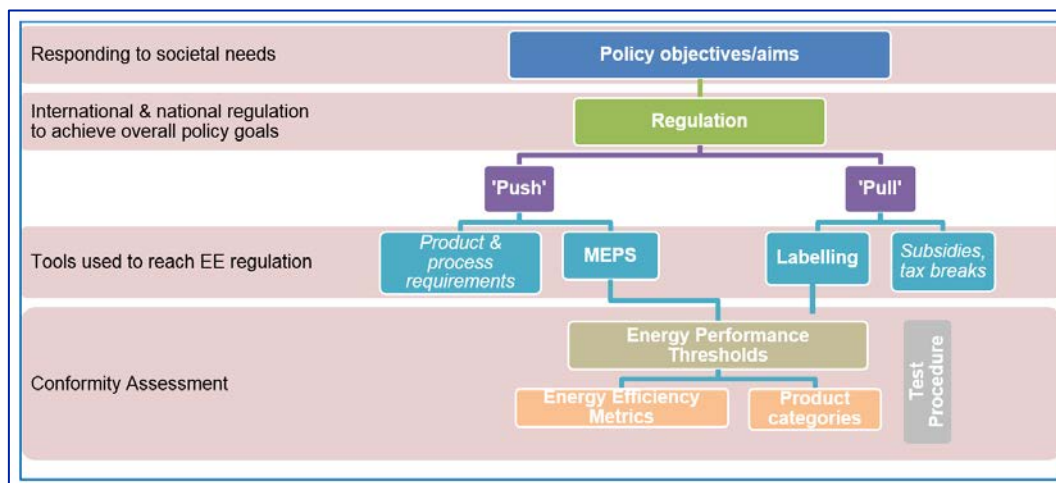
22. Case study 5: TTIP and fossil fuels: Not a direct trade effect, but a strategic LNG price and energy dependence effect for the longer run; trade in refined petroleum products will go up

This case study helps to illuminate the figures given above with regards to TTIP's potential impacts on EU energy demand: it is important to note that the EU's energy mix is likely to change, owing to inter alia, global energy market developments, policies to implement the Paris agreement and other autonomous measures, as well as TTIP itself. TTIP should underpin LNG exports from US to EU which began in early 2016. Through tariff liberalisation, TTIP could have significant economic and environmental impacts, because trade in refined petroleum products would increase. If increased gas use replaces the use of coal in the EU's electricity generation, and does not replace the use of renewable energy sources, it could have a positive impact on the environment (assuming this coal is not used elsewhere). Although LNG exports to the EU are likely to be marginal in the short-run given the current global oil and gas prices, they are an important new source that will help with the EU's energy security and increase competition on the EU gas market. In the longer run, the removal of the LNG export ban could lead to a diversification of Europe's energy mix towards more LNG. There are, however, some public concerns about the environmental aspects of shale gas production, such as methane leakages, with shale gas likely to form a proportion of the LNG exported from the US.

23. Case study 6: TTIP and energy efficiency: impact of TTIP's regulatory co-operation framework on energy efficiency of products could be 0.3 percent of total energy use by 2030

There are high ambitions in the areas of TBT (reducing unnecessary and duplicative test procedures, while increasing the use of international standards) and regulatory co-operation (reduce divergent regulatory requirements, without jeopardizing environmental protection levels) in TTIP. Success in TTIP could in the longer term lead to additional energy savings, lower retail prices for energy efficient products and reduced conformity assessment costs for producers. TTIP's impact is most likely to come from exchange of information, the use of international standards in test procedures and, potentially, mutual recognition of conformity assessment procedures. A rough estimate of the total energy savings that could be achieved in the longer term under TTIP in the EU is 0.3 percent of total energy use.¹⁰

Figure 0.5 Policy aims, regulation and related processes regarding energy efficiency



24. Sector study 1: Impacts on the agri-food sector.

The agri-food sector comprises of the primary agricultural sector and the processed food sector. In the 2013 the sector generated a turnover just over 1 trillion Euro, making it the largest sector in the EU. A significant share of EU's production is exported to the US market, this mainly concerns spirits, wine and beer, which take up 45 percent of all food and beverages products exported to the US. The EU mainly imports oilseed & soybeans, nuts, and spirits from the US, making up 37 percent of all food and beverages imports from the US. As tariffs can be high in this sector, transatlantic trade is significantly hampered. When exporting to the US average tariffs per product group range from 0.0 to 15.0 percent, but can be more than 100 percent for specific products. Average tariffs levied by the EU are even higher, ranging from 2.8 to 66.4 percent. Besides tariffs, the processed foods sector is also a sector that knows many NTMs. For example the US imposes barriers on EU milk products that fall under the 'pasteurised milk ordinance' (PMO) for Grade A dairy products; live ruminants, beef and derived products from the EU are banned from US import since 1998 due to the outbreak of BSE in the EU in the 1990s¹¹; and US approval procedures for plants, fruit and vegetables from the EU are strict and time consuming to the extent of presenting a trade barrier (applications can be pending for 10 years or longer). As a result of TTIP the expected changes in EU output in the sector range from -1.0 percent for other meats to 1.1 percent for beverages and tobacco in the ambitious scenario. The changes in employment are likely to follow the changes in output and range from -1.3 percent for other meats to 0.5 percent for vegetable oils. Some larger impacts are expected regarding trade, EU exports are estimated to increase between 0.8 and 16.1 percent, depending on the subsector. Imports of the EU sector are estimated to increase between 0.5 and 67.9 percent. These results are, however, likely to be underestimated since a reduction of NTMs in this sector as not modelled.¹² With regards to third countries, it is estimated that overall the rest of the world is not significantly affected. However, some preference erosion

¹⁰ This finding is different from the CGE modelling result, because the CGE modelling result does not take into account technological improvements in energy efficiency.
¹¹ The EU and the US are currently working on a solution for several EU countries, including the Netherlands.
¹² Please see Section 1.4 for more details and explanation.

could occur, depending on the sector and the country (e.g. vegetables and fruits in Mexico), though these impacts are expected to be rather limited. A more detailed analysis of the impact on the different subsectors can be found in Chapter 7.

25. Sector study 2: Impacts on the chemicals and pharmaceutical sectors

The chemicals sector is one of the largest and most involved sectors in transatlantic trade and FDI. It is a sector that includes petrochemicals, polymers, basic inorganic chemicals, specialty chemicals and consumer chemicals. In terms of turnover and value added it is one of the largest sectors in the EU. However, globally the EU has lost significant market share to China. In 2004 the EU held 30.9 percent of the global market, but only 17.0 percent in 2014. The majority of EU chemical production is destined for the home market, only 25 percent concerns extra EU exports. The EU's main export markets are Rest of Europe, NAFTA and Asia. Although tariffs with the US are relatively low, because of the significant value of goods traded, these tariffs still add a significant cost to chemicals trade. Also NTMs add to the cost of trade, it has been estimated that NTMs in the chemical sector add up another 21 to 29 percent to the costs. One of the issues often mentioned by businesses that result in additional costs is the need for relabelling.

Although most pharmaceutical products are made from chemical substances, they should be treated as a separate industry. While the sector is small in number of enterprises (4,200) and employees (554,000), it is large in terms of turnover (€229 billion) and value added (€80 billion). Worldwide the EU sector accounts for 25.3 percent of world sales. In 2013 its extra-EU exports were worth €113.4 billion, of which 27 percent was destined for the US, its main trading partner. In the pharmaceutical sector tariffs are close to zero, but some NTMs currently in place are burdensome for trade, like e.g. differences in clinical trials and labelling requirements.

The modelling exercise conducted in this study estimates an output gain ranging from 0.1 to 0.3 percent in the EU. Both exports and imports are also expected to increase with around 5.2 to 9.4 percent. The largest gains come from the reduction of NTMs. It is important to keep in mind that the model exercise has combined the chemicals and pharmaceutical sectors into one industry. The outcomes do not imply that the two sectors will be impacted in the same way, but they show merely a range in which the impact might fall. Moreover, the scenario modelled, is more ambitious and not in line with the current negotiations on chemicals, therefore the results are over-estimated. With regard to employment, the model has estimated a small change ranging from -0.1 to 0.0 percent. For pharmaceuticals, additional to direct benefits for the industry, the reduction of duplicative testing and duplicative clinical trials¹³ could also benefit patients in terms of improved access to medicines, lower prices (if companies pass the cost reduction on), and fewer clinical trials on both adults and children. In both industries, time and resources that no longer need to be spent on e.g. duplicative procedures could now be used in other areas, such as safety or research and development, which could ultimately benefit the consumer, the environment, or the competitiveness position of the industry. A more detailed analysis can be found in Chapter 8.

26. Sector study 3: Impacts on the mechanical engineering sector

The mechanical engineering sector is a key European sector, employing over 2.8 million people in over 91 thousand companies. The EU sector exported products worth €303 billion, of which €58 billion to the US, its most important export destination, in 2014. When exporting their products to the US, EU firms are faced with average tariffs ranging from 0 to 8.0 percent.¹⁴ The industry mainly suffers from NTMs in the form of differences in standards, requirements and tests, but also from restrictions in the area of public procurement. In terms of the economic and trade impacts, the CGE model predicts positive impacts of TTIP. In the EU, the total output is expected to grow with about 0.5 percent in the case of an ambitious scenario and exports would grow by 1.5 percent. The positive outcomes are in line with the overall analysis of the industry that suggests that the EU mechanical engineering sector is a strong and globally competitive industry. Stakeholders have also indicated that they expect the mechanical engineering industry to gain from TTIP. In line with the expected growth in output and trade, the mechanical engineering sector is also estimated to create more jobs in the EU, equally for the high-skilled and low-skilled workforce, with an increase of about 0.2 percent. On the other hand, growth of the sector's production and trade across the Atlantic means a challenge for the environment –

¹³ This should only concern test and trials that provide the same level of safety.

¹⁴ These tariffs are weighed averages, within the different product groups tariffs can be higher for some products.

as the emissions of CO₂ are expected to grow with 0.4 to 0.5 percent in the EU. A more detailed analysis can be found in Chapter 9.

27. Sector study 4: Impacts on the electrical and electronic goods sector

In 2013 the EU electrical and electronic goods sector generated a turnover of 559 million euro and employed around 2.5 million persons.¹⁵ In terms of trade, extra EU exports equalled €280 billion in 2014, of which €41 billion was exported to the US. The US is the second most important trading partner for imports (€29 billion), but clearly lags behind China (€153 billion). The average tariffs that EU producers face when exporting to the US range from 0 to 5.8 percent.¹⁶ However, more important than tariffs are the NTMs present in the sector. NTMs faced by EU exporters are caused mostly by divergence of US standards from international product standards, necessity of 3rd party testing on import products, and the existence of the Energy Conservation Program for Commercial and Industrial Equipment (EPCA). The existence of US state-level safety certifications and the Encryption Control Protocol that is not in line with the international arrangements also creates barriers for EU exporters. The expected impacts of TTIP on the electrical and electronics goods sector are modelled for two sub-sectors: 1) electric goods¹⁷, and 2) electrical engineering¹⁸. The changes in output are estimated to be positive in the electric goods subsector (1.5 percent), but negative in the electronic engineering sub-sector (-7.9 percent). These differences in expected impacts relate to the significant different competitiveness characteristics of the two subsectors. Similarly exports are expected to decrease in the electronic equipment subsector (-1.5 percent) and increase in the electrical goods subsector (1.5 percent). The employment impacts are in line with both subsector output effects and are thus expected to increase for the former (0.2 percent) and decrease for the latter (-7.5 percent). The electronic engineering industry representatives, however, are not convinced of such a strong effect on the EU's competitive position that could ultimately result in negative impacts from TTIP. A more detailed analysis can be found in Chapter 10.

28. Sector study 5: Impacts on the Motor vehicles sector

The motor vehicle sector analysed in this study comprises of "motor vehicles, including parts and components. With a turnover of €959 billion in 2013, the motor vehicle sector is one of the largest manufacturing sectors in the EU. On the global market China has taken over the EU's place as leading producer. The EU's share in world production has decreased over time from 34 percent in 2000, to 23 percent in 2014. The EU motor vehicle sector sees the US as its main trading partner, good for €46 billion of exports in 2014. The average tariffs EU exporters face are relatively low and range from 0 to 1.6 percent, average tariffs levied by the EU are much higher. The NTMs present in the sector are more burdensome and could add a 27 percent additional cost to trade and investment with the US. Often cited issues relate to differences in safety, emission and fuel efficiency regulations. Additional to a tariff reduction TTIP is likely to address many of the differences in safety regulation. An ambitious TTIP could result in an EU output gain of 1.5 percent and an increase in overall exports and imports of 40.9 and 42.1 percent respectively. Also low skilled and high skilled employment is expected to increase, by 1.2 and 1.3 percent respectively. A positive impact is also expected by the EU industry and predicted by other studies.¹⁹ The impact of the scale effect on the environment is negative as increased production could lead to increased environmental pressure in terms of an increase in air pollutants by 1.5 percent in the ambitious scenario. However additional time and resources available due to regulatory cooperation could be used to e.g. improve the production efficiency or stimulate R&D with respect to electric cars. A more detailed analysis can be found in Chapter 11.

29. Sector study 6: Impacts on the Maritime and air transport sector

While the maritime transport sector is more focussed on freight transport, the air transport sector is more focussed on the transportation of passengers. In terms of EU exports the US is

¹⁵ 1.1 Million employees were employed in the electronic goods subsector (NACE 26), and 1.4 million in the electrical equipment subsector (NACE 27).

¹⁶ These tariffs are weighed averages, within the different product groups tariffs can be higher for some products.

¹⁷ Corresponds to GTAP41 and HS84, and includes for example: medical precision and optical instruments, electric and word-processing machines, automatic data processing machines, computer storage devices and scientific and technical instruments.

¹⁸ Corresponds to GTAP40 and HS85, and includes for example: electronic equipment for broadcasting and transmission, manufacture of office machinery, manufacture of television and radio transmitters or sound or video recording.

¹⁹ CAR (2016), Peterson Institute (2015).

the most important export destination for both the maritime and air transport sectors. Although the services industries do not face the burden of tariffs, they are impacted by other trade barriers. A significant market access restriction in the maritime transport sector is The Jones Act, which effectively excludes the EU industry from the US market. In addition foreign ownership restrictions, the container security initiative, or local content requirements hinder trade. Air transport services are also hindered by foreign ownership restrictions, as well as by the Fly American Act, and the Clear Air Act. Although not all trade barriers will be lifted in these two sectors, the modelling results show that in both the ambitious and less ambitious scenario output and trade will increase for both sectors. Output is expected to go up by 0.9 percent in the maritime transport sector and by 0.4 percent in the air transport sector. In maritime transport services export and import will increase by 1.2 and 1.3 percent respectively, for air transport these numbers amount 1.1 and 0.7 percent. A large part of the increase in output and trade stems from indirect effects, i.e. increased trade in other sectors (due to a reduction in trade barriers), which requires more transportation of their goods. With regards to the environmental impacts the increase in transportation will most likely lead to increased pressure on the environment. Air pollution is estimated to increase by 0.9 percent in the maritime transport sector and by 0.4 percent in the air transport sector in the ambitious scenario. There are however other factors that might be able to offset these increases. If additional transport leads to an increased demand for ships, more young and less polluting ships will be used and could potentially replace the old and more polluting vessels. A more detailed analysis can be found in Chapter 12.

30. Sector study 7: Impacts on the Financial services (incl. insurance) sector

The financial services sector in the very specific context of trade agreements is separated between insurance on the one hand, and banking and other financial services on the other hand. The EU and US are by far the biggest financial markets in the world, also used as platforms for financing operations outside of their territory. It is estimated that the financial services sector contributed on average 4.9 percent to gross value added in the Eurozone (1999 - 2013) and that the sector's value added contributed just over 5 percent to EU27 GDP in 2011. This study focuses on the trade in financial services (including foreign direct investments in financial sectors), as it has been regulated since the GATS and through various bilateral agreements. Despite losing market share due to the crisis, Europe remained the largest insurance market in the world in 2012. The EU27 is a net exporter of financial services and a net exporter of insurance services; however insurance services exports show a declining trend since 2012. FDI data confirm the strong integration between the EU US financial sectors. EU outward FDI stock in the US over the past few years accounted for approximately 30-36 percent of all EU financial services outward FDI stock. US FDI stock in the EU sector over the past few years amounted to approximately 40 percent of all inward FDI stock. The model results for an ambitious scenario with 20 percent spill-overs indicate a small positive impact for the EU services sectors in terms of output (0.40 percent for finance and 0.8 percent for insurance) and more substantial impacts for trade, and particularly exports (increase by 4.2 percent in exports and 2.6 percent in imports for finance, and by 4.2 percent in exports and 2.6 percent in imports for insurance). Employment impacts are in line with output and are expected to be slightly positive for the EU. These results likely reflect a lower limit of the potential impacts. FDI is not included in the modelling, while this is key for the sector. Minimal direct environmental impacts are expected given the limited increase in output and the fact that trade in financial services will not create substantial transport flows with possible negative effects (e.g. as part of the trade will take place electronically). Potential negative impacts, as seen in particular by civil society but also by several academics, relate to the actual approach taken to regulatory cooperation and the specific form it will take. Given the high level of integration between EU and US financial markets, the main transatlantic barrier in the financial sector remains regulatory divergence, about which the EU has proposed to include in the TTIP some elements to develop regulatory cooperation. This should be done while preserving full autonomy of regulators from both sides, and in order to achieve financial stability as a primary objective, two conditions that the EU has always set out to be its priorities in that field. A more detailed analysis can be found in Chapter 13.

1. Introduction

This chapter provides an introduction to and an overview of our approach to the Interim Technical and Final Report of the Trade and Sustainability Impact Assessment on the Transatlantic Trade and Investment Partnership (TTIP) between the European Union (EU) and the United States of America (US).

The introduction provides an overview of the 15 chapters, includes an analysis of the impact-assessment literature on TTIP, and an explanation of the approach and methodology we chose for this report.

Box 1.1 Take-away from this chapter

- After carefully analysing the different models used for assessing and studies performed on the potential impact of the Transatlantic Trade and Investment Partnership we have concluded that the CEPR (2013) is most suitable for assessing the impacts;
- The CEPR (2013) study has been updated and includes the following changes:
 - The baseline has been updated and extended from 2027 to 2030;
 - The results for Turkey have been 'split out';
 - The results for EU Member States have been 'split out' (macro-level for national income, GDP, trade and wages);
 - Several GTAP sectors have been disaggregated into sub-sectors (the specific sub-sectors are presented below).

1.1. Introduction and overview of the report

The overall approach of the study consists of three phases: an overall economic, social and environmental analysis, an in-depth sectoral analysis, and the flanking measures and policy recommendations. The overall analysis is presented in the Interim Technical Report, as well as the first part of the sector analyses (i.e. the baseline and market access issues). The assessment of sectoral impacts and the flanking measures and policy recommendations are presented in the Final Report. A detailed overview of the framework applied for each analysis can be found in the Inception Report.²⁰ Throughout the study, Ecorys has consulted widely with stakeholders, details of which can be found in Chapter 14.

The report contains the following chapters and set up:

- Executive Summary
- Chapter 1 – Introduction and overview
- Chapter 2 – Overview of current EU-US relations
- Chapter 3 – Overall economic impacts
- Chapter 4 – Overall social impacts
- Chapter 5 – Overall environmental impacts
- Chapter 6 – Introduction to the sectoral impacts
- Chapter 7 – Potential TTIP impact on the agri-food sector
- Chapter 8 – Potential TTIP impact on the chemical sector
- Chapter 9 – Potential TTIP impact on the mechanical engineering sector
- Chapter 10 – Potential TTIP impact on the electrical and electronic goods sector
- Chapter 11 – Potential TTIP impact on the motor vehicles sector
- Chapter 12 – Potential TTIP impact on the air and maritime transport sector
- Chapter 13 – Potential TTIP impact on the finance and insurance sector
- Chapter 14 – Consultations and communications
- Chapter 15 – Overall conclusions and recommendations

In the second chapter we provide a brief overview of current EU-US relations in terms of economic, social and environmental indicators.

²⁰ <http://www.trade-sia.com/ttip/wp-content/uploads/sites/6/2014/06/TSIA-TTIP-Final-Inception-Report-publish2506.pdf>.

The overall analyses are presented in Chapters 3, 4 and 5 (economic, social and human rights, and environmental), which take account of the structure of the negotiations. Table 1.1 shows how the trade agreement is negotiated at three levels: market access, regulatory co-operation and a rules-based framework.

Table 1.1 Structure of the elements covered in the TTIP negotiations

Market access	Regulatory co-operation	Rules-based framework	Institutional framework
Trade in goods and custom duties	Regulatory coherence	Sustainable development	Institutional provisions
Services	Technical barriers to trade (TBTs)	Energy and raw materials (ERMs)	
Public procurement	Food safety and animal and plant health (SPS)	Customs and trade facilitation (CTF)	
Rules of origin	Sectoral annexes	Small and medium-sized enterprises	
		Investment protection	
		Competition	
		Intellectual property (IP) and Geographical indications (GIs)	
		Government-Government dispute settlement (GGDS)	

- The economic assessment in Chapter 3 includes the FTA's impacts on the EU28 and the US, but also impacts for the individual EU Member States and at sectoral level. In addition, the effects on EU Outermost Regions and on third countries, including Turkey, are reported. The last section of the economic chapter contains a section on SMEs;
- Chapter 4 focuses on the potential impact of TTIP on employment and wages, and on prices and labour displacement. Additionally, three case studies highlight the market-access and regulatory co-operation elements. They include topics that cannot be measured quantitatively, but could be significantly affected and are often raised as concerns by civil society groups. The case studies were chosen with civil society groups over the course of two workshops in the summer of 2015. There is also an analysis of the potential impact on human rights;
- Chapter 5 covers the baseline environmental situation and expected impacts of the TTIP. Topics discussed include climate change, energy use, air pollution, material use, biodiversity, and water pollution. In addition to the quantitative analysis three case studies help illuminate potential market access and regulatory co-operation aspects of TTIP and how they could impact certain environmental areas. Civil society groups helped select the case studies.

The sector analyses are outlined in Chapters 6 to 13. A brief introduction to the sector analyses in Chapter 6 is followed by the results for the individual sectors in the remaining chapters. The criteria used for selecting these sectors can be found in the Inception Report. While sectoral impacts are mentioned in the economic chapters, the analysis is much deeper in the sector-specific chapters.

Chapter 14 explains how we have communicated with stakeholders and civil society. The Annexes provide details of all engagements with stakeholders that took place during the project.

1.2. Approach to this Trade Sustainability Impact Assessment (TSIA)

1.2.1. Approach to this Trade Sustainability Impact Assessment

In order to deliver an analysis that fulfils the requirements of this TSIA, different methodological approaches will be applied. Figure 1.1, the project landscape, on the next page depicts our

overall approach and framework for the analysis. As can be seen, the study will be implemented in three phases: inception, interim, and final (in line with the DG Trade Handbook for Impact Assessments). The main elements of each phase are explained below.

The overall methodology depicted in the project landscape applies aspects highlighted in the Terms of Reference, and translates and adapts these into a framework provided in the TSIA Handbook (Chapter II). The key aspect of every TSIA is the interrelatedness of various methodologies to create a comprehensive impact assessment that is based on cutting-edge methodological techniques, as well as tested stakeholder consultation tools.

Next to the **inclusion of key stakeholders** in the process, every TSIA includes an analytical component. This concerns assessing the impact of trade policy changes, in this case the Transatlantic Trade and Investment Partnership (TTIP), in **economic, environmental, social and human rights** terms as required in every TSIA.

We have used a multi-faceted approach for two reasons: (1) the potential weakness inherent in one tool or method and (2) different methodologies and tools delivering results that point in the same direction are important to validate and test the robustness of results. In our view and experience this combination produces a methodology that is stronger than the sum of its parts.

Research and analysis

Our approach and methodology for the quantitative and qualitative overall and sectoral impact assessments is based on the following key principles and methods:

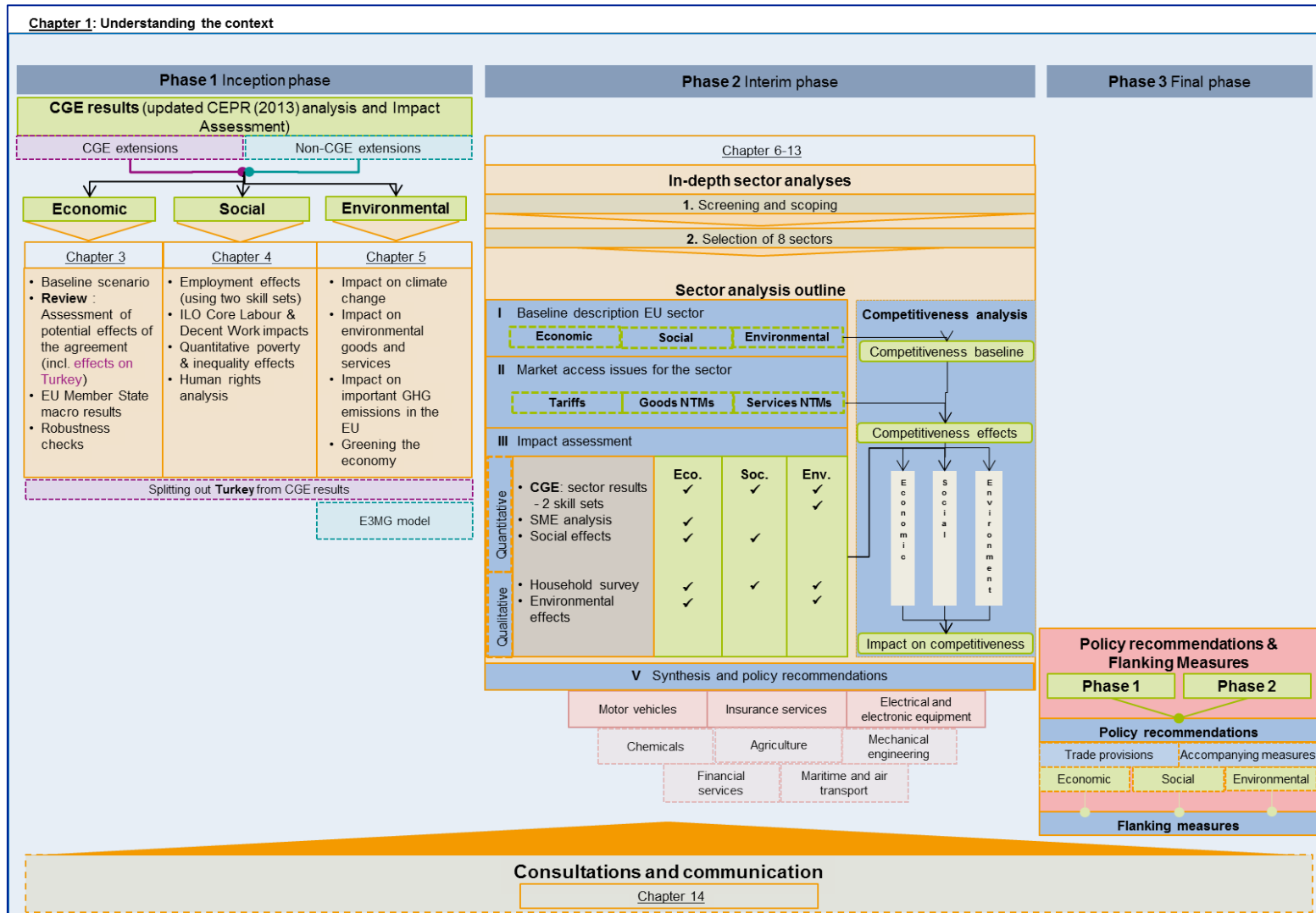
- A **concise literature review** that compares the results of the various impact assessment studies;
- **An analysis of an update of the CEPR (2013) study** that features new data, a 'split out' for Turkey, a 'split out' for EU Member States and further disaggregation of sectors;
- Performing a **quantitative social analysis of employment, wages and inequality, differentiating between different strata of the population by means of the econometric E3MG model**. Furthermore, the updated CEPR results are extended with an analysis of changes in poverty and household inequality, based on estimated variations of household income;
- Identification of **additional relevant social issues with a qualitative analysis** of reports and statistics. Progress and effects with respect to the **ILO Core Labour Standards, human health, and access to health care systems** are three issues that are analysed specifically (Chapter 4);
- Analysing the environmental effects of TTIP through quantitative modelling. In combination with the CGE model, the **econometric E3MG model** is used to calculate effects on CO2 emissions and air pollution, as well as provide scenarios for **regulatory convergence in climate policy** between the EU and the US (Chapter 5).

Methodological tools for consultations

Our approach and methodology for the consultation process is based on the following key principles and methods:

1. **Timely engagement of key stakeholders** - ensuring that they are included from the start of the study, creating ownership and support for the study and more broadly the TTIP;
2. **Balanced approach** - making sure that stakeholders from various sections of society, including marginalised and vulnerable groups are included and their voices heard. Also ensuring the inclusion of government representatives, the European Parliament, international and regional organisations, so as to include complementary knowledge and broad perspectives;
3. **Interactivity** - making use of media and communication tools that are easily accessible and enable stakeholders to be fully engaged, fostering a truly reciprocal dialogue. We have also organised workshops centred on case studies and sector studies;
4. **Face-to-face interaction** - with key stakeholders and experts through interviews, workshops and public meetings;
5. **Optimal use of existing networks and forums** - expanding the outreach of the study and disseminating its results widely.

Figure 1.1 The Project landscape



1.3. Concise literature review of TTIP impact assessments

A range of studies have analysed the potential impacts of TTIP in recent years, ranging from EU-wide impacts to impacts on specific EU Member States or on specific sectors. These studies differ in terms of the assumptions made about the likely content of the agreement, the methodologies used, the variables, countries and sectors featured in the output of the analysis and on the level of detail of the reporting. This section discusses the various studies, the assumptions they used and their conclusions.²¹ We assess which study is most suitable for modelling the long-term impacts of TTIP.

1.3.1. Overview of the impact studies

Before and during the TTIP negotiations, several studies have analysed its potential impact on the EU economy.²² The various studies and their assumptions are summarised in Table 1.2. They initially appear similar, with a tariff scenario, a limited or modest scenario and a deep or ambitious scenario. However, the differences analysed and presented below set the studies apart and explain the variations in results:

- In terms of model used to conduct the study, there are two outliers: the Ifo (2013) study and the GED Bertelsmann (2013) who make use of a structurally estimated general equilibrium model (whereas the other studies make use of a CGE model);
- Most models assume labour to be mobile in the long run, meaning that workers will be able to adapt and move between sectors. Therefore, when there is an increase in (labour) demand in sector X and a decrease in demand in sector Y over time, labour is assumed to 'switch' from sector Y to sector X;
- Most models assume full employment in order not to overestimate the impacts. The outliers here are the models applied by IFO (2013), which do not assume full employment, and GED Bertelsmann's model (2013) which assumes frictional unemployment²³;
- While almost all studies focus on the impacts on the EU (and sometimes several Member States) and the US, only CEPR (2013) and CESifo (2014) also include the impacts on several third countries and regions;
- In terms of variables reported, the impact studies differ. Whereas some focus more on social indicators (e.g. IFO, 2013), other studies focus more on trade and economic performance-related indicators (e.g. CEPR, 2013; CEPPII, 2013; and ECIPE, 2010);
- Studies have modelled several different scenarios in terms of ambitions and depth of the TTIP agreement: from ambitious and comprehensive to limited, from broad to tariff- or public procurement only. There are slight differences in tariff-removal ambitions, reductions in NTMs and the treatment of spill-overs;
- The GED Bertelsmann (2013) study focuses on macro outcomes, whereas the other studies also report sectoral outcomes. The CEPPII (2013) and IFO (2013) studies report the results for the three different aggregated sectors, i.e. agriculture, manufacturing and services. The other studies have disaggregated sectors further than the three main ones (agriculture, industries and services) and report results for 12 or more sectors.

²¹ Results in terms of variables on countries reported, the actual outcomes of some of the studies are reported in the economic chapter.

²² The studies conducted on the impact on Member States or sector will not be discussed in this section as we are looking for the study that indicates best the overall impact. The former will be discussed in the economic and sectoral chapters.

²³ This arises from the explicit modelling of the job search process by employees and employers.

Table 1.2 Overview of most relevant TTIP studies

Organisation	Title	Year	Country	Model used	Scenarios	Macro vs sector level	Variables
Ecorys	Non-Tariff Measures in EU-US Trade and Investment – An Economic Analysis	2009	EU, US	CGE	NTM liberalisation, limited scenario; ambitious scenario	Macro and sector (12) results	Real income, real household income, wages, imports, exports, terms of trade, output
European Centre For International Political Economy (ECIPE)	A Transatlantic zero agreement: Estimating the gains from Transatlantic free trade in goods	2010	EU25, US	CGE	Tariff scenario; modest scenario, ambitious scenario	Macro and sector (32) results	GDP, national income, output, bilateral trade
Centre for Economic Policy Research (CEPR)	Reducing Transatlantic Barriers to Trade and Investment, an economic assessment	2013	EU, US, East Europe, Mediterranean, China, India, ASEAN, MERCORUS, low income	CGE	Tariff only; services only; procurement only; less ambitious; ambitious. (all include spill overs)	Macro and sector (20) results	GDP, national income, household income, import, export, bilateral trade, terms of trade, output, wages
GED Bertelsmann Stiftung	Transatlantic Trade and Investment Partnership (TTIP) Who benefits from a free deal	2013	Germany, EU27, US, Canada, (RoW)	Structurally estimated general equilibrium model	Tariff scenario; comprehensive liberalisation scenario	Macro results	Import, export, real per capita income, employment, unemployment, wages
Centre d'Etudes Prospectives et d'Informations Internationales (CEPII)	Transatlantic Trade: Whither Partnership, Which Economic Consequences?	2013	US, Germany, France, EU27, UK	CGE (MIRAGE)	Ambitious scenario (full phase of tariffs and 100 percent container scanning, 25 percent cut in the level of trade restrictiveness of NTMs)	Macro and sector (3) results	GDP, value added, import, export
IFO	Dimensions and Effects of a Transatlantic Free Trade Agreement Between the EU and US	2013	US, Germany, (EU26)	Structurally estimated general equilibrium model	Tariff scenario; NTB scenario; single market scenario	Macro and sector (3) results	Welfare effect, unemployment rate, unemployment, real wage, labour productivity, sector exports, bilateral sector exports.
CESIfo	Going Deep: The Trade and	2014	EU27, US, several third countries	Structurally estimated	Deep TTIP	Macro and sector (3)	Value added, export, real income

Organisation	Title	Year	Country	Model used	Scenarios	Macro vs sector level	Variables
	Welfare Effects of TTIP (working paper)			general equilibrium model		results	

1.3.2. Model and study choice

As indicated above, each study differs slightly in terms of the scenario assumptions, the model used, or the outcome variables. In this section we will assess, based on these indicators, which study is the most suitable for analysing the expected effects of TTIP.

The different studies use CGE-based methodologies (with more than one CGE model being adopted), or a structurally estimated general equilibrium model. Each model has its specific merits and should be treated as such and therefore there is no 'good model' or a 'bad model', but the real question is: *"Which model is most suited to analyse the policy question at hand – in this case an ex ante impact assessment of a potential Free Trade Agreement, TTIP?"*

Studying the assumptions of the models, we find important differences that have also been highlighted in part by CEPS (2014) in their comparison of impact assessment studies for the European Parliament:²⁴

- Macro- versus sector-level disaggregations;
- Labour market closure condition (i.e. full-employment assumption);
- Labour mobility between sectors;
- Modelling trade costs of NTMs;
- Liberalisation scenarios;
- Other model specificities.

Macro- and/or sector disaggregations

The first difference is about whether or not to include sector-disaggregations in analysing the potential effects of TTIP. There are two compelling reasons why sector-level disaggregation is imperative: because sectors in an economy are not independent from one another. For example, if prices for insurance services or prices for chemical products drop, many downstream sectors that use insurance and/or chemicals will be impacted as well (see for example Figure 8.9 in Chapter 8 on the Chemicals Sector). This sector interaction – captured in detailed input-output matrices (or Social Accounting Matrices in the GTAP dataset we use) – is vital to understand how effects work through the economy. Not including a form of sector disaggregation will therefore miss out on a lot of potential and real-life dynamics and effects we know exist in an economy. The Ecorys (2009), ECIPE (2010), CEPR (2013), and CESifo (2014) studies stand out with regard to the fact that they present macro-effects and detailed sector impacts. IFO (2013) and CEPII (2013) only report at aggregate-sector level (agriculture, industry, services). GED Bertelsmann (2013), on the other hand, does not disaggregate to sector level.

Fixed labour supply assumption

The second assumption relates to the closure of the labour market. The CGE model can either assume a fixed labour supply or fixed wages – but not both.²⁵ The fixed-labour assumption is used when looking at a policy question that has a long-run time horizon. The fixed-wages assumption could be used to look into policy questions with a short-run horizon. For a long-run perspective if we do not assume fixed labour supply, we would need to fully model the labour markets (with all their complexities) of EU 28 Member States, which is not possible given the data constraints. It should be noted that with the fixed labour supply assumption, the model assumes that nobody will go in or out the labour force as a result of the implementation of the trade agreement. The assumption looks at the status quo and assumes that the total labour force will neither expand or nor contract.

²⁴ Pelkmans, J. Lejour, A. Schrefler, L. Mustilli, F and Timini, J. (2014). *Detailed appraisal by the EP ex-ante impact assessment unit of the European Commission's impact assessment – EU-US Transatlantic Trade and Investment Partnership* CEPS.

²⁵ The labour market closure condition of fixed labour supply is a technical specification that allows the model to focus on the long-run effects of TTIP. By fixing the labour supply (i.e. no net job changes are possible) a change in labour demand as a result of the trade agreement will show up in average wage changes at the aggregate level. It is also possible to identify the sectors that gain and lose employment as the economy and the labour market eventually adjust to the new equilibrium. We could have chosen not to fix labour supply and hold wages constant. This would allow reporting aggregate job increases (or decreases). However, such specification would be more suitable to look only into the short-term effects, which would happen while wages did not adjust to their long-term equilibrium levels.

Given that the policy question in this study is to assess the potential effect of TTIP once it has fully worked through the economy (which will take a considerable amount of time), the fixed labour assumption-version of the CGE model is more appropriate. This choice also leads to more moderate estimates of a potential TTIP. Since labour supply is assumed to be fixed, an increase in labour demand will result automatically in an increase in wages. This in turn, limits the potential of overall expansion of output as it pushes up firms' costs.

That said, it is clear that the fixed labour supply assumption also has limitations to consider, not least because it entails that all workers are going to be mobile across sectors. This is a less than perfect assumption even in the long-run.

The Ecorys (2009), ECIPE (2010), CEPR (2013), CEPII (2013), GED Bertelsmann (2013) and IFO (2013) studies all include long-run labour market closure conditions. CESifo (2014) does not.

Labour mobility assumption

The third assumption relates to whether or not labour is mobile across sectors. In the CGE model it is considered mobile²⁶. However, labour tends to be relatively immobile in the short-run. For policy questions such as TTIP, with a long-run horizon such as 10-15 years, it is reasonable to assume that labour can move across sectors. Hence, for the longer time horizon, the CGE model with full employment is more appropriate, albeit imperfect. If one would want to know, however, what the short-run impacts (e.g. six months or a year) of TTIP could be, a limited labour-mobility assumption could be used. An assumption of no labour mobility would suggest unfilled vacancies in sectors that expand under TTIP and persistent unemployment in those that decline. An assumption of full mobility in the long run is also problematic. That is why the Ecorys (2009), ECIPE (2010), CEPR (2013), CEPII (2013), GED Bertelsmann (2013), IFO (2013) and CESifo (2014) studies all assume a degree of labour mobility to analyse the long-run potential TTIP impacts.

Comprehensiveness and degrees of trade liberalisation

The fourth difference between the studies is the liberalisation scenarios that are being assumed (see Table 1.2, column six). Ideally, one would like to set up a scenario that exactly matches what is in the TTIP agreement in order to obtain the most accurate results. However, as the negotiations are ongoing and there is no final text, we are left with texts that merely define the ambitions and aims of the agreement. We therefore have to make assumptions. From the European Commission's website dedicated to TTIP²⁷ it becomes clear that they aim for an ambitious agreement that entails *inter alia* removal of nearly all customs duties and a removal or reduction of technical barriers to trade.²⁸ Contrary to tariffs, it is not possible to remove all non-tariff barriers that currently exist between the EU and the US. Some barriers to trade exist because of different societal or policy choices, whereas others merely reflect a difference in developments over time and are not necessary to achieve a specific policy goal. In case of the latter, these differences create unnecessary additional costs and can be addressed. These barriers are marked as "actionable". Barriers related to differences in societal and policy choices are not actionable.

Given the levels of uncertainty, the studies that model multiple scenarios with different levels of ambition for TTIP are preferable, because they offer a range of outcomes within which TTIP outcomes would likely be. This would leave out the CEPII (2013) study.²⁹ The other studies all report for less ambitious and ambitious scenarios and sometimes also for specific sub-scenarios (e.g. a tariff-only scenario or a public-procurement-only scenario).

When we turn to what types of liberalisation are assumed, we also find differences. In some studies (e.g. ECIPE, 2010) the emphasis is on tariff liberalisation, while in other studies the focus is solely on non-tariff measure alignment (Ecorys, 2009). Because the aim is to conclude an ambitious and encompassing TTIP agreement that entails – as said above – the removal of nearly all customs duties and removal or reduction of technical barriers to trade,³⁰ the ECIPE

²⁶ Still labour is not perfectly mobile between sectors.

²⁷ http://ec.europa.eu/trade/policy/in-focus/ttip/index_en.htm

²⁸ <http://trade.ec.europa.eu/doclib/press/index.cfm?id=1230#regulatory-cooperation>

²⁹ The CEPII 2013 does provide a sensitivity analysis for different scenarios, but only for 2 out of 4 indicators and not at sector level.

³⁰ <http://trade.ec.europa.eu/doclib/press/index.cfm?id=1230#regulatory-cooperation>.

(2010) and Ecorys (2009) studies are also less applicable. More recent studies look at a combination of tariff liberalisation and impacts of regulatory cooperation and a rules-based framework, modelled through lowering of non-tariff measures (e.g. CEPR, 2013; IFO, 2013). The ECIPE (2010), CEPR (2013), CEPII (2013), GED Bertelsmann (2013), IFO (2013) and CESifo (2014) studies all assume ambitious tariff cuts and/or tariff removal.

Regarding alignment of non-tariff measures (NTMs), the levels of ambition diverge:

- Ecorys (2009) assumes that 50 percent of all NTMs are 'actionable' and in the ambitious scenario all actionable NTMs are addressed (i.e. 50 percent of all NTMs are addressed). In the more limited scenario the assumption is that 50 percent of all actionable NTMs are addressed (i.e. 25 percent of all NTMs are addressed);
- CEPR (2013) takes a double as conservative approach when compared to Ecorys (2009): in the ambitious scenario 50 percent of actionable NTMs (i.e. roughly 25 percent of all NTMs) are addressed, while in the more limited scenario, 25 percent of actionable NTMs (i.e. roughly 12,5 percent of all NTMs) are addressed;
- CEPII (2013), when compared to CEPR (2013) assumes more ambitious liberalisations of NTMs in agriculture and processed foods, but less ambitious liberalisations of other NTMs;
- GED Bertelsmann (2013) models the US – following TTIP – at the level of the EU Internal Market; i.e. at the level equivalent to being the 29th EU Member State;
- ECIPE (2010) makes use of a scenario in which there is full elimination of tariffs on goods, a reduction of trade facilitation costs by an amount equivalent to 3 percent of the value of trade in non-commodity goods sectors, and an increase in labour productivity by 3.5 percent in sectors with high levels of intra-industry trade and an increase in labour productivity by 2 percent in all other goods sectors;
- IFO (2013) also models the creation of a single (transatlantic) market³¹, next to a complete reduction of tariffs;
- CESifo (2014) assumes that all tariffs will be eliminated and that the costs of NTMs will fall to a level equal in other deep PTAs.

The above implies that CEPR (2013) is the study that presents one of the most conservative scenarios, providing options for a more ambitious and more limited scenario.

Modelling trade costs

The different NTM liberalisation scenarios applied in the different studies obviously lead to differences in the estimated impact of reducing NTMs in TTIP. However, this is not the only factor at play; part of the differences in estimated impacts are related to differences in estimating the level of NTMs that are in place, i.e. the trade costs associated with NTMs. There are two possible ways to quantify the trade costs of NTMs: a quantity-based approach and price-based approach. The first approach makes use of a gravity equation to estimate by how much trade flows are reduced due to NTMs. The latter method compares prices in the importing country with the prices of similar products in markets free of distortions.³² Ecorys (2009) and CEPII (2013), for example, both used the quantity-based method,³³ but used different sources for the input data. Ecorys (2009) has conducted a large business survey, where more than 5,500 EU and US firms from 23 sectors indicated the openness within their sector with regards to bilateral trade. The outcome of the survey was a bilateral NTM index with numbers ranging from 0 to 100, where zero indicated no barriers or free trade, and hundred indicated a closed market due to the existence of NTMs. They have cross checked these numbers with the trade restrictiveness indicators in global databases like the OECD (S)TRI database. The final trade restrictiveness index has been used in a regression in order to estimate its impact on EU-US

³¹ For the single market it is assumed that the level of total effective bilateral trade barriers between participating TAFTA countries falls to the levels that we have calibrated for trade relations within the EU. Fontagné et al (2013).

³²

³³ The GED Bertelsmann (2013) study has used a different method. This study estimated that on average trade agreements such as NAFTA or the European Union increase aggregated trade by 80 percent. This assumption has been applied to estimate the TTIP impacts as well, without assessing what is actually achievable in TTIP and what is not. Based on the assumed 80 percent increase in trade and the current trade elasticity they have estimated the reduction in trade costs. So if trade increases by 80 percent and trade elasticity is 5, then trade costs must have fallen by 80 percent/ 5 = 16 percent, they say. Since the current tariffs amount to 3.5 percent, it means that the non-tariff barriers must have fallen by 16 percent – 3.5 percent = 12.5 percent. In addition they model the US becoming a 29th EU Member State due to TTIP. This leads to overestimated impact results.

trade and investment flows.³⁴ The trade restrictiveness coefficients, as estimated in the regression, have been changed into trade cost estimates. These trade cost estimates - in percentages - present the estimated increase in trade costs due to the existence of NTMs and regulatory divergence. Based on input from experts, businesses, legislators and regulators, the actionability of NTM reduction in each sector has been estimated. When a NTM is defined as actionable, it means that this NTM can potentially be reduced. Based on the trade cost estimates and degree of actionability per sector the impact of certain TTIP scenarios are estimated. CEPR (2013) made use of several databases such as the UNCTAD TRAINS database and WTO trade policy reviews to obtain a level of trade restrictiveness. A more detailed and step-by-step approach of the two methods can be found in a study by Berden and François (2015)³⁵. The CEPR (2013) study has used the NTMs as presented in the Ecorys (2009), but applied a different level of ambition in liberalising these NTMs.

Comprehensiveness of country and indicator coverage

The fifth difference between the studies relates to the degree of comprehensiveness in terms of country and indicator coverage. The CEPR (2013) study is the only one reporting outcomes for both the EU and the US, as well as several third countries and regions. Since the IFO (2013) and ECIPE (2010) do not report at EU level or report for a lower aggregation of EU countries these reports are less applicable for looking at overall EU-wide effects. Concerning the indicators reported, the CEPR (2013), GED Bertelsmann Stiftung (2013) and Ecorys (2009) are most comprehensive as they report both many indicators as well a diverse range of these indicators (both economic and social indicators).

Specific model characteristics

Finally, there are some specific model characteristics, context factors, or scenario elements that matter. CEPR (2013) employs the concept of spill-over effects of TTIP to model to some degree the potential global impact of TTIP. If a third country producer currently produces for the EU market according to EU regulations/standards and for the US market according to (different) US regulations/standards, and if TTIP achieves a degree of regulatory convergence between the EU and US regulatory systems, the third country producer should be able to produce for both markets more cheaply. Given the level of regulatory divergence between the EU and US in the baseline this implies there could be significant third country spill-overs of TTIP. Indirectly this could also mean that trade among third countries is facilitated. If several third countries would align with these new regulations, (when trading with the EU and the US) they could also more easily trade amongst themselves by using these regulations. CEPS (2014) acknowledges that these spill-over effects could indeed occur, but the magnitude of this effect is subject to debate.

In addition to the studies presented above, another assessment has been made on the potential impact of the TTIP. This study, Capaldo (2014), differs significantly from the others and is not very suitable for assessing the potential impacts of TTIP. The reasons for this and the specifics of the study are presented below.

Box 1.2 The Capaldo (2014) study

- The study makes use of the United Nations Global Policy Model (GPM), which is typically used for assessing the impact of changes in national income policies, fiscal policies, or industrial policies, but not for trade-policy shocks;
- The GPM does not account for tariffs nor does it include trade costs related to regulatory divergences. Thus the model cannot directly assess the impact of reducing trade barriers, meaning that it cannot quantify the effect of a trade agreement. Moreover, the model fails to capture the mechanisms that underpin the gains from trade. For example the model is not able to account for the increased efficiency in the allocation of resources across sectors.;
- Contrary to other studies, this study assumes that labour is immobile, i.e. there is no reallocation of resources and that the labour market does not adapt to the new situation;

³⁴ "Technically: the NTM indexes are converted into logarithms and then fed into a gravity equation as specific friction variable – allowing us to estimate the impact of these indexes on trade and investment flows. This method is superior to the residual approach that would gather all left-over effects into the NTM and would therefore be much more inaccurate. The gravity equation allows us to control for distance and size of GDP." (Ecorys, 2009)

³⁵ <https://www.ceps.eu/system/files/SR116%20Berden%20and%20Francois%20NTMs.pdf>.

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- Contrary to other studies, this study does not assume full employment (the implications of this are explained above). The short-run focus of this assumption is less appropriate for a policy question that asks for a longer time horizon;
- The study does not have aggregated EU results (except for unemployment). The results are presented for the UK, France, Germany, other Northern Europe, and other Southern Europe. Also impacts on third countries are not included;
- The estimated impacts are presented for: Net exports, GDP, employment, income per employee and net taxes;
- The study focusses only on macro results, not on results at sectoral level;
- The study reports the results for one scenario only;
- As a result of model choice, Capaldo (2014) only focuses on some macroeconomic adjustments. As a result of these mechanisms, the labour share of GDP would decrease and lending will increase over time. While it is debated whether these effects occur in reality, it is not correct to model them as TTIP-related. While these two assumptions are exogenous to the TTIP policy shock, they do drive the majority of the results.
- The points mentioned above clearly show that the model is not suited for estimating the potential impacts of the TTIP agreement (or any trade agreement), and if it does model the impacts, that the outcomes are questionable.

Source: Capaldo (2014), CEPS (2014), Bauer, M. and Erixon, F. (2015).

To answer what is the appropriate model to assess the potential effects of TTIP, we combine in Table 1.3 below our assessment of the considerations above. From the Table it becomes clear that CEPR (2013) is indeed the most suitable for reporting the expected impacts of TTIP in the context of the present study.

Table 1.3 Selection criteria for model and study choice on TTIP impacts

Criteria	Ecorys (2009)	ECIPE (2010)	CEPR (2013)	GED Bert (2013)	CEPII (2013)	IFO (2013)	Capaldo (2014)	CESifo (2014)
Year	+	+	+++	+++	+++	+++	+++	+++
Country coverage	++	+	+++	++	++	+	+	++
Model	+++	+++	+++	+++	+++	+++	+	+++
Sector disaggregation	+++	+++	+++	+	++	++	+	+++
FE assumption*	++	++	++	++	++	++	+	++
LM assumption**	++	++	++	++	++	++	+	++
Model trade costs	+++	+++	+++	+++	+++	+++		+++
Different scenarios	+++	+++	+++	+++	+	+++	+	+++
Tariff, NTM, rules coverage	+	+	+++	+++	+++	+++		+++
NTM modelling	+++	+	+++	+	+++	++		++
Indicator coverage	+++	++	+++	+++	++	++	++	++
TOTAL	26+	23+	31+	26+	26+	26+	11+	28+

* FE assumption = Full Employment assumption; ** LM assumption = Labour mobility assumption.

The CEPR (2013) report has also been independently reviewed and extensively compared with other TTIP impact studies in a comparative study for the European Parliament by CEPS (2014).³⁶ All the above studies are based on models and thus have their limitations, but CEPR (2013) was considered to be by far the most comprehensive and globally comparable study

³⁶ CEPS, 2014. EU-US Transatlantic Trade and Investment Partnership – Detailed appraisal of the European Commission’s impact assessment.

done on TTIP so far and also the most appropriate. CEPS (2014) detailed appraisal of the CEPR (2013) report finds the following elements of particular importance:

- The study uses one of the most tested and (academically and empirically) scrutinised CGE models for trade-policy modelling (Francois, Van Meijl & Van Tongeren, 2005) – a model that has been upgraded following the use in various earlier TSIA work; *“There are indeed no better alternatives to assess the impacts of trade agreements than the CGE modelling”*; ³⁷
- The study uses the most comprehensive global dataset available (GTAP 8) with data for over 160 countries and 58 sectors therein – no other dataset has this reach or coverage, allowing us to scrutinize the global implications of TTIP as well as allow for inter-sectoral links within and between economies;
- The study covers third countries in its approach – which is important for this analysis – and also includes modelling the regulatory impact for third countries;
- The CGE approach allows for modelling of the behaviour of the different actors in the entire economy, including many sectors;
- The study allows for intermediate goods sectors and interlinkages and economies of scale, as well as for imperfect competition.
- The study has included the element of regulatory compatibility in its scenarios.

However, the CEPS (2014) assessment emphasizes also that there is no such thing as a perfect economic model and the CGE approach does have limitations. Examples given, include *“the (unrealistically) flexible labour market, the peculiarities of how investments are included, the lack of innovation and productivity-growth effects in enterprises of different sizes”*.³⁸ The current Trade SIA recognizes these limitations and aims to complement these indicators with additional social, environmental and sector specific analyses (in Chapters 4 to 13).

1.4. CEPR (2013) and the updated CEPR results

As indicated above, we clearly believe that the CEPR (2013) report is most suitable to use as the baseline for this Trade SIA. The terms of reference for this study explicitly stated the need for a review of existing methods rather than running a new economic impact assessment of TTIP through CGE modelling.

While the CEPR (2013) approach is the most suitable for this study, there are some important issues that the 2013-analysis does not cover. These are the following:

- Since the CEPR (2013) assessment has been made a few years ago, the baseline is outdated;
- The impacts for Turkey – which has a customs union with the EU and is therefore impacted in a unique way by TTIP – are not ‘split out’;
- The original CEPR study only presents results for the EU as a whole - the European Commission has indicated its wish to inform EU Member States by providing impact information not just for the EU as a whole but also for the individual EU Member States (at macro-level);
- Some GTAP sectors have been presented at a very high level of aggregation (e.g. processed foods) – while especially sub-sector level effects matter.

Ecorys has included in the Trade SIA an analysis of a CEPR update of its TTIP simulation from 2013. Ecorys has elaborated on these new results that are presented in detail in Chapter 3. In the remainder of the study we will refer to it as the “updated results of the CEPR 2013 report”, or in short “the updated results”. The CEPR (2013) study included the following:

- The CEPR (2013) results are presented for the year 2027;

³⁷ CEPS, 2014. EU-US Transatlantic Trade and Investment Partnership – Detailed appraisal of the European Commission’s impact assessment.

³⁸ CEPS, 2014. EU-US Transatlantic Trade and Investment Partnership – Detailed appraisal of the European Commission’s impact assessment.

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- The expected impacts have been modelled for 20 sectors for the following indicators for both the EU and the US: output, (extra EU) exports and imports, bilateral exports, and low-skilled and high-skilled employment;
- The macro results reported for the EU and the US consist of changes in GDP, household income, bilateral exports, total exports, total imports, terms of trade, less-skilled and more-skilled wages, labour displacement, CO2 emissions and land use;
- For nine other regions - consisting of other OECD, East Europe, Mediterranean, China, India, ASEAN, MERCOSUR, low income and the Rest of the World – GDP, exports, CO2 emissions and land use have been modelled.

The additional elements of the updated results are the following:

- We use the GTAP 8 dataset but the baseline was updated with the most recent macroeconomic forecasts and extended to 2030 (in CEPR(2013) the baseline went up to 2027);
- We have split out Turkey in the updated analysis (compared with Turkey being in a more aggregated set of third countries in CEPR, 2013);
- We have split out EU Member State effects at macro-level for national income, GDP, trade and wages);
- We have disaggregated several GTAP sectors into sub-sectors, in particular:
 - Agriculture, forestry, fisheries, and Other primary sectors into Cereals and other grains, Vegetables and fruits, Other primary agriculture, Other primary, and Energy;
 - Processed foods into Ruminant meats, Other meats, Vegetable oils, Dairy products, Rice, Sugar, Other processed foods, and Beverages and tobacco;
 - Metals and metal products into Iron and steel products, Non-ferrous metals, and Fabricated metals;
 - Other manufactures into Textiles, Clothing, Leather products, Non-metallic minerals, and Other manufactures;
 - Other services into Distribution, Land/other transport, and Other services.

The two scenarios are presented in the box below. However, it should be noted, that the updated CGE model simulation does not include any reduction of NTMs affecting trade in the disaggregated processed food sectors. This reflects technical limitations of the available analytical tools rather than changes in the ambition of the negotiations. To be more precise: the data source used for bilateral NTMs trade-costs equivalents continues to be ECORYS (2009) – like in CEPR (2013). However, this source does not feature any estimates for the disaggregated “processed food” sectors (Ruminant meats, Other meats, etc.) and no other reliable estimates for NTMs trade costs covering the agri-food sectors at the level of detail needed for the updated CEPR analysis were found elsewhere.³⁹ As in CEPR (2013), there are also no NTM cuts in the sub-sectors from “agr, forestry, fisheries” and “other primary sectors” as no data was available in ECORYS (2009).

Therefore, the estimated impacts in the disaggregated processed foods sectors are underestimated (compared to CEPR (2013)). As a consequence the macro impacts for the EU, the US and third countries also represent a lower bound. The choice not to model NTM reductions in the processed foods sectors also affects the estimated impacts on other sectors as spill-over effects are reduced. Normally a reduction in NTMs in the processed-food sector would also benefit other sectors that receive some of their inputs from the processed-food sector. This effect is not taken into account in the updated CEPR results.

Although for all the other sectors a reduction in NTMs has been modelled it should be noted that the same level of NTM reduction is applied to all sectors (except for the primary and processed foods sectors), while in reality this is not likely to be the case. For example, looking at the available EU position papers, it seems that the (potential) level of NTM reduction in e.g. the automotive sector is much larger than it may be in the chemical sector, owing to policy differences. Therefore it is important to keep in mind that for some sectors the expected impacts might be overestimated.

³⁹ This has to do with the shortcomings of the existing methodologies to compute trade costs equivalents of NTMs while properly accounting for the complexities and specificities of agri-food trade. Therefore it was decided not to model NTM reductions in the disaggregated food sectors that are featured in the updated CEPR analysis.

Box 1.3 TTIP scenarios

Less ambitious scenario:

- 98 percent of tariffs eliminated;
- 10 percent of NTBs eliminated on both goods and services (20 percent of actionable), except for processed foods, here a reduction of NTBs has not been modelled;
- 25 percent of procurement NTBs eliminated.

Ambitious scenario:

- 100 percent of tariffs eliminated;
- 25 percent of NTBs eliminated on both goods and services (50 percent of actionable), except for processed foods, here a reduction of NTBs has not been modelled;
- 50 percent of procurement NTBs eliminated.

The subsectors that are included in the processed food sector are:

- Ruminant meats;
- Other meats;
- Vegetable oils;
- Dairy products;
- Rice;
- Sugar;
- Other processed foods; and
- Beverages and tobacco.

A technical note to the updated results can be found in Annex II. In this technical note a sensitivity analysis has been added as well in order to see where the largest differences in the results come from (i.e. change in base year, scenario or sector disaggregation). Several experiments have been modelled where each time one of the changes compared to the CEPR (2013) results have been introduced. From this we can see that the change of the base year from 2027 to 2030 results in some small changes in the estimated impact of TTIP. Only the chemical, motor vehicles and metal sector in the EU and chemicals, other transport equipment and other manufactures in the US see some larger changes. The largest changes in the update results compared to the CEPR (2013) in the macro outcomes (and to a lesser extent in the sectoral outcomes) are due to the disaggregation of sectors.

1.5. Quantitative methodological approach

As indicated above the CEPR 2013 results have been updated in order to obtain an even more comprehensive study on the potential impacts of TTIP. The underlying data, estimates of trade costs and experiment design follow directly from the CEPR (2013). Above our overall approach to the study has been explained, followed by the literature review on impact assessment studies for TTIP and models used. That leads us to conclude that the CGE model is currently the best way to quantify potential effects of TTIP. But then, in order to detail the overall CGE findings further at more disaggregate levels for additional social and environmental effects, we employ the E3MG model, linked to the CGE model.

1.5.1. The CGE model – non-technical summary

The CGE model we use for this project is based on the Francois, Van Meijl, and Van Tongeren model (FMT 2005)⁴⁰ and is implemented in GEMPACK – a software package designed for solving large applied general equilibrium models.⁴¹ Versions of this model have been employed for studies for the EC, ADB and WTO negotiations. The model is solved as an explicit non-linear system of equations, through techniques described by Harrison and Pearson (1994). The model is a standard multi-region computable general equilibrium (CGE) model, with important features

⁴⁰ Francois, J.F., H. van Meijl and F. van Tongeren (2005), "Trade Liberalization in the Doha Development Round," *Economic Policy* April: 349-391.

⁴¹ The full model code for Francois, van Meijl and van Tongeren can be downloaded from the internet at <http://www4ide.org/francois/data.htm/>.

related to the structure of competition (as described by Francois and Roland-Holst, 1997).⁴² Imperfect competition features are described in detail in Francois (1998).⁴³ Social accounting data are based on version 8.0 of the GTAP dataset (www.gtap.org). The sector scheme and regional aggregation was designed in consultation with the Commission in order to maximise the insights yielded into for example preference erosion and third country effects, in particular of neighbouring developing countries.

The data we use for this analysis are contained in the GTAP version 8 dataset). The database is the best and most up-to-date source of internally consistent data on production, consumption and international trade by country and sector. For more information, see Dimaran and McDougall (2006).⁴⁴ The GTAP data on protection incorporates the Macmaps dataset, which includes a set of ad valorem equivalents (AVEs) of border protection across the world. The source information concerns various instruments, such as specific tariffs, mixed tariffs and quotas, which cannot be directly compared or summed. In order to be of use in a CGE model, these have been converted into an AVE per sector, per country and per trading partner. The GTAP database also includes detailed information on input-output, trade and final demand structures for the whole world. Next to tariff barriers, the CEPR analysis also includes non-tariff barriers to trade, which are taken from the Ecorep (2009) study.

The baseline has been updated and adjusted incorporating relevant aspects to capture changes up to 2030 in the real world that could affect the results of the simulations (e.g. a great recession, price changes of key commodities such as grains and energy or the aggregation of particularly sensitive products with non-sensitive products in certain sectors).

The general conceptual structure of a regional economy in the model is as follows. Within each region, firms produce output, employing land, labour, capital, and natural resources and combining these with intermediate inputs. Firm output is purchased by consumers, government, the investment sector, and by other firms. Firm output can also be sold for export. Land is only employed in the agricultural sectors, while capital and labour (both skilled and unskilled) are mobile between all production sectors. Capital is fully mobile within regions. All demand sources combine imports with domestic goods to produce a composite good. Investment effects are also included, along the lines of Francois, McDonald, and Nordstrom (1996).⁴⁵

Taxes are included in the theory of the model at several levels. Production taxes are placed on intermediate or primary inputs, or on output. Some trade taxes are modelled at the border. Additional internal taxes can be placed on domestic or imported intermediate inputs, and may be applied at differential rates that discriminate against imports. Where relevant, taxes are also placed on exports, and on primary factor income. Finally, where relevant (as indicated by social accounting data) taxes are placed on final consumption, and can be applied differently to consumption of domestic and imported goods.

Trade policy instruments are represented as import or export taxes/subsidies. This includes applied most-favoured nation (MFN) tariffs, antidumping duties, countervailing duties, price undertakings, export quotas, tariff rate quotas (TRQ) and other trade restrictions. The major exception is service-sector trading costs, which are discussed below. The full set of tariff vectors are based on the tariff protection data from GTAP, as sourced from the WTO. The set of services trade-barrier estimates is described below.

International trade is modelled as a process that explicitly involves trading costs, which include both trade and transportation services. These trading costs reflect the transaction costs involved in international trade, as well as the physical activity of transportation itself. Those trading costs related to international movement of goods and related logistic services are met by composite services purchased from a global trade services sector, where the composite "international trade

⁴² Francois, J.F. and D.W. Roland-Holst (1997), "Scale economies and imperfect competition, in Francois, J.F. and K.A. Reinert, eds. (1997), Applied methods for trade policy analysis: a handbook, Cambridge University Press: New York.

⁴³ Francois, J.F. (1998), "Scale economies and imperfect competition in the GTAP model," GTAP consortium technical paper. http://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=317.

⁴⁴ Dimaran, B, and McDougall, R., ed. (2007). The GTAP database -- version 7, Global Trade Analysis Center: Purdue University.

⁴⁵ Francois, J.F., B. McDonald and H. Nordstrom (1996), "Trade liberalization and the capital stock in the GTAP model," GTAP consortium technical paper. http://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=310.

services" activity is produced as a Cobb-Douglas composite of regional exports of trade and transport service exports. Trade-cost margins are based on reconciled f.o.b. and c.i.f. trade data, as reported in version 8 of the GTAP dataset.

A second form of trade costs is known in the literature as frictional trading costs. These are implemented in the service sector. They represent real resource costs associated with producing a service for sale in an export market instead of the domestic market.

It is well known that the complexity of global general equilibrium models tends to increase geometrically as we add regions and sectors. A similar problem exists even when we focus on an individual sector. For example, if we are modelling trade policy for left-handed horseshoe nails across 100 countries, there are 9,900 potential bilateral trade flows. To avoid this problem, we reduce the solution set of the model to those global prices that clear global markets. Once we have a global set of equilibrium prices, we can then back solve for national results. Within this context, we work with a linearized (percent-change) representation of import demand, combined with generic export-supply equations (see Francois and Hall 1997, 2003). This reduced-form system, which only includes as many equations as there are exporters, is then solved for the set of world (exporter) prices.

A basic assumption is national product differentiation.⁴⁶ As developed here, this means that imports are imperfect substitutes for each other. The elasticity of substitution is held to be equal and constant across products from different sources. The elasticity of demand in aggregate is also constant. Finally, import supply is also characterized by constant (supply) elasticities. Such an approach is consistent with the Armington approach to product differentiation at the national level (See Francois and Hall 1997), or with the Flam-Helpman (1987) model of firm-level differentiation (where firm-specific capital fixes varieties).

Via a set of equations, we model the bilateral trade, production, national income, and price effects of market integration. This also includes likely third country effects. Furthermore, the equations can be augmented, where data are available, to identify employment effects as well. We can also modify the basic equations to reflect any information we identify in price impacts of NTBs.

Trade data come from EUROSTAT and COMTRADE. Protection data in the WTO and WITS tariff databases will be augmented with additional sources. Sources we have exploited include the WTO's integrated database, with supplemental information from the World Bank's recent assessment of detailed pre- and post-Uruguay Round tariff schedules and from the UNCTAD/World Bank WITS dataset.

A more technical and detailed explanation of the CGE methodology can be found in Annex I.

1.5.2. The E3MG model – non-technical summary

E3MG is a computer-based model of the world's economic and energy systems and the environment. It was originally developed through the European Commission's research framework programme and is now widely used in Europe and beyond for policy assessment, for forecasting and for research purposes. The global edition is a new version of E3ME which expands the model's geographical coverage from 33 European countries to 53 global regions. It thus incorporates the global capabilities of the previous E3MG model.

The structure of E3MG is based on the system of national accounts, with further linkages to energy demand and environmental emissions. The labour market is also covered in detail, including both voluntary and involuntary unemployment. In total there are 33 sets of econometrically estimated equations, also including the components of GDP (consumption, investment, international trade), prices, energy demand and materials demand. Each equation set is disaggregated by country and by sector.

E3MG's historical database covers the period 1970-2012 and the model projects forward annually to 2050. The main data sources for European countries are Eurostat and the IEA, supplemented by the OECD's STAN database and other sources where appropriate. For regions

⁴⁶ This can result, in an Ethier-Krugman type model, if product varieties are fixed. It may also be a result of national differences in product characteristics (like French vs. Australian wine).

outside Europe, additional sources for data include the UN, OECD, World Bank, IMF, ILO and national statistics. Gaps in the data are estimated using customised software algorithms.

As a general model of the economy, based on the full structure of the national accounts, E3MG is capable of producing a broad range of economic indicators. In addition there is a range of energy and environment indicators. The following list provides a summary of the most common model outputs:

- GDP and the aggregate components of GDP (household expenditure, investment, government expenditure and international trade);
- Sectoral output and GVA, prices, trade and competitiveness effects;
- International trade by sector, origin and destination;
- Consumer prices and expenditures;
- Sectoral employment, unemployment, sectoral wage rates and labour supply;
- Energy demand, by sector and by fuel, energy prices;
- CO2 emissions by sector and by fuel;
- Other air-borne emissions;
- Material demands (Europe only at present).

This list is by no means exhaustive and the delivered outputs often depend on the requirements of the specific application. In addition to the sectoral dimension mentioned in the list, all indicators are produced at the national and regional level and annually over the period up to 2050.

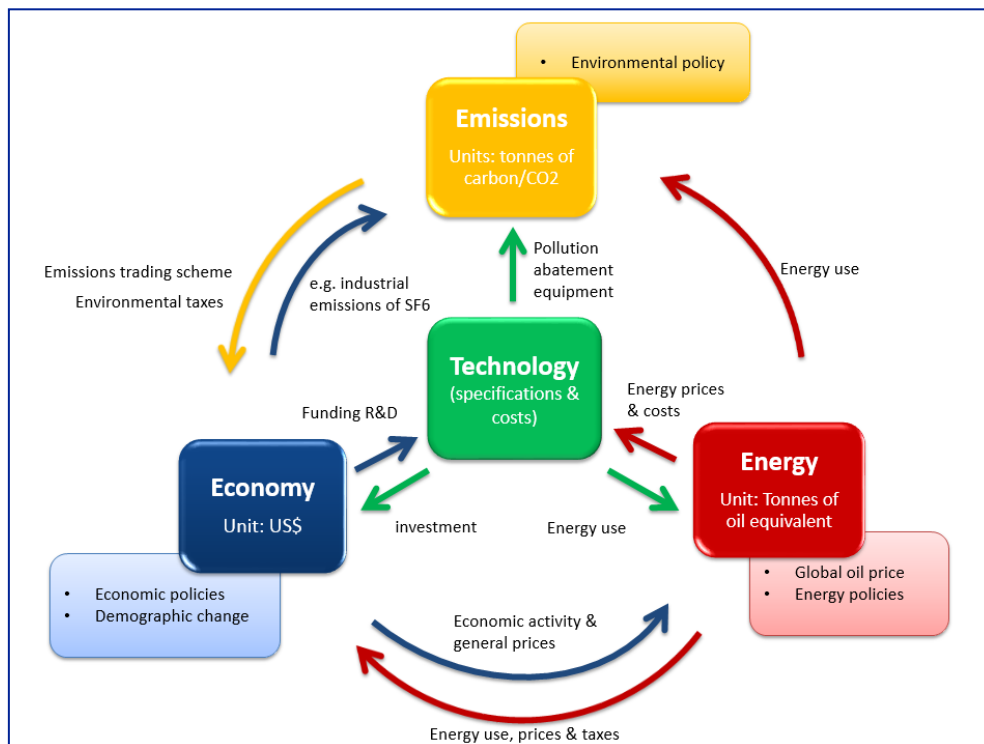
Figure 1.2 shows how the three components (modules) of the model - energy, environment and economy - fit together. Each component is shown in its own box. Each data set has been constructed by statistical offices to conform with accounting conventions. Exogenous factors coming from outside the modelling framework are shown on the outside edge of the chart as inputs into each component. For each region's economy the exogenous factors are economic policies (including tax rates, growth in government expenditures, interest rates and exchange rates). For the energy system, the outside factors are the world oil prices and energy policy (including regulation of the energy industries). For the environment component, exogenous factors include policies such as reduction in SO2 emissions by means of end-of-pipe filters from large combustion plants. The linkages between the components of the model are shown explicitly by the arrows that indicate which values are transmitted between components.

The economy module provides measures of economic activity and general price levels to the energy module; the energy module provides measures of emissions of the main air pollutants to the environment module, which in turn can give measures of damage to health and buildings. The energy module provides detailed price levels for energy carriers distinguished in the economy module and the overall price of energy as well as energy use in the economy.

Technological progress plays an important role in the E3MG model, affecting all three Es: economy, energy and environment. The model's endogenous technical progress indicators (TPIs), a function of R&D and gross investment, appear in nine of E3MG's econometric equation sets including trade, the labour market and prices. Investment and R&D in new technologies also appear in the E3ME's energy and material demand equations to capture energy/resource savings technologies as well as pollution abatement equipment. In addition, E3MG also captures low-carbon technologies in the power sector through the Future Technology Transformations (FTT) power sector model.⁴⁷

⁴⁷ See Mercure (2012).

Figure 1.2 E3 linkages in the E3ME model



The labour market

Treatment of the labour market is an area that distinguishes E3MG from other macroeconomic models. E3MG includes econometric equation sets for employment, average working hours, wage rates and participation rates. In this study, estimates of the CGE model (of amongst others on GDP, wages, employment and consumer prices) feeds into the E3MG modelling in order to estimate the real household income for different income groups.

Comparison with CGE models and econometric specification

E3MG is often compared to Computable General Equilibrium (CGE) models. In many ways the modelling approaches are similar; they are used to answer similar questions and use similar inputs and outputs. However, underlying this there are important theoretical differences between the modelling approaches. In a typical CGE framework, optimal behaviour is assumed, output is determined by supply-side constraints and prices adjust fully so that all the available capacity is used. In E3MG the determination of output comes from a post-Keynesian framework and it is possible to have spare capacity. The model is more demand-driven and it is not assumed that prices always adjust to market clearing levels. In this study the input for the E3MG model is the output from the CGE model, i.e. the effects on output, trade and prices are used to estimate the social and environmental effects.

The econometric specification of E3ME gives the model a strong empirical grounding. E3MG uses a system of error correction, allowing short-term dynamic (or transition) outcomes, moving towards a long-term trend. The dynamic specification is important when considering short and medium-term analysis (e.g. up to 2020) and rebound effects⁴⁸, which are included as standard in the model's results.

A more technical and detailed explanation of the E3MG methodology can be found in A.

⁴⁸ Where an initial increase in efficiency reduces demand, but this is negated in the long run as greater efficiency lowers the relative cost and increases consumption. See Barker et al (2009).

2. Overview of the current EU-US relationship

The purpose of this chapter is to present a brief overview of the economic, social and environmental situations in the EU and the US and how they are linked to each other in order to put the implementation of the Transatlantic Trade and Investment Partnership (TTIP) into perspective. As such, this Chapter is not only concerned with describing the current state of the two economies but also with presenting (shared) trends. Each of the three sustainability pillars will be discussed in a similar way: first, the situation in the EU and the US, with an effort to link the stories and second, the relationship between the EU and the US. Each description is generally based on data from commonly recognised sources, such as the World Bank.

2.1. Economic relationship between the EU and US

The economic relationship between the EU and the US is known to be the most significant between two trading blocs in the world.⁴⁹ Strong mutual ties exist, both through trade in goods and services as well as investments and these are strengthened by longstanding political and other forms of co-operation between the two regions. With the ongoing process of globalisation, these ties are becoming ever more important. It is this context – along with general economic developments within either the EU or the US – that we aim to illustrate in this section. It should be noted that we will not pay specific attention to intra-regional heterogeneity, which does of course exist within both the EU Member States and the US Federal States.

2.1.1. General economic developments in the EU and the US

Economic developments

Perhaps the most notable economic development since 2000 in the European Union has been its enlargement up to 28 Member States. It is this set of countries – unless explicitly stated otherwise – for which the joint economic situation and developments will be illustrated in this chapter. In general, the EU internally represents a single market with free movement of goods, services and capital. This market is not yet fully integrated, but moving in that direction.

The US economy is characterised, for example, by its technological power and its relatively flexible labour market, being the largest in the world in terms of GDP.⁵⁰ Moreover, as multiple international crises (dotcom bubble, subprime mortgage crisis) had their roots in the US, the influence of the US economy on the global economy is undeniably significant. In fact, the US economy is an important driver for economic conditions worldwide. It is worth noting that like the EU, the US does not have a fully integrated single market either in certain sectors, for example professional services or certain financial services, which are fully or partly regulated at state level, or in the field of mandatory product standards, where individual states may adopt measures of their own.

We will shortly describe the economic situation and development since 2000.

GDP per capita

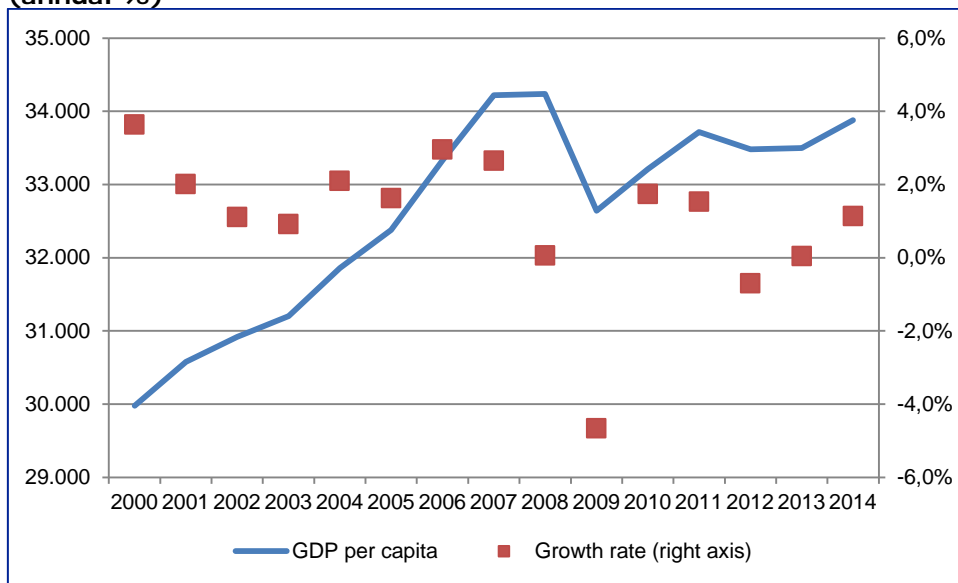
As a measure of welfare while controlling for changes in population, EU GDP per capita in constant 2010 US dollars⁵¹ and its growth rate since 2000 are shown in Figure 2.1. GDP per capita steadily increased until the financial crisis set in in 2008. After that, GDP per capita growth rates recovered but then suffered another negative shock in 2012. As a consequence, GDP per capita has stabilised around the level of the pre-crisis year 2007. Clearly, the past years have been a challenging economic environment for European policy makers. The call for 'growth and jobs' has become stronger each year since 2008, among others, for this reason. It has been widely debated to what extent the economic downturn following the financial crisis has been triggered by events outside the EU and to what extent it also depended on structural problems within the EU.

⁴⁹ <http://ec.europa.eu/trade/policy/countries-and-regions/countries/united-states/>.

⁵⁰ World Bank, World Development Indicators.

⁵¹ Reporting EU GDP per capita in US dollars instead of euros is intended to ease EU-US comparison.

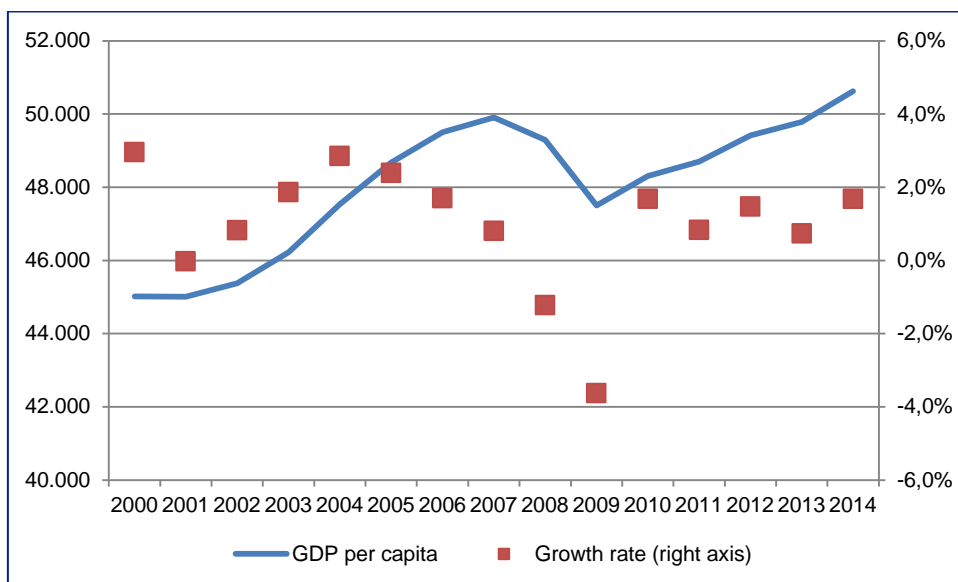
Figure 2.1 EU GDP per capita (2010 constant US dollars) and GDP per capita growth (annual %)



Source: OECD.

Figure 2.2 presents the development of US GDP per capita (growth). Except for the period in which the economy was hit – in a similar way as the EU – by the subprime mortgage crisis and subsequent financial crisis, US GDP per capita has grown at a relatively steady rate. In other words, the US economy seems to have quite quickly regained a steady pace of growth after the crisis period – which contrasts to the post-2010 performance in the EU.

Figure 2.2 US GDP per capita (2010 constant US dollars) and GDP per capita growth (annual %)



Source: OECD.

Crucial to the influence of events in the US on the EU or vice versa is how the EU and US economy are economically related. Therefore, let us turn to trade indicators.

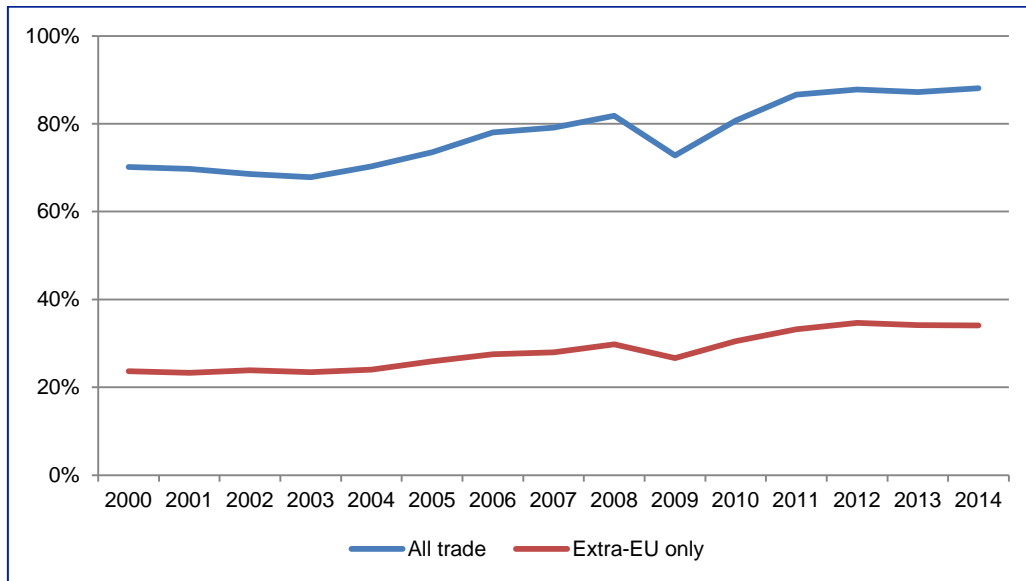
International trade

Figure 2.3 shows the trade openness ratio, defined as the sum of exports plus imports of goods as percentage of GDP, for the EU as a whole. This ratio indicates how important international trade is for the EU. There is some variation in the trade openness ratio over the years, depending on economic circumstances, but clearly, for the EU economy international trade is

Trade SIA on the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the USA

very important. More importantly, the trade openness ratio has a positive trend: since the year 2000, the ratio has increased by more than ten percentage points, up to 34 percent in 2013.

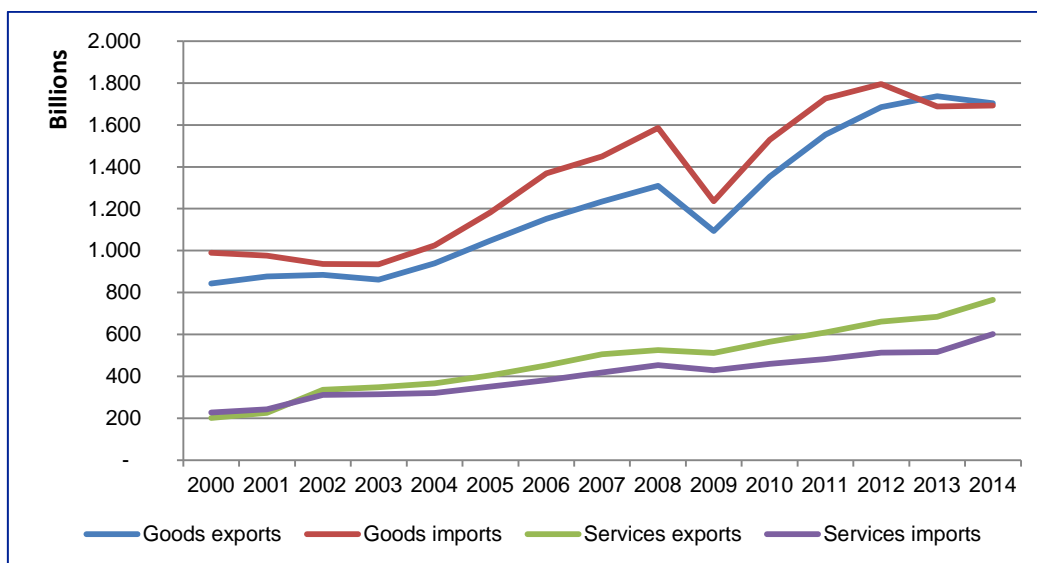
Figure 2.3 Extra-EU goods and services trade (% of GDP)



Source: Eurostat, author's calculations.

Not only relative to GDP, but also in absolute numbers international trade has become increasingly important for the EU. Figure 2.4 shows that exports and imports of goods, excluding intra-EU trade, have both grown by more than 75 percent since 2000. Also apparent from this figure is that the EU as a whole has had consistently higher imports than exports *vis-à-vis* the rest of the world, i.e. a deficit on the current account of the balance of payments. Remarkably, this deficit turned into a surplus in 2013. This may indicate an improvement of the overall level of competitiveness of the EU. More likely, it reflects a contraction of domestic demand in the EU as a consequence of the cyclical downturn that has led to a decline of imports.

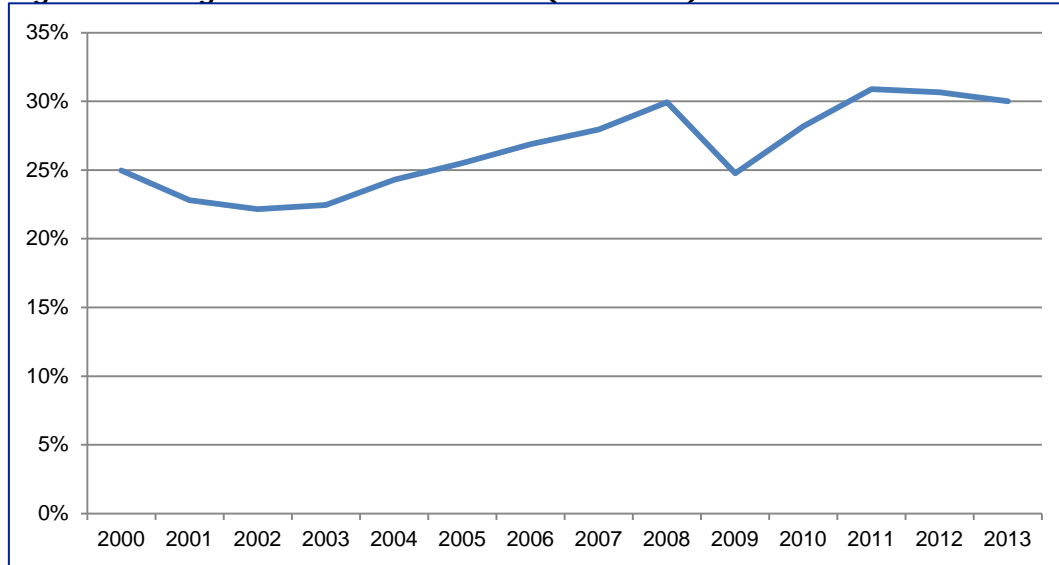
Figure 2.4 Extra-EU exports and imports of goods and services (billion euros)



Source: Eurostat.

Figure 2.5 shows the relative importance of exports and imports of goods for the US economy. The trade openness ratio stood at 25 percent in 2013, which is slightly lower than in the EU. It can be said that international trade has become more important for the US economy over the past decade and a half, since US trade as a percentage of GDP has increased by five percentage points since 2000.

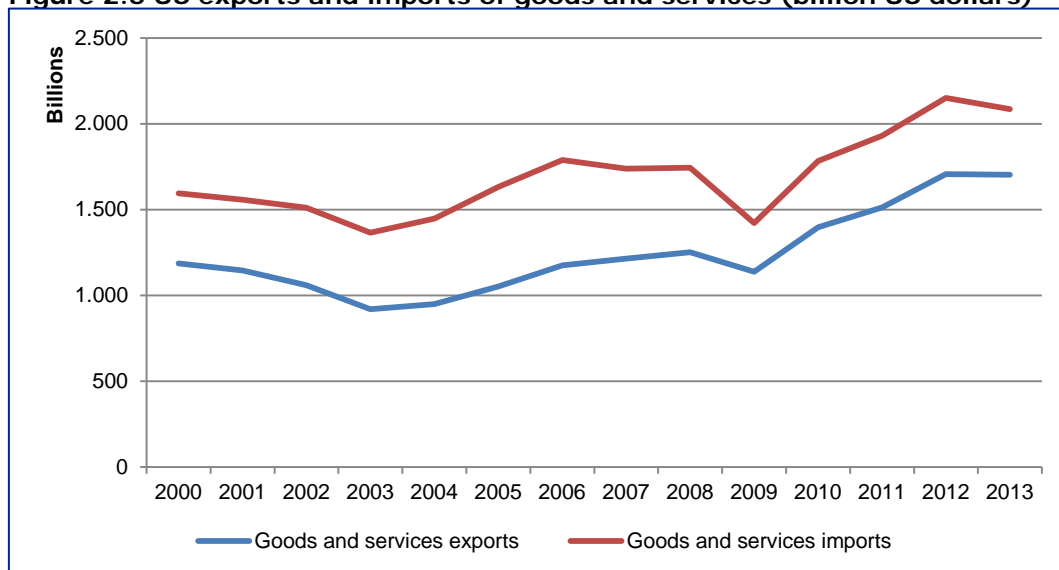
Figure 2.5 US goods and services trade (% of GDP)



Source: Eurostat, author's calculations. 2014 US trade data not available in Eurostat.

This statement is supported by the positive trend of US exports and imports of goods as shown in Figure 2.6. The sum of exports and imports has almost doubled since 2000. Furthermore, the US has consistently higher imports than exports, i.e. runs a deficit on the current account of the balance of payments.

Figure 2.6 US exports and imports of goods and services (billion US dollars)



Source: Eurostat. 2014 US trade data not available in Eurostat, nor is this data split up in goods and services.

2.1.2. The economic EU-US relationship

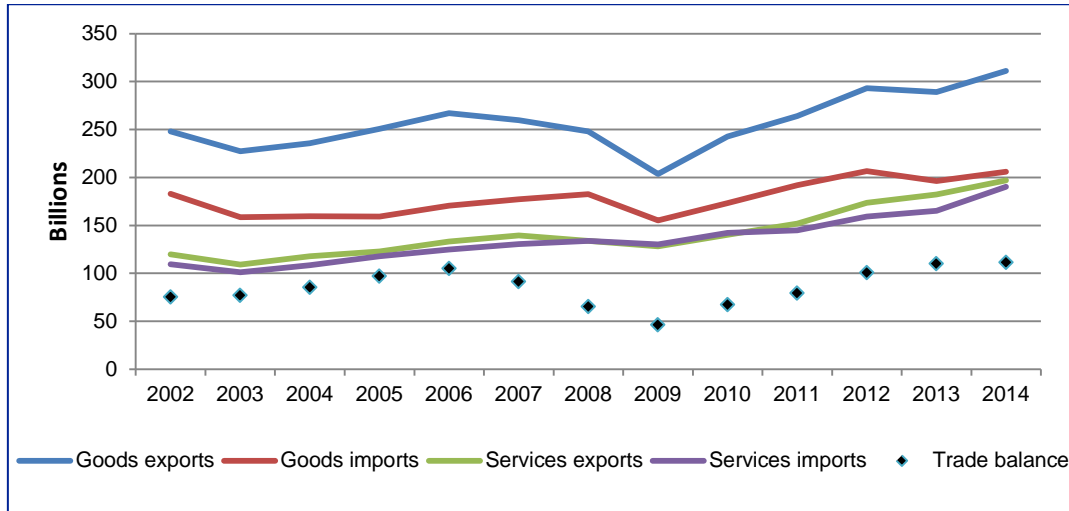
Particularly relevant to a trade and investment treaty such as TTIP is how the US and EU economies interact with one another. This section illustrates how the EU and US are economically related through the presentation of some general facts and figures regarding Transatlantic trade and investment.

Bilateral trade

The first indicator of bilateral trade is total trade and the trade balance, presented in Figure 2.7. The figure plots EU exports towards the US (US imports from the EU) and EU imports from the US (US exports to the EU) since the year 2002. Total goods trade (exports plus imports) goes

up from € 430 billion in 2002 to over € 520 billion in 2014. Total services trade increases from € 230 billion to € 390 billion. Additionally, the EU has had a consistent positive trade balance *vis-à-vis* the US. In 2014 the EU had the largest surplus for the period under consideration, with EU combined goods and services exports to the US worth € 508 billion and EU imports from the US worth € 397 billion, amounting to a surplus of € 111 billion in 2014.

Figure 2.7 EU exports to and imports from the US (nominal billion euros)



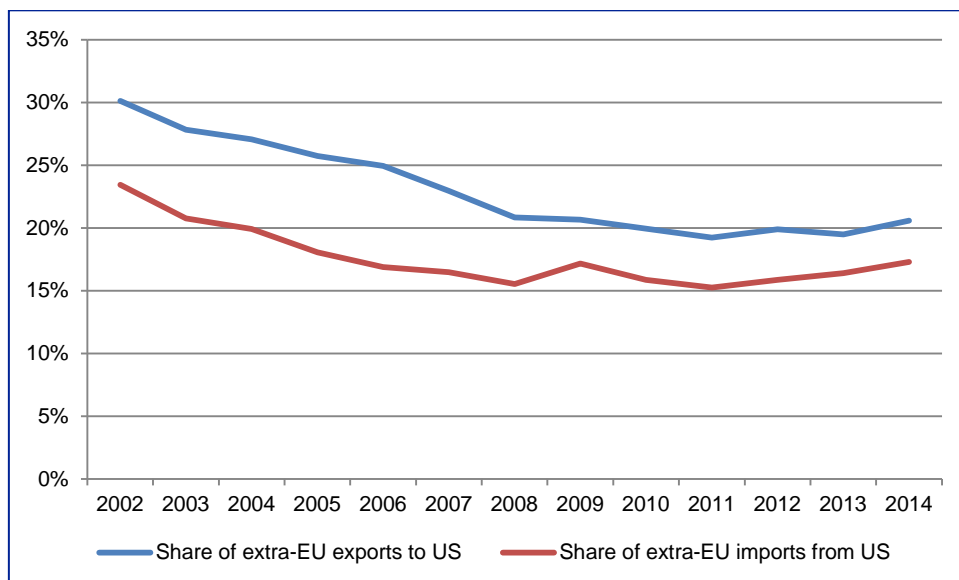
Source: Eurostat.

Even though these numbers indicate how substantial the trade is between the EU and the US, it does not show the relative importance of the US as a trading partner for the EU or vice versa. Therefore, we present the share of EU exports directed to the US as well as the share of EU imports originating from the US in Figure 2.8. Three observations stand out. First, the US has been a significant trading partner for the EU, as (since 2002) on average 23 percent of EU exports have been directed to the US, while on average 18 percent of EU imports originated in the US.⁵² Second, the relative importance of the US as a trading partner for the EU (and vice versa) has declined between 2002 and 2009, which is a reflection of the relative rise of developing countries in terms of trade volumes. Third, the US has been more important to the EU as an export destination than as producer for EU imports.

In Figure 2.9, a similar exercise is performed, showing the share of US exports directed towards the EU as well as the share of US imports originating from the EU. The picture once more confirms the strong economic relationship between the EU and the US: on average, 24 percent of US exports were directed to the EU while on average 21 percent of US imports originated from the EU. Note also that the EU as a destination for US exports and as a producer of US imports has been almost equally important in relative terms. This relative importance has been quite stable since 2002.

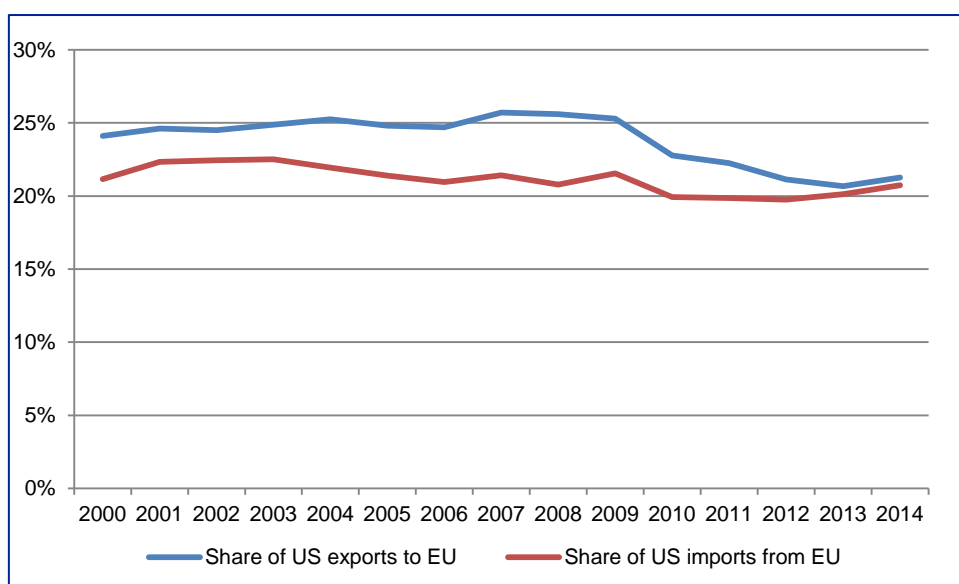
⁵² Excluding intra EU trade.

Figure 2.8 Relative importance of the US as a trading partner for the EU



Source: Eurostat, author's calculations.

Figure 2.9 Relative importance of the EU as a trading partner for the US



Source: US Bureau of Economic Analysis, author's calculations.

Bilateral Foreign Direct Investments

The EU and the US are not only economically linked through the exchange of goods and services, but also – and even more so – through investments. Here we focus on the role of the US in receiving EU FDI flows. Figure 2.10 shows how EU FDI to the US has peaked shortly before the financial crisis (2007), then dropped, and peaked again in 2011. In 2007 the EU invested almost € 180 billion in the US, representing approximately 14 percent of total EU FDI outflows. In the following years, EU FDI to the US dropped sharply to € 60 billion in 2010. After 2010 FDI flows picked up again. The share of total FDI outflows directed to the US has risen to 25 percent in 2012. In other words, the US has been a major destination for EU investments abroad and in relative terms one that has become more important again in recent years.

In 2015 global FDI flows increased by 36 percent, reaching its highest level since the 2008-09 financial crises.⁵³ Both in the EU as the US a strong growth in FDI flows were reported. FDI

⁵³ UNCTAD, Global Investment Trends Monitor, January 2016.

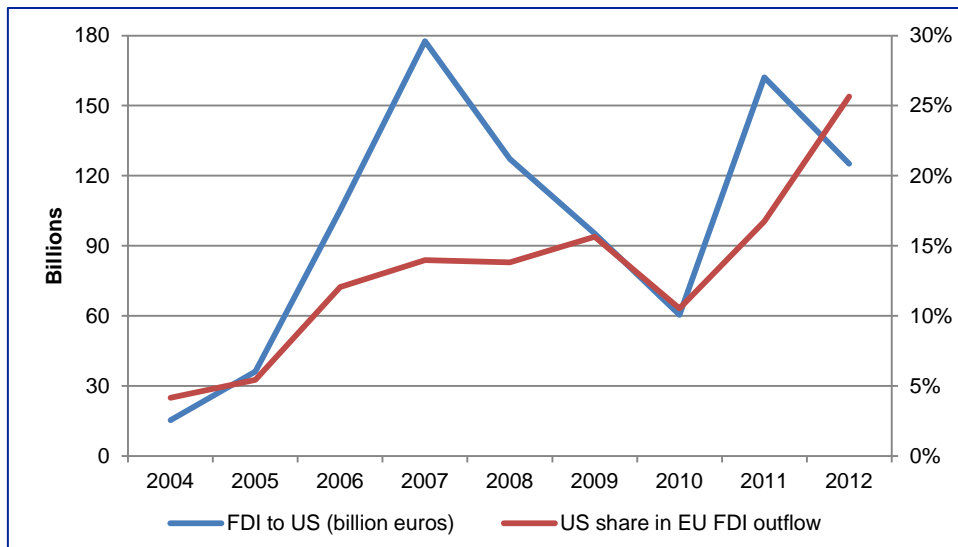
Trade SIA on the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the USA

inflow in the US even quadrupled (to the highest level since 2000), but this was partly due to a historically low level in 2014. As a result the US returned to be the largest host economy of FDI inflows. After three years of decline, inflows to the EU increased again.

In addition, developing Asia hosted a record FDI inflow. By accounting for one third of total FDI flows, it continued to be world's largest FDI recipient region. Largest recipient in this region was Hong Kong, whereas inflows to China increased by 6 percent and inflows to India nearly doubled.

For 2016 a decline in FDI flows is predicted due to the current fragility of the worldwide economy.

Figure 2.10 EU FDI out flows to the US

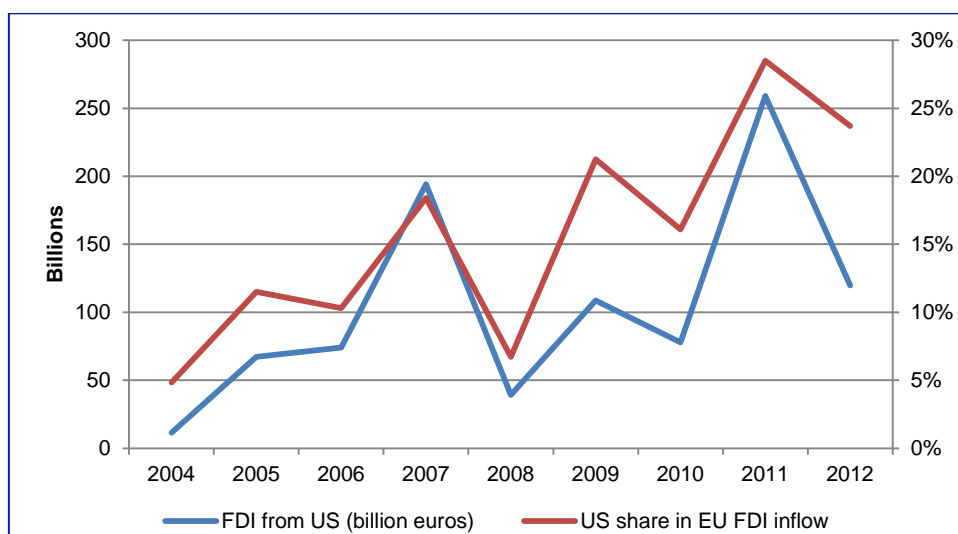


Source: Eurostat, author's calculations.

Notes: EU refers to EU27.

Similarly, the US has not only been an important destination country for EU FDI, it has also been an important source country for FDI into the EU. In Figure 2.11, we show that FDI flows are large. Also, the impact of the financial crisis is clearly visible, leading to a decline of US FDI directed to the EU in 2008 and 2009. In 2011, FDI from the US to the EU peaked at almost € 260 billion even though in the following year investments more than halved. The share of total EU FDI inflows originating from the US shows a positive trend, however, peaking at 28 percent in 2011.

Figure 2.11 EU FDI inflows from the US



Source: Eurostat, author's calculations.

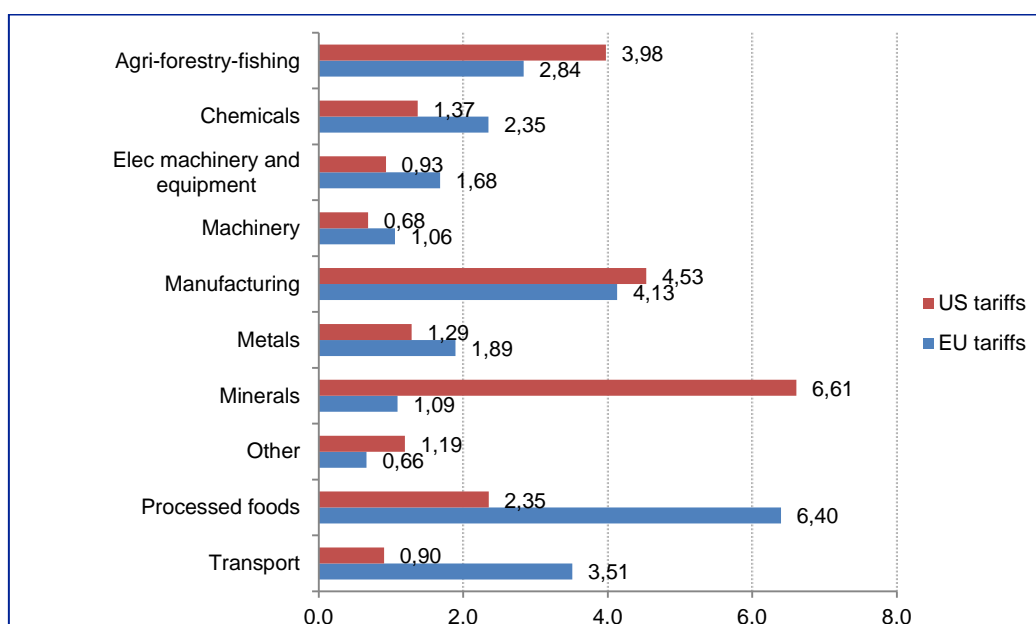
Notes: EU refers to EU27.

Impediments to trade

Despite the substantial size of EU-US trade, there are still some significant impediments to trade. Generally, a distinction is being made between tariff and non-tariff barriers (NTBs). For this latter category, a further distinction can be made; some NTBs can be part of TTIP negotiations, whereas others cannot. This last category are made of NTBs that are created in order to reach a particular policy goal, or is established on the basis of societal/political choices. A brief outline of these will be provided in order to put TTIP further into perspective when it comes to trade and to give a general sense of where the benefits of TTIP would come from.

Figure 2.12 shows (trade weighted) averages of effectively applied tariff rates across 10 sectors for the year 2013, where US tariffs refers to tariffs that the US imposes on imports originating from the EU (the other way around for EU tariffs). The EU imposes the highest tariffs on imported US processed foods. On the other hand, the highest US tariffs on imports from the EU are levied in minerals. Clearly, there is quite some variation in tariffs across sectors, as tariffs in machinery are relatively low while tariffs in manufacturing are substantial, which is mainly due to high mutual tariffs on articles of apparel.

Figure 2.12 EU-US tariff overview for the year 2013



Source: WITS, author's calculations.

With respect to non tariff barriers, the major problem is that these are often very specific, i.e. they apply to a particular sector or product. It is therefore difficult to present a straightforward overview of the most important or burdensome non tariff barriers. However, non tariff barriers can be categorised. Categories of non tariff barriers on goods that are generally identified are, in order of importance for EU firms exporting (or wanting to export) to the US:⁵⁴

- Sanitary and Phytosanitary measures (SPS), only for exporters of food, drink, animal feed and products that come into contact with food;
- Technical Barriers to Trade (TBT);
- Border procedures;
- Measures on competition;
- Price control measures;
- Licenses and quantity controls;
- Finance measures;
- Distribution restrictions;
- Export-related measures;
- Rules of origin;
- Intellectual Property (IP);
- Government Procurement (GP) restrictions;
- Subsidies;
- Restrictions on post-sales;
- Antidumping duties, countervailing measures and safeguard measures;
- Investment measures.

Categories of non tariff barriers on services that are generally identified are, in order of importance for EU firms exporting (or wanting to export) to the US:

- Restrictions on the movement of people;
- Discriminatory measures and standards;
- Barriers to compliance and public ownership;
- Restrictions on foreign ownership.

The importance of these barriers differs across firm size and sectors. The sectoral specific trade barriers are presented and discussed in sectoral analysis, Chapters 7-13.

Other aspects of the EU-US economic relation

Other aspects of the EU-US economic relation include:

- Supranational economic organisations: economic cooperation and negotiation where both the EU and the US are involved is not only bilateral but also multilateral. As such, the EU (either directly or indirectly via Member States) and the US are also economically tied in organisations such as the WTO, OECD and G8. First, the EU is member of the WTO, but the 28 Member States are also WTO member on their own right. The European Commission speaks for all EU Member States at almost all meetings on this platform for trade negotiations and trade related dispute settlements. The EU is only indirectly represented in the OECD by some of the EU Member States. The EU has, however, released a joint initiative in corporation with the OECD, named SIGMA (Support for Improvement in Governance and Management) which aims to strengthen the foundations for improved public governance. Finally, dubbed 'its 9th member' the EU represents its Member States at the G8, holding the privileges and obligations of membership but not having the right to chair or host a summit. At this governmental political forum, issues such as the global economic outlook, climate change and human rights are addressed.

2.2. Social relationship between the EU and US

Mirrored by the deep economic relationship, the EU-US social relation is also strong. There are various social issues relevant to this impact assessment. In this part of the Chapter therefore,

⁵⁴ European Union, 2015.

the social situation in the EU and the US as well as the relationship between the EU and the US are introduced.

2.2.1. General social developments in the EU and the US

Social developments

The prolonged economic downturn following the financial crisis has had a substantial social impact in the EU – in some Member States more than in others. We have seen in the economic section that following the global financial crisis, the US recovered, but EU recovery has been meagre and remained sluggish. Major concerns for the European Commission are therefore unemployment (especially in the Eurozone periphery, where unemployment rates in countries such as Greece and Spain have reached levels of 27 percent and 25 percent respectively), decreasing disposable household incomes, and increasing levels of poverty and inequality, threatening the EU goal of inclusive and sustainable growth. Recently formulated goals aim to develop policies that support formation, maintenance and use of human capital, matched by supply of quality jobs while restoring socio-economic convergence, particularly concerning Southern and peripheral EU Member States.⁵⁵ More generally with respect to the legal framework for labour, the EU complements policy initiatives by Member States by setting minimum standards. These standards are legally founded in the Treaty on the Functioning of the European Union (TFEU), particularly Article 153. Member States' authorities remain responsible for enforcing the rules. The EC checks Member States for incorporating directives correctly into national law.⁵⁶

From a social perspective the financial crisis also posed significant challenges to policy makers in the US. Among the major social issues in the US are health care, education, unemployment and illegal immigration. Specifically, labour law is governed by both federal law, state law and judicial decisions as well as decisions of administrative agencies.⁵⁷ Federal law and guidelines issued by agencies established under federal law or the US constitution have to be followed by states.⁵⁸ Below some general social features are illustrated.

Employment

Any economy, also developed economies, will face pressures on economic structures. Figure 2.13 distinguishes the three major economic activities (agriculture, industry and services) and shows how the distribution of labour across these sectors has changed in ten years. Closely related to generally observed patterns over the course of economic development, there is a shift of labour from agriculture and industry towards services. The relative share of the labour force employed in the services sector has increased from 63 percent to 69 percent at the expense of agriculture and industry. Even though services have become relatively more important to employment, in 2010 approximately 25 percent of the labour force was still employed in industry.

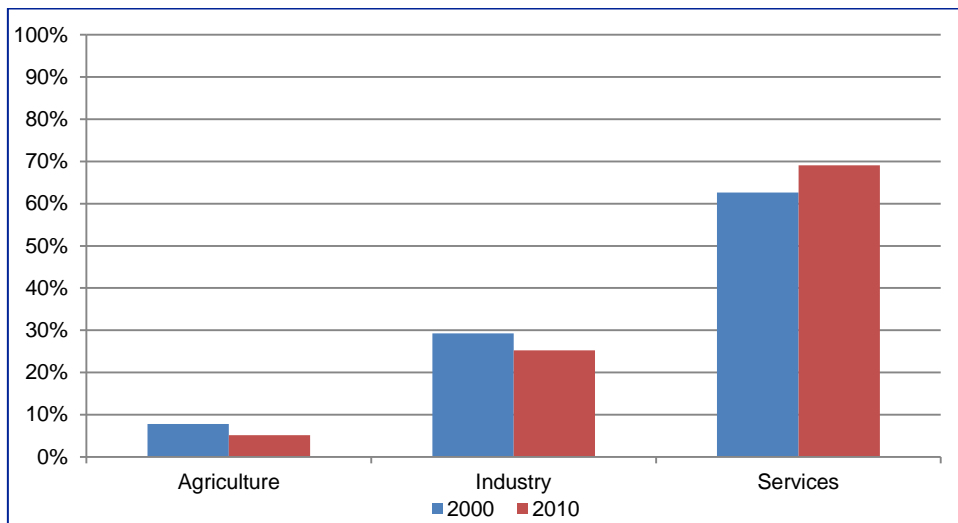
⁵⁵ EC, DG for Employment, Social Affairs and Inclusion, 2014.

⁵⁶ <http://ec.europa.eu/social/main.jsp?catId=157>.

⁵⁷ <http://www.legisworks.org/congress/79/publaw-404.pdf>.

⁵⁸ <http://www.dol.gov/opa/aboutdol/lawsprog.htm>.

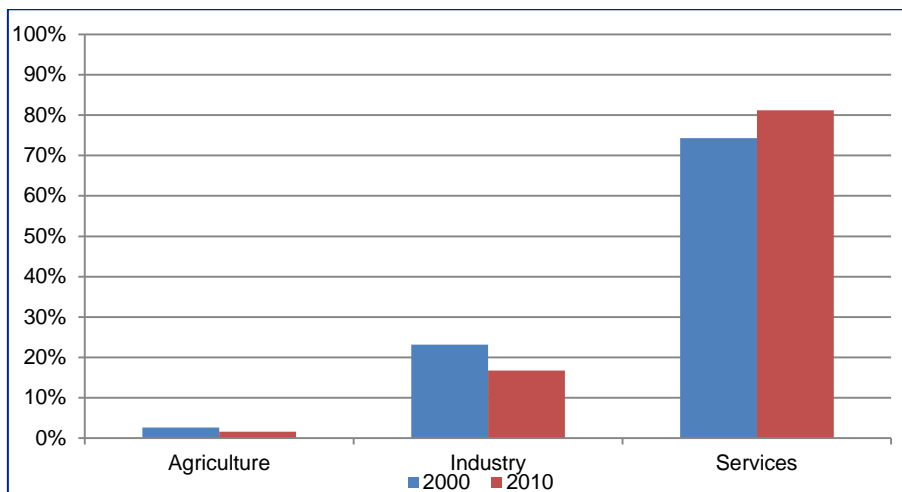
Figure 2.13 EU distribution of employment across sectors 2000-2010 (% of total labour force)



Source: World Bank, World Development Indicators.

Considering US sectorial employment shares in total employment, it becomes clear from Figure 2.14 that services have become relatively more important. In 2000, 74 percent of the labour force was employed in services. In 2010 this percentage had risen to 81 percent. Crucially, this development shows that the composition of sectorial employment shares is not fixed. It also becomes clear that even more than in the EU, the services sector is a dominant employer. In contrast, agriculture has an employment share of only two to three percent.

Figure 2.14 US distribution of employment across sectors 2000-2010 (% of total labour force)



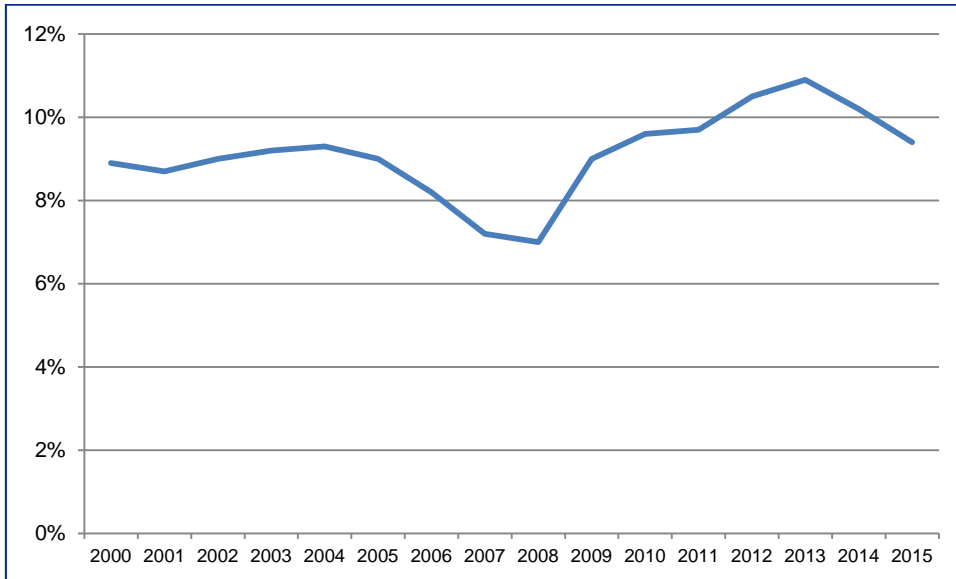
Source: World Bank, World Development Indicators.

Unemployment

Another major social indicator is the unemployment rate as percentage of the total labour force, shown for the EU in Figure 2.15. For the period under consideration, the average unemployment rate has been 9 percent. However, there is quite some fluctuation. The unemployment rate slowly declined to a level of 7 percent in 2008, but rose sharply thereafter to around 11 percent in 2013. This illustrates how the unemployment rate moves in accordance with the business cycle. The unemployment rate generally rises as an economy is in a recession and vice versa, i.e. the unemployment rate is a countercyclical variable. Remarkably, the situation did not improve directly after the financial crisis. Rather, the unemployment rate kept rising in the EU, suggesting a more prolonged structural adjustment rather than a 'straightforward' recovery. Of

course the impact of the Eurozone sovereign debt crisis was felt between 2010 and 2013. Since 2013, the unemployment rate has started to decline.⁵⁹

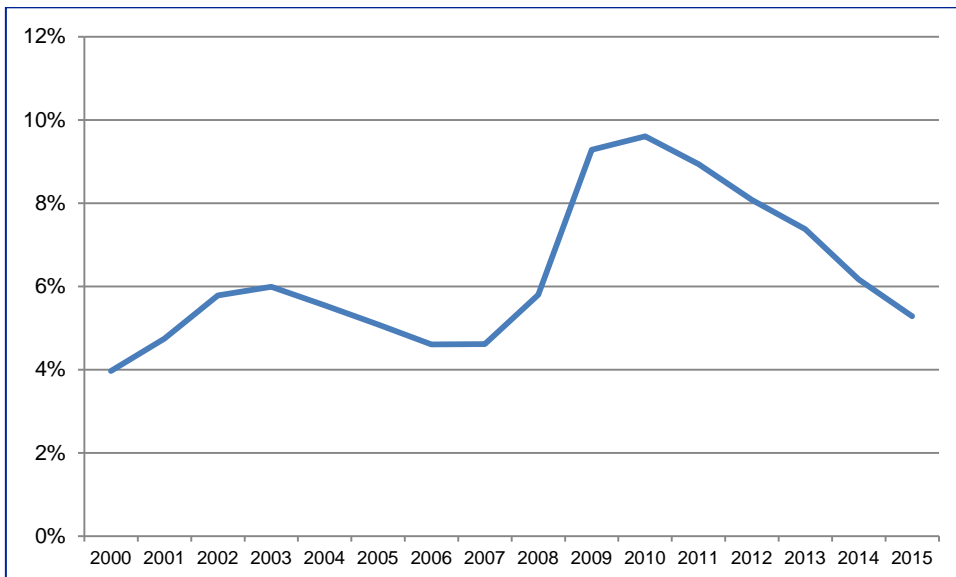
Figure 2.15 EU unemployment rate (% of total labour force, annual average)



Source: Eurostat.

The average unemployment rate in the US since 2000 has been 6.4 percent. As presented in Figure 2.16, the financial crisis clearly had a major impact, as an additional 5 percentage points of the labour force became unemployed. However, recovery of the labour market after 2010 is also visible in contrast to the EU, as the unemployment rate dropped again to 5.0 percent in 2015 and is poised to decline further. It should be noted, however, that labour-market participation has decreased to levels below 60 percent.

Figure 2.16 US unemployment rate (% of total labour force, annual average)



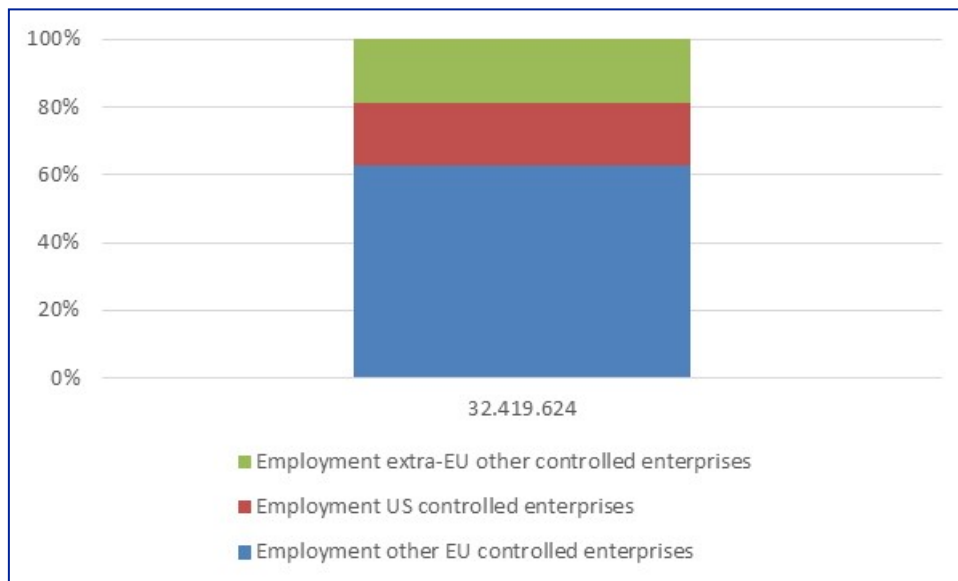
Source: Bureau of Labor Statistics.

⁵⁹ Monthly and quarterly estimates from Eurostat indicate that the unemployment rate is also declining in 2015.

2.2.2. The social EU-US relationship

If we look at how the EU- and US labour markets are linked we find that the US is very important in terms of jobs created in the EU by US-owned companies or EU companies exporting to the US market. In Figure 2.17 we show that 32 million jobs in the EU come from foreign controlled firms (total column). Of those 32 million jobs, the majority (just over 60 percent) comes from other firms in other EU Member States (i.e. the EU internal market). However, employment by US controlled enterprises is responsible for almost 3.7 million jobs in the EU – making the US by far the most important extra-EU employer. All other third countries together also generate around 3.8 million jobs).

Figure 2.17 Employment in the EU by US controlled firms (% of total foreign jobs in the EU)



Source: Eurostat, GTAP9, own calculations.

In addition, we can also look at the employment created in EU firms that produce for exports to the US as we show in Table 2.1. This means: the below Table indicates how many jobs are involved in exporting to the US. If TTIP leads to increases in exports to the US, this number is poised to rise. We see that the majority of jobs – 1.9 million – can be found in the services sectors (in line with the above analyses for the EU and US that the lion's share of jobs can be found in those sectors), but also in manufacturing 1.6 million jobs are linked to exporting to the US.

Table 2.1 Total employment in the EU producing for exports to the US (2011)

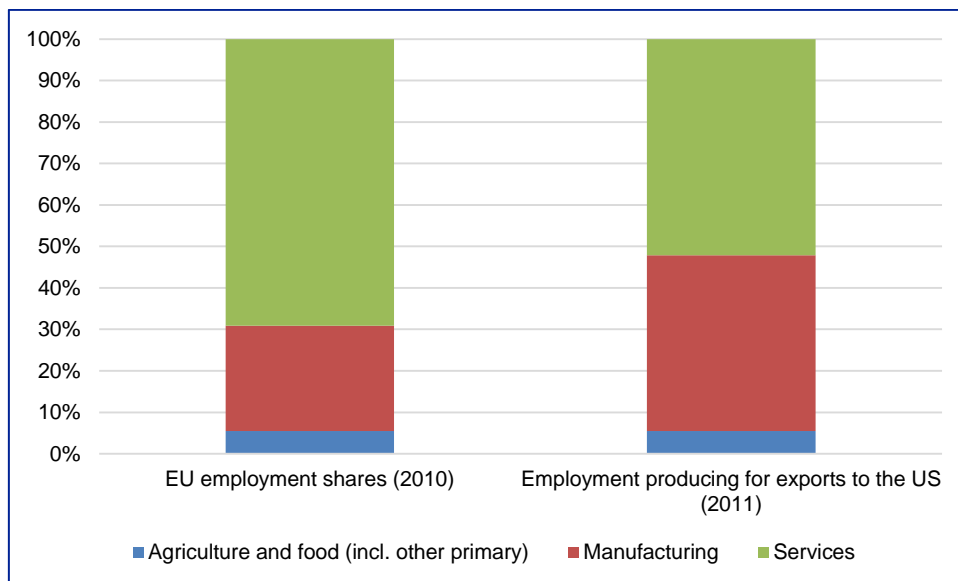
Agriculture and food	Other primary	Manufacturing	Services	Total
141.308	62.345	1.563.738	1.926.269	3.693.660

Source: Eurostat, GTAP9, own calculations.

In Figure 2.18 we combine the employment shares in the EU in 2010 across sectors to the split in EU employment for exports to the US from the Table above. It is interesting to note that the shares of agriculture are roughly the same. In other words: the share of agriculture in EU jobs is roughly the same as the share in agricultural jobs as percentage of total jobs for exporting to the US. What is, however, very different, is that the share of manufacturing jobs for the US (42 percent) is much higher than the share of manufacturing jobs in EU total employment (25 percent). The reverse is true for services. This implies that more trade with the US could give a significant boost to EU manufacturing and would fit in well with the EU goal of increasing the

share of manufacturing as percentage of EU GDP from the current 16 percent to the 'desired' 20 percent.⁶⁰

Figure 2.18 Comparing EU employment shares to EU employment for US exports (2010, 2011)



Other aspects of the EU-US social relation

Health related topics tend to have global impact. Examples include the spreading of communicable diseases, where co-operation between EU-US sends a strong signal to the rest of the world. Moreover, the production of and trade in healthcare goods make up a large share of the world market. A case study is devoted to this topic:

- Supranational organisations: both the EU Member States and the US are members of international institutions such as the ILO, which is devoted to promoting social justice and internationally recognized human and labour rights. This organisation acts as a platform for international, and therefore also for EU-US social consultations. One of the case studies focuses on ILO core labour standards.

2.3. Environmental relationship between the EU and the US

The main topic concerning the environmental relation between the EU and the US is how national or regional environmental policies affect the rest of the world. The emission of greenhouse gases and related global warming require an international approach. However, the EU-US environmental relationship is not limited to climate change. Before delving deeper, we first introduce the environmental situations in the EU and US.

2.3.1. General environmental developments in the EU and US

Environmental developments

A broad range of environmental legislation has been put in place by the EU over the past decades. Pollution has been reduced and existing legislation has been modernised. Three key objectives formulated in the 7th Environment Action Programme are to protect, conserve and enhance natural capital in the EU, to turn the EU into a resource-/energy-efficient, green economy and to safeguard EU inhabitants from risks related to health and wellbeing caused by environment-related pressures.⁶¹ More generally, EU environmental law is based on the TFEU, in particular Articles 191-193. Environmental issues are a shared competence of the EU and its

⁶⁰ http://europa.eu/rapid/press-release_MEMO-14-37_en.htm.

⁶¹ EC, DG for the Environment, 2014

Member States. The environmental situation in the EU will be briefly introduced below based on two broad indicators (energy production and emissions) since a more encompassing baseline is described in the chapter concerning overall environmental impacts.

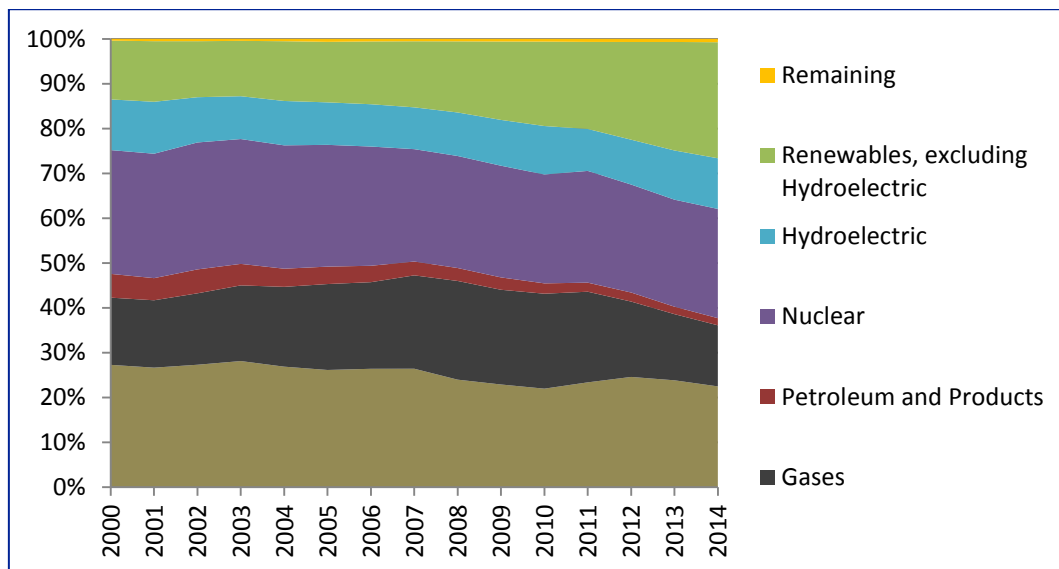
In the US, Congress develops environmental legislation, while organisations such as the Environmental Protection Agency (EPA) are empowered by Congress to formulate environmental regulations and enforce these by issuing sanctions and levying fines. Federal, state and local governments as well as private industry are subjected to these regulations. The focus nowadays mainly lies on climate change. The EPA has been giving responsibility to develop strategies to manage emissions and to develop standards.

Energy production

To introduce environmental developments, let us first take a look at the way energy is produced and consumed. Figure 2.19 shows the various sources for electricity generation in the EU. A distinction is made between oil, gas and coal sources, nuclear sources, hydroelectric sources, renewable sources and remaining (unidentified) sources. In 2000, around 55 percent of electricity production in the EU originated from oil, gas and coal sources. This increases to 85 percent when nuclear sources are included. In the period under consideration, the relative importance of renewable sources excluding hydroelectric sources rose from 2 to 13 percent at the expense of oil, gas, coal and nuclear sources. This implies there is a noticeable shift of electricity production towards more sustainable sources of energy production (geothermal, solar, tides, wind, biomass, and biofuels), but the EU still produces over 50 percent of its energy through combustion of fossil fuels.

The EU has set itself the following energy goals for 2030: a 40% cut in GHG emissions (compared to 1990 levels); at least a 27% share of renewable energy in the energy mix; and at least 27% energy savings compared to the business as usual scenario. This objective, particularly focussing to reduce overall climate change and warming up of the planet, shows that many investments or innovations are needed in the renewable energy sector and in energy efficiency.

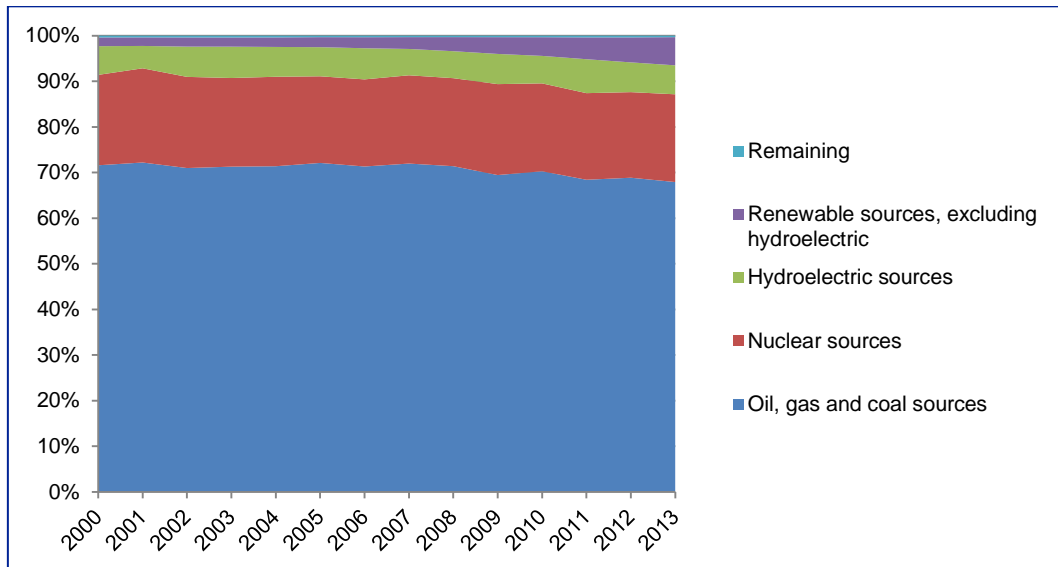
Figure 2.19 Sources of electricity production in the EU



Source: DG ENER, Country datasheets June 2016.

Figure 2.20 presents the sources of electricity production in the US. There are two aspects worth highlighting. First, around 70 percent of electricity production originates from oil, gas, and coal, which increases to 90 percent if we add nuclear sources. These numbers are thus higher in the US than in the EU. We also find that these production shares in the US are rather constant. Second, the production share of sustainable sources is not only small, but is also not growing substantially: in thirteen years the share of these sources increases by a rather small 4 percentage points. This is considerably less compared with the EU.

Figure 2.20 Sources of electricity production in the US

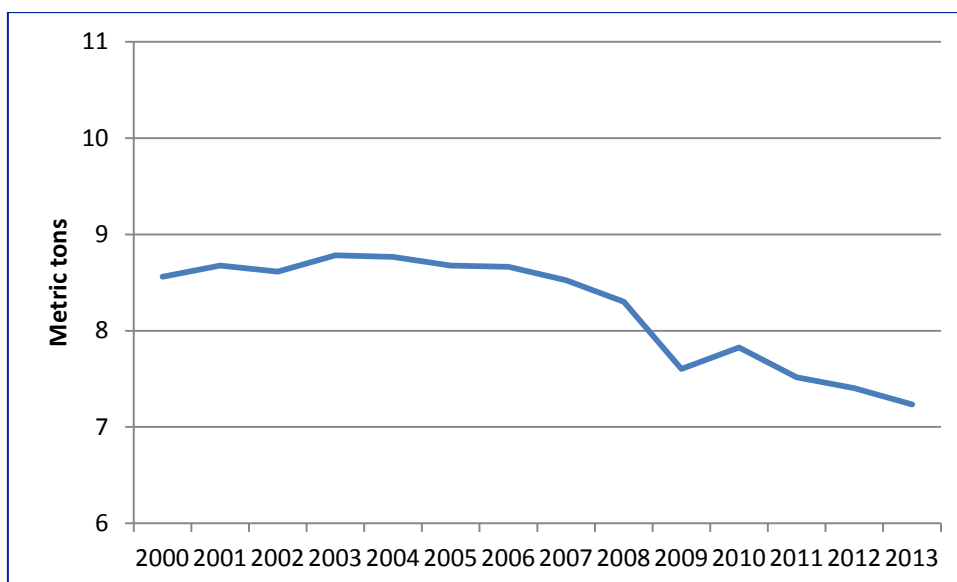


Source: World Bank, World Development Indicators.

Emissions

The sources of energy production are reasonably related to the emission of greenhouse gasses, for example carbon dioxide (CO₂). The development of CO₂ emissions in metric tons per capita in the EU is shown in Figure 2.21. It appears that the emission of CO₂ is rather stable, even though emissions have started to decline following the financial crisis. In 2011, approximately 7 metric tons of carbon dioxide were emitted per capita. More attention to CO₂ and other greenhouse gas (GHG) emissions in the EU will be given in Chapter 5.

Figure 2.21 CO₂ emissions in the EU (metric tons per capita)

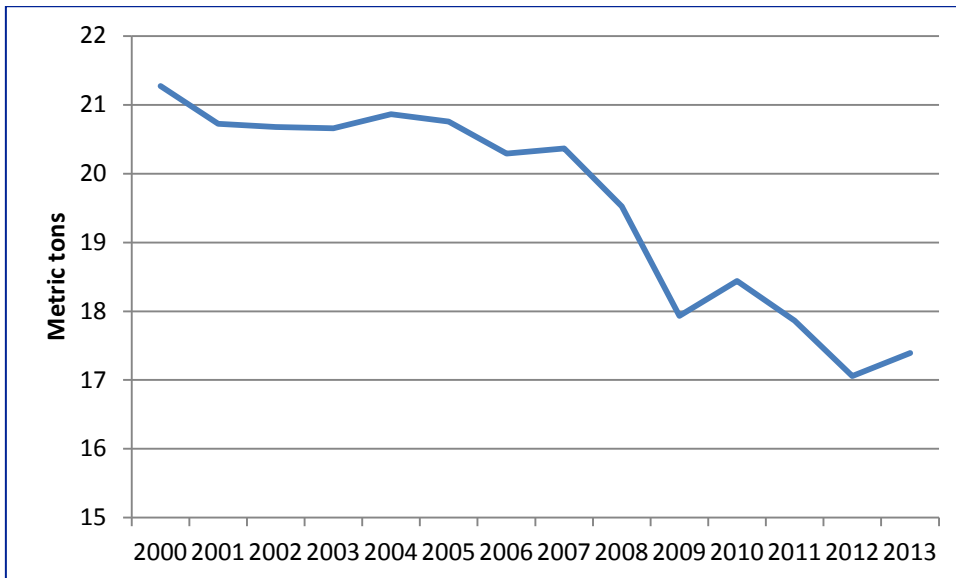


Source: European Environment Agency (EEA), author's calculations.

With respect to CO₂ emissions per capita in the US, Figure 2.22 shows a strong downward trend. Seemingly, this trend has accelerated during the financial crisis, resulting in a decrease of emissions by almost 19 percent in 2011 compared with 2000 levels of CO₂ emissions in metric tons per capita. In 2011, approximately 17 metric tons of carbon dioxide were emitted per capita. This decrease can be explained by several factors. First, is the economic situation of the US that has been depressed because of the global financial crisis. Production and therefore also CO₂ emissions are expected to pick up when economic activity increases. Second, because of the shale oil and shale gas revolution, there is evidence that US industry shifts to (cheap) shale

gas.⁶² The shift towards shale gas could lead to a reduction in CO₂ emissions when compared to coal for instance. To date there is however high controversy when debating the real emissions of shale gas production, as the level of fugitive methane emissions could offset any CO₂ gains. According to the EIA 2015 Annual energy outlook emissions of methane along the supply chain will dent the environmental credentials of gas unless action is taken to tackle these leaks.⁶³

Figure 2.22 CO₂ emissions in the US (metric tons per capita)



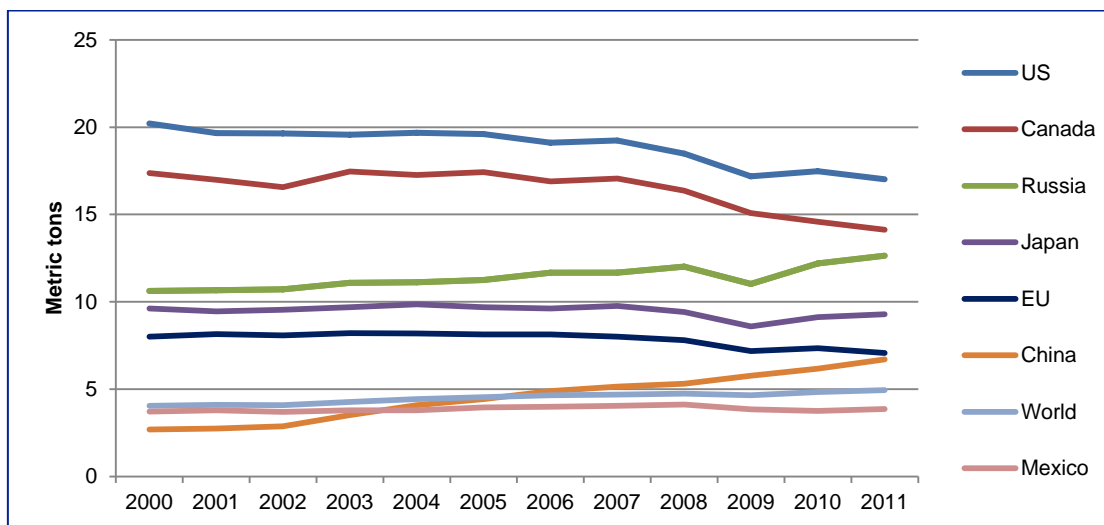
Source: United States Environmental Protection Agency (EPA), author's calculations.

We note that the CO₂ emissions per capita have been dropping in both the EU and US, especially in recent years – as consequence of a combination of cleaner production and depressed levels of economic activity. In the below Figure 2.23, we have put Figure 2.19 and Figure 2.20 together to not only highlight the trend in CO₂ emissions per capita, but also the differences in levels between the EU and US. Though in the US the decline in CO₂ emissions has been higher than in the EU, US levels are still much higher than EU levels. Furthermore, to put the figures into a global perspective, Japan, the Russian Federation and a world average have been added to Figure 2.20. The world average lies around 5 metric tons per capita, which is lower than the emission level in the EU and US. The Russian Federation and Japan have emission levels in between those of the EU and the US. Remarkably, even though we see a negative trend for the US and (to a lesser extent) the EU and Japan, the world average is increasing. This reflects the increase of CO₂ emissions per capita in countries such as Russia and other large countries, such as China and India.

⁶² Laurenzi and Jersey, 2013.

⁶³ EIA annual energy outlook, 2015.

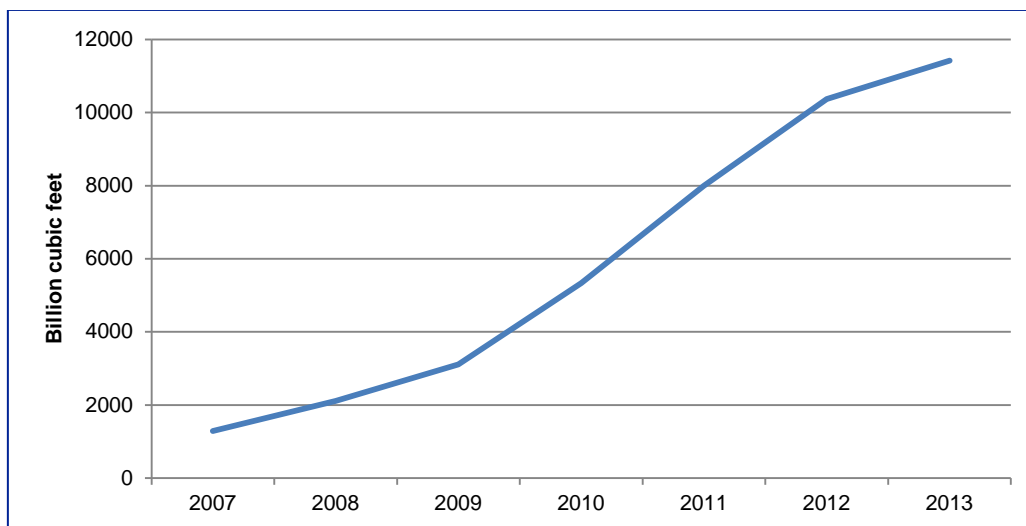
Figure 2.23 CO2 emissions for selected countries and the world (metric tons per capita)



Source: World Bank, World Development Indicators.

A final important point is the shale oil and shale gas revolution that has taken place in the US. Oil and gas production has increased tremendously in recent years (see Figure 2.24 for shale gas below). The US is expected to become a net gas exporter in 2018. This has already had a significant impact on global fossil fuel prices.⁶⁴ Slumping fossil fuel prices have taken a toll on numerous renewable energy projects, and even made several fossil-fuel production locations economically unattractive (or led to big debts in the US oil and gas sector).⁶⁵ It also has meant that from an economic perspective, gas has become a more attractive fossil fuel. With the US projected to becoming a net exporter of gas in 2018, there are potential effects of TTIP for the Liquid Natural Gas (LNG) market that need to be considered.⁶⁶ Finally, low prices for fossil fuels, have made US manufacturing industries such as chemicals much more competitive, with considerable impacts in some sectors. We refer to the case study on unconventional resources and the chemicals sector study for a more in-depth impact assessment.

Figure 2.24 US domestic shale gas production (billion cubic feet)



Source: US EIA.

⁶⁴ Note that the main impact on lower fossil fuel prices is not the increase in shale gas production, but the reaction by, mainly, the OPEC members that led to a global oversupply and a drop in prices.

⁶⁵ <http://www.ft.com/intl/cms/s/0/0f78005c-f9a9-11e5-8f41-df5bda8beb40.html#axzz4AFPLdFrX>

⁶⁶ The according assessment can be found at the case study regarding trade in unconventional resources.

2.3.2. The environmental EU-US relationship

When we look at the environmental relationship between the EU and US, we see that both are having a high level of environmental protection, based on the TFEU (Arts 191-193) in the EU and regulations set by the EPA in the US. Importantly, both nations have different regulatory regimes. As a consequence, TTIP may have a different impact on either the EU or the US. In addition to section 5.2.6 (dealing with consumer protection and providing an overview of relevant MEAs) we discuss below a selection of relevant international and recent environmental and climate frameworks and agreements in which the EU and US participate⁶⁷, namely:

- The United Nations Framework Convention on Climate Change (UNFCCC);
- The Kyoto Protocol and Doha Agreement;
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)⁶⁸;
- The Paris Agreement (COP21); and
- The Environmental Goods Agreement (EGA)⁶⁹.

The EU and the US are both parties to the United Nations Framework Convention on Climate Change (UNFCCC), which aims to stabilise greenhouse gas concentrations in the atmosphere to prevent dangerous interference with the climate system. However, the US – although it has signed the Kyoto Protocol (KP) as one of the countries listed in “Annex B” with binding targets for the period 2008-2012⁷⁰ – did not ratify the Protocol and therefore does not take part in the international emission trading system, nor in negotiations specific to KP states. It also is not a party to the amendment of the Kyoto Protocol (the Doha Agreement), which added commitments for a second commitment period, 2013-2020. The EU (and its member states) has committed to binding emission reduction targets under the KP for both commitment periods.

The EU and US both participated in COP21, in Paris, where 195 nations adopted a new climate agreement that has a goal of keeping the increase in the average global surface temperature to well below two degrees Celsius above pre-industrial levels. The main achievements/outcomes of the Paris Agreement are:

- Reaffirm the goal of limiting global temperature increase well below 2 degrees Celsius, while urging efforts to limit the increase to 1.5 degrees;
- Establish binding commitments by all parties to make “nationally determined contributions” (NDCs), and to pursue domestic measures aimed at achieving them;
- Commit all countries to report regularly on their emissions and “progress made in implementing and achieving” their NDCs, and to undergo international review;
- Commit all countries to submit new NDCs every five years, with the clear expectation that they will “represent a progression” beyond previous ones;
- Reaffirm the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too;
- Extend the current goal of mobilizing \$100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025;
- Extend a mechanism to address “loss and damage” resulting from climate change, which explicitly will not “involve or provide a basis for any liability or compensation;”
- Require parties engaging in international emissions trading to avoid “double counting;” and
- Call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country’s NDC.⁷¹

Policy measures to achieve the reductions are manifold; there are policies at EU level, policies at national levels, and a mix of the two. One of the main policy measures to achieve these reductions at the EU level is, for example, the EU 2030 climate and energy package, which aims to cut greenhouse gases by 40 percent (compared with 1990 levels), increase the share of renewable energy in the energy mix to at least 27 percent and improve energy efficiency by at

⁶⁷ See chapter 5.2.6 for a discussion and overview of a number of other important frameworks and agreements in which the EU and/ or US take part.

⁶⁸ See chapter 5 for the case study on illegal trade in natural resources, where also CITES is discussed.

⁶⁹ Note: the EGA is still being negotiated.

⁷⁰ See http://unfccc.int/essential_background/kyoto_protocol/items/1678.php; or Annex I of the UNFCCC.

⁷¹ <http://www.c2es.org/international/negotiations/cop21-paris/summary>.

least 27 percent by 2013. On the US side “the President’s Climate Action Plan”⁷² was announced in June 2013. As part of this plan, the Environmental Protection Agency’s “Clean Power Plan” was proposed in 2014, mainly aiming to cut greenhouse gas emissions from coal-fired power plants. The rule foresees a nationwide emission reduction by 30 percent in 2030 compared to 2005 levels, which is translated into targets specific to individual states. States and companies can choose their own way of reaching the target (e.g. establish cap-and-trade system, increase renewables, increase energy efficiency, etc.).⁷³

Another example of collaboration between the EU, the US and 14 other nations is the Environmental Goods Agreement (EGA) on liberalisation of trade in environmental goods and services. Since 2014 16 WTO members have negotiated on the EGA to remove barriers to trade in environmental or “green” goods that are crucial for environmental protection and climate change mitigation. Green goods (or environmental services) include, among others, products that contribute to environmental and/or climate protection and are mainly affecting air, land – and waste quality, but also contribute to an increase in energy efficiency and research and development of renewable energy such as solar, hydroelectric and wind.⁷⁴

Energy trade flow between EU and US

Table 2.2 shows trade in energy products between the EU and the US in 2014. It shows that the EU is a net exporter of petroleum and petroleum products, but a net importer of gas and coal, coke, briquettes - vis-à-vis the US. Trade of gas and coal, coke and briquettes flows mainly in one direction: from the US to the EU. Furthermore, while trade in electric current is negligible, bilateral trade in petroleum amounts to almost 28 billion euros. With the US becoming a net exporter of gas in 2018 and with a potential TTIP, there may be significant effects of TTIP on this energy relationship.

Table 2.2 Trade in energy products between the EU and the US (2014; million euros)

	EU exports to US	EU imports from US
Coal, coke and briquettes	6	3,269
Petroleum, petroleum products	16,010	11,808
Gas, natural and manufactured	159	1,205
Electric current	3	8

Source: Eurostat.

Other aspects of the EU-US environmental relation

- Most importantly, environmental issues often concern the entire world: clean water or air is a global public good. This implies that the EU and the US are environmentally related by spill over effects: the EU and the US are environmentally affected by actions initiated and policies implemented elsewhere on the globe; and a combined approach towards i.e. climate action could have a positive impact in third countries.
- Supranational organisations: also multilaterally, e.g. in the UN Environment Programme, both EU Member States and the US are involved. Relevant multilateral environmental agreements will be exhaustively described in the environmental baseline assessment of the chapter devoted to assessing the environmental impact of TTIP.

2.4. Concluding remarks on the EU-US relationship

From this Chapter, we deduce a few core conclusions:

1. The EU and US economies are highly integrated through trade and foreign direct investments;

⁷² Executive Office of the President (2013), The President’s Climate Action Plan.

⁷³ See <http://www2.epa.gov/carbon-pollution-standards/clean-power-plan-proposed-rule> and <http://www.theguardian.com/environment/2014/jun/02/obama-rules-coal-climate-change>.

⁷⁴ <http://trade.ec.europa.eu/doclib/press/index.cfm?id=1116>.

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2. The EU and US have gone through a deep economic crisis in 2008-09, for the EU followed by the Eurozone sovereign debt crisis in 2010-12, for the US followed by an economic recovery;
3. In 2013, at the start of the TTIP negotiations, the results of these crises were that the US had high levels of unemployment still, but was set for an economic recovery, while the EU was still dealing with the fall-out of the Eurozone crisis, with high – and rising – levels of unemployment and debt. TTIP – in that context – was seen by both EU and US as a driver for jobs and growth that were both direly needed;
4. Tariffs and especially non tariff barriers to trade, that do not reflect different societal or policy choices, create significant impediments to EU-US trade;
5. The deep level of economic integration also manifests itself in the large number of jobs in the EU that are created by US majority owned affiliates and the large number of jobs in the EU working on exports to the US;
6. Unemployment levels are for both the EU and US higher than desired. However, for the EU the unemployment levels have been rising until 2013 (standing at 11 percent), following the global financial crisis and Eurozone sovereign debt crisis, while for the US unemployment peaked at 10 percent in 2010 and has been dropping since;
7. The energy mix in the EU and US is dominated by oil, gas and coal – i.e. fossil fuels – but within that category fuel use is shifting;
8. CO2 emissions have dropped over the past years for both the EU and US. This is mainly due to the depressed levels of economic activity, but – in the EU mainly – also in part due to the use of more renewable energy. The EU and US are also taking coordinated international action to reduce CO2 emissions. The CO2 emissions drop in metric tons per capita has been larger in the US, but comes from much higher original levels and remains high compared with EU emissions levels per capita.

3. Overall economic impacts

3.1. Introduction

In this Chapter we present the potential economic impacts of the TTIP based on the updated results of CEPR (2013), hence referred to as 'the updated results'. The results are an update of the CEPR (2013) results in the following ways⁷⁵:

- The baseline is updated on the basis of more recent growth forecasts and extended by three years – moving the effect horizon from 2027 to 2030, allowing the use of the most recent data;
- The effects for Turkey have been “split out”;
- Various sectors have been disaggregated further (e.g. processed foods and metals/metal products);
- The macro-economic effects at EU level are disaggregated for EU Member States; and
- For technical reasons, no NTM reduction has been modelled for processed foods (see Chapter 1 for a detailed explanation).

For the reasons outlined in Chapter 1, in our view CEPR (2013) provides the best model for simulating the potential effects of TTIP. Our discussion will therefore focus on the – updated – results from this model. However, where other relevant literature exists, results will be compared.

This Chapter is organised as follows. In Section 3.2 below we first present the general macroeconomic expected effects of TTIP. These results are benchmarked against other overall EU impact assessment studies: the original CEPR (2013), CEPII (2013), Ecorys (2009) and GED Bertelsmann (2013).⁷⁶ In addition, we report the potential macroeconomic impact of TTIP on individual EU Member States and briefly discuss the EU Outermost Regions (Section 3.3). We then take a closer look at the economic results by examining the estimates at a more disaggregate level, focusing on sector specific changes for the EU and US (Section 3.4). Following this, we present the expected impact on third countries (Section 3.5), paying particular attention to the effects for Turkey (that has a Customs Union with the EU). This Chapter concludes with a discussion of the potential impacts of TTIP on small and medium-sized enterprises (SMEs).

3.2. Macroeconomic impacts for the EU and the US

In this section we consider the macroeconomic effects for the EU and US based on the updated results of CEPR (2013). The estimated changes in national income, GDP, wages, aggregate and bilateral trade flows, and terms of trade are presented in Table 3.1. While the CEPR (2013) report is considered to be the key reference study for economic impacts of TTIP for the EU and US, with the main results presented here originating from an update of that study, various other quantitative exercises have been undertaken as explained in the literature review (see Chapter 1). In the Table below we present the results of a selection of these studies. We select our reporting based on two arguments. First, not all studies report both EU and US overall results (but instead focus on – for example – an individual EU Member State).⁷⁷ We only report studies that have results for both the EU and US. This means that ECIPE (2010), IFO (2013) and Capaldo (2014) – which have no macro-results for the EU as a whole – drop out. Second, some studies use different approaches, assumptions, data, NTM estimations methodologies – making it important to report their findings to show variation in results that can follow from those differences (so these studies we *do* report below). Other studies can be considered 'satellite studies', as explained in CEPS (2013), i.e. they use exactly the same method as one of the core

⁷⁵ A more extensive explanation of the differences between CEPR (2013) and the updated results can be found in Chapter 1.

⁷⁶ See the literature review in the previous chapter.

⁷⁷ Francois and Pindyuk (2012) for Austria, the Kommerskollegium for Sweden (2012), Felbermayr and Aichele (2014) for Germany, Ecorys (2012) for the Netherlands, CEPR (2013) for the United Kingdom and the Trade Partnership Worldwide (2013) for the US.

studies, but – for example – just disaggregate differently or look at an individual EU Member State.⁷⁸

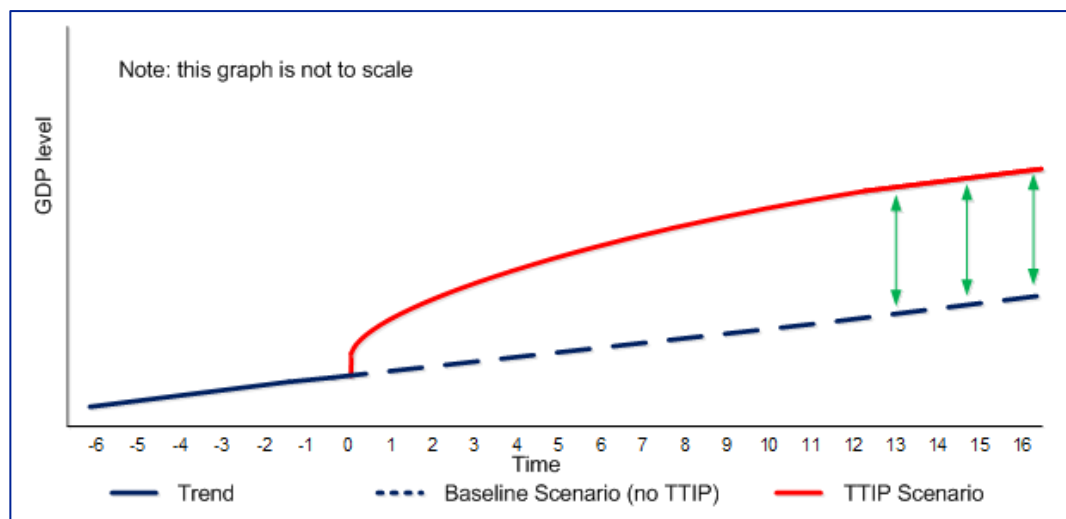
Some guidance to interpretation of the results presented in Table 3.1 is provided in Box 3.1.

Box 3.1 How to interpret the (updated) CEPR (2013) results

In general, the results for a particular variable are expressed in percentages. For example, the estimated GDP effect in the EU is 0.5 per cent (ambitious scenario). How should one interpret this number (or any of the other numbers)?

In the Figure below, the example of GDP is graphically illustrated. Time is depicted on the x-axis. The solid blue line indicates the trend of the GDP level over time. At time $t=0$, either a TTIP is implemented or not. In case TTIP is not implemented, this is referred to as the baseline scenario. This scenario is represented by the blue dotted line and is simply an extension of the trend line. The alternative is to assume a TTIP scenario. The new situation followed by the implementation of TTIP leads to a new (CGE modelled) path of the GDP level after $t=0$. This alternative is shown by the solid red line. In the analysis, the GDP level in the TTIP scenario is compared to the GDP level in the baseline scenario for a particular year (the year of comparison in the update of CEPR (2013) is 2030). Accordingly, the green arrow in the figure indicates the estimated impact of TTIP in terms of a gain in the level of GDP. In the output of the updated results, this gain is expressed in percentages. The cut in tariffs will result in immediate gains, whereas the NTM removal and gradual adjustment of economic structures imply gains that will be realised over the course of the years, but at a slower rate. It is therefore not accurate to represent the estimated impact on GDP for example as “an additional 0.035 per cent per year” (dividing 0.5 per cent by 14 years).

Importantly, **the estimated impact is permanent and applies to (GDP) levels and not (GDP) growth rates** (in fact, marginal GDP changes are the slope of the lines in the figure below). This implies that after TTIP is fully implemented the differences between GDP levels with TTIP and without TTIP is 0.5 percent, and this is the case for each year after 2030 as well (which is represented by the parallel lines after 2030 and the green arrows in the figure below – note this graph is not to scale).



⁷⁸ The Trade Partnership Worldwide (2013) on TTIP effects for US states is a disaggregation of CEPR (2013) while Ecorys (2012) is a disaggregation of Ecorys (2009) for the CGE part of the results.

Table 3.1 Overview of macroeconomic impacts for the EU and the US

Variable	CEPR (2013) update Ambitious ⁷⁹	CEPR (2013) update Less Ambitious ⁸⁰	CEPR (2013) Ambitious ⁸¹	CEPR (2013) Less ambitious ⁸²	CEPI I (2013) ⁸³	Ecorys (2009) : ambitious ^{84,85}	GED-B (2013): Fully liberalised ⁸⁶
GDP							
EU, %	0.5	0.3	0.5	0.3	0.3	0.7 ⁸⁷	5.0 ⁸⁸
US, %	0.4	0.2	0.4	0.2	0.3	0.3	13.4
EU, billion euros	-	-	119	68	-	122	-
US, billion euros	-	-	95	50	-	41	-
National income							
EU, %					-	-	-
US, %	0.3	0.2	0.4	0.3	-	-	-
EU, billion euros	0.3	0.2	0.3	0.2	-	-	-
US, billion euros	-	-	86	48	-	-	-
EU, billion euros	-	-	65	33	-	-	-
Household income							
EU, %	0.4	0.2	0.5	0.3	-	0.8	-
US, %	0.3	0.2	0.4	0.2	-	0.3	-
EU, billion euros	-	-	71	40	-	-	-
US, billion euros	-	-	68	30	-	-	-
Wages, less skilled							
EU, %	0.5	0.3	0.5	0.3	-	0.8	-
US, %	0.4	0.3	0.4	0.2	-	0.4	3.7 ⁸⁹
Wages, more skilled							
EU, %	0.5	0.3	0.5	0.3	-	0.8	-
US, %	0.3	0.2	0.4	0.2	-	0.4	3.7
Total exports							
EU (extra EU), %	8.2	4.6	5.9		7.6	6.1	-
US, %	11.3	7.2	8.0	3.4	10.1		-
				4.8			

⁷⁹ The ambitious scenario includes the elimination of 25 per cent of NTB related costs, 100 per cent removal of tariffs and a 50 per cent reduction for NTBs linked to procurement. Projected year: 2030.

⁸⁰ The less ambitious agreement considers the three limited policy options simultaneously, i.e. a 10 per cent reduction in trade costs from NTBs, 98 per cent removal of tariffs and a 25 per cent reduction for NTBs linked to procurement. Projected year: 2030.

⁸¹ The ambitious scenario includes the elimination of 25 per cent of NTB related costs, 100 per cent removal of tariffs and a 50 per cent reduction for NTBs linked to procurement. Projected year: 2027.

⁸² The less ambitious scenario includes the elimination of 10 per cent of NTB related costs, 98 per cent removal of tariffs and a 25 per cent reduction for NTBs linked to procurement. Projected year: 2027.

⁸³ Reference scenarios includes an across-the-board 25% cut in the level of trade restrictiveness of NTMs for both the product and service sectors with the exception of public and audio-visual services. Projected year: 2025.

⁸⁴ Full reduction of all actionable divergences identified in all sectors. Projected year: 2018.

⁸⁵ Trade effects in the Ecorys (2009) study for the EU include intra-EU trade – hence a smaller percentage change effect.

⁸⁶ The liberalized scenario is a deep, comprehensive liberalization of trade in which regulatory barriers to market access are also reduced. The matrix of trading costs is solely derived from the simulation of observed trade flows of existing, deep trade agreements.

⁸⁷ Real income.

⁸⁸ Real per capita income.

⁸⁹ This is the figure for percentage change in real wages overall, not specific to less or more skilled groups.

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Variable	CEPR (2013) update Ambitious ⁷⁹	CEPR (2013) update Less Ambitious ⁸⁰	CEPR (2013) Ambitious ⁸¹	CEPR (2013) Less ambitious ⁸²	CEPI I (2013) ⁸³	Ecorys (2009) : ambitious ^{84,85}	GED-B (2013): Fully liberalised ⁸⁶
Total imports	7.4	4.0	5.1	2.9	7.4	2.0	-
EU (extra-EU), %	4.6	2.9	4.7	2.8	7.5	3.9	-
US, %							
Bilateral exports							
EU to US, %	27.0	15.3	28.0	16.2	49.0	-	-
US to EU, %	35.7	22.0	36.6	23.2	52.5	-	-
Terms of trade							
EU (extra-EU), %	0.5	0.3	0.0	0.0	-	0.1	-
US, %	-0.3	-0.1	-0.2	-0.1	-	-0.2	-

Source: updated results of CEPR (2013); CEPR (2013); CEPII (2013); Ecorys (2009); GED Bertelsmann (2013).

Note: Estimates to be interpreted as changes relative to the baseline scenario (no TTIP), 20 per cent direct spill-overs:

The updated results (ambitious scenario) are summarised concisely in Box 3.2 below:

Box 3.2 Key results from the updated CEPR (2013) impact assessment of TTIP

- **National income** is projected to be 0.3 percent higher each year for the EU as well as for the US;
- **GDP** is projected to be 0.5 percent higher each year for the EU and 0.4 percent higher for the US;
- **Wages for both the high- and low-skilled workers** are expected to go up by 0.5 percent in the EU and by 0.3 percent for high-skilled workers and 0.4 percent for low-skilled workers in the US;
- **Total exports** increase for both EU (extra EU) (+8.2 percent) and US (+11.3 percent) as do **total imports** for EU (extra EU) (+7.4 percent) and US (+4.6 percent);
- Terms of trade change marginally: for the EU the estimated improvement is 0.5 percent, for the US there is an estimated deterioration of 0.3 percent;
- **Bilateral trade** is expected to increase significantly, with an increase of 27 percent of EU exports to the US and 35.7 percent increase of US exports to the EU.

These updated results are highly comparable to CEPR (2013) and CEPII (2013). In terms of GDP effects CEPII (2013) reached marginally lower impacts, but for trade the outcomes are comparable and for bilateral EU-US trade, CEPII (2013) expects a higher impact from TTIP. The difference with CEPII (2013) comes from CEPII estimating NTMs to be much higher and agricultural NTMs to be much more actionable than was assumed in the CEPR analyses – note that in the updated results NTMs for processed foods are not actionable at all⁹⁰. The updated results are more conservative than the Ecorys (2009) results. The Ecorys (2009) results predict higher national income and GDP effects from TTIP. The Ecorys (2009) study seems to expect lower trade impacts for the EU than the update of CEPR (2013), but in the Ecorys study intra-EU trade flows were included. Consequently, the base values for EU trade are larger, of which the majority is not liberalised (i.e. the share that concerns intra EU trade). The estimated percentage change in trade is thus lower, however in absolute terms the results are similar.

The updated results are significantly more conservative than the GED Bertelsmann (2013) results. This, according to CEPS (2014), is primarily due to a different modelling approach and a differences in the scenarios assumed. As explained in Chapter 1, the impact of TTIP on trade in GED Bertelsmann (2013) is based on the fact that on average, large trade agreements (like NAFTA and the Single Market) increase aggregated trade by 80 percent, the real ambitions of

⁹⁰ See chapter 1 for a detailed explanation.

the TTIP negotiations are not reflected in the calculations. Given that TTIP is not expected to be as ambitious (as the Single Market) the expected impacts are thus overestimated.⁹¹

In the CEPR CGE model the total expected impact for each of the macro indicators (GDP, national income, household income, wages and trade) has been “split out” by type of trade measure and spill-over effect. In this way, one can easily see which part of the total impact is attributed to e.g. the removal of tariffs or the reduction in NTMs. The total effect can be split out in terms of the following three trade measures and two spill-over effects:

- **Tariffs:** effect of reduction of tariffs; that is the combination of loss in tariff revenue with increased other tax revenues, lower production and transport costs, etc. (e.g. the impact of tariff reduction on national income is +0.07 percent for the EU in the ambitious scenario);
- **NTMs on goods⁹²:** effect of the reduction in regulatory unnecessary divergences on goods through regulatory cooperation; (e.g. the impact of a reduction of NTMs on goods on national income is +0.22 percent for the EU in the ambitious scenario);
- **NTMs on services:** effect of the reduction in unnecessary regulatory divergences on services through co-operation; (e.g. the impact of a reduction of NTMs on services on national income is + 0.02 percent for the EU in the ambitious scenario);
- **Direct spill-overs:** effect of the convergence and closer integration of EU and US regulatory framework and standards on direct trade with third countries (e.g. the impact of direct spill-overs on national income is +0.01 percent for the EU in the ambitious scenario);
- **Indirect spill-overs:** effect of increased trade among third countries as they align more closely to the EU-US regulatory systems; (e.g. the impact of indirect spill-overs on national income is +0.02 percent for the EU in the ambitious scenario).

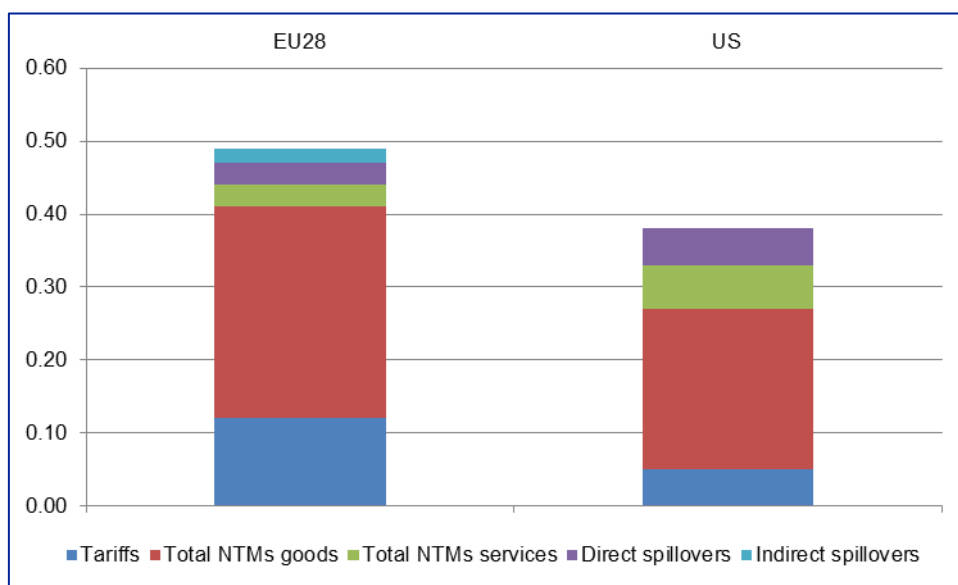
3.2.1. Expected Gross Domestic Product effects from TTIP

The updated results indicate that TTIP will generate positive gains with the estimated impact on GDP ranging between 0.3 percent and 0.5 percent each year for the EU and between 0.2 percent and 0.4 percent each year for the US (depending on whether TTIP will be more or less ambitious). Given the size of the economies in absolute terms this is a considerable gain and a gain that accrues each year. Furthermore, there is a substantial extra estimated gain in GDP when comparing the less ambitious scenario with the ambitious scenario for both the EU and US – from this perspective, the more ambitious TTIP, the higher the expected gains. Modelling simulations show that GDP effects in the EU are slightly higher than in the US. The decomposition of the model results shows that the estimated gains are linked mostly to the lowering of NTMs in goods for both the EU and US. For the EU, tariff liberalisation matters significantly. The disaggregated effects are presented in Figure 3.1.

⁹¹ Note that more generally, various studies project the impact of TTIP over different timescales. This is a further reason for differences in results. Standing out is GED Bertelsmann (2013), which compared the factual observed reality in 2010 to a counterfactual reality in which the TTIP agreement already existed in 2010.

⁹² As explained in Chapter 1, due to technical reasons no reduction of NTMs in the processed food sector has been modelled. This is not a reflection of the negotiations; nothing has changed in the ambition of the EC in the negotiations.

Figure 3.13.2 Decomposition of total GDP effects for EU and US (% of total effect), ambitious scenario



Source: updated results of CEPR (2013).

CEPII's (2013) findings on GDP effects are not significantly different, with slightly lower estimates of 0.3 percent for both the EU and US. The Ecorys (2009) study – with a more ambitious regulatory convergence scenario – shows larger results. The GED Bertelsmann results of, respectively, 5 percent and 13 percent increases in GDP for the EU and US show potential GDP gains could be much larger. The CEPS assessment found these results highly implausible: *“As US exports to the EU amount to a moderate 3.5 percent of US GDP and part of existing trade is already free or mostly free from barriers, it is very unlikely that even the most ambitious TTIP would generate no less than 13 percent extra US GDP. Furthermore: the case of the EU is less extreme but still pretty radical.”*⁹³ These large impacts may be driven to a good extent by the assumption that large trade agreements on average increase aggregated trade by 80%, which does not take into account the actual measures likely to be included in TTIP.

Box 3.3 Differences in national income and GDP effects – a technical explanation

The updated results report marginally lower national income effects than CEPR (2013) and no changes in GDP effects at the first decimal place. Before discussing why this is the case, we first recall that there is a difference in economic definitions between National Income and Gross Domestic Product (GDP). Gross Domestic Product measures the value in monetary terms (i.e. market prices) of the goods and services produced on the territory of a country in a certain period. Gross National Income is a concept that can be derived from GDP by accounting for the difference in income received by nationals abroad and the income earned by non-nationals on the territory of the country. In addition, GDP includes capital depreciation which is not included in National Income. Last but not least, National Income is net of indirect taxes such as VAT, excise and customs duties.

All these conceptual elements are, however, rarely available in databases used for CGE modelling in a clear cut manner. In a CGE context a National Income measure is calculated which rests on the concept of equivalent variation (EV). It shows the change in real purchasing power for an average consumer given the production, factor returns and consumer price changes that followed the implementation of the policy change that is being analysed (the TTIP in this case). In other words it shows how much more goods and services consumers would be able to purchase as a result of the implementation of trade agreement.

The marginal changes in national income, GDP and other variables reflect the many factors that interplay in a general equilibrium setting. The comparison between results

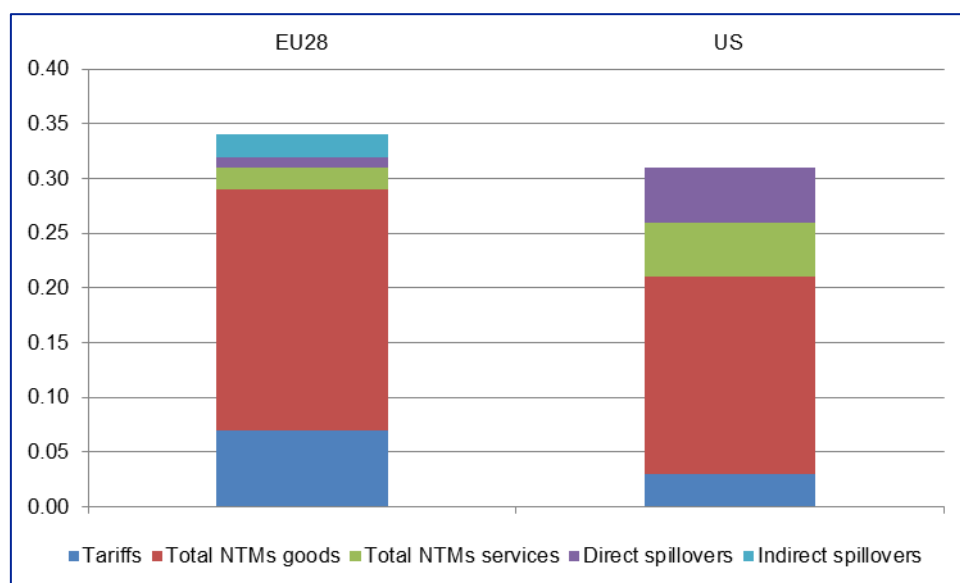
⁹³ CEPS, 2014.

from different simulations can also reflect changes to the baseline, the definition of scenarios, etc. When comparing the results of the original CEPR (2013) simulation with those of the updated analysis one has to take into account the changes introduced to the baseline, and to the sectorial (38 sectors instead of 20) and to the geographical disaggregation (due to the splitting out of EU Member States and Turkey) of the model. The scenarios' design was also changed. As the Ecorys (2009) report did not provide NTMs trade costs equivalents for the sub-sectors of processed foods no cuts to these were taken into account in the updated simulation. This implies a more limited liberalisation compared with the one in CEPR (2013). This means that in the processed foods sectors the domestic producers will face less competition from foreign imports than if the liberalisation had been more ambitious. As a result the prices would not fall by as much, which lowered the estimated gains for consumers (given the important weight of these goods in private consumption). This is reflected in the updated changes for national income. The estimated GDP changes are not impacted as much as given that processed food sectors are responsible for a rather limited contribution to aggregate value added.

3.2.2. Expected national income effects from TTIP

In the ambitious scenario by 2030 national income in the EU and in the US is estimated to be 0.3 percent higher (each year henceforth) relative to a situation where no TTIP was in place. In the less ambitious scenario, income effects would be around 0.2 percent in both the EU and US. National income effects can be interpreted as a change in the national consumption possibilities as they take into account the increase in national output as well as changes in relative consumer prices that result from the adoption of the trade agreement. We note that the national income effects in the EU are slightly more positive than those in the US. This is mainly because the EU tariff component is higher than the US tariff component, as shown in Figure 3.2, which translates into a larger downward effect on prices in the EU. The main driver for the national income effects in the EU and US comes from alignment of NTMs in goods (see Figure). For the US, NTMs in services and direct spill-overs are also relatively important. We also note that positive national income effects for the EU and US are higher the more ambitious the TTIP.

Figure 3.3 Decomposition of total National Income effects for EU and US
(% of total effect), ambitious scenario



Source: updated results of CEPR (2013).

The CEPR (2013) study reports similar but marginally higher outcomes. The differences are mainly driven by the fact that the updated results no longer model a reduction of NTMs in the processed foods sector, while there are some substantial NTMs present in this sector on both sides. As a consequence there will be fewer foreign imports at lower prices and thus a less pronounced reduction of consumer prices. This leads to a smaller impact on national income. In

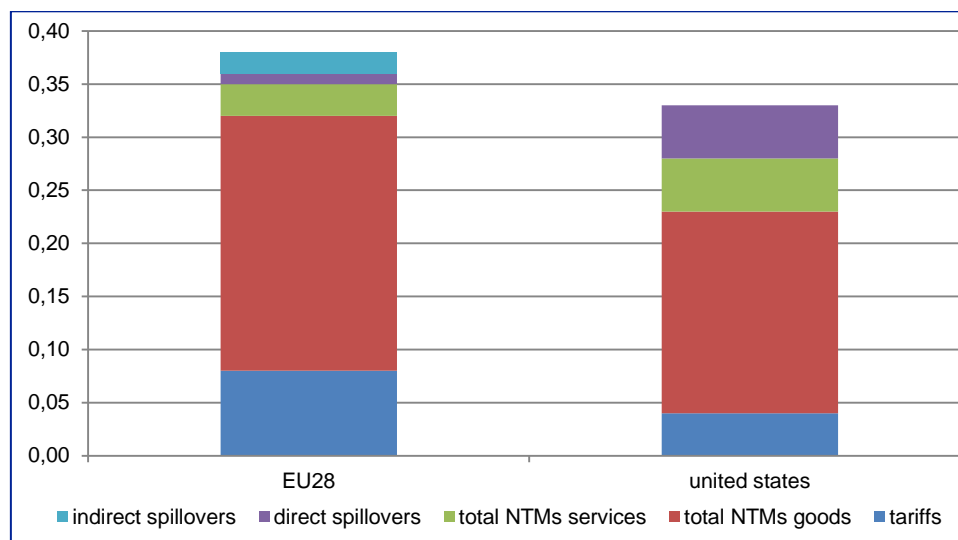
addition, a small part of the differences can be explained by the fact that the baseline in the updated results has been updated and the projections of the impacts have been extended by three years to 2030 (instead of 2027). This, of course, holds also for the impacts on household income, and bilateral trade

3.2.3. Expected Household Income effects from TTIP

The impacts on household income for the EU are estimated to be 0.4 percent in the ambitious scenario.⁹⁴ For the US, this figure equals 0.3. In the less ambitious scenario the expected impacts are estimated to be 0.2 percent for both the EU and the US. For both the EU and the US (in both scenarios) the main contribution to this increase comes through a reduction of NTMs on goods.

The CEPR (2013) estimates for household income in the ambitious scenario were slightly higher, namely 0.5 percent for the EU and 0.4 percent for the US. The slightly lower outcome of the update CEPR 2013 results are due to the less ambitious liberalisation of trade in processed foods⁹⁵ compared with the CEPR 2013 study, as explained in 3.2.2.

Figure 3.4 Decomposition of total household income effects for EU and US (% of total effect), ambitious scenario



Source: Updated CEPR results.

3.2.4. Expected wage effects from TTIP

The estimated real wage effects are consistently positive, i.e. for both skilled- and less skilled labour in both the EU and the US, in both scenarios. Expected gains range from 0.2 percent to 0.5 percent and are somewhat larger for the EU than the US. Wage changes for skilled- and less skilled labour are identical in the EU and very similar in the US. The results are comparable to the GDP estimates. As noted in CEPR (2013): *"The wage effects are in line with changes in GDP and so are consistent with an interpretation of general cost savings that lead to productivity gains as firms operate with lower tariff and NTB-related costs for transatlantic commerce."*

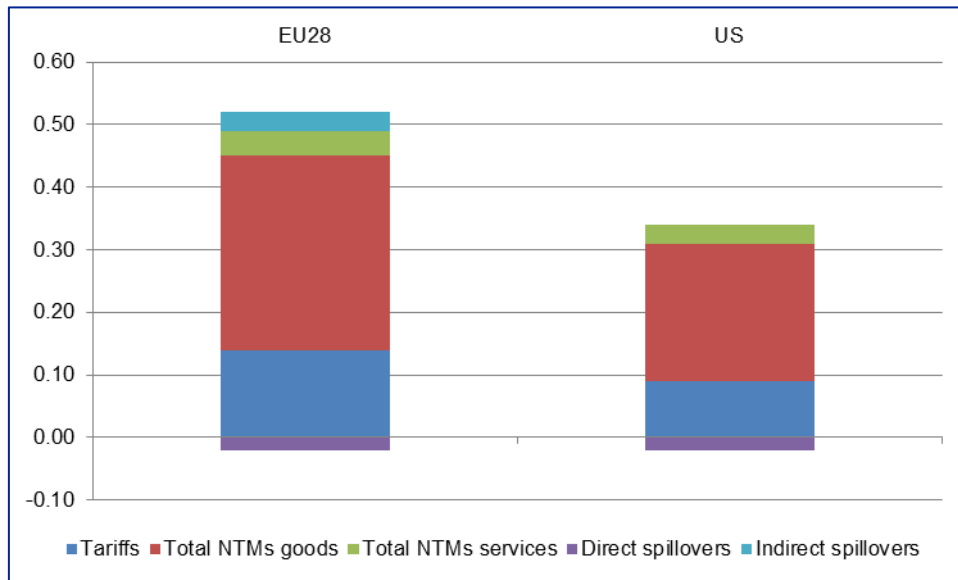
The updated results imply that TTIP has a potential positive impact on wages each year, which is an important social outcome. The GED Bertelsmann study has provided wage effect estimates for the US only. With a 3.7 percent change in real wage overall, the effect is approximately ten times as large as the estimated US wage effects in the ambitious scenario of the updated CEPR (2013) results). This is, however, not too surprising given the high estimated GDP effects in GED Bertelsmann. When we disaggregate the total high- and low-skilled wage effect, as is done in Figure 3.4 and 3.5, we see that the main gains in wages come from successful regulatory

⁹⁴ Household disposable income is a subset of total income (it is less than total national income). It represents the income available to spend on final consumption (food, clothing, transport, housing), after allocations to the government and for savings. Changes in this variable therefore measure the changes in private consumption valued at current prices.

⁹⁵ No reduction of NTMs in processed foods has been modelled.

coherence work on NTMs in goods, but also – to a higher degree than with National Income and GDP – from tariffs. Direct spill-over effects exert a very limited negative wage effect in both the EU and US – which is to be expected because increased trade with third countries that would get market access by approximating EU and US regulatory systems would lead to a more competitive EU and US market.

Figure 3.5 Decomposition of total high-skilled wage effects for EU and US (% of total effect), ambitious scenario

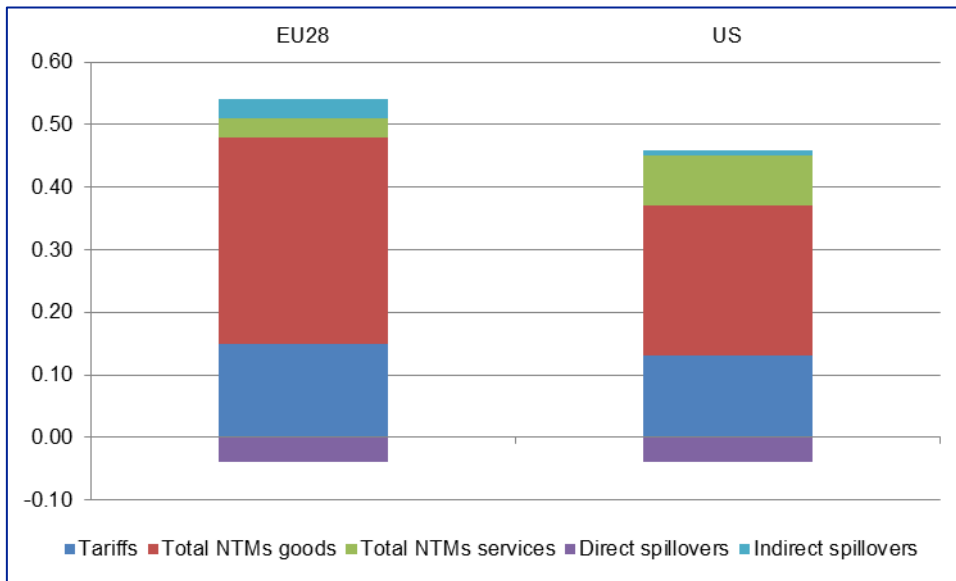


Source: updated results of CEPR (2013).

Figure 3.5 shows that also for low-skilled workers, NTMs in goods and tariffs matter most, and that direct spill-overs have small negative wage effects. Looking at the difference between the disaggregation for high- and low-skilled workers, we see that for the EU low-skilled workers, the positive tariff effect is slightly less strong, while the negative effect of direct spill-overs is marginally larger. For US workers regulatory alignment of NTMs in services is relatively more important for the low-skilled workers and so are tariffs. Also in the US the negative effect on wages of the low-skilled from direct spill-overs is slightly higher than for high-skilled workers.

This means that for both high- and low-skilled workers both NTM alignment in goods and tariffs matter most, but that for low-skilled wages in the US, NTM alignment in services also matter significantly.

Figure 3.6 Decomposition of total low-skilled wage effects for EU and US (% of total effect), ambitious scenario



Source: updated results of CEPR (2013).

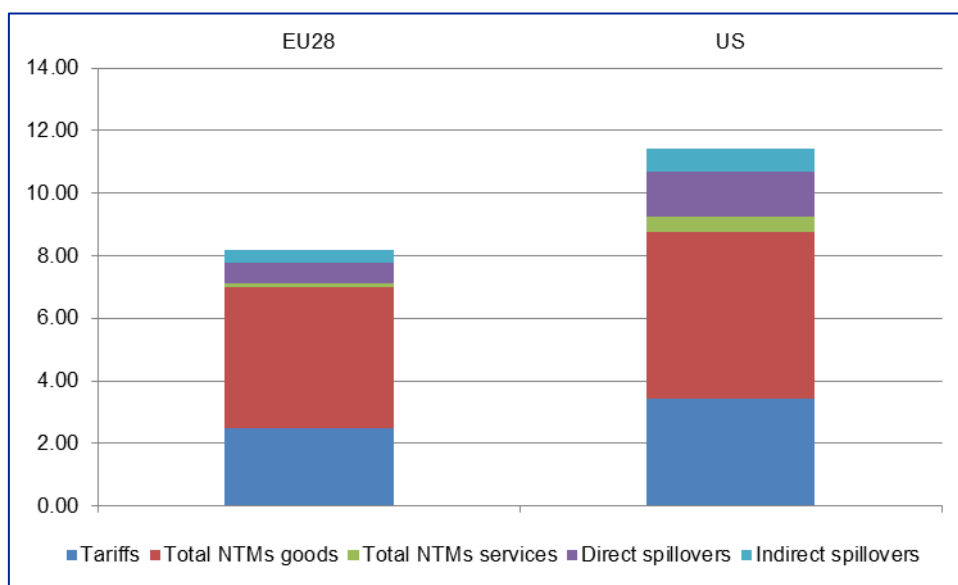
3.2.5. Expected trade effects from TTIP

Total exports

Total extra-EU exports are expected to increase by 4.6 percent and 8.2 percent after the realisation of respectively the less ambitious or ambitious scenario. The most substantial effect comes from the reduction of NTMs on goods, followed by tariff cuts. The prospects for the US are substantially larger in percentage terms: exports are expected to increase by 7.2 percent under the less ambitious scenario and by 11.3 percent under the ambitious scenario. The reduction of NTMs on goods and tariff cuts both contribute significantly to this result. Part of these total trade results are the consequence of increased bilateral trade with each other, but – owing to the existence of Global Value Chains (see Brakman et al., 2015) and more generally, income effects – also third country trade is impacted.

When we disaggregate from what elements of TTIP the export increases originate, we find that the main driver for increased exports is – again – regulatory co-operation to reduce NTMs in goods, followed by tariffs. What is noteworthy, however, is that the tariff effect on exports is higher for the US than the EU, which is not surprising since the initial average tariff faced by US exporters to the EU is higher than the initial average tariff faced by EU exporters to the US. Direct spill-overs also contribute relatively more to US exports than to EU exports. This is shown in Figure 3.6.

Figure 3.7 Decomposition of total export effects for EU and US (% of total effect), ambitious scenario



Source: updated results of CEPR (2013).

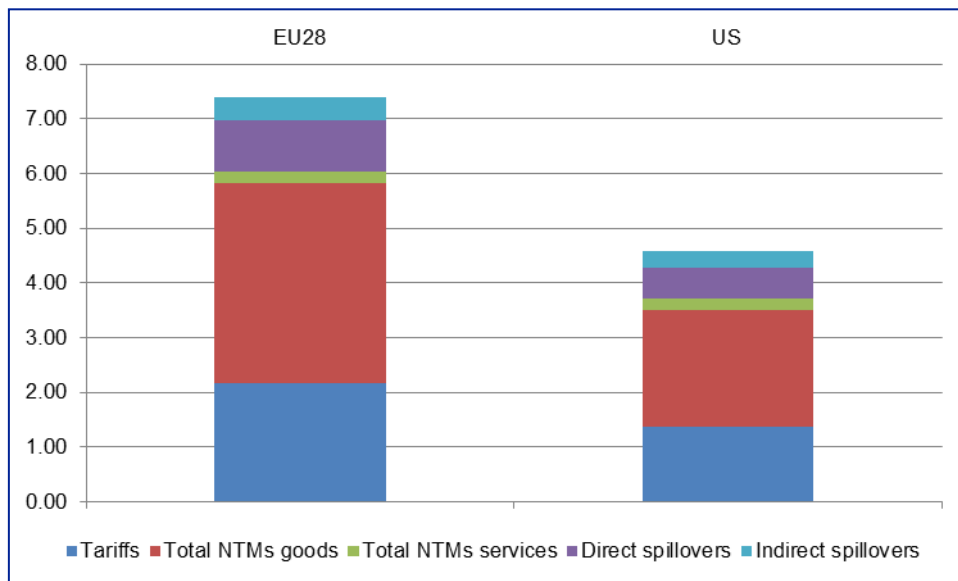
In CEPII (2013), EU exports and US exports are estimated to increase by 7.6 percent and 10.1 percent respectively. As such, CEPII (2013) also found a larger increase of exports for the US compared to the EU. The CEPII (2013) estimates lie in between the estimated effects of the less ambitious and ambitious scenarios from the CEPR (2013) update. The impact reported by Ecorys (2009) is much lower compared to the updated results but this is because intra-EU trade flows were included in the Ecorys study (2009).

Total Imports

For the EU the expected TTIP induced increase of extra-EU imports is 4.0 percent under the less ambitious and 7.4 percent under the ambitious scenario. As with exports, we witness an increase in imports – hence also an increase in total trade – but at a lower relative level. Both EU and US imports are expected to increase less than exports. However, for the US the difference is much larger. The increase in imports can be explained by the increase in income, people have more to spend and can consume more products, i.e. resulting in increased demand. This can result in more imports of final products, as well as in more imports of intermediate products (needed to assemble the final product in the EU). Clearly, the large ambition in reduction of trade barriers and cuts in border protection, and therefore a reduction in trade costs is also a significant factor in the increase of imports and exports.

Looking at how total import effects are built up, we see that NTMs in goods are the main driver for EU and US imports, and so are tariff liberalisation and direct spill-overs. This is depicted in Figure 3.7. For the EU, the reduction in tariffs accounts for 2.18 percentage points of the estimated 7.4 percent increase in imports. The reduction in NTMs in goods accounts for 3.6 percent. For the US these numbers are 1.4 percent and 2.1 percent respectively.

Figure 3.8 Decomposition of total import effects for EU and US (% of total effect)



Source: updated results of CEPR (2013).

The CEPII (2013) result for the EU (a 7.4 percent increase in imports) is similar to the result under the ambitious scenario of the CEPR (2013) update. However, CEPII (2013) predicts an increase of US imports of 7.5 percent, which is much larger than the CEPR (2013) update.

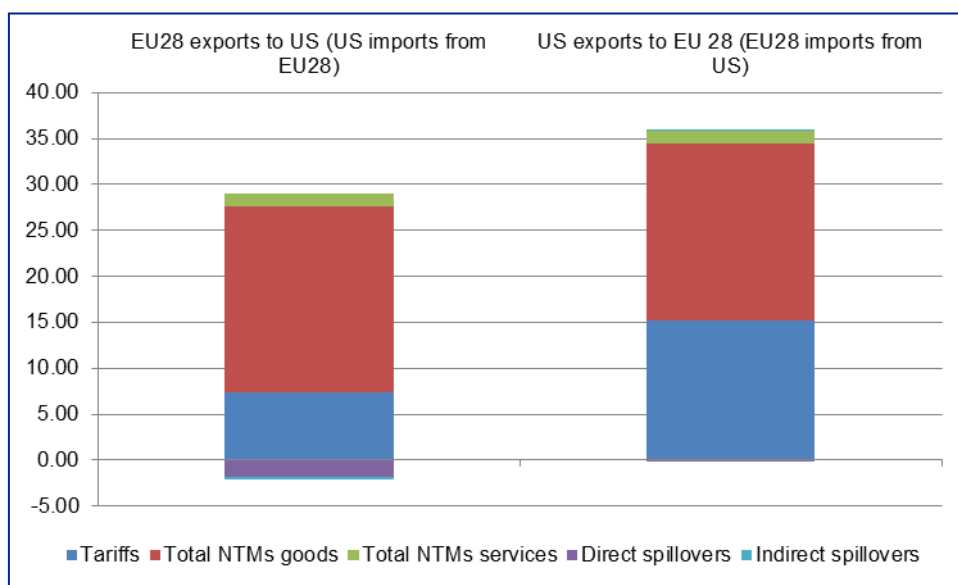
Bilateral trade

The updated results imply that TTIP would substantially increase bilateral EU-US trade. Exports from the EU to the US (i.e. imports of the US from the EU) are estimated to increase by 15.3 percent under the less ambitious scenario and 27.0 percent under the ambitious scenario. The estimated increase of exports from the US to the EU (i.e. imports of the EU from the US) ranges from 22.0 percent to 35.7 percent. In other words, the growth of exports from the US to the EU is expected to be larger than the growth of exports from the EU to the US in relative terms. The same comes out of the CEPII (2013) report, even though the difference is much smaller (3 percentage points in CEPII (2013) compared with 7 to 9 percentage points in the updated results), and growth of bilateral exports in both directions is estimated to be much larger (around a 50 percent increase in bilateral trade in both directions).

As is shown in Figure 3.8, the reduction of NTMs in goods sectors would be the most significant driving force behind these growth rates, followed by the reduction of tariffs. In the ambitious scenario the reduction in tariffs accounts for 7.4 percentage points (of the 27.0 percent) increase of EU exports to the US, and 15.2 percentage points (of the 35.7 percent) increase of US exports to the EU. The numbers for the reduction in NTMs in goods are respectively 20.2 percent and 19.30 percent.

As expected the impact from a reduction in tariffs and NTMs in goods takes up a relatively larger share of the expected impact for bilateral trade than for total imports and total exports. Since only EU and US tariffs and NTMs are reduced they will of course have a larger impact when looking only at EU and US trade instead of extra-EU-world trade and US-world trade.

Figure 3.9 Decomposition of total bilateral trade effects for EU and US (% of total effect)



Source: updated results of CEPR (2013).

Terms of trade

The final trade effect to be reported is the effect of trade liberalisation on the terms of trade. Terms of trade indicate how much exports are worth in terms of imports. The estimated changes in terms of trade are quite small. According to the CEPR (2013) update, the terms of trade for the EU rise by 0.3 to 0.5 percent in the less ambitious and ambitious scenarios, respectively. This means that exports buy 0.3 to 0.5 percent more imports for the EU (i.e. export prices rise more than import prices). The terms of trade for the US worsen marginally by 0.1 percent and 0.3 percent in the less and more ambitious scenarios respectively.

The results from Ecorys (2009) are small and comparable to the updated CEPR (2013) and CEPR (2013) results. A small and positive increase is expected in the EU terms of trade (0.1 percent) and a small but negative impact is expected in the US terms of trade (-0.2 percent).

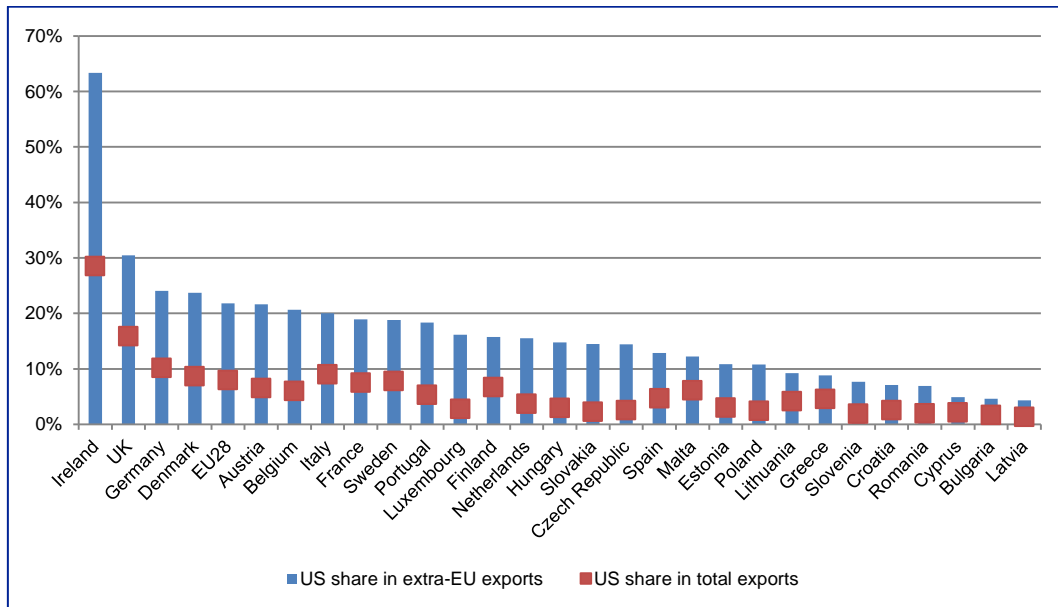
3.3. Macroeconomic impacts for EU Member States

When international trade agreements involving the EU have been discussed and analysed in the past, they have tended to consider the EU as a whole. The TTIP is proving different – as the negotiations have progressed, there have been growing calls to assess the potential impacts at the level of individual Member States. This may be partly explained by the sheer size of the existing current economic relationship between the EU and the US and the anticipated effects.

Before embarking on our analysis of the potential macroeconomic impacts of TTIP for EU Member States, we should reiterate some facts about the methodology. For instance, the modelling results stem from a CGE model that does not include processed food liberalisation in terms of NTMs. Furthermore, the model takes no account of FDI flows, which means results may be underestimated for countries that are an attractive destination for US inward FDI. Potential increases in FDI inflows as a result of TTIP may lead to an even stronger bilateral relationship with the US, which will not appear in the CGE results. Moreover, the removal of certain services NTMs at the EU level will have a larger or smaller effect depending on the

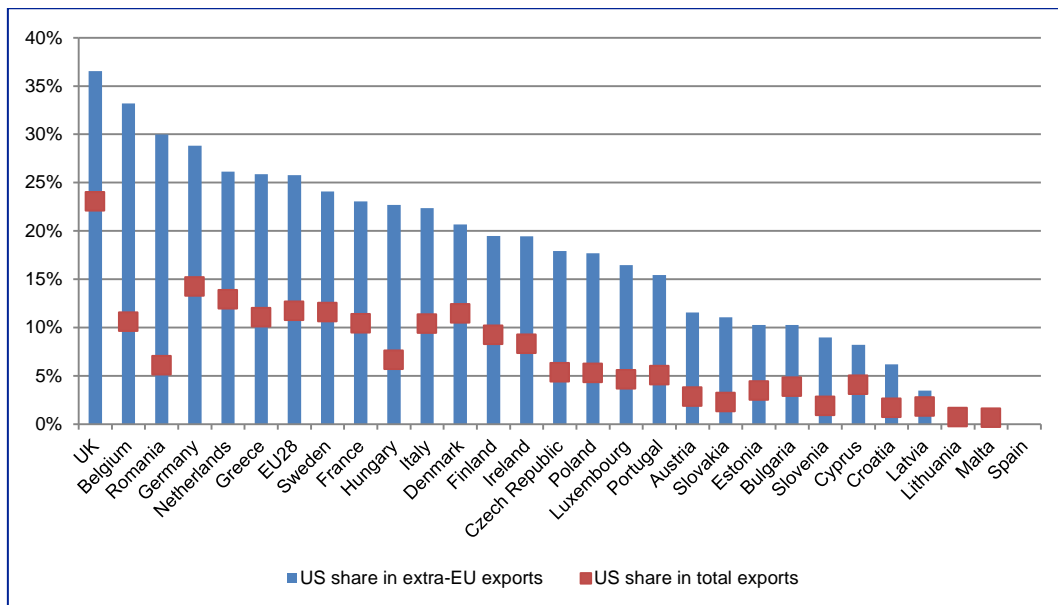
composition of the national economy and on the national legislation regarding these EU-wide NTMs.⁹⁶

Figure 3.10 Share of US in goods exports in total extra-EU exports, %



Source: Eurostat data.

Figure 3.11 Share of US in services exports in total extra EU exports, %



Source: Eurostat data.

In order to facilitate a convenient discussion of the macroeconomic impacts on Member States, they will be grouped into categories for which the effects may have similar explanations. This categorization is based on both geographical specificities, as well as existing trade relations with the US. Table 3.2 summarises these categories. For each of these groups, the estimated changes in GDP⁹⁷, wages and exports and imports are presented for the ambitious scenario.

⁹⁶ For example, if a Member State does not have any restrictions in services trade, but at the EU level there are restrictions, the CGE model will most likely lead to an overestimation of the effect of TTIP on that specific Member State.

⁹⁷ National income will be reported in the Tables too, but since the impact on GDP and National income tends to be similar for most countries, we aim to avoid repetition here and focus on the often-used indicator of GDP in our discussion. In case the effects are too different from one another, we will report

Additionally, a few indicators that provide insight into economic relations are included in the analysis, such as the share of the US in total extra-EU exports for goods and services, as depicted in Figure 3.9 above.

Table 3.2 EU country categorisation

Group	Member States included
Deep commercial ties with US	Belgium, Germany, Ireland, The Netherlands, United Kingdom
South and Southwest Europe	France, Greece, Italy, Portugal, Spain
Other Western Europe	Austria, Denmark, Finland, Luxembourg, Sweden
Large EU-13	Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia
Small EU-13	Croatia, Cyprus, Estonia, Malta, Latvia, Lithuania, Slovenia,

3.3.1. EU MS with deep commercial ties with US

The first group of countries contains EU Member States that are heavily engaged in Transatlantic trade. Among them are the four of the six largest EU trading partners with the US in absolute terms (Belgium, Germany, The Netherlands and the UK)⁹⁸ and Ireland, which has the largest goods trade flow with the US in relative terms.

Table 3.3 Overview of macroeconomic impacts for large trade partners, ambitious scenario

		BE	DE	IE	NL	UK
Baseline trade and FDI structure						
Goods exports to US	% of total extra-EU exports	21.2	22.7	50.7	15.1	26.2
Services exports to US	% of total extra-EU exports	33.2	28.8	19.4	26.1	36.5
FDI stock in US	% of total extra-EU FDI	45.4	41.5	21.9	23.1	35.7
FDI stock from US	% of total extra-EU FDI	16.6	38.4	17.0	35.1	57.3
TTIP Impact						
National Income	% change	0.4	0.5	1.4	0.4	0.4
GDP	% change	1.2	0.6	1.4	0.6	0.5
Wages, less skilled	% change	1.1	0.6	1.6	0.6	0.4
Wages, more skilled	% change	1.0	0.6	1.7	0.6	0.5
Exports to US	% change	28.2	38.3	18.8	16.1	17.8
Imports from US	% change	34.4	60.0	18.0	29.0	28.5

Source: Baseline values; Eurostat for trade, and UNCTAD for investment; and TTIP impacts; updated results of CEPR (2013).

Note: Goods trade data from 2015, services trade data from 2014, investment data from 2012. Estimates to be interpreted as changes relative to the baseline scenario (no TTIP) in 2030, 20 per cent direct spill-overs. BE = Belgium, DE = Germany, IE = Ireland, NL = The Netherlands, UK = United Kingdom.

Given that all five Member States have strong trade relationships with the US, the impact of TTIP on their national income and GDP is likely to be positive. Ireland, with its relatively high dependency on the US for both imports and exports, stands to gain the most; an expected increase in GDP of 1.4 percent. Belgium is expected to undergo a 1.2 percent increase in GDP, although the country's national income (e.g. output produced by Belgians) may only grow by 0.4 percent. For the three larger Member States in this group, GDP effects are expected to be less pronounced, but still marginally above EU28-average.

both. The difference between national Income and GDP in the CGE modelling is discussed at length in box 3.3.

⁹⁸ <https://www.census.gov/foreign-trade/statistics/highlights/toppartners.html>; trade partners number 3 and 4, France and Italy, are included in the Southern European group.

3.3.2. South and south west Europe

The second group consists of five EU Member States that border the Mediterranean Sea: France, Greece, Italy, Portugal and Spain. Transatlantic exports make up around 10-20 percent of the total flow. The share of the US in the investment stocks for these countries ranges from 7 percent of the outflow in Portugal to 40 percent in France for both directions (and 50 percent of the inflow in Greece).

Table 3.4 Overview of macroeconomic impacts for Southern Europe, ambitious scenario

		FR	EL	IT	PT	ES
Baseline trade and FDI structure						
Goods exports to US	% of total extra-EU exports	17.5	10.5	19.3	18.9	12.8
Services exports to US	% of total extra-EU exports	23.0	25.9	22.4	15.4	N/A
FDI stock in US	% of total extra-EU FDI	39.4	14.7	18.7	7.1	19.0
FDI stock from US	% of total extra-EU FDI	38.1	49.6	30.1	18.3	31.2
TTIP Impact						
National Income	% change	0.2	0.2	0.3	0.2	0.2
GDP	% change	0.4	0.5	0.5	0.4	0.4
Wages, less skilled	% change	0.4	0.4	0.5	0.4	0.3
Wages, more skilled	% change	0.4	0.4	0.5	0.4	0.3
Exports to US	% change	24.3	13.6	24.4	27.3	13.5
Imports from US	% change	29.0	27.5	31.9	28.1	26.0

Source: Baseline values; Eurostat for trade, and UNCTAD for investment; and TTIP impacts; updated results of CEPR (2013).

Note: Goods trade data from 2015, services trade data from 2014, investment data from 2012. Estimates to be interpreted as changes relative to the baseline scenario (no TTIP) in 2030, 20 per cent direct spill-overs. FR = France, EL = Greece, IT = Italy, PT = Portugal, ES = Spain.

The impact of TTIP on the GDP of all five countries is an expansion of approximately 0.5 percent, which is similar to the impact on GDP for the EU as a whole. Wages are expected to rise by a similar magnitude, following the pattern of GDP. This follows from the assumption in the model that an increase in output (GDP) leads to a higher demand for labour, resulting in higher wages⁹⁹. This impact is largest in Italy (0.5 percent) and smallest in Spain (0.3 percent).

3.3.3. Other Western Europe

The third group contains the three Scandinavian Member States (Denmark, Finland and Sweden) along with Austria and Luxembourg. In terms of goods and services exports, these countries typically ship between 15 and 20 percent of their exports to the US. Outward FDI makes up a large share of the total investments in Sweden and Finland, whereas it is much smaller in Austria and Luxembourg. On the other hand, inward FDI from the US amounts to between a quarter and a third of the total for four of the countries, with the exception of Luxembourg, where more than 60 percent of the total FDI originates in the US.

⁹⁹ The CGE model uses the fixed labour supply assumption. See for a more elaborate explanation Chapter 1 and Chapter 4.

Table 3.5 Overview of macroeconomic impacts for other Western Europe, ambitious scenario

		AT	DK	FI	LU	SE
Baseline trade and FDI structure						
Goods exports to US	% of total extra-EU exports	21.2	21.7	17.0	16.4	18.5
Services exports to US	% of total extra-EU exports	11.5	20.7	23.0	16.5	24.1
FDI stock in US	% of total extra-EU FDI	9.6	22.8	43.0	12.2	41.8
FDI stock from US	% of total extra-EU FDI	29.8	26.2	21.9	61.3	39.3
TTIP Impact						
National Income	% change	0.8	0.2	0.3	0.4	0.4
GDP	% change	0.9	0.5	0.3	0.9	0.5
Wages, less skilled	% change	0.9	0.6	0.5	0.5	0.6
Wages, more skilled	% change	0.9	0.6	0.5	0.8	0.6
Exports to US	% change	64.5	13.3	26.4	10.5	49.0
Imports from US	% change	59.2	20.3	42.7	10.9	26.5

Source: Baseline values; Eurostat for trade, and UNCTAD for investment; and TTIP impacts; updated results of CEPR (2013).

Note: Goods trade data from 2015, services trade data from 2014, investment data from 2012. Estimates to be interpreted as changes relative to the baseline scenario (no TTIP) in 2030, 20 per cent direct spill-overs. AT = Austria, DK = Denmark, FI = Finland, LU = Luxembourg, SE = Sweden.

The three Scandinavian Member States can expect to see their GDP increase by 0.3-0.5 percent under TTIP, whereas Austria and Luxembourg can expect double that figure. This can be related to the relatively higher degree of (indirect) economic integration with the US for both these countries. More specifically, Austrian firms are well integrated in the German value chain, and export roughly a fifth to the US, and for Luxembourg the services sector relies heavily on the US. Wages are anticipated to rise slightly more than GDP in the Scandinavian countries.

3.3.4. Large EU-13 Member States

The fourth group of countries is compiled of the six larger Member States that have joined the EU since the turn of the century: Bulgaria, Czech Republic, Hungary, Poland, Romania and Slovakia. While these countries are relatively diverse, common trends are apparent in their baseline values. The US is a more important partner for services exports than for goods exports. Moreover, with the exception of Poland, the US is not a significant destination for outward FDI, with Romania and Slovakia at near-zero figures. Inward FDI from the US accounts for more than a third of the total in Poland, and a little over a quarter for the Czech Republic and Romania.

Table 3.6 Overview of macroeconomic impacts for large EU-13 Member States, ambitious scenario

		BG	CZ	HU	PL	RO	SK
Baseline trade and FDI structure							
Goods exports to US	% of total extra-EU exports	4.6	14.2	14.8	10.9	7.3	14.9
Services exports to US	% of total extra-EU exports	10.3	17.9	22.7	17.7	30.0	11.0
FDI stock in US	% of total extra-EU FDI	10.0	7.1	2.9	15.6	0.2	0.2
FDI stock from US	% of total extra-EU FDI	6.2	26.6	10.5	37.1	26.8	13.6
TTIP Impact							
National Income	% change	0.3	0.1	0.2	0.1	0.2	0.3
GDP	% change	0.4	0.2	0.2	0.1	0.3	0.5
Wages, less skilled	% change	0.4	0.1	0.2	0.2	0.2	0.4
Wages, more skilled	% change	0.4	0.2	0.3	0.1	0.2	0.4
Exports to US	% change	31.3	25.9	35.8	25.7	20.3	116.4
Imports from US	% change	73.5	54.5	34.6	31.6	35.8	41.2

Source: Baseline values; Eurostat for trade, and UNCTAD for investment; and TTIP impacts; updated results of CEPR (2013).

Note: Goods trade data from 2015, services trade data from 2014, investment data from 2012. Estimates to be interpreted as changes relative to the baseline scenario (no TTIP) in 2030, 20 per cent direct spill-overs. BG = Bulgaria, CZ = Czech Republic, HU = Hungary, PL = Poland, RO = Romania, SK = Slovakia.

These newer Member States are all at or below the EU average in terms of expected GDP change. Indeed, Slovakia and Bulgaria come close to the EU average of 0.5 percent, but Poland and the Czech Republic see only marginal increases in their GDP. This may not be caused only by the relatively low economic integration with the US, but also because electrical machinery is a relatively important export sector of these countries while the output of this sector in the EU will, it is anticipated, be negatively affected, as we will see in a later chapter.¹⁰⁰ Similarly, the exclusion of the NTM reduction in the processed food may play a significant part in these findings, as benefits from reduced NTMs in the processed food sector do not show up in these results, but may exist in reality. The processed food sector accounts for an important part of the value added and exports in the listed economies. Wage changes are, again, estimated to be of similar magnitude as it follows changes in GDP. One remarkable finding is the scale of the projected increase in Slovakian exports to the US.

3.3.5. Small EU-13 Member States

The last group consists of the smaller Member States that joined the EU in 2004, 2007 and 2013. It is important to mention that the impact and baseline value are therefore based on relatively small absolute values. Goods and services exports to the US tend to account for about 5-12 percent of the total. Outward FDI seldom ends up in the US, whereas inward FDI from the US is 35 percent for Cyprus and less than 15 percent for the other six countries.

¹⁰⁰ Author's calculations using Eurostat data indicate that in 2014, for Poland and the Czech Republic, the share of electrical machinery exports relative to total goods exports amounts to approximately 12 percent and 17 percent, respectively.

Table 3.7 Overview of macroeconomic impacts for small EU-13 Member States, ambitious scenario

		HR	CY	EE	LV	LT	MT	SI	
Baseline trade and FDI structure									
Goods exports to US	% of total extra-EU exports	6.8	3.7	12.6	4.5	11.4	10.6	7.4	
Services exports to US	% of total extra-EU exports	6.2	8.2	10.3	3.5	1.5	0.8	9.0	
FDI stock in US	% of total extra-EU FDI	0.7	1.3	9.6	N/A	N/A	N/A	1.2	
FDI stock from US	% of total extra-EU FDI	19.0	35.9	12.8	8.9	5.0	0.3	2.0	
TTIP Impact									
National Income	% change	0.1	0.3	0.2	0.3	0.4	0.2	0.1	
GDP	% change	0.2	0.7	0.3	0.4	1.1	0.1	0.3	
Wages, less skilled	% change	0.2	0.6	0.1	0.4	1.1	0.9	0.2	
Wages, more skilled	% change	0.2	0.6	0.2	0.4	1.2	0.9	0.3	
Exports to US	% change	9.3	5.5	13.8	11.7	21.6	22.5	24.0	
Imports from US	% change	35.0	24.2	49.2	105.1	198.6	14.6	31.8	

Source: Baseline values; Eurostat for trade, and UNCTAD for investment; and TTIP impacts; updated results of CEPR (2013).

Note: Goods trade data from 2015, services trade data from 2014, investment data from 2012. Estimates to be interpreted as changes relative to the baseline scenario (no TTIP) in 2030, 20 per cent direct spill-overs. HR = Croatia, CY = Cyprus, EE = Estonia, LV = Latvia, LT = Lithuania, MT = Malta, SI = Slovenia.

There is a large variety in expected GDP effects for these Member States; ranging from 1.1 percent for Lithuania to a mere 0.1 percent in Malta. The Lithuanian finding is most surprising, especially if one looks at neighbouring Estonia and Latvia, both of which are forecast to experience smaller GDP increases. One explanation may be that agriculture accounts for a larger proportion of Lithuania's economy than most other Member States. TTIP may therefore make inputs in that sector cheaper, helping to boost output at a lower cost. In terms of percentage changes in trade flows (especially imports for the Baltic states), it should be reiterated that the absolute baseline values are small. An explanation for the small increase in GDP for Malta can arguably be found in the size of economic ties between Malta and the US, which is relatively small. Moreover, the electrical machinery sector declines significantly (EU28 result), which in Malta accounts for a reasonable share in their export mix. However, benefits such as lower import prices will still increase welfare in Malta (as it will in any other Member State).

3.3.6. Overall findings

As it turns out, the intensity of trade with the US seems to be an important explanation for the different GDP effects. This should not come as a surprise, if one heavily relies on a trade partner with which barriers still exist, trade will flourish even more upon removal of said barriers and there will be increases in output and in demand for labour. The position of Member States in the intra-industry value chain in the EU can explain why exports need not increase for GDP to go up, as was also found in a study by the World Trade Institute (2016).

Overall, the expected TTIP impact in terms of wage changes is positive for all EU Member States, both for skilled and less skilled workers. The change in wages is partly related to the expected impact on GDP, as the long-run law of supply and demand stipulate that higher output requires more labour, which in turn pushes up wages due to the higher demand. It is not surprising, therefore that the Member States that are expected to gain most in terms of their overall economies are also the countries expected to gain most in terms of wage changes.

These results imply that – for some EU Member States more than others – the US will become increasingly important as a trading partner. Imports will increase by more than exports, which means that there may be a small degree of trade diversion from EU MS to the US. It is important to note at this point that the trade surplus of the EU as a whole with the US remains. The wide variation in impact shows that bilateral trade between EU Member States and the US is asymmetrically affected across the EU, something that would not have become visible without disaggregation at EU Member State level.

3.3.7. Results from other literature

In addition to the aforementioned updated results, several studies have been performed for individual Member States. These studies include the Copenhagen Economics study on Ireland (2015), CEPR study on the UK (2013), Kommerskollegium study (2012) on Sweden, FIW study (2013) on Austria, the Ifo Institut study (2013) on Germany, the Ecorys (2012) study on the Netherlands, CEPR (2013) on Poland and the CEPII (2013) study that includes France. We will briefly discuss the main results from these studies as presented in the table below and compare them – where possible – to the findings of the update results of CEPR (2013) for those EU Member States that we present in brackets and in Italics underneath.

Table 3.8. Overview of macro impacts of TTIP on EU MS from other literature, % change

	AT ¹⁰¹	DE ¹⁰²	FR ¹⁰³	IE ¹⁰⁴	NL ¹⁰⁵	PL ¹⁰⁶	SE ¹⁰⁷	UK ¹⁰⁸
National income (CEPR update results)	1.7 (0.8)	4.7 ¹⁰⁹ (0.5)			0.7 ⁹ (0.4)		0.2 (0.4)	0.4 (0.4)
GDP (CEPR update)			0.2 (0.4)	1.1 (1.4)		0.2 (0.1)		0.4 (0.5)
Wages skilled (CEPR update)	1.1 (0.9)	1.6 ¹¹⁰ (0.6)		1.2 (1.7)		0.3 (0.1)		0.5 (0.5)
Wages low skilled (CEPR update)	1.0 (0.9)	1.6 (0.6)		1.9 (1.6)		0.3 (0.2)		0.5 (0.4)
Exports			2.6	3.8	1.7	1.2	0.3	2.9
Imports			2.5	4.3	1.8	1.1	0.3	2.5

Most studies differ in the scenarios simulated (as indicated underneath the table), but all rely – except for the Ifo Institut study – on CGE methodologies (although not necessarily the same model). With the exception of the studies on Ireland and the UK, these other studies are very limited in the results they present at the macro level.

The first thing to note is that all results are positive, despite the variety in study methods, assumptions, scenarios and techniques. It is also clear that some Member States are expected to gain more than others. The study on Austria predicts larger impacts than the CEPR (2013) updated results. The difference in wage effects are only marginal, however for national income the study on Austria estimates an effect twice as large (1.7 percent versus 0.8 percent) than that found in the CEPR (2013) updated results. Also, the study on the German economy estimates larger impacts than the updated CEPR (2013) results do. The impact on national income is remarkably high: 4.7 percent versus 0.5 percent. These differences can be explained by the use of a completely different methodology, as has been discussed in Chapter 1 and the Annexes. The expected impacts for Ireland, Sweden and France on the other hand are slightly lower compared with the CEPR (2013) updated results. When we look across variables, per EU Member State, based on the above results, Ireland is expected to gain most compared with the other six countries.

The Polish study allows for a deeper analysis of the effect of the exclusion of the NTM reduction in the processed food sector. The results for Poland in Table 3.8 display the split-out impact of TTIP on GDP, based on the CEPR (2013) model and assumptions. It seems that the expected GDP impact is double the size when NTMs are reduced in the processed food sector (e.g. 0.2 percent as opposed to 0.1 percent in the updated CEPR (2013) results).

¹⁰¹ Scenario: 50% reduction of actionable trade barriers (equals 25% of all trade barriers). CGE model used.

¹⁰² Comprehensive scenario, complete reduction of tariffs and additional creation of a single market. Structurally estimated general equilibrium model used.

¹⁰³ Scenario: 100% tariff reduction, removal of 100% scanning requirement, 25% reduction in trade restrictiveness of NTMs.

¹⁰⁴ Same scenario as CEPR (2013), CGE model used.

¹⁰⁵ Ambitious scenario, alignment of all actionable NTBs (equals 50 of all NTBs), CGE model used.

¹⁰⁶ Same scenario as CEPR (2013), CGE model used.

¹⁰⁷ Comprehensive scenario, 50% reduction of NTBs. CGE model used.

¹⁰⁸ Modified ambitious scenario, 100% tariff reduction, 50% reduction of actionable NTBs, 75% NTBs in chemicals, motor vehicles, and business and ICT services.

¹⁰⁹ Real income.

¹¹⁰ Real wage.

3.3.8. Expected impact of TTIP on the EU's Outermost Regions

There are nine EU Outermost Regions (OR), as referred to in Article 349 of the TFEU. These regions are:

- Azores and Madeira (Portugal);
- The Canary Islands (Spain);
- Guadeloupe; French Guiana; Martinique; La Reunion; Saint-Martin and Mayotte (France).

The OR are located in different geographical basins: the Atlantic Ocean, Caribbean, Amazonia and Indian Ocean. They range from 51 km² in size (Saint Martin) to 83,846 km² (French Guiana), which is about twice the size of The Netherlands. The Outermost Regions are constrained by several factors such as; *inter alia*, remoteness, small size (being in most cases island economies), climate and dependence on only a few products or services. Table 3.9 below provides an overview of the GDP per capita of the EU ORs according to the latest figures available, with the lowest found in Mayotte.

Table 3.9 2014 GDP (PPS) of the EU Outermost Regions

Outermost Region	GDP per capita (EU =100)
Azores	71
Madeira	73
Canary Islands	78
Guadeloupe	73
French Guiana	58
Martinique	77
La Reunion	70
Saint-Martin	N.A. ¹¹¹
Mayotte	31

Source: Eurostat.

In a policy letter on TTIP, the Canary Islands expressed their concerns regarding a number of issues. The first dealt with their desire to retain their particular treatment of taxes and tariffs to offset the additional costs imposed on producers due to their remoteness and to safeguard their primary sector.¹¹² More specifically, the concern expressed by the Canary Islands predominantly focused on the protection of production, competitive position and exports of bananas and tomatoes.¹¹³ Likewise, the French Outermost Regions identified sugar, rum and bananas as their defensive interests at stake in TTIP.¹¹⁴ A common OR issue is how TTIP deals with Geographical Indications (GIs) and Designations of Origins (DOs), both of which need to be safeguarded. For example, the GI of Madeira is valuable, as the US is the final destination for 25 percent of the extra-EU exports of wine, mostly in the premium segment.¹¹⁵

For most of the ORs the main sectors of economic activity are the agri-food sector (bananas, sugar, rum and milk), fisheries, the tourism sector and public works. Due to their remoteness the ORs mainly trade with their nearest neighbours, their Spanish, Portuguese or French mother countries and the rest of the EU.

Trade relations between the US and the Autonomous Region of the Azores in 2011 resulted in a trade deficit for the Azores of some 10 million euros. Bilateral exports towards the US totalled 4.6 million, whereas imports were valued at 14.7 million. In terms of exports, especially dairy

¹¹¹ As regards Saint Martin, GDP per capita in Saint-Martin was estimated to EUR 14,700 in 2010 (current prices) well below the national average and lower than Guadeloupe (source: IEDOM report Saint Martin 2015).

¹¹² http://ec.europa.eu/taxation_customs/taxation/other_taxes/canary_islands/index_en.htm

¹¹³ Policy letter by the Government of the Canary Islands on June 4, 2015.

¹¹⁴ Note EURODOM, a note identifying the interests of the French OR in light of TTIP.

¹¹⁵ Contribution of the Autonomous Region of Madeira on TTIP between the EU and the US.

products (especially cheese) were relevant, some 30 percent of the export value can be attributed to this sector.¹¹⁶

Similar trade patterns can be found in the trade relations between the French OR and the US. Martinique reported a trade deficit of some 180 million euros in 2014. In that same year, Guadeloupe had a trade deficit of 234 million euros in that same year, when petroleum imports at 237 million euros trumped exports at 3 million euros (of which 80 percent is exported to France, only 1 percent to North America¹¹⁷). For French Guiana, the US was the third most important import partner at 94 million euros, whereas imports amounted to only 6 million. Due to the geographical distance between Reunion and the US, only 3 percent of the exports go to the US, mostly fish.¹¹⁸

Since the ORs are not included in the CGE modelling, it is not possible here to establish the potential impacts TTIP might have. However, as this agreement covers products produced in the ORs, it will be important that, during negotiations, their specific situation and economies are taken into account. This is also relevant to the Overseas Countries and Territories (OCTs) of the EU, of which Greenland, New Caledonia, Saint-Pierre et Miquelon and possibly also the Netherlands Antilles, and French Polynesia have important trade links with the EU and/or US.

3.4. Sectoral impacts of TTIP for the EU and US

In order to understand better the underlying changes of the macroeconomic effects within the EU and US economies as a consequence of TTIP, we now move on to the disaggregated sector specific changes in output, employment and trading patterns. As with the overall macroeconomic analysis, we will use the available quantitative modelling results at sector level from the 2015 update of the CEPR (2013) study.¹¹⁹ Tables 3.10, 3.11, and 3.12 show the expected impacts of TTIP on output, employment, exports and imports at a sectoral level for the agricultural/primary, manufacturing and services sub sectors. As in the previous section, we distinguish between the impact following the implementation of either a less ambitious or an ambitious comprehensive TTIP agreement¹²⁰. Here, discussion will focus mainly on the ambitious scenario. As indicated earlier, it is important to keep in mind that no reduction of NTMs in the processed food subsectors has been modelled, which could result in expected impacts that are underestimated.¹²¹

3.4.1. Relative importance of the EU and US sectors

Before discussing the outcomes of the CGE modelling at sector level, we will first have a look at the relative importance of the EU and the US sectors. The expected impacts of TTIP are presented in percentage changes, but without knowing the size and importance of a sector the percentage changes don't tell us the full story. Tables 3.10 and 3.11 present the 2011 baseline value added and output figures of the sectors in the EU and in the US, in million euros and in percentage share of total value added and output.

In the EU the majority of value added is generated in the service sectors, 7,994 of the 10,853 billion euro (73.7 percent). The other services (29.8 percent), business services (15.5 percent), distribution (7.2 percent) and construction (6.6 percent) sectors have contributed the most. Of the remainder of total value added around 22 percent is attributed to the manufacturing sector and 4 percent to the agriculture and primary sector. Within the manufacturing sector the largest shares of value added can be found in the following sectors: other machinery (4.3 percent), chemicals (3.3 percent), wood and paper products (2.3 percent), fabricated metals, (1.8

¹¹⁶ These figures are reported in a paper from the cabinet of the state secretary of foreign affairs of the autonomous region of the Azores on the identification of interests of the Azores in the TTIP negotiations.

¹¹⁷ Shares of exports to France and North America is 2011. Source: http://www.guadeloupe.cci.fr/fileadmin/document/S_informer/Etudes_eCONOMIQUES/Commerce_exterieur_Guadeloupe_EN.PDF.

¹¹⁸ Note Eurodom, a note identifying the interests of the French OR in light of TTIP.

¹¹⁹ Where possible, sector results from CEPR (2013) were compared to its updated results. No extraordinary changes were identified.

¹²⁰ See footnotes *a* and *b* in Table 3.1.

¹²¹ These subsectors are: Ruminant meats, Other meats, Vegetable oils, Dairy products, Rice, Sugar, Other processed foods, and Beverages & tobacco.

percent), and motor vehicles (1.6 percent). The manufacturing sectors with the lowest share in value added, ranging from 0.0 to 0.5 percent, include food sectors (rice, sugar, meat), non-ferrous metals, and leather-clothing-textile products. The energy sector has the largest share of value added within the agriculture and primary sectors, 2.6 percent.

The share of value added of the services sectors is slightly larger in the US, 79.0 percent or 8,245 out of the 10,441 billion euro. The other services industry generated 32.1 percent of total value added, distribution services 12.7 percent, business services 10.4 percent, and financial services 7.7 percent. The share of value added generated in the manufacturing sectors is only 17 percent. The sectors that added the most value are almost the same as in the EU: other machinery (3.6 percent), chemicals (2.7 percent), wood and paper products (2.4 percent), fabricated metals (1.1 percent), motor vehicles (0.9 percent), and other processed foods (0.9 percent). Within the agriculture and primary sectors, the energy sector has the largest share in value added, 3.0 percent.

Table 3.10 Baseline value added in million euros and percentage share, 2011

	European Union		United States	
	Million €	Shares	Million €	Shares
Cereals, other grains	29,678	0.3%	31,470	0.3%
Vegetables and fruits	41,983	0.4%	27,166	0.3%
Other primary agriculture	84,119	0.8%	46,156	0.4%
Other primary	59,850	0.6%	29,576	0.3%
Energy	284,161	2.6%	313,986	3.0%
Ruminant meats	14,007	0.1%	21,152	0.2%
Other meats	36,856	0.3%	17,150	0.2%
Vegetable oils	9,783	0.1%	1,762	0.0%
Dairy products	71,009	0.7%	23,296	0.2%
Rice	2,412	0.0%	1,860	0.0%
Sugar	9,866	0.1%	1,879	0.0%
Other processed foods	151,893	1.4%	99,058	0.9%
Beverages, tobacco	81,488	0.8%	38,246	0.4%
Textiles	57,093	0.5%	43,009	0.4%
Clothing	49,565	0.5%	22,396	0.2%
Leather products	26,871	0.2%	4,411	0.0%
Wood and paper products	253,063	2.3%	255,783	2.4%
Chemicals	359,072	3.3%	283,390	2.7%
Iron and steel products	72,317	0.7%	50,516	0.5%
Non-ferrous metals	44,631	0.4%	30,559	0.3%
Fabricated metals	194,858	1.8%	116,897	1.1%
Motor vehicles	174,364	1.6%	98,131	0.9%
Other transport equipment	72,371	0.7%	82,268	0.8%
Electrical machinery	82,514	0.8%	51,928	0.5%
Other machinery	467,210	4.3%	377,206	3.6%
Non metallic mineral products	95,256	0.9%	53,170	0.5%
Other manufactures	82,224	0.8%	33,660	0.3%
Construction	719,016	6.6%	655,640	6.3%
Distribution	784,547	7.2%	1,329,204	12.7%
Land other transport	306,266	2.8%	215,736	2.1%

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Water transport	39,617	0.4%	24,342	0.2%
Air transport	36,533	0.3%	52,392	0.5%
Communications	268,136	2.5%	223,809	2.1%
Finance	393,545	3.6%	804,311	7.7%
Insurance	103,223	1.0%	202,746	1.9%
Business services	1,682,651	15.5%	1,081,301	10.4%
Personal services	377,769	3.5%	346,304	3.3%
Other services	3,232,924	29.8%	3,349,106	32.1%
Total	10,852,741	100.0%	10,440,971	100.0%

Source: GTAP 9 database

In terms of output, services still make up the largest share, but not as much as in terms of value added. In the EU services make up 62 percent of total output, in the US this equals 68 percent. In the EU, the services and manufacturing sectors that have the largest shares in output are the same sectors as for value added, though the height of the shares differs slightly. Also in the US, the most important services sectors in terms of output are the same sectors as in terms of value added. Within the manufacturing sectors, however, the electrical machinery sector has become much more important.

Table 3.11 Baseline output in million euros and percentage share, 2011

	European Union		United States	
	Million €	Shares	Million €	Shares
Cereals, other grains	55,078	0.2%	67,596	0.3%
Vegetables and fruits	62,812	0.3%	50,674	0.3%
Other primary agriculture	179,442	0.7%	126,263	0.6%
Other primary	125,364	0.5%	56,889	0.3%
Energy	1,082,950	4.5%	1,074,394	5.4%
Ruminant meats	51,855	0.2%	85,645	0.4%
Other meats	127,198	0.5%	69,568	0.3%
Vegetable oils	33,163	0.1%	17,819	0.1%
Dairy products	278,649	1.2%	100,937	0.5%
Rice	4,387	0.0%	6,032	0.0%
Sugar	16,758	0.1%	10,535	0.1%
Other processed foods	445,711	1.8%	277,078	1.4%
Beverages, tobacco	250,309	1.0%	111,396	0.6%
Textiles	174,464	0.7%	122,388	0.6%
Clothing	148,701	0.6%	87,368	0.4%
Leather products	83,257	0.3%	12,358	0.1%
Wood and paper products	704,024	2.9%	584,785	2.9%
Chemicals	1,206,748	5.0%	776,245	3.9%
Iron and steel products	287,888	1.2%	151,521	0.8%
Non-ferrous metals	190,806	0.8%	127,831	0.6%
Fabricated metals	510,742	2.1%	279,512	1.4%
Motor vehicles	795,400	3.3%	442,481	2.2%
Other transport equipment	275,807	1.1%	197,671	1.0%
Electrical machinery	302,809	1.3%	401,909	2.0%
Other machinery	1,375,289	5.7%	827,014	4.2%
Non metallic mineral products	268,321	1.1%	115,699	0.6%

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Other manufactures	233,240	1.0%	84,964	0.4%
Construction	1,728,093	7.1%	1,286,050	6.5%
Distribution	1,872,509	7.7%	2,206,186	11.1%
Land other transport	1,037,425	4.3%	523,853	2.6%
Water transport	213,479	0.9%	59,487	0.3%
Air transport	208,496	0.9%	188,372	0.9%
Communications	511,826	2.1%	412,459	2.1%
Finance	817,637	3.4%	1,216,506	6.1%
Insurance	298,776	1.2%	408,914	2.1%
Business services	3,081,430	12.7%	1,656,582	8.3%
Personal services	672,709	2.8%	964,991	4.9%
Other services	4,484,673	18.5%	4,688,018	23.6%
Total	24,198,225	100.0%	19,877,988	100.0%

Source: GTAP 9 database

3.4.2. Expected sector level output effects from TTIP

As Table 3.12 shows, the expected impact of TTIP on output in agriculture and other primary sectors is generally small. Production in the agricultural sector specifically, is virtually unaffected. Only in the energy sector there is a notable positive effect of 0.5 percent for both the EU and US. Output changes across primary sectors are consistently higher in the US than in the EU (under the ambitious scenario), even though the difference is only marginal.

Within manufacturing, the table shows that the largest output growth in the EU is expected to be in the leather products sector (2.7 percent). Output will also grow by more than 1 percent in: beverages and tobacco (1.1 percent), motor vehicles (1.5 percent), clothing (1.8 percent) and textiles (1.8 percent). Although the largest percentage increase is expected to be in the leather, clothing and textiles sectors, because of their small baseline values (see Table 3.10 and 3.11), the absolute changes in these sectors are, relatively speaking, still small. A small baseline value in combination with relatively high tariffs that are still in place can result in substantial percentage estimates for output changes. Also in the automotive sector and beverages & tobacco sector there are still relatively high tariffs in place, however, contrary to the leather, clothing and textiles sectors, they are the two largest sectors in the EU in terms of production value. It are also sectors where the EU has a comparative advantage, therefore it is not surprising that larger gains are expected here. When decomposing the results we see that the textiles, clothing and leather products sectors mainly benefit from the reduction of tariffs whereas the automotive sector mainly benefits from a reduction in NMTs in goods.

There are, however, also sectors that are expected to see a decline in output. The output of electrical machinery is estimated to contract by 7.9 percent, and that of iron & steel, and non-ferrous metals, is expected to fall by 2.5 percent and 3 percent respectively as a result of the agreement. It appears that these sectors are hit harder by increased competition after a reduction of tariffs and NTMs. A decomposition of the impact shows indeed that the negative impact for these three sectors is mainly driven by direct spill-overs. Third countries can benefit from more aligned EU and US regulation and consequently trade less costly with these two countries. The electrical machinery, iron & steel, and non ferrous metal sectors clearly lose out because of this. Additionally, because the electrical machinery sector is expected to be impacted negatively we would expect upstream sectors such as iron & steel and fabricated metals to also lose out. The expected negative impact in the electrical machinery sector might seem rather higher, however a quick look at Tables 3.10 and 3.11 shows that baseline values are relatively small. For example, the electrical equipment only contributes 0.8 percent to total value added in the EU. The share of iron & steel and non-ferrous metals is even lower, 0.7 and 0.4 percent respectively. Consequently an expected impact of -0.8 in the fabricated metals sector (with a share of 1.8 percent) could have a larger effect.

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In the US, the largest gains in terms of output are expected in the non-ferrous metals sector (3.2 percent), other meats sector (2.2 percent), other machinery (1.5 percent) and rice (1.1 percent). The non-ferrous metals, other meats and rice sectors largely benefit from a reduction in NTMs in goods. Still these sectors only make a small share of US total value added (together 0.5 percent) and total effects thus likely to be small. The other machinery sector on the other hand has the largest share in value added in manufacturing (3.6 percent of total US value added) and the overall effect is thus likely to be larger than in the other meats sector. For the same reasoning an expected impact of 0.6 percent in the other transport equipment sector could have a similar effect, given its relative large share in value added (1.0 percent).

Sectors that are expected to shrink most in relative terms include beverages and tobacco, electrical machinery and motor vehicles, with expected negative growth rates of 2.6 percent, 2.4 percent and 2.9 percent respectively. The US has a comparative disadvantage in the beverages & tobacco sectors (whereas the EU has a large comparative advantage).¹²² The negative change in output in the beverages and tobacco, and motor vehicle sector is caused by the reduction of NTMs in goods and the direct spill-overs. For the electrical machinery sector, the direct spill-overs are the main reason for the negative impacts. As for the EU sector it is likely that the US sectors cannot face the (increased) competition from third countries. In order to relativise these numbers we compare them with the baseline values presented in Table 3.10. The beverages and tobacco, and electrical machinery sector are of relative small importance and add respectively only 0.4 and 0.5 percent to US value added. The total effect on output is therefore expected to be rather small. With a value added share of 0.9 percent, the effect on output in the motor vehicle sector is expected to be more significantly. Similarly, the expected impact on the wood and paper products (-0.1 percent), and chemical sector (-0.4 percent) is relatively small, but given their high shares in value added (2.9 percent and 3.9 percent), the total effect on output of these sectors is likely to be more significant. Besides the sectors highlighted, other sectors are not affected significantly regarding output change: these sectors see their output either decline or rise to a very limited extent.

Output changes in the EU services sector are positive across all sub-sectors but also small. The insurance and water transport sectors are expected to see the largest growth in their output (growth rates of 0.8 percent and 0.9 percent respectively). In the US, output growth rates are similarly close to zero. For finance and insurance, small but negative growth rates are estimated.

Table 3.12 Expected sectoral impact on output (% change)

Sector	EU – less ambitious	EU – ambitious	US – less ambitious	US – ambitious
Agriculture and other primary				
Cereals, other grains	0.0	0.0	0.0	0.3
Vegetables and fruit	-0.1	-0.1	0.0	0.1
Other primary agriculture	0.2	0.1	-0.1	0.5
Other primary	0.0	0.0	0.0	0.1
Energy	0.5	0.5	-0.1	0.5
Manufacturing (including food processing)				
Ruminant meats	-0.3	-0.5	0.0	0.4
Other meats	0.0	-1.0	0.2	2.2
Vegetable oils	0.4	0.5	-0.5	0.0
Dairy products	0.4	0.3	-0.3	0.2
Rice	-0.1	-0.6	0.0	1.1
Sugar	0.4	0.4	-0.1	0.2
Other processed foods	0.3	0.4	0.0	0.4
Beverages, tobacco	0.7	1.1	-1.4	-2.6
Textiles	1.7	1.8	-0.4	0.6

¹²² European Competitiveness report 2014

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Sector	EU – less ambitious	EU ambitious –	US – less ambitious	US ambitious –
Clothing	1.8	1.8	-0.8	0.3
Leather products	2.4	2.7	-1.4	0.2
Wood and paper products	0.1	0.1	-0.1	-0.1
Chemicals	0.1	0.3	0.2	-0.4
Iron and steel products	-0.7	-2.5	-1.9	-1.4
Non-ferrous metals	-1.1	-3.0	0.9	3.2
Fabricated metals	0.0	-0.8	-1.4	-1.1
Motor vehicles	0.2	1.5	-0.6	-2.9
Other transport equipment	-0.1	0.0	0.5	0.6
Electrical machinery	-4.0	-7.9	-2.5	-2.4
Other machinery	0.5	0.4	0.5	1.5
Non-metallic mineral products	0.5	0.7	-0.6	-0.2
Other manufactures	0.7	0.7	0.4	0.5
Services				
Construction	0.3	0.5	0.2	0.3
Distribution	0.4	0.5	-0.1	0.1
Land other transport	0.4	0.5	-0.1	0.2
Water transport	0.5	0.9	0.2	0.4
Air transport	0.3	0.4	0.1	0.4
Communications	0.1	0.1	0.1	0.3
Finance	0.2	0.4	-0.1	-0.1
Insurance	0.4	0.8	-0.3	-0.5
Business services	0.1	0.2	0.0	0.1
Personal services	0.1	0.2	0.1	0.3
Other services	0.1	0.3	0.1	0.2

Source: updated results of CEPR (2013).

Note: Estimates to be interpreted as changes to the baseline scenario (no TTIP) in 2030, 20 per cent direct spill-overs.

3.4.3. Expected sector level employment effects from TTIP

As Table 3.13 shows, changes in employment for skilled- and less-skilled labour are very similar in agricultural and other primary sectors. In general, the estimated effect is relatively small. Also, changes in employment correspond to changes in output. In agriculture, no more than 0.7 percent of employment growth for either less or more skilled labour against the baseline is expected to occur after trade liberalization. Growth rates are – in accordance with output changes – consistently higher in the US than in the EU. In the EU, employment growth is largest in the energy sector (0.3 percent for both less skilled and more skilled). In the US, other primary agriculture is expected to be growing fastest in terms of employment (0.6 percent for less skilled labour, 0.7 percent for more skilled labour).

The biggest percentage increase of employment in EU manufacturing sectors is expected to occur in the leather products sector (2.2 percent less skilled and 2.3 more skilled), followed by textiles (1.5 percent) clothing (1.5 percent) and beverages and tobacco (0.8 percent). The biggest decline is expected in electrical machinery (7.5 percent). In addition, the non-ferrous metals sector and iron and steel sector are expected to see a significant decline of 3.0 and 2.6 percent respectively for both more skilled and less skilled labour. The expected changes in employment are linked to the expected changes in sectoral output. If a sector's output is

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expected to increase, more labour is also needed to bring about this increase in output. The contrary holds for an expected decrease in output. Since leather products, textiles, clothing and beverages and tobacco are expected to experience the biggest increase in output due to TTIP, it is not surprising that the largest increases in employment are also expected in these sectors. The same logic holds for the electrical equipment, non-ferrous metal and iron and steel sectors, which are expected to see a (substantial) decrease in their output and thus will require less labour.

A similar story holds for the US. The non-ferrous metals sector is expected to expand its employment by 2.9 percent. The expected changes in the other meat, other machinery and rice sector are respectively 2.1 percent, 1.4 percent, and 1.3 percent. In contrast, a significant (2.8 percent) contraction in motor vehicles sector can be expected, as well as in beverages & tobacco (2.6 percent), electrical machinery (2.4 percent), iron and steel products (1.5 percent) and fabricated metals (1.1 percent). For the primary and manufacturing sectors, there is no significant difference in changes in employment between less skilled and more skilled labour per sector (i.e. employment of less skilled and more skilled labour is affected more or less the same within a particular sector).

For services, changes in less and more skilled labour employment in both the EU and the US are close to zero. In the ambitious scenario the EU insurance services and water transport stand out with an expected increase in employment of 0.6 and 0.4 percent respectively for both skill groups. On the US side these are construction and insurance, with an expected change of 0.3 and -0.5 respectively for both skill groups. Also, for the services sectors the expected impacts are in line with the expected impact on output, i.e. the sectors that are expected to see their output increase (decrease) are also the sectors that are expected to see employment increase (decrease).

Table 3.13 Expected sectoral impact on employment (% change)

Sector	Less skilled				More skilled			
	EU – less ambitious	EU - ambitious	US - less ambitious	US - ambitious	EU – less ambitious	EU - ambitious	US - less ambitious	US - ambitious
Agriculture and other primary								
Cereals, other grains	0.0	-0.1	-0.1	0.4	0.0	-0.1	-0.1	0.4
Vegetables and fruit	-0.1	-0.1	0.0	0.2	-0.1	-0.1	0.0	0.2
Other primary agriculture	0.2	0.1	-0.1	0.6	0.2	0.1	-0.1	0.7
Other primary	0.1	0.1	0.0	0.2	0.1	0.1	0.0	0.2
Energy	0.3	0.3	-0.1	0.4	0.3	0.3	-0.1	0.5
Manufacturing (including food processing)								
Ruminant meats	0.0	-0.2	-0.1	0.3	0.0	-0.2	-0.1	0.3
Other meats	-0.3	-1.3	0.2	2.1	-0.3	-1.3	0.2	2.1
Vegetable oils	0.3	0.5	-0.6	0.1	0.3	0.5	-0.6	0.1
Dairy products	0.3	0.2	-0.4	0.2	0.3	0.2	-0.4	0.2
Rice	-0.2	-0.7	-0.1	1.3	-0.2	-0.7	-0.1	1.3
Sugar	0.2	0.3	-0.1	0.2	0.2	0.3	-0.1	0.2
Other processed foods	0.1	0.1	0.0	0.2	0.1	0.1	0.0	0.2
Beverages, tobacco	0.4	0.8	-1.3	-2.6	0.4	0.8	-1.3	-2.5
Textiles	1.4	1.5	-0.4	0.5	1.4	1.5	-0.4	0.5
Clothing	1.5	1.5	-0.8	0.2	1.5	1.5	-0.8	0.2
Leather products	2.0	2.2	-1.4	0.1	2.0	2.3	-1.4	0.1
Wood and paper products	0.0	-0.1	-0.1	-0.2	0.0	-0.1	-0.1	-0.2
Chemicals	-0.1	0.0	0.1	-0.5	-0.1	0.0	0.1	-0.5
Iron and steel products	-0.8	-2.6	-1.8	-1.5	-0.8	-2.6	-1.8	-1.4
Non-ferrous metals	-1.2	-3.0	0.8	2.9	-1.2	-3.0	0.8	2.9
Fabricated metals	-0.2	-0.9	-1.3	-1.1	-0.2	-0.9	-1.3	-1.1
Motor vehicles	0.1	1.2	-0.7	-2.9	0.1	1.3	-0.6	-2.8
Other transport equipment	-0.2	-0.1	0.4	0.5	-0.2	-0.1	0.4	0.6
Electrical machinery	-3.8	-7.5	-2.4	-2.4	-3.8	-7.5	-2.4	-2.4
Other machinery	0.4	0.2	0.4	1.4	0.4	0.2	0.5	1.4

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Sector	Less skilled				More skilled			
	EU – less ambitious	EU - ambitious	US - less ambitious	US - ambitious	EU – less ambitious	EU - ambitious	US - less ambitious	US - ambitious
Non metallic mineral products	0.3	0.3	-0.6	-0.3	0.3	0.3	-0.6	-0.3
Other manufactures	0.5	0.5	0.3	0.4	0.5	0.5	0.4	0.4
Services								
Construction	0.1	0.2	0.1	0.3	0.1	0.2	0.2	0.3
Distribution	0.0	0.0	-0.1	-0.1	0.0	0.0	-0.1	0.0
Land other transport	-0.1	-0.1	-0.1	-0.1	-0.1	0.0	-0.1	0.0
Water transport	0.2	0.4	0.1	0.2	0.2	0.4	0.1	0.2
Air transport	0.1	0.1	0.0	0.2	0.1	0.1	0.1	0.2
Communications	-0.1	-0.1	0.0	0.0	-0.1	-0.1	0.0	0.1
Finance	0.1	0.1	-0.1	-0.2	0.1	0.1	-0.1	-0.2
Insurance	0.3	0.6	-0.3	-0.5	0.3	0.6	-0.3	-0.5
Business services	-0.1	-0.2	0.0	0.0	-0.1	-0.1	0.0	0.0
Personal services	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.2
Other services	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0

Source: updated results of CEPR (2013).

Note: Estimates to be interpreted as changes to the baseline scenario (no TTIP) in 2030, 20 per cent direct spill-overs.

3.4.4. Expected sector level (extra EU) trade effects from TTIP

When it comes to trade, exports and imports in the primary sectors are generally expected to increase in both the EU and the US, as shown in Table 3.14. The largest expected increase of extra EU exports (in the ambitious scenario) is 2.8 percent for the energy sector, closely followed by 2.6 percent growth for other primary agriculture both sectors clearly benefit from the reduction in tariffs.¹²³ The largest expected increase in extra EU imports can be found in cereals & other grains (4.8 percent) and in other primary agriculture (3.0 percent). Also here the reduction in tariffs is the largest contributor to this increase. In the US, the export growth of the energy sector also stands out with a growth rate of 3.6 percent. With respect to imports, the biggest growth is in the sector other primary agriculture (3.6 percent). Just like in the EU the reduction of tariffs brings about the largest part of the estimated increase in both exports and imports.

Similarly, EU manufacturing sectors are expected to see their extra EU exports grow after trade liberalization. The only exception is electrical machinery, of which extra EU exports are estimated to decline by a relatively modest 1.5 percent. Given the expected large decrease in output in this sector it can be expected that the production for both the domestic and foreign market will decline and thus a decrease in extra EU exports. As for output, the expected decrease is mainly driven by direct spill-overs. The largest growth (of 40.9 percent) is expected to occur in the motor vehicles sector. The other sectors that are expected to see substantial growth in extra EU export are: non-ferrous metals (24.8 percent), fabricated metals (21.0 percent), dairy products (16.1 percent) and beverages & tobacco (13.2 percent). Regarding extra EU import growth, the largest expected increases can be found in dairy (67.9 percent), motor vehicles (42.1 percent), other transport equipment (11.2 percent), beverages & tobacco (10.6 percent) and wood and paper products (10.3). The increase in extra EU imports for all other manufacturing sectors lies between 0.5 percent and 9.5 percent. When looking at the disaggregation of the results (for both extra EU imports and extra EU exports), we see that the sectors mentioned above are the sectors that benefit the most from a reduction in NTMs (except for dairy and beverages & tobacco since no reduction in NTMS was modelled for these sectors), and to a lesser extent of the reduction in tariffs. It is indeed the case that there are still relatively high tariffs in place in the dairy, beverages & tobacco, metals and automotive¹²⁴ sector. Also, in the automotive sector there are several burdensome NTMs in place and many small differences in regulations exist. When these are reduced a large trade potential between the EU and the US can be realised.

Several US sectors are expected to undergo substantial changes in their export performance. The biggest increase in exports is expected in the automotive industry (57.3 percent), followed by dairy (42.0 percent), fabricated metals (37.8 percent), other meats (27.6 percent), non-ferrous metals (25.4 percent) and clothing (17.3 percent). The two metal sectors benefit most from the reduction of NTMs, whereas for the dairy, other meats and clothing sectors the reduction in tariffs is much more important. In the automotive sector the reduction of tariffs and NTMs in good are both equally important. With the exception of motor vehicles, these are not the sectors where the US has a comparative advantage, but the reduction in Transatlantic trade barriers might bring about cheaper intermediate products and improve the US's competitive position. For the other manufacturing sectors, the expected change in export ranges from 0.3 percent to 14.8 percent. For imports, a tremendous increase of 97.0 percent is expected in the dairy sector. Other sectors that will also see significant increase in imports are motor vehicles (19.5 percent), beverages & tobacco (18.7 percent), chemicals (11.4 percent) and other transport equipment (10.1) percent. For all these sectors the reduction of NTMs in goods is most important.¹²⁵ The other machinery sector is likely to see a decrease in its imports of 0.4 percent. This negative impact is driven by the direct spill-overs i.e. increased of third countries with the EU and the US due to alignment of EU and US regulation. The estimated change in imports for the other manufacturing sectors ranges from 0.6 percent to 6.9 percent.

¹²³ The decomposition of the results as done for the macro and Member State impacts can be found in Annex III.

¹²⁴ Only at the EU side, US tariffs in the motor vehicle sector are relatively low (see Chapter 11).

¹²⁵ Although there is no reduction of NTMs modelled in the dairy sector and in the beverages & tobacco sector, they still benefit from the reduction of NTMs in other sectors.

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Note furthermore that, regarding output, employment as well as trade, the effects of trade liberalization are much larger for manufacturing sectors than for primary sectors. In other words, the impact of TTIP is more prominent in manufacturing sectors than in primary sectors. Besides that, the differences between the results under the less ambitious and ambitious scenario are most significant for trade, especially in the manufacturing sectors. For example, US dairy exports (imports) expected to increase from 7.2 percent (33.2 percent) to 42.0 percent (97.0 percent), dependent upon which scenario is considered. However, there are manufacturing sectors for which the scenario does not lead to major changes, including “other manufacturers” in the EU. For them, export (import) growth rises only modestly from 5.9 percent (0.2 percent) to 6.0 percent (0.5 percent). An explanation could be that the existing trade barriers in some manufacturing primary sectors are much more pressing and economically relevant than in the latter sectors.

Services-sector exports are all affected positively, and in some cases significantly. For extra EU exports the highest growth rates are expected in finance and insurance (both 4.2 percent). These results are largely driven by the reduction in NTMs in services – they count for 3.9 and 4.0 percent of the total 4.2 percent increase. In the US, these sectors also are expected to experience positive growth rates (2.3 percent for finance and 1.8 percent for insurance). However, communications and personal services show higher potential growth rates here, of 4.9 percent and 3.6 percent respectively. Although the reduction in NTMs in services is very important, these sectors also benefit from the direct and indirect spill-overs. The most notable import growth rates are expected for the personal services sector in the EU, of which imports are estimated to increase by 5.3 percent, and for the financial services sector in the US, with an expected import growth rate of 6.4 percent. The expected impact on the US finance sector is mainly driven by the reduction in NTMs in services, whereas for the EU personal services sector the reduction in NTMs in both goods and services is very important. Across all services sectors, imports are expected to increase, with the exception of EU distribution (growth rate insignificantly different from zero) and US other services (having a negative growth rate of 0.4 percent). It seems that trade in the services sector is less affected by TTIP than trade in manufacturing sectors in terms of percentage changes. However, it should be stressed once more that this analysis only takes into account the trade part of transatlantic relations, while services sectors are generally more strongly related via FDI: this is not captured by these results. Thus the impacts on the services sectors may be underestimated, as TTIP will most likely also affect FDI patterns between the EU and US.

Table 3.14 Expected sectoral impact on trade (% change)

Sector	Exports				Imports			
	Extra EU – less ambitious	Extra EU - ambitious	US - less ambitious	US - ambitious	Extra EU – less ambitious	Extra EU - ambitious	US - less ambitious	US - ambitious
Agriculture and other primary								
Cereals, other grains	-0.2	0.8	0.4	0.9	2.7	4.8	0.2	1.6
Vegetables and fruit	-0.1	0.8	0.6	1.6	1.0	1.6	0.3	1.2
Other primary agriculture	0.7	2.6	0.5	1.6	2.0	3.0	1.4	3.6
Other primary	-0.1	0.0	0.5	0.6	0.8	0.9	0.4	0.8
Energy	2.8	2.8	1.8	3.6	0.4	0.6	0.8	0.4
Manufacturing (including food processing)								
Ruminant meats	0.1	1.3	-1.2	3.3	0.4	0.5	1.3	1.1
Other meats	0.9	2.2	3.6	27.6	1.8	9.5	2.4	3.0
Vegetable oils	0.9	2.2	-0.7	0.3	0.5	0.7	0.7	1.4
Dairy products	5.2	16.1	7.2	42.0	13.5	67.9	33.2	97.0
Rice	1.2	4.1	0.3	3.4	2.0	6.2	0.9	2.7
Sugar	0.1	1.6	1.3	6.9	0.3	0.6	0.9	1.0
Other processed foods	0.9	2.0	1.6	4.7	1.3	2.8	1.1	1.5
Beverages, tobacco	6.5	13.2	4.6	11.0	4.9	10.6	9.6	18.7
Textiles	9.6	9.9	7.6	9.6	1.0	1.1	1.5	0.7
Clothing	11.9	12.1	15.2	17.3	0.4	0.6	1.5	1.0
Leather products	11.4	11.9	5.2	7.4	0.5	0.5	1.6	1.4
Wood and paper products	2.1	4.0	3.6	7.6	5.2	10.3	2.5	4.3
Chemicals	5.2	9.4	7.6	11.5	5.7	9.2	6.1	11.4
Iron and steel products	6.5	12.9	5.0	14.8	0.7	1.6	1.7	2.4
Non-ferrous metals	15.7	24.8	13.6	25.4	1.0	1.6	4.8	6.9
Fabricated metals	13.4	21.0	20.4	37.8	2.3	5.0	2.9	3.3
Motor vehicles	20.0	40.9	33.5	57.3	23.9	42.1	10.1	19.5
Other transport equipment	3.3	6.2	5.0	8.6	6.7	11.2	5.4	10.1
Electrical machinery	-0.6	-1.5	2.7	8.2	3.4	6.5	2.9	4.3

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Sector	Exports				Imports			
	Extra EU – less ambitious	Extra EU - ambitious	US - less ambitious	US - ambitious	Extra EU – less ambitious	Extra EU - ambitious	US - less ambitious	US - ambitious
Other machinery	1.8	1.5	3.3	5.1	0.8	1.2	0.5	-0.4
Non-metallic mineral products	8.6	8.7	6.6	8.5	1.0	1.5	5.0	4.2
Other manufactures	5.9	6.0	4.4	4.9	0.2	0.5	0.7	0.6
Services								
Construction	0.3	0.6	0.9	2.2	0.7	1.5	1.0	1.6
Distribution	0.7	0.9	-0.6	0.6	-0.2	0.0	1.2	0.2
Land other transport	0.5	0.9	-0.2	0.8	0.0	0.3	0.9	0.2
Water transport	0.6	1.2	0.7	1.4	0.6	1.3	0.7	1.4
Air transport	0.6	1.1	0.7	1.5	0.3	0.7	0.3	0.7
Communications	0.5	0.9	2.3	4.9	1.4	3.0	0.4	0.5
Finance	2.1	4.2	1.1	2.3	1.3	2.6	3.3	6.4
Insurance	2.1	4.2	0.8	1.8	1.3	2.6	3.0	5.9
Business services	0.5	0.9	0.9	2.2	0.7	1.6	0.7	1.1
Personal services	0.5	0.9	1.2	3.6	2.4	5.3	1.2	1.3
Other services	0.1	0.3	0.3	0.9	0.4	0.9	-0.1	-0.4

Source: updated results of CEPR (2013).

Note: Estimates to be interpreted as changes to the baseline scenario (no TTIP) in 2030, 20 per cent direct spill-overs. For the EU: extra EU.

3.5. TTIP impact on third countries, including developing countries

The global economy has become increasingly interconnected over the last few decades, but there are still large differences in the degree of participation in this globalization trend. Some regions are much more globally integrated than others, which is often reflected in strong and stable trade and investment flows between some regions, and only marginal ones between others. Regardless, the entire world has become more interlinked compared to a few decades ago. Developing countries account for a larger share of EU imports than the US, Canada, Japan and China combined, if energy resources are excluded. Moreover, for 30 percent of the third countries, TTIP parties account for more than 50 percent of their total exports.¹²⁶

One only needs to look at how economic developments in specific countries or regions have had global knock-on effects:

- The Global Financial Crisis in 2008/09 started as a domestic US housing market crisis and turned into a global crisis affecting large parts of the global population;
- The Asian Crisis in 1997 spread through trade and (multinational) investment links – starting in Thailand, and eventually affecting the entire region.

Global and regional trade policy related developments can also have an impact on third countries:

- Chinese accession into the WTO in 2001 has led to lower tariff barriers and a further integration of China into the world economy – allowing the aforementioned growth and production to spill over internationally via increased trade activity;
- The stalled Doha Round has motivated participants to establish Regional Free Trade Agreements on their own. Instead of lowering trade barriers between many countries at once, trade barriers are now lowered between only a few countries, leading to possible trade diversion effects for trading partners not included in the agreement. For example the recently signed TPP between the US and 11 other countries will benefit the concerned countries, but can divert some of the current trade flows between the EU and the TPP participants.

Similarly, although the TTIP agreement aims to reduce tariffs and NTMs between the EU and US, the impact will not be limited to the Transatlantic marketplace only because of the substantial and deep interlinkages that exist between EU and US and third countries. This section will discuss the potential impacts of TTIP on third countries. We will pay particular attention to the potential impacts for Turkey. We will mainly discuss the updated results, using other research to contextualise and complement the findings.

3.5.1. Impact channels from TTIP to third countries

There are various channels through which TTIP can potentially affect third countries. We identify the following main ones, stemming from a TTIP agreement that further integrates the EU and US economies and value chains:

- Increased welfare in TTIP countries could lead to increased demand by domestic consumers for products from third countries, e.g. raw materials, semi-finished products and tourism. This would lead to a boost in production for third-country sectors that are in EU-US demand;
- Further alignment between EU and US standards and regulation through mutual recognition¹²⁷ or harmonisation can benefit producers in third countries that serve both markets. These producers no longer have to comply with two different sets of standards and regulations, but may instead adopt a single (or less divergent) set. This will push down the production costs in third countries. Benefits arising from further alignment

¹²⁶ IFO (2015). *Potential impacts of TTIP on developing and emerging economies. English Summary*; http://www.cesifo-group.de/ifoHome/research/Projects/Archive/Projects_AH/2014/proj_AH_ttip-entwicklungslaender.html.

¹²⁷ It should be noted that mutual recognition of standards or regulations is only being pursued in one area of the TTIP negotiations, related to the automotive sector (see Chapter 11).

- between the EU and US standards will be maximized in case third countries are consulted to identify specific needs and concerns;
- The degree to which mutual recognition and equivalence also applies to products produced in third countries will, largely, determine the economic effects of the previous point. If mutual recognition only applies to products made in the EU and US, it may become more difficult to access the Transatlantic market from third countries. The treatment of the Rules of Origin is crucial in this respect. A single set of administration, certification and verification processes for the treatment of Rules of Origin in TTIP would enhance any positive impact for third countries;
 - Reduced trade costs across the Atlantic could lead to trade diversion away from third countries. These third country producers now face competition from EU/US producers who will face fewer costs related to trade barriers. This cost advantage will have negative consequences for third countries' suppliers;
 - Among the third countries that may face the most severe negative impact are those with preferential treatment concerning tariffs. These Generalised System of Preferences (GSP) agreements allowed producers from developing countries to enter the EU (or US) market at lower tariffs than producers from non-GSP countries. TTIP could allow EU/US firms this same privilege, thus increasing competition for third country producers. On the other hand, a more harmonized set of rules and procedures towards preference schemes may benefit third countries if it pushes down compliance costs;
 - A last set of factors that affect third countries depend on the position of their producers in global value chains (especially for those goods and services that will face the largest changes in their demand with a TTIP agreement). If TTIP leads to the expansion of the trade flow between the EU and US, producers of the intermediate goods that are used by EU and US firms can benefit from increased demand for their products.^{128 129}

Based on the above-mentioned points, it seems that TTIP does not only have to be a win-win for the EU and the US only, but third countries can potentially benefit as well from the agreement if (and only if) they also get access to the joint EU-US market. However, it is worth remembering that the least developed countries (LDCs) already have free access to the EU Internal Market. TTIP will therefore not create a situation of preferential treatment for the US vis-à-vis third countries. On the other hand, there are important caveats that can lead to adverse effects for third countries. Identification of these effects at this stage can allow room for mitigating policies.

3.5.2. Literature review on the potential effects of TTIP on third countries

There are a number of studies that deal with the question of the effect of TTIP on third countries. All of these studies acknowledge that it is difficult to make proper predictions without a careful analysis of the final text. While the abolishment of tariffs lends itself to a straightforward analysis, trade agreements that go beyond this have many direct and indirect effects that complicate this assessment. However, Francois et al. in CEPR (2013) predict that the sectors in third countries that have the most to lose in terms of market access are primary agriculture, motor vehicles, chemicals and pharmaceuticals and processed foods. On the other hand, if NTBs are non-discriminatorily reduced, TTIP could also imply benefits for third countries due to trade creation.¹³⁰

A recent addition to the literature that deals with the potential effect of TTIP on third countries was conducted by Brakman et al. (2015) for the Dutch Ministry of Foreign Affairs.¹³¹ Through a gravity model, they estimated the effect of TTIP on international trade flows. As input for their model, they used trade flows (e.g. exports to TTIP parties as a percentage of total exports) and income changes¹³² due to TTIP (based on a Bertelsmann report by Felbermayr et al. (2014)¹³³).

¹²⁸ CEPR. (2015). Catalyst? TTIP's impact on the rest. VoxEU.

¹²⁹ Brakman, S., Kohl, T., & van Marrewijk, C. (2015). The Impact of the Transatlantic Trade & Investment Partnership (TTIP) on Low Income Countries. Directorate for Trade Policy and International Economic Governance, Ministry of Foreign Affairs, The Netherlands.

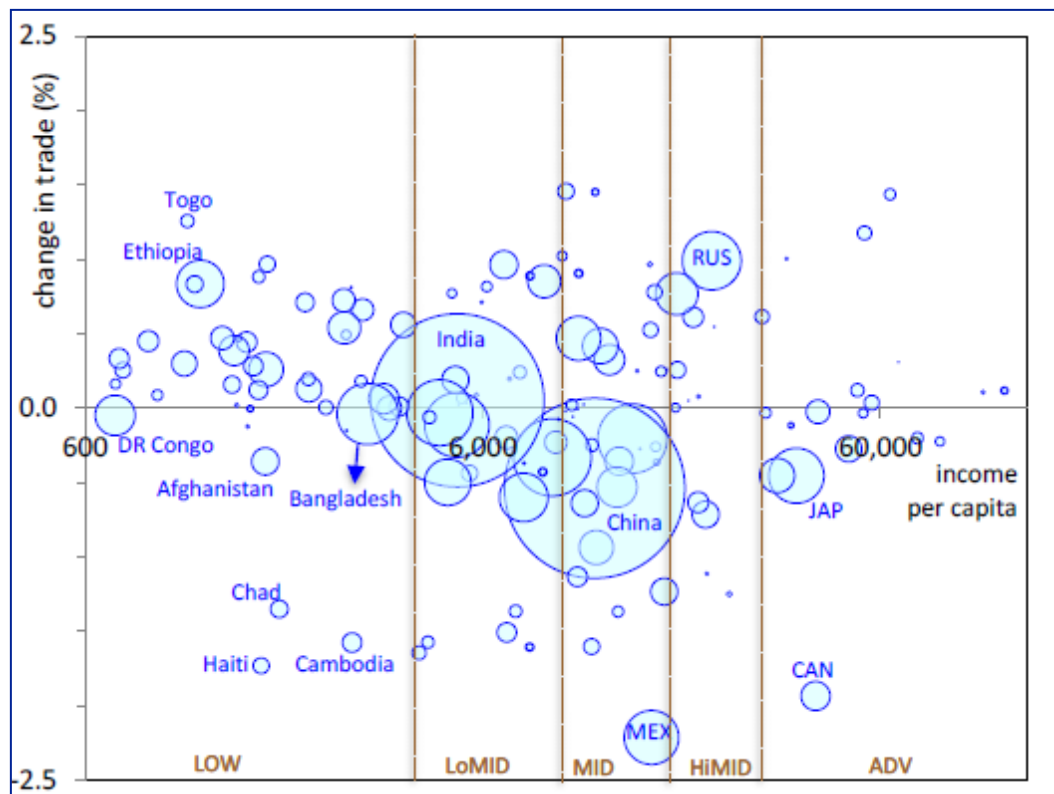
¹³⁰ Joseph Francois, Bernard Hoekman and Doug Nelson. *TTIP, regulatory diversion and third countries*. In CEPR. (2015). *Catalyst? TTIP's impact on the rest*. VoxEU.

¹³¹ Brakman, S., Kohl, T. and Marrewijk, C. van (2015) The impact of the Transatlantic Trade & Investment Partnership (TTIP) on low income countries.

¹³² Changes in income can reflect changes in tariffs, when many developing countries have advantageous GSP agreements with *either* the EU *or* the US. These advantages are eliminated once tariffs between the EU and the US are removed. Secondly, changes in incomes can also reflect changes in non-tariffs

Concerning the scope of the agreement (the scenario) that is modelled, the study assumes that 26 provisions will be included in the agreement (e.g. public procurement, IPR, capital mobility).¹³⁴

Figure 3.12 Impact of TTIP on trade flows



Source: Brakman et al (2015).¹³⁵

Figure 3.11 shows the impact of TTIP on trade flows in third countries as found in Brakman et al. (2015). The EU and the US are not depicted here (increases of 4.2 percent and roughly 1.5 percent, respectively), but they are unsurprisingly the largest beneficiaries of changes in trade as their bilateral trade costs go down. Changes in trade for third countries are not the result of changes in trade costs, as they are not affected by TTIP. Rather, substitution effects as a result of trade creation and diversion, as well as income changes are the prime cause of changes in trade.

On average, third countries will experience a decrease in their total trade flows of about 0.2 percent, as this is the population weighted mean for the RoW. If we group the countries by their level of development, those in the LOW and HiMID classifications are most likely to see an increase in their total trade. Among the former group are many African countries that will benefit from increased demand for their export products as a result of trade creation between the EU and US. HiMID countries such as Russia and Turkey (next to RUS), with strong trade links to the EU are set to experience an increase in their total trade. These countries benefit from increased income and their position in the supply chain for EU producers. Canada, Mexico and to a lesser extent Japan, with strong trade links to the US, on the other hand, face negative effects and indeed see a decrease in their total trade. This is caused by trade diversion, where

measures; where both trade creation and trade diversion effects are likely to be large and impact incomes of third countries.

¹³³ Felbermayr et al. (2014) Transatlantic Trade and Investment Partnership (TTIP): Who benefits from a free trade deal? Bertelsmann Stiftung. <http://www.bfna.org/publication/transatlantic-trade-and-investment-partnership-ttip-who-benefits-from-a-free-trade-deal>.

¹³⁴ For a more detailed description of the model and equations used we refer to the study itself.

¹³⁵ Brakman, S., Kohl, T., & van Marrewijk, C. (2015). The Impact of the Transatlantic Trade & Investment Partnership (TTIP) on Low Income Countries. Directorate for Trade Policy and International Economic Governance, Ministry of Foreign Affairs, The Netherlands.

the US turns to trade with the EU instead of these NAFTA and TPP partners, as the EU are direct competitors of this group of countries.

Countries in the LoMID income group, such as India, Indonesia and the Philippines do not face any significant change in their total trade. The population weighted mean for this group is a mere -0.1 percent. Larger changes in trade are to be found in the MID income group, where China, Mexico and Brazil are located. This group of countries faces the largest negative impact from TTIP, with a population weighted average of -0.5 percent. These countries see little expected gains in their income due to TTIP, and trade diversion is particularly strong for this group (note that neither the EU nor the US have a free-trade agreement with Brazil and China).

A more detailed analysis for the effect of TTIP on a number of third countries was undertaken using case studies, in for instance IFO (2015)¹³⁶ and Aichele and Felbermayr in CEPR (2015).¹³⁷ There are three types of impact that can be identified from these case studies; likely trade diversion, uncertain trade effects and likely trade creation. Below, examples are provided for each of these three cases. Case studies in these reports are a combination of interviews with experts, literature review and own quantitative analysis of trade data. They are designed such that they are exemplary for the larger region or are particularly interesting for other reasons.

Trade diversion

Aichele and Felbermayr in CEPR (2015)¹³⁸ identify Bangladesh and Cambodia as vulnerable, export- dependent countries at risk of losing market access once tariff barriers in the textile industry are removed. Manufacturers may face more competition from Eastern Europe on the US market. Similarly, Bangladesh is identified by IFO¹³⁹ as one of the countries for which trade diversion may turn out to be most significant. Two thirds of the textile exports find their way to TTIP partners, signalling dependence and vulnerability at the same time. In order to mitigate possible negative impact, the TTIP partners both have development instruments that could be used to offset trade diversion effects. Moreover, discriminatory regulatory co-operation between the EU and US may lead to trade diversion from certain other countries that export intermediate goods, such as Mexico. However, the integration of the Mexican economy with the US will also allow for some protection.

The Cato institute (2015) identifies the Ghanaian fishing sector as a vulnerable sector, as their export basket shows significant overlap with the export basket from the US in this sector. A reduction of tariffs increases the competition for the Ghanaian sector, with a real possibility of trade diversion in this sector.¹⁴⁰

Uncertain trade effects

For a number of countries, trade diversion and trade creation may both arise at the same time, albeit in different sectors. IFO identified Brazil as an example, where exports of raw materials may increase due to higher demand, while exports of agricultural goods may suffer from trade diversion. More specifically, the study identified the fruit juice product group. Exports to the EU and US amounted to 1.8 billion euros in 2012, whereas bilateral EU-US trade in fruit juice is only 180 million euros, Should tariffs (18 percent in the EU and 6 percent in the US) be abolished, this will have severe negative impacts for the fruit-juice sector in Brazil. In a similar fashion, in the IFO (2015) case study on Ivory Coast, it was found that it exports many agricultural products that are naturally endowed to them. Trade diversion is unlikely to arise in product groups such as cacao beans, as neither Europe nor the US is able to produce them in great quantities. However, relatively high MFN rates for processed, more sophisticated cacao products will make it more difficult for Ivory Coast to move up to the production of higher valued products. For several other countries, the effect depends on the end-result of the

¹³⁶ IFO (2015). *Potential impacts of TTIP on developing and emerging economies English Summary*; http://www.cesifo-group.de/ifoHome/research/Projects/Archive/Projects_AH/2014/proj_AH_ttip-entwicklungslaender.html.

¹³⁷ Rahel Aichele & Gabriel Felbermayr. *The impact of TTIP on third countries*. In: CEPR. (2015). *Catalyst? TTIP's impact on the rest*. VoxEU.

¹³⁸ Rahel Aichele & Gabriel Felbermayr. *The impact of TTIP on third countries*. In: CEPR. (2015). *Catalyst? TTIP's impact on the rest*. VoxEU.

¹³⁹ IFO (2015). *Potential impacts of TTIP on developing and emerging economies. English Summary*; http://www.cesifo-group.de/ifoHome/research/Projects/Archive/Projects_AH/2014/proj_AH_ttip-entwicklungslaender.html.

¹⁴⁰ Cato Institute (2015). Article by Joakim Reiter. *The Effects of TTIP on Developing Countries*.

negotiations. For example, for countries such as Morocco and South Africa, the impact of TTIP depends on whether regulatory convergence contains discriminatory clauses (e.g. that these beneficial clauses only apply to EU and US producers – Rules of Origin). If this is the case, these countries will face larger barriers to enter (or retain their position on) the Transatlantic market. On the other hand, for South Africa, exports of mineral resources and the strong position in the automotive-sector value chain allow for some positive effects to be expected. Similarly, the EU-Turkey customs union and the process of updating the EU-Mexico FTA complicate the analysis of the overall effect.

Trade creation

IFO (2015)¹⁴¹ also identified a case study where benefits of TTIP may lead to higher demand for tourism services. In Kenya, for instance, tourism makes up some 15 percent of GDP, in which case an increase in demand for intercontinental tourism may have beneficial effects for the Kenyan economy. These effects can also be felt in other popular tourist destinations, such as the aforementioned cases Indonesia and South Africa.

Rules of origin

Much like any trade agreement, TTIP will contain clauses that exclude products manufactured by third countries that merely pass through TTIP partners to enjoy the same benefits as those goods and services produced within the territory of the TTIP partners. However, a CGD Policy Paper (2016)¹⁴² claims that these rules of origin are most restrictive in those sectors where third countries tend to have a comparative advantage. These sectors, agriculture for the EU and labour-intensive manufacturing for the US, have relatively restrictive rules of origin (e.g. through higher local content requirements). Third countries could be indirectly impacted through TTIP if supply chains that include input from third countries now face more barriers than do supply chains that merely include TTIP partner inputs. Only the latter supply chain can benefit from the lower barriers to trade as a result TTIP.

3.5.3. Quantitative third country effect estimations, including developing countries

Table 3.15 depicts the expected impacts on third countries from TTIP (ambitious scenario) of the updated CEPR results. Note that in this Table we also report specific results for Turkey (see next section). We will first discuss the potential effects of an ambitious scenario and then make a comparison with the less ambitious scenario, the results for the less ambitious scenario can be found in Annex III. Overall, we see that the impact on third countries is zero or very small and positive. The relatively larger expected impacts relate to exports and imports, ranging from 0.2 to 2.0 percent for exports and ranging from 0.4 to 2.0 percent for imports.

Interesting to see is that expected impact on GDP in ASEAN countries equals the expected impact on GDP in the EU. And the expected impact on national income in ASEAN countries even exceeds the expected income in the EU. This, we believe, comes mainly because of the high degree of integration of ASEAN in the EU and US value chains. Also in terms of wages the expected impact is zero or positive for third countries. Only the OECD, ASEAN countries and the Rest of World are expected to see a clear positive wage impact.

Overall, the ASEAN countries stand to gain the most, while low income countries, China and India are only expected to experience small positive changes or no impact at all.

¹⁴¹ IFO (2015). Potential impacts of TTIP on developing and emerging economies. English Summary; http://www.cesifo-group.de/ifoHome/research/Projects/Archive/Projects_AH/2014/proj_AH_ttip-entwicklungslaender.html.

¹⁴² Kimberly Elliott (2016). TPP Risks and TTIP Opportunities: Rules of Origin, Trade Diversion, and Developing Countries. <http://www.cgdev.org/sites/default/files/CGD-Policy-Paper-Elliott-TPP-TTIP-Rules-of-Origin.pdf>

Table 3.15 Impact on third countries percentages changes, ambitious scenario, by 2030

	Low income	Mercosur	Turkey	OECD	China	India	ASEAN	RoW
GDP	0.0	0.0	0.1	0.1	0.0	0.0	0.5	0.2
National income	0.0	0.1	0.1	0.1	0.2	0.1	0.7	0.2
Export	0.3	0.9	2.0	1.2	0.4	0.2	1.3	0.8
Import	0.4	1.3	1.4	1.0	1.6	0.6	2.0	0.9
Terms of trade	-0.4	-0.6	-0.1	-0.2	-0.3	-0.5	-0.2	-0.2
Skilled wages	0.0	0.0	0.1	0.1	0.0	0.0	0.3	0.2
Low skilled wages	0.0	0.0	0.2	0.1	0.0	0.0	0.3	0.1

Source: updated CEPR (2013).

When comparing the outcomes of the ambitious scenario with the less ambitious scenario, we see a similar picture in the overall expected effects, i.e. positive small or no impact at all for low income countries, China and India, and relatively larger changes for OECD, ASEAN countries and the RoW. When taking a closer look at the former three countries/country groupings, one notices that the effects on imports and exports are almost halved between the two scenarios, while the differential effects for the other variables is much less pronounced.

However, the estimated impacts in CEPR (2013) presented substantially larger impacts for third countries in the ambitious scenario. ASEAN countries for example were expected to see GDP rise by 0.9 percent, and low income countries by 0.2 percent. In terms of exports the differences are even more substantial. For low income countries the expected increase is 1.0 percent, three times that presented in the updated results. The impacts for China, India and ASEAN countries were estimated at 1.0 percent, 0.9 percent and 2.3 percent respectively. Only for MERCOSUR and OECD countries were the estimated impact equal on average. A possible explanation for the differences between the updated CEPR (2013) results and those found in CEPR (2013) can be found in the fact that a reduction in processed food NTMs is no longer included in the scenario and model. As a result, there will be less scope for positive spill-overs in the agri-food sector, which tends to be one of the most important explanatory factors in the total exports of these developing countries, leading to lower gains.

An important driver for the updated results – as it was in the CEPR (2013) model is the concept of ‘spill-overs’. Whereas for the EU and US (see section 3.2) these direct and indirect spill-overs were limited – as is expected because EU and US experience mostly direct bilateral effects – for third countries the direct and indirect spill-over effects are more important. If TTIP achieves closer alignment of the EU and US regulatory framework, including standards, direct spill-overs can benefit third countries due to a reduction in costs their firms incur to export to both the EU and the US. The revised EU textual proposal on regulatory cooperation explicitly states that cooperation at the international level should be pursued, so that compatible regulatory measures can be developed.¹⁴³ This would then allow third countries to benefit from the direct spill-overs from TTIP. Third countries can also benefit from indirect spill-overs if they adopt some of these ‘new’ regulations which would reduce the costs of trading among themselves (see also Chapter 1 for a more detailed explanation). This point is important enough to illustrate it with two examples:

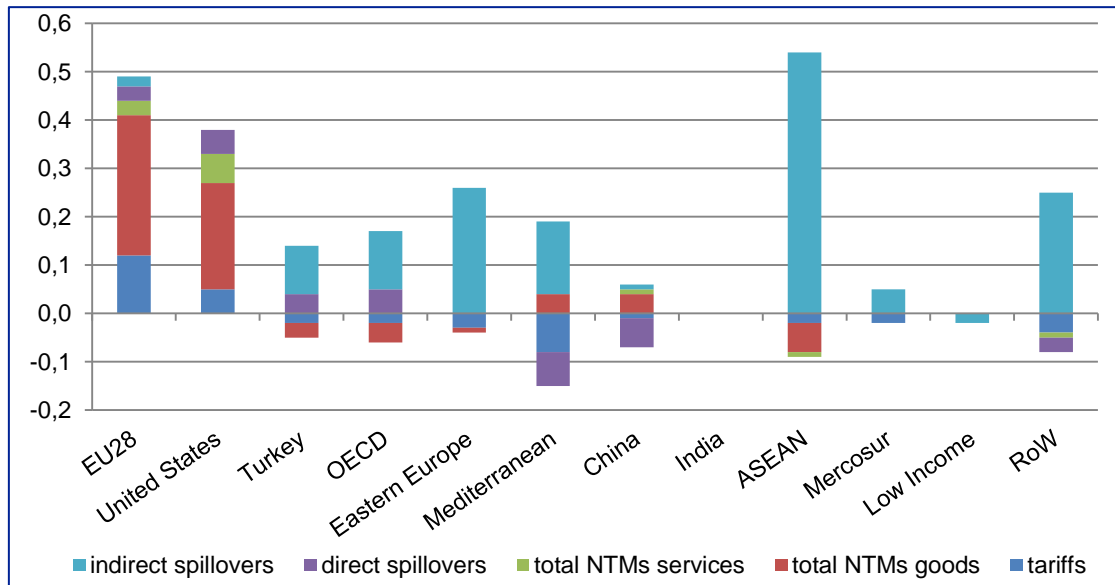
- If Malaysia trades a lot with both the EU and the US and if regulatory systems across the Atlantic come closer to each other, this can benefit Malaysian firms given that it would be less costly to adapt their production to meet the standards of the EU and the US. This is a **direct spill-over effect**;
- If Indonesia also trades intensively with Malaysia and if they also decide to align themselves with the EU/US regulatory system as well (because they both trade with the TTIP countries) trade between the two will also become less costly. The resulting trade-promoting effect is described as **indirect spill-overs** in the CEPR analysis.

¹⁴³ Revised EU negotiating proposal for legal text on “regulatory cooperation”, DG Trade website, downloaded 09.08.2016. http://trade.ec.europa.eu/doclib/docs/2016/march/tradoc_154377.pdf.

In the four figures below, we show how the expected TTIP impact of the ambitious scenario for selected third countries in terms of GDP, exports and wages for high- and low-skilled workers, can be disaggregated into the different components. For purpose of comparison, we also leave the disaggregation for the EU and US in (the same disaggregation already presented in section 3.2).

From Figure 3.12, we see that while for EU and US GDP effects are driven by NTM alignment in goods and by tariff liberalization, for third countries the main driver of the results are the indirect spill-overs. They play an especially important role for Eastern European and ASEAN countries.

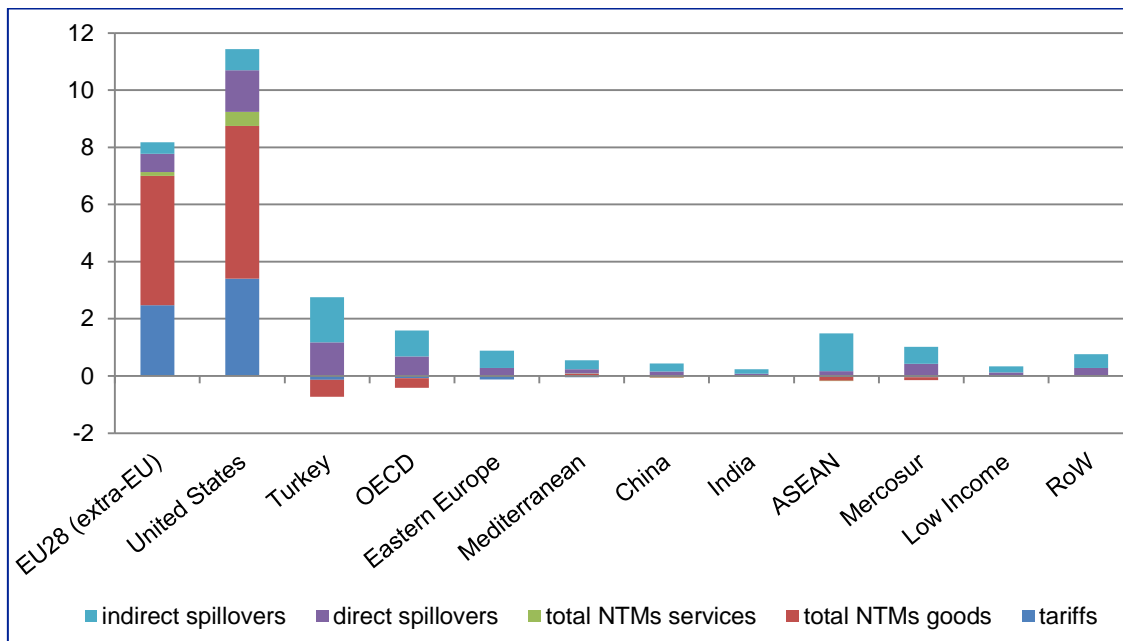
Figure 3.13 Decomposition of total GDP effects for third countries (percentage change)



Source: Updated CEPR (2013) results.

Regarding exports, as depicted in Figure 3.13, we see that TTIP mainly affects the EU and US. However, Turkey, the OECD and ASEAN also benefit to a limited degree, mainly from indirect spill-over effects. While this effect is small, it is clear that here too the indirect spill-overs (light blue in the figure) dominate.

Figure 3.14 Decomposition of total export effects for third countries (percentage change)

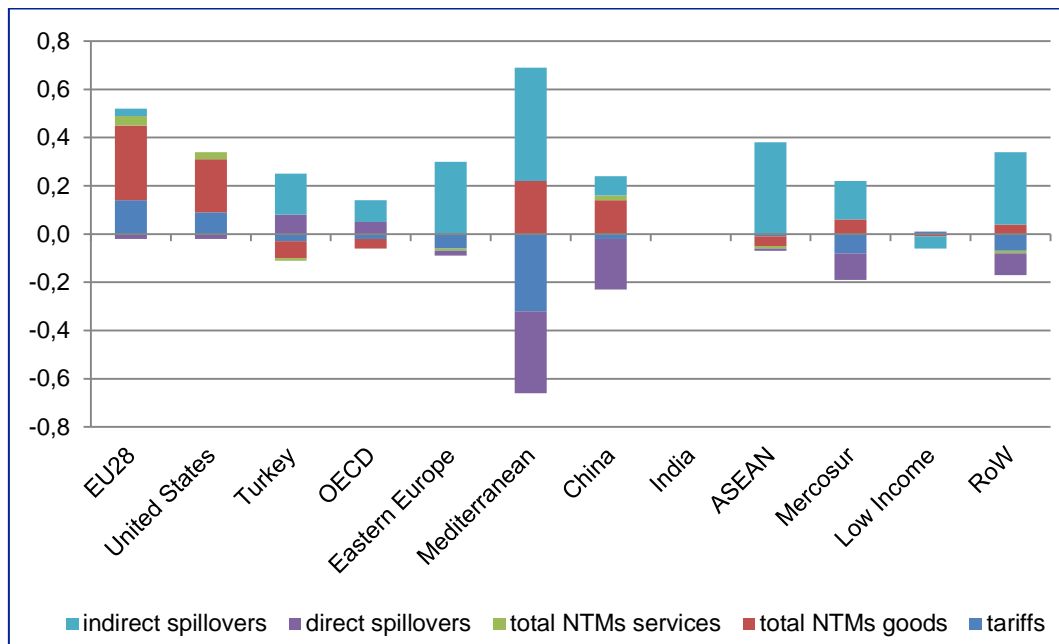


Source: Updated CEPR (2013) results.

Regarding wages (see Figures 3.14 and 3.15), the potential effects of TTIP for third countries are relatively large compared to the TTIP parties themselves. On the aggregate, all third countries are expected to see either positive or no effects. The main positive driver for these effects are indirect spill-overs (e.g. for Turkey, Eastern Europe, Mediterranean, ASEAN, Mercosur, and Rest of World). For India and low-income countries, these indirect spill-overs are much smaller, which may be explained by their lower level of development. Regulatory cooperation between the EU and US refers less to the export goods of India and low-income countries, so that smaller benefits are to be had. Direct spill-overs for high-skill labour are predominantly negative for the Mediterranean countries and China. This is due to the fact that their exports are more low-skill intensive than the EU and US, so that TTIP will expand on the comparative advantage that these countries have in the low-skilled export sector. As a result, the high-skill labour force loses out as the demand for high-skill labour goes down. We also see the discriminatory effect of tariffs clearly: EU-US tariff liberalisation has a negative effect – for high-skilled workers – on the Mediterranean countries, Mercosur and Rest of World, as trade diversion away from these countries towards EU-US trade hurts the demand for high-skilled workers in these countries.

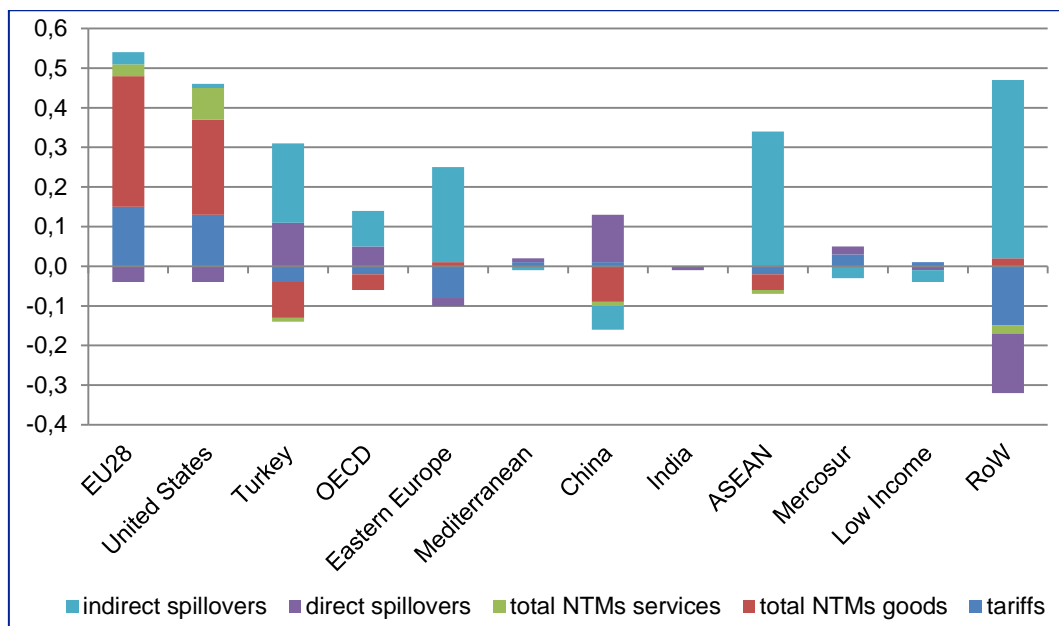
For both low-skilled workers and high-skilled workers wages in third countries are not expected to change or are positively affected. The composition effect plays a role in explaining why for low-skilled workers, NTM alignment in goods is negative: the skill intensity of the growing TTIP sectors is different from the skill-intensity in these countries.

Figure 3.15 Decomposition of total high-skilled worker wage effects for third countries (percentage change)



Source: Updated CEPR (2013) results.

Figure 3.16 Decomposition of total low-skilled worker wage effects for third countries (percentage change)



Source: Updated CEPR (2013) results.

3.5.4. Impact of TTIP on Turkey

Given the special relationship between Turkey and the EU, it is important to discuss the potential impact on Turkey in this separate section. On the 12th of September 1963, Turkey signed the Association Agreement with the European Economic Community. Since 1995, Turkey has a Customs Union with the EU, and since 1999, Turkey has been officially a candidate country. In addition to the Customs Union, Turkey has a bilateral side-agreement with the EU that covers trade in a number of agricultural sectors.

A second reason to pay specific attention to Turkey is the deep economic relationship between Turkey and the EU. As the 18th largest economy in the world with average annual growth of 4% over the last 15 years, EU-Turkey economic relations are set to become even larger over time.¹⁴⁴ As things currently stand, Turkey is the EU's sixth largest trading partner whereas the EU is Turkey's number one trading partner and accounts for 70 percent of FDI in Turkey. Around 40 percent of goods traded by Turkey come from or go to the EU. The US on the other hand is a relatively small trading partner of Turkey, although it is the third most important export destination for Turkey (after the EU and Iraq), only 4 percent of total exports go to the US. Also for imports the US is third most important trading partner for Turkey (after the EU and China), 5.4 percent of total imports comes from the US.

The custom union (CU) includes free movement of goods between the EU and Turkey, and covers both goods produced in both parties or imported goods from third countries, common rules of origin and common custom duties on imports from outside the EU.¹⁴⁵ Owing to the existence of the CU, Turkey's trade policy is closely related to the trade policy of the EU, and Turkey is subject to the trade agreements which the EU establishes with third countries.¹⁴⁶ Therefore, because of the CU, a negotiated TTIP agreement between the EU and US will have a direct impact on Turkey – but Turkey is not a party at the negotiating table, nor does it automatically get an FTA with the US. Mavuş et al. (2013) indicate that there are also side effects to the CU, two of which are of particular interest for the ongoing TTIP negotiations:

- The first issue relates to the fact that Turkey does not have any right to participate in or comment directly on the ongoing negotiations. However, the EU regularly updates Turkey on the state of play of the negotiations;
- The second issue relates to the TTIP rules of origin and custom duties. Once TTIP is in force, the US will benefit from the elimination of tariffs when exporting to the EU and to Turkey via the EU. Turkey, on the other hand, cannot make use of the tariff elimination between the EU and the US by exporting via the EU to the US if clauses concerning the Rules of Origin end up in the final agreement.

Mavuş et al. (2013) have estimated the impact of TTIP on Turkey. In case of an ambitious scenario (removal of tariffs, reduction in NTMs (5 percent) and direct spill-overs (20 percent), Turkey would see a GDP change of -0.19 percent and an export change of 0.13 percent when Rules of Origin clauses do not allow for the same treatment of EU and Turkish goods on US markets. If there is no differential treatment of EU and Turkish goods in terms of access to the US market, the corresponding figures would be 3.8 percent and 6.9 percent respectively. The Bertelsmann Stiftung¹⁴⁷ study also found that impacts of TTIP on Turkey could be negative. The results from this study indicate a 2.5 percent drop in real per capita income and a drop of 0.4 percent in employment, but their analysis is based on a much more comprehensive agreement than is envisioned at this stage.

The results obtained through CGE modelling presented in this TSIA show a different picture when we compare them with the above results found in the literature. The reason for this difference is that compared to the Mavuş study, the updated CEPR (2013) CGE model simulates a more ambitious scenario. Compared with the Bertelsmann study, the updated CEPR (2013) CGE model *does* model spill-over effects whereas the Bertelsmann study *does not*. In both the ambitious and less ambitious scenarios, Turkey would gain in terms of GDP, by 0.1 percent in each case. Turkey is expected to see its exports and imports increase by 2.0 percent and 1.4 percent respectively (in the ambitious scenario). However, the net effect on the trade balance is expected to be negative. This could be explained by the current levels of import and exports. When looking at the wages for both low skilled and skilled workers, we expect TTIP to have a positive effect on wages, whereby this increase would be slightly higher for low-skilled workers. The result, however, that jumps out is the potential effect of bilateral Turkey-US trade following

¹⁴⁴ Ties that Bind; Turkey, TTIP and Transatlantic Partnership, Baris Omarli and Audrey Stevens, October 15, 2015.

¹⁴⁵ http://ec.europa.eu/taxation_customs/customs/customs_duties/rules_origin/customs_unions/article_414_en.htm.
http://ec.europa.eu/taxation_customs/40customs/customs_general_info/about/index_en.htm.

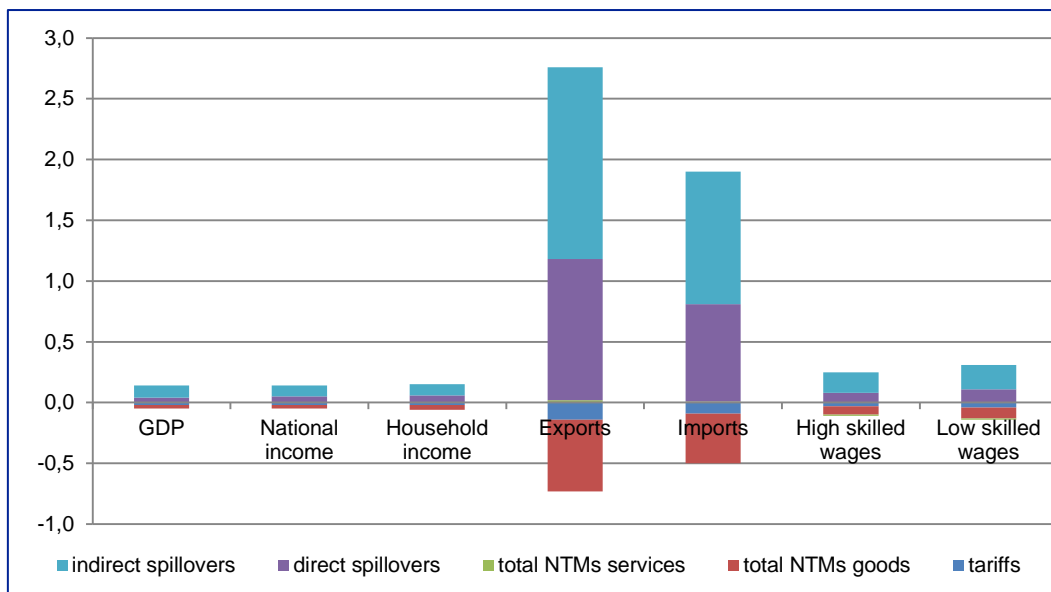
¹⁴⁶ Mavuş et al (2013), The possible effects of TTIP on Turkish economy. MPRA Paper No. 51900. https://mpra.ub.uni-muenchen.de/51900/1/MPRA_paper_51900.pdf.

¹⁴⁷ Felbermayr et al. (2014) *Transatlantic Trade and Investment Partnership: who benefits from a free trade deal?* Part 1: Macroeconomic effects. GED Bertelsmann Stiftung.
<http://www.bfna.org/publication/transatlantic-trade-and-investment-partnership-ttip-who-benefits-from-a-free-trade-deal>.

TTIP. Turkey's exports to the US are expected to go up by 1.3 percent, but imports from the US are expected to rise by 23.7 percent! This is because the US will benefit from the elimination of tariffs when exporting to the EU and to Turkey after TTIP comes into effect, but Turkey cannot make use of the tariff elimination between the EU and US because of Rules of Origin that could potentially be included in TTIP.

When we decompose GDP, total exports, total imports, and wage effects that are expected for Turkey from TTIP in the ambitious scenario (see Figure 3.13) we see that the indirect spill-over effect, i.e. increased trade between other third countries and Turkey, because of adoption of the EU/US system of standards, is positive for Turkey. Turkey will benefit from this event as it allows for production to meet only a single system of standards. If we isolate the effect of regulatory coherence in NTMs for goods, Turkey faces a negative impact. This is due to the fact that the EU and US engage in regulatory coherence, increasing the trade between the EU and US. The negative effect of EU-US NTM reduction for Turkey is met by positive effects that are also a result of this alignment (e.g. the direct spill-overs).

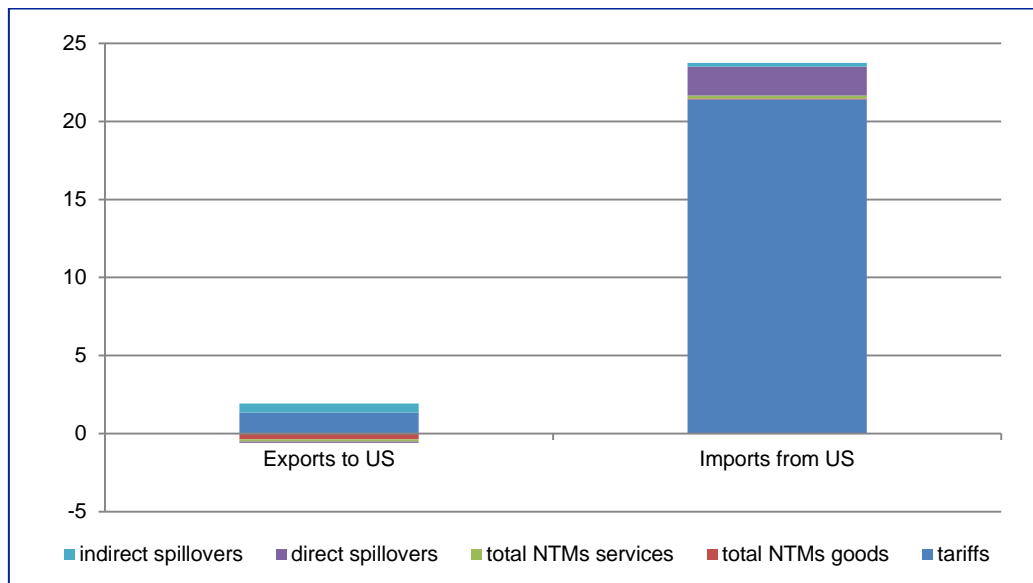
Figure 3.17 Expected TTIP impact on Turkey's GDP, NI, total trade and wages - ambitious scenario (percentage change)



Source: Updated CEPR (2013) results.

The most pronounced effect, as said above, is the change in imports for Turkey. In Figure 3.17 below, we show the expected changes in bilateral imports and exports between Turkey and the US. There is only one driver for the import increase: tariff liberalisation in TTIP.

Figure 3.18 Decomposition of expected TTIP impact on bilateral US-Turkey trade, billions EUR



Source: Updated CEPR (2013) results.

Turkey has raised the issue of inclusion in the TTIP negotiations several times to both the EU and the US, however neither has yet included any third countries. If third countries are included (as also Canada and Mexico would want) it would only slow down the process. Also, the EC would need a new mandate from all EU Member States that would allow them to negotiate also with Turkey.¹⁴⁸ Of course, Turkey could try to negotiate its own FTA with the US. However, earlier attempts by Turkey to start talks with the countries that are currently negotiating an FTA with the EU or have finished negotiations, have stranded.¹⁴⁹ Another option for Turkey would be to modernise the current Customs Union and try to better reap the benefits of TTIP and future FTAs concluded by the EU.

3.6. TTIP impact on Small and Medium Sized Enterprises

SMEs constitute a large part of the economy in the EU: they account for 99.8 percent of all non-financial business¹⁵⁰ enterprises and 67 percent of total employment in these sectors.¹⁵¹ In 2012, 619,000 SMEs were exporting outside Europe, of which 150,000 also exported to the US. These 619,000 SMEs make up 78 percent of all exporting firms in the EU.¹⁵² Trade with the US or in general is however not free of barriers. Given their size, it is often much harder for SMEs to cope with these trade barriers than it is for larger firms. In this section we will give a concise overview of SMEs in the EU, the sectors in which they mainly operate, the potential impact of TTIP on SMEs when looking at the sectoral results, the results from the SME survey, and a discussion of other literature. The analysis of SMEs at sectoral level and the issues they face are discussed in more detail in the sectoral chapters:

- Agri-food, Chapter 7;
- Chemicals sector, Chapter 8;
- Mechanical engineering sector, Chapter 9;
- Electrical and electronic sector, Chapter 10;
- Motor vehicles sector, Chapter 11;
- Maritime and air transport, Chapter 12;

¹⁴⁸ Kirişci (2015) TTIP's enlargement and the case of Turkey.

¹⁴⁹ These countries include, *inter alia*, Canada, Mexico, South Africa, India, Japan and Vietnam.

¹⁵⁰ All sectors except: financial services, education, health, arts, culture, government services, agriculture, forestry and fishing.

¹⁵¹ European Commission (2015) Annual report on European SMEs 2014/2015 – SMEs start hiring again.

¹⁵² European Commission (2015) t: "Small and Medium Sized Enterprises and the Transatlantic Trade and Investment Partnership" http://trade.ec.europa.eu/doclib/docs/2015/april/tradoc_153348.pdf.

- Financial and insurance services, Chapter 12.

3.6.1. SMEs in the EU

The Eurostat SBS database gives us an insight into the number of enterprises present in each sector for different size classes. All firms up to 250 employees are classified as SMEs, firms with 250 or more employees are seen as large firms. According to the Eurostat SBS database, the manufacturing sector in which most SMEs were active in 2012 is the metal (fabricated metals only) industry, with 381,139 firms. The processed food sector contains the second-largest number of SMEs (264,915 firms), followed by the sector that provides repair and installation of machinery and equipment (182,978). Other sectors with large numbers of SMEs include manufactured wood products, other manufacturing, furniture manufacturing, printing and reproduction of recorded media, non-metallic minerals, and machinery and equipment not elsewhere classified. Relatively few SMEs are active in the coke and petroleum sector, the pharmaceutical sector or in transport equipment. For all sectors, the majority of SMEs consist of firms with 0-9 employees. The share ranges from 63 percent in the pharmaceutical sector to 91 percent in the repair and installation sector.

Regarding the services sectors, the majority of SMEs can be found in the food and beverage services activities (1.5 million firms), real estate activities (1.3 million firms), legal and accounting activities (1.1 million firms), architectural and engineering activities (973,926 firms) and in the land transport sector (906,579 firms).¹⁵³ Sectors where one can find relative few SMEs are the air transport (2,700 firms), water transport (21,154), and telecommunications (45,235 firms) sectors. Like for the manufacturing sectors the SMEs in the services sector mainly employ 0-9 persons. In the real estate services sector we find the highest share where these firms account for 98 percent of all SMEs in the sector.

3.6.2. Impact of TTIP on SMEs

By comparing the results from the CGE modelling with the sectors with the most SMEs, we can see which SMEs might benefit the most, and which ones relatively less. In manufacturing, in terms of output¹⁵⁴, the largest gains are to be expected in the manufacturing of non-metallic mineral products, and other manufacturing, both would see output increase by 0.7 percent (see Table 3.16). The estimated gains for processed foods, other machinery, wood and paper products are 0.4, 0.4 and 0.1 percent respectively. The fabricated metals sector is, however, expected to experience a decline in output of 0.8 percent. When looking at the impacts on trade, it is the fabricated metal sector that is expected to see the largest increase in extra-EU exports, 21 percent¹⁵⁵, followed by non-metallic mineral products, other manufactures and wood and paper products (8.7, 6.0 and 4.0 percent respectively). For the extra-EU imports, the largest increase can be found for wood and paper products (10.3 percent) and fabricated metals (5.0 percent). Processed foods, non-metallic mineral products, other machinery and other manufactures are expected to undergo modest changes in their imports, ranging from 0.5 percent to 2.8 percent. When comparing these modelling results with all sectors, it seems that the sectors that will gain the most in terms of output and export are not the sectors in which most SMEs are active. Only the fabricated metal sector, that has a high share of SMEs, stands in the top three of largest effects on exports. Nonetheless, SMEs in the manufacturing sectors are, based on the modelling, expected to gain from the agreement.

For the services sectors, it is much more difficult to identify the sectors with a high share of SMEs that gained most from the agreement. The sector aggregations used in the model are rather different from Eurostat. However, since all services sectors are estimated to gain from TTIP in terms of both output and export, it is likely that SMEs in the services sectors will gain as well.

¹⁵³ Eurostat, SBS data, 2013

¹⁵⁴ Ambitious scenario only.

¹⁵⁵ Given the decrease in output this would imply that the EU fabricated metal sector will produce less for the domestic market, and focus more on the international market.

Table 3.16 Top 10 sectors with the most SMEs and expected impacts

Sector	Number of SMEs	Output	Extra-EU exports	Extra-EU imports
Manufacture of fabricated metal products	381,139	-0.8%	21.0%	5.0%
Manufacture of food products	264,915	0.4%	2.0%	5.0%
Repair and installation of machinery and equipment	182,978	n.a. ¹⁵⁶	n.a.	n.a.
Manufacture of wood and of products of wood and cork, except furniture	177,460	0.1%	4.0%	10.3%
Other manufacturing	147,270	0.7%	6.0%	0.5%
Manufacture of wearing apparel	124,635	n.a.	n.a.	n.a.
Manufacture of furniture	123,360	n.a.	n.a.	n.a.
Printing and reproduction of recorded media	122,977	n.a.	n.a.	n.a.
Manufacture of other non-metallic mineral products	97,283	0.7%	8.7%	1.5%
Manufacture of machinery and equipment n.e.c.	91,078	0.4%	1.5%	1.2%

Source: Eurostat SBS database and updated CEPR results.

Civil society groups often argue that TTIP is for the benefit of the largest companies. However, compared with large firms, it are the SMEs that often lack the time and resources to cope with the regulatory burden of international trade – in this case Transatlantic trade. A single barrier may be a cost factor for large firms that they will try to reduce or avoid (e.g. by locating locally instead of exporting) but could prove prohibitive for an SME. Due to small differences in e.g. labelling, testing methods, certifications, etc. between the EU and the US, firms often have to test a product twice or change labels before it can enter the US market. Again: SMEs often lack the capacity and/or resources to deal with these differences while larger firms can manage more easily. For the SMEs that do export, these costs are still a larger burden than for large companies, as the trade volume to cover the costs is much smaller for SMEs. In fact, having spoken with many SMEs as part of this and other studies (Ecorys (2009), we find that a large share of the bosses of SMEs can be characterised as ‘entrepreneurs’ and often ‘conceptual thinkers’ with regard to their product or product range. For example, they care about the image and design of their product, and can ‘see’ how this concept could work in the US (or EU). They do not care and have no affinity for rules and regulations that they consider burdensome and irritating. If too many of these rules and regulations cross their paths, they move their attention for growth and exports elsewhere. From interviews with SMEs, it also became clear that once attention and sales had shifted away from the US market (due to the prohibitive nature of trade barriers for SMEs), entrepreneurs rarely tried exporting to the US again.

One of the aims of TTIP is to reduce the regulatory burden in cases where regulations are only slightly different. This will especially help SMEs (for the reasons given above), as tests will only need to be performed once or when labelling requirements are straightforward and clear. In addition, SMEs will benefit from the reduction/removal of tariffs and the facilitation of customs procedures, while TTIP will provide improved market access for services and public procurement. Furthermore, the stimulation of investment and protection of intellectual property (IP) in the agreement would benefit SMEs.¹⁵⁷ TTIP has the potential to increase the number of SMEs that export. The question is whether TTIP would *de facto* make a difference in reducing these ‘small’ costs, which could trigger SMEs to begin or retry exporting to the US.

These foreseen changes are not only beneficial for future exports of SMEs, but also for future investments. SMEs often refrain also from investing in the US because of discriminatory regulations or other market access issues. When some of these barriers are lifted the potential for SMEs to invest in the US could increase.

Also SMEs that currently do not export directly to the US (and will still not export after TTIP) could benefit from the agreement as well. Many SMEs are part of the supply chain of other firms

¹⁵⁶ In the CGE model these sectors are included/combined with other sectors.

¹⁵⁷ http://trade.ec.europa.eu/doclib/docs/2014/march/tradoc_152266.pdf.

that do export to the US, for example wholesale and retail firms. They often export indirectly by providing goods or services to firms that do export. When the exports of the latter increase, the number of products required from their suppliers will increase as well. SMEs that do not export directly can also benefit from improved trade conditions in terms of more choice and cheaper products from the US.

Another group of SMEs that could gain from the agreement are the SMEs active in the non-tradeable sector. The non-tradeable sector includes for example, hairdressers or restaurants. Although these sectors do not export at all, increase household income could increase the demand for products in the non-tradeable sector.

3.6.3. Results from the SME survey

During the course of 2014, as part of this TSIA, Ecorys and the European Commission have launched an SME survey. The aim of the SME survey was to collect information on and to get better insights into the trade barriers European SMEs currently face when doing or potentially wanting to do business with the US. The outcomes of the SME survey feed into this report as well as into the negotiations directly. The European Commission has already published the overall results of the SME survey in detail.¹⁵⁸

In the various sector studies, we will further elaborate on the sector-specific findings of the survey concerning trade barriers faced and perceived by SMEs when doing business across the Atlantic. For now we will summarise the outcomes of the European Commission's report.

The survey has generated a total of 869 responses, of which the majority belongs to the smallest size class. As can be seen from Table 3.17, 279 firms with a size class of 1-9 employees responded to the survey. Additionally, many firms with a number of employees between 10-25 and 25-50 filled in the survey: 125 and 101 responses respectively. As the size of firms starts to increase we see a smaller number of responses to the survey with the lowest number of responses in the size class 200-250 employees. A more detailed distribution of the respondents, concerning country of origin and sector, can be found in Annex VI.

Table 3.17 Number of respondents per size class

Size class	Number of respondents
1-9 employees	279
10-25 employees	125
25-50 employees	101
50-100 employees	92
100-150 employees	63
150-200 employees	39
200-250 employees	28
250-500 employees	45
More than 500 employees	97

Source: survey data.

The survey asked some basic questions concerning size, sector, turnover of the firm and whether the firm exports or not. The second part of the survey focussed on Transatlantic trade and concerned questions related to the importance of the US market in exports, whether companies face trade barriers, and if so what type of barriers. Of all the firms that responded to the survey:

- 76 percent said that they were currently exporting to the US or other nations outside the EU;
- 8 percent indicated that they did not export at all;
- 4 percent indicated that they only exported within the EU;

¹⁵⁸ http://trade.ec.europa.eu/doclib/docs/2015/april/tradoc_153348.pdf.

- 12 percent indicated that they were marginal exporters, i.e. exporting once in while.

When making a distinction between the size of firms, it becomes clear that larger¹⁵⁹ firms export more beyond the EU than micro-firms. Of all large firms, 92 percent indicated to export, whereas “only” 57 percent of micro-firms indicated that they export. Of all the firms that are currently exporting, 74 percent indicated that they also export to the US, of which 26 percent indicated that they see the US as a priority market for their business. In absolute terms, there seems to be a relatively equal distribution in the total number of firms that export to the US per size class. This is also the case when we compare the numbers for firms exporting in general to the number of firms exporting to the US market. However, when looking at the total number of respondents, there is a clear distinction in size with regards to exporting to the US. Seventy five percent of all large firms questioned export to the US compared with 39 percent of all micro firms and 48 percent of all small firms.

The part of the survey that dealt with trade barriers perceived by SMEs contained 20 yes/no questions on a specific set of types of trade barriers (16 on goods and 4 on services). This list of trade barriers contained amongst others Sanitary and Phyto-Sanitary (SPS) measures, Technical Barriers to Trade (TBT) measures, border procedures, Government Procurement (GP) restrictions and measures on Intellectual Property. The full list of these barriers can be found in Annex VI. The three most important aggregate barriers that are perceived by all firm sizes are SPS measures, TBT measures and border procedures. Trade barriers that were reported the least are anti-dumping and safeguard measures, and investment measures. Within the category of SPS and TBT measures, the most burdensome issues are requirements for:

- Labelling;
- Testing;
- Packaging;
- Certifications;
- Minimum standards, and
- Bans and restrictions.

The issues that are most pressing can differ across sectors. In the survey, 91 respondents from the food and beverages sector identified 362 barriers. Around 90 of them concerned SPS measures related to food quality and safety. Among other issues identified, most involved labelling requirements, authorisations/certifications/inspections and border procedures. In the chemicals, pharmaceutical and rubber sector, 122 specific issues were identified, of which 31 related to standards and certification. The other most mentioned NTMs were measures on competition, border procedures and licences/quantity controls. These are also the NTMs that are most burdensome in the textiles, wearing apparel and leather industry – specifically requirements and standards concerning flammability were mentioned.

Firms exporting services to the US indicated that they are most affected by restrictions on:

- The movement of people; and
- Discriminatory measures and standards.

Concerning the former, the main issues here are the legal limits on travelling by employees due to quotas on the number of available visas and the allowed duration of stay in the US. Issues mentioned by both manufacturing firms and service providers are the differences in regulation across US states and the problem of finding proper information on the different rules and regulatory developments in the US States. The latter is an especially large burden for SMEs; in the EC's report it is indicated that 46 percent of all firms do not know who¹⁶⁰ applied the barrier. When this is not known it becomes more difficult (for SMEs) to obtain the necessary information about the barrier/regulation. This issue is most pressing in the mining and quarrying sector, where all firms questioned indicated that they did not know who applied the barrier. The numbers are also high among manufacturers of fabricated metals and for SMEs working in agriculture, forestry and fishing (87 and 86 percent respectively). Construction services and

¹⁵⁹ In the remainder of the chapter we will refer to the size class classification used in the SME report by the European Commission, i.e. 1-9 employees are micro firms, 10-50 employees are small firms, 51-250 employees are medium firms and 250 or more employees are large firms.

¹⁶⁰ Applied by US government, US states or a private standard.

water supply services, on the other hand, indicated that they are fully aware of who applied the barrier.

Although SMEs and large firms face the same level of tariffs and other trade barriers¹⁶¹, they are more burdensome and costly for SMEs. Owing to their smaller size and limited amount of resources, it is more difficult for SMEs to access the necessary information and cope with all the trade barriers.

3.6.4. Results from other studies

In addition to the SME survey, other studies¹⁶² have been conducted on what TTIP can do for SMEs in terms of trading with the US. Several of these studies agree that SMEs are the backbone of the European economy, accounting for around 99 percent of all businesses. (Salfi, 2015, *The logic of zero boosting SMEs trade in TTIP*; *Businesseurope*, 2015, *TTIP what's in it for Small and Medium-Sized Enterprises*; Workman, 2014, *Big opportunities for small business*), and are thus expected to see the effects of TTIP. In addition SMEs in the EU represent 67 percent of total employment and 58 percent of gross value added.¹⁶³ However, many SMEs do not export to the US (or export at all) at the moment, due to tariffs and burdensome trade barriers and the lack of resources and capacity to deal with them. The 2015 study conducted by the European Economic and Social Committee (EESC) mentions that less than 1 percent of all EU SMEs export directly to the US. Given this large share of non-exporting enterprises, liberalising trade between the EU and the US could definitely have a positive impact on SMEs.

According to these studies, besides tariffs, differences in the regulatory process, customs procedures and differences in standards and testing are the most cited trade barriers faced by EU SMEs when doing business with the US. The costs of compliance with these regulations for SMEs could proportionally be 10 to 30 times higher than for large companies.¹⁶⁴ Also high on the list is the lack of transparency and information concerning (changes in) the applied regulations in US States. Many SMEs struggle with finding the right information about all the different rules and procedures that are applied on the other side of the Atlantic and thus refrain from exporting altogether. SMEs that export often face extra costs when only at the last moment, at the US border, they find out that the procedures followed are not in line with the ones needed to enter the US. Other factors that hinder SMEs in exporting to the US include access to finance, protection of Intellectual Property (IP), complexity of rules or origin, lack of access to public procurement, lack of access to the service markets or visa requirements. For example, a British company providing safety and rescue equipment and training indicated it faces many challenges when exporting to the US. Slight differences between the American safety regulations monitored by OSHA compared with the British HSE means that the company has to double-test equipment and adapt training to US legislation, with considerable cost implications.¹⁶⁵

A reduction in these trade barriers and NTMs could thus have a positive direct impact on SMEs. In addition it could positively impact SMEs indirectly, when trade barriers are lifted. SMEs that are part of a value chain of other companies that export to the US can potentially see their sales in tandem with other companies. However, Salfi (2015) mentions that SMEs will only benefit from a quick and thorough removal of trade barriers. When the reduction in trade barriers is small and progressive it will not benefit SMEs much, as the overall burden remains substantial (and resources of SMEs small).

3.6.5. Conclusions

SMEs are the employment backbone of the EU and US economies and if TTIP would be able to facilitate trade for SMEs by removing trade barriers that are prohibitive for SMEs, and providing more information in an easily accessible way, its impact would be highly significant. SMEs are clear about what hinders them most in trading across the Atlantic: SPS measures, TBT measures, border procedures, and a lack of clear and available information. And these are

¹⁶¹ Except for visas, that is SME specific.

¹⁶² Workman, 2014; British American Business (2014); Business Europe 2015; ECIPE 2015.

¹⁶³ European Economic and Social Committee (2015) Opinion on the TTIP and its impact on SMEs.

¹⁶⁴ European Economic and Social Committee (2015) Opinion on the TTIP and its impact on SMEs.

¹⁶⁵ Local Specific Tangible how a EU-US trade and investment agreement can help businesspeople and their company in the UK. (2014) British American Business.

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indeed issues that are part and parcel of the TTIP agenda. When the issues that are most pressing for SMEs are addressed, it can benefit exporting SMEs in both the manufacturing and services sectors. Moreover, this change in (trade) costs and opportunities could make the difference between exporting and/or investing, or not exporting and/or investing. The TTIP agreement can also prove beneficial for SMEs that (still) do not export, as they can benefit from cheaper products from the US, but also will see their supplies to exporting firms increase. There is, however, a big challenge that needs to be overcome: the high level of abstract thinking and negotiating in TTIP stands far from the very down-to-earth practical problems and challenges that SMEs face on a daily basis; and can even keep them awake at night. This gap needs to be bridged through a mechanism that allows SMEs from the bottom up to reach the 'live' agreement TTIP and insert issues and questions that trigger a TTIP mechanism to look at and address them. In this respect, the EU proposal to set up websites with specific information helping SMEs finding out about tariffs and non-tariff measures, and the proposal to set up an SME committee that will interact regularly with SME stakeholders and bring their point of view on the implementation of TTIP to other TTIP committees can help SMEs better take advantage of the opportunities created by TTIP.

4. Overall social impacts

4.1. Introduction

In this Chapter we present the overall social impact elements of the Trade Sustainability Impact Assessment (TSIA). As such, it forms one of the core chapters of this study.

Negotiations on the Transatlantic Trade and Investment Partnership (TTIP) are being conducted around three pillars: market access for EU and US companies, regulatory co-operation and trade rules. At the same time, and in line with the TSIA methodology, we will investigate potential social impacts using causal chain analysis, beginning with changes in the production structure and the economic effects of TTIP (described in the previous chapter).

This Chapter begins with an assessment of the potential social impact of TTIP through the economic channel. For this we use the CGE and E3MG results (i.e. wage effects, employment effects and consumer price effects). These are the estimated impacts based on two broad scenarios (ambitious and less ambitious) that involve tariff liberalisations, regulatory coherence in non-tariff measures (NTMs) in goods and services, and public procurement. We then take these results and feed them into the E3MG model, which enables us to look at a much more detailed social level at the expected impacts. Given the limitations of quantitative analysis based on models, we continue to assess the trade and regulatory co-operation channels to complete the impact analysis. In section 4.4 we assess the potential social effect through the regulatory co-operation channel by looking at the possible impact of TTIP on adhering to the provisions in the eight International Labour Organisation (ILO) Fundamental Conventions and the potential effects for the provision of public healthcare. We conclude by assessing the impact of trade and regulatory co-operation on human rights.

4.2. Assessment of social impact through the economic channel

4.2.1. *General equilibrium impacts of a change in the structure of the economy*

Our quantitative approach for the social analysis starts from the general equilibrium analysis carried out for the economic analysis. The general equilibrium approach is favourable because the many interlinkages in the model can reveal a wide range of potential impacts.

For this chapter we focus on the wage, employment, consumer price and labour displacement effects of TTIP, as these constitute the core of the quantifiable social indicators that form the starting point of our analysis. The variables have all been introduced in the previous chapter, but as these results serve as important inputs for the following steps in our analysis – an analysis that will go into much more detail – we briefly return to the CGE results first. It is important to stress that the CGE results are presented at an aggregated level and give only a broad indication of the impact of TTIP for the average citizen.

Before we turn to the discussion of the wage and employment effects, an important note must be made regarding the labour-market assumption made in the model and therefore throughout this analysis. There are two approaches to modelling quantitative social effects that follow from policy changes.¹⁶⁶ For reasons explained in Chapter 1, we have chosen to follow the example of CEPR (2013) and assume a fixed labour supply. This choice comes at a cost; while it facilitates

¹⁶⁶ Technical limitations of the CGE model do not allow for a simultaneous analysis of wage and labour effects at the same time, and thus require a choice between a fixed labour supply (that is, a fixed number of workers in the economy, no new entrants) and fixed wages (e.g. no autonomous growth in the average wages of workers). The 'fixed labour supply' approach allows us to look at long-run/structural effects of policy changes, when a fixed (average) unemployment rate is more likely to hold. Policy changes are then fully reflected in wage changes and shifts of workers between sectors. The latter approach allows for new workers to enter or leave the labour force due to policy changes, but does not capture wage changes. While this latter approach provides more insights in the short-term (where wages are fixed through contracts), it implicitly attributes lower/higher unemployment in the long-term (exogenous from TTIP effects) to the calculated impacts of TTIP, leading to an over-/underestimation.

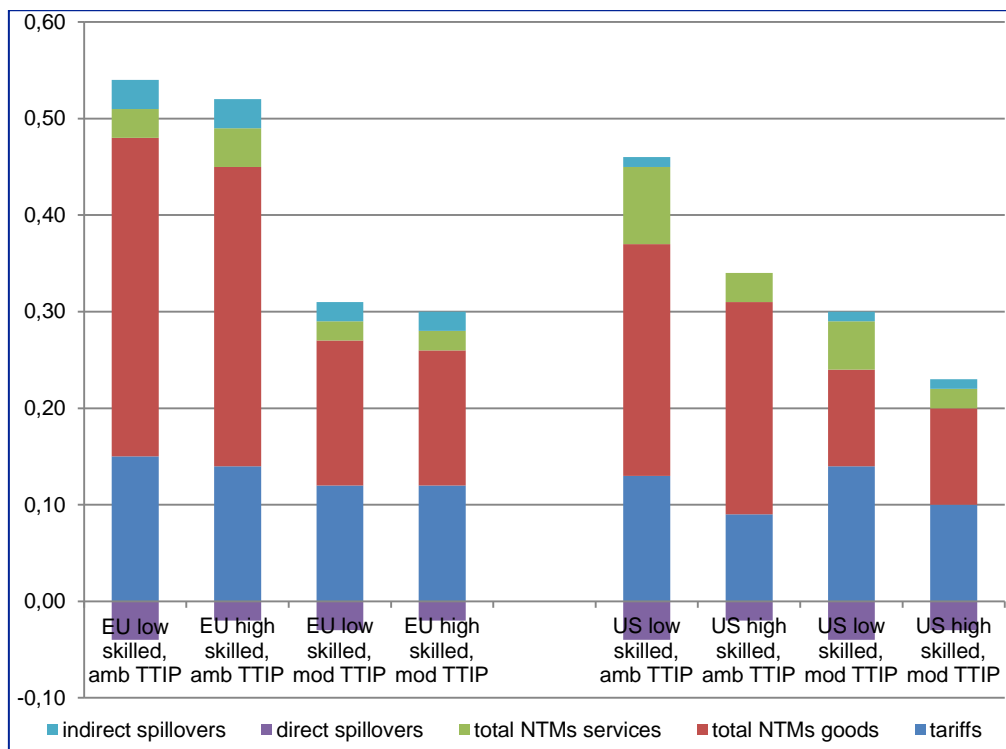
an analysis of the long-run effects of policy changes, short- to medium-term effects are less distinguishable. This disclaimer applies to the two sections that follow. In order to enhance the analysis in light of these drawbacks, a qualitative analysis is used to further identify relevant specific characteristics, trends and development. This nuances the outcomes from the quantitative model wherever necessary.

Wage effects

Before looking at the wage effects, it is important to reiterate that for an impact analysis of the long-run effects, the CGE model requires the fixed labour market closure assumption. This assumption is explained in the footnote of the previous paragraph, as well as in Chapter 1.3.2.

The full overview of the long-run impact of TTIP on wages – both for the high- and the low-skilled workers in the EU and the US is shown in Table 3.1 in section 3.2. Wages of high-skilled as well as low-skilled workers are expected to increase by 0.5 percent in the ambitious scenario and 0.3 percent in the less ambitious scenario.¹⁶⁷ In the US, the expected impact of TTIP on wages of high-skilled workers and low-skilled workers in the ambitious scenario are 0.3 and 0.4 percent respectively. For the less ambitious scenario, the wage rises are 0.2 and 0.3 percent for high-skilled and low-skilled workers, respectively.

Figure 4.1 Summary of (disaggregated) CGE wage effects



Source: Updated CEPR (2013) results.

Figure 4.1 summarises all wage effects, including a disaggregation as to where these changes come from. Clearly, the largest wage gains would come from successful regulatory coherence on NTMs in the goods sector, followed by the effects of tariff liberalisation. Direct spill-over effects would have a potentially negative effect on wages in both scenarios and for both high- and low-skilled workers, due to increased competition between EU and US firms. Aligning regulatory differences in services sectors have relatively the highest positive wage effect for low-skilled US workers. Within the EU, differences between wage changes for high-skilled and low-skilled workers are very small as Figure 4.1 shows. The wage impact for low-skilled workers in the US

¹⁶⁷ Less ambitious scenario: 98 percent of tariffs eliminated, 10 percent of NTBs eliminated on both goods and services (20 percent of actionable), except for processed foods, here a reduction of NTBs has not been modelled, 25 percent of procurement NTBs eliminated.
Ambitious scenario: 100 percent of tariffs eliminated, 25 percent of NTBs eliminated on both goods and services (50 percent of actionable), except for processed foods, here a reduction of NTBs has not been modelled, 50 percent of procurement NTBs eliminated.

is generally larger than that for high-skilled workers. For both scenarios, the difference is approximately 0.1 percentage point.

The total wage effects for the EU are larger than for the US in both scenarios. In the ambitious scenario, wages are expected to increase by 0.1 percentage point more in the EU than in the US. A similar difference is found in the moderate scenario, in which case the wages in the EU are also expected to increase slightly more than the US. This may be due to a larger increase in demand for labour in the EU than the US, which follows from increased economic activity as a result of TTIP. This larger demand for labour is, in this case, reflected in higher wages due to the fixed labour supply assumption discussed in Chapter 1. Under the alternative assumption of fixed wages, this increased demand for labour would have been reflected in higher overall employment levels.

Employment effects at sector level

As discussed above, theoretical limitations of the CGE model restrict the employment analysis to sector-level assessment, from which changes in overall employment cannot be derived (see footnote 141) The total overview of expected impacts of TTIP on employment at the sectoral level is shown in Table 3.11 in section 3.4. In order to focus on where the largest impacts can be found, we present Table 4.1 for the EU and Table 4.2 for the US with the three sectors with the largest percentage gains and the three sectors with the largest percentage declines.

Table 4.1 Most affected sectors in terms of employment in the EU (% change)

Sector	Ambitious scenario	Moderate scenario
<i>Largest gains</i>		
Leather products	+ 2.3	+ 2.0
Textiles	+ 1.5	+ 1.5
Clothing	+ 1.5	+ 1.4
<i>Largest losses</i>		
Electrical machinery	- 7.5	- 3.8
Non-ferrous metals	- 3.0	- 1.2
Iron & steel products	- 2.6	- 0.8

Source: Updated CEPR (2013) results.

Table 4.2 Most affected sectors in terms of employment in the US (% change)

Sector	Ambitious scenario	Moderate scenario
<i>Largest gains</i>		
Non-ferrous metals	+ 2.9	+ 0.8
Other meats	+ 2.1	+ 0.2
Other machinery	+ 1.4	+ 0.5
<i>Largest losses</i>		
Motor vehicles	- 2.9	- 0.6
Beverages, tobacco	- 2.5	- 1.3
Electrical machinery	- 2.4	- 2.4

Source: Updated CEPR (2013) results.

In agriculture and other primary sectors, expected employment gains in the US tend to be much larger than in the EU. Overall, within agriculture, employment in the US is expected to increase much more than the expected employment changes in the EU. In the manufacturing sectors, large impact changes occur predominantly in the electrical machinery (more so in the EU than in the US) and non-ferrous metals (where the 3 percent decrease in the EU is matched with a 2.9 percent increase in the US). The largest employment growth for the EU is expected to occur in the leather products sector (2.3 percent), textiles and clothing (both 1.5 percent). In the services sectors, no large shocks are expected based on the CGE impact analysis.

Labour displacement index (LDI)

The labour displacement index is an index that denotes the variation of employment changes across sectors. A high LDI denotes that there are large changes in employment across sectors. In other words, it presents the short-run pressure on employment sectors from changes in the

production structure of the economy because of TTIP. Employment changes in important and large sectors therefore have a larger weight than do relatively small sectors. The displacement index is generally larger in the ambitious case for both the EU and the US, because the economic adjustment following deeper degrees of liberalisation and further-reaching degrees of regulatory cooperation is larger. In the moderate case, the EU's weighted mean deviation is higher than that of the US. This means that in the EU – as a percentage of the total labour market – more people are changing jobs than in the US. The difference in the labour displacement index does not differ much between high- and low-skilled workers in the US, though in the EU, under an ambitious TTIP, labour pressures in the short run are marginally higher for the low-skilled.

Table 4.3 Labour displacement rates in the EU and US

Economic bloc Scenario	European Union		United States	
	Ambitious	Moderate	Ambitious	Moderate
High-skilled	0.5	0.3	0.5	0.2
Low-skilled	0.6	0.4	0.5	0.3

Source: Updated CEPR (2013) results.

4.2.2. Consumer impacts

The expected consumer impacts are shortly summarised in Box 4.1 and will be discussed and explained in more detail in the analysis below. In this analysis, we will follow the guidelines provided in Tool #28 of the Better Regulation Toolbox, and, in so far relevant, focus on the impacts on consumers along the lines proposed there.¹⁶⁸

Box 4.1 Expected impact on consumers summarised

- Real wages in the EU are expected to increase by 0.5 percent in the ambitious scenario for both skill groups (CGE modelling). In the US this increase amounts to 0.4 percent and 0.3 percent for low-skilled and high-skilled respectively;
- In the ambitious scenario consumers prices are estimated to increase by 0.3 percent in the EU and remain the same in the US;
- The impact on household income is an increase of 0.4 percent in the EU (E3MG modelling). This estimate is a combination of a 0.8 percent income effect and a -0.4 percent expenditure effect. Since the increase in income dominates the negative effect on prices, real household income still increases;
- As new markets become more accessible on both sides of the Atlantic, due to trade liberalisation, product choice and variety will increase.
- TTIP will not lead to lower product safety on either side of the Atlantic. Products that do not comply with the goods and services safety rules will not be allowed on the market.

Consumer prices, quality and availability of goods and services.

The impact of TTIP on consumer prices is calculated in the CGE model. Before going further it is important to note that changes to prices coming from this modelling set up also reflect closely the assumptions made regarding the labour market closure. The fixed labour market closure means that any increase in demand for labour will be met by wage increases, which will in turn push up firms' costs, and will be eventually be passed on to consumers as higher prices. In fact, the fixed labour supply closure can be said to lead to more pronounced price effects.

The aggregate figures presented in this section reflect price changes of a basket of goods and services that the average consumer buys. Broadly seen, one can identify four distinct categories of goods and services that feed into this consumption basket. These are shown in Table 4.4.

¹⁶⁸ Better Regulation Toolbox. European Commission. http://ec.europa.eu/smart-regulation/guidelines/tool_28_en.htm.

Table 4.4 Detailed explanation of basket of goods and services, per category

No.	Type of goods and services	Expected effect of TTIP on price
1.	Non-tradable, domestically produced	0
2.	Tradable, domestically produced in net-exporting sectors	+
3.	Tradable, domestically produced in net importing sectors	-
4.	Imported	-

The first category contains non-tradable goods and services such as haircuts. A priori the effect of TTIP on their prices in the EU can, be assumed to be marginal (and only due to general equilibrium effects). However, the CGE results show that a number of non-tradable goods and services do see an increase in prices. Higher income for the average EU citizen will push demand for example for personal services to a higher level. This leads to an increase in their respective price level.

The second category refers to tradable goods and services produced in sectors for which an important share of the production is exported. In other words these are sectors for which the EU economy has a competitive advantage. Given the size of the US market, the reduction of trade barriers may lead in these sectors to a significant increase in demand. If labour demand increases in those sectors to accommodate the higher demand for goods and services, this is likely to lead to price increases (notably due to the fixed labour supply assumption).

The third category consists tradable goods that the EU mainly imports. The EU producers will face stronger competition from the US in case of a concluded TTIP agreement and prices will tend to fall. Finally the fourth category represents goods that the EU only imports, which will now more freely enter the market (if barriers vis-a-vis the US were previously in place). For the latter two categories, the effect of TTIP on the consumer prices is similar; more competition leads to a downward pressure on domestic prices. The aggregated effect on consumer prices is the end result of the interplay between both opposing forces and of the composition of the consumption basket for the average EU consumer.

In the modest scenario, consumer prices will, on average, increase by 0.2 percent in the EU, and decrease by 0.1 percent in the US. In case of an ambitious agreement, however, consumer prices are not expected to change in the US while they are expected to increase in the EU (by 0.3 percent).¹⁶⁹ This reflects the price dynamics discussed above and the composition of consumption baskets for the average EU and US citizen. One other factor that plays a role is the fact that in the updated CEPR (2013) results, the NTMs in the processed food sector are not reduced. This means that the reduction in import prices of processed foods products would be more limited than if the liberalisation were more ambitious. Finally the price effects in the EU also reflect the higher estimated GDP effects. As the EU's GDP will grow more significantly than the US, its consumers will also be able to spend this additional income, pushing demand for EU goods and services. It is therefore important to note that these larger impacts on prices for European consumers should be seen in combination with the larger overall GDP impact and larger wage increases for European workers, compared to the impact on the US consumers.

Box 4.2 Expected impact on import prices for US goods and services

While the overall price changes are a combination of many driving factors, the liberalization entailed by the TTIP agreement will have a direct positive effect on the price of imported products and services from the US. The CGE results reflect that, on average, imported goods and services from the US will become 4.1 percent cheaper for EU consumers.¹⁷⁰ This decrease can be largely explained by tariff reduction and goods NTM alignment.

For each sector, we see different magnitudes of, and reasons behind the results. For instance, in some sectors the effect of tariff reduction has a large impact on import prices. Agricultural products are an example, where tariff reduction accounts for 90

¹⁶⁹ These aggregate figures serve as input for the E3MG modelling exercise, the results of which are presented in the next section.

¹⁷⁰ This is the weighted average of imports from the US per sector and price changes of goods and services imported from the US.

percent of the decrease in import prices, which will on average be between 20 percent and 30 percent lower as a result of TTIP. In other sectors, such as construction and communication services, NTM alignment are the main driver of the declining prices. On the other hand, increased demand from third countries as a result of TTIP can also lead to higher import prices for US goods and services. For instance, higher demand from consumers from third countries (through indirect spill-overs) push prices for imported personal services from the US. For an exact overview of the US import price changes, see the Tables III.51 and III.52 in Annex III.

Consumers will benefit not only from lower prices for US products and services but also from a wider choice. As far as the availability of goods and services is concerned, economic theory predicts that more competition and opening up to trade leads to a larger variety of goods and services available to consumers. The removal of NTBs in certain sectors can open up the Transatlantic market for small and medium-sized enterprises (SMEs). One can think of small, specialized bike manufacturers in the Netherlands, or wineries in Italy that, upon lowering of NTBs, can enter the US market. Similarly, a US manufacturer of little children's toys may not be able to enter the EU internal market unless NTMs are reduced. Please note that the exact increase in variety of goods and services available to the consumers depends on the final text. The sectors mentioned here are solely for illustrative purposes.

Consumer information and protection.

A number of stakeholders have expressed fears that consumer protection may be under threat as a result of provisions in the TTIP agreement. More specifically, BEUC claims that it may become much harder to introduce new consumer protection policies as it has to adhere to concepts such as '*not more burdensome than necessary*' and be the '*least trade restrictive*' option.¹⁷¹ This is the issue of 'regulatory chill', restricting the perception of governments that they can regulate in the public interest.¹⁷² However, in terms of actual legislative and rule-making ability, an EP commissioned study found that the regulatory sovereignty of legislators is unlikely to be affected by TTIP, noting that an assessment of the impact of transatlantic regulatory cooperation can only be made once the process can be observed.¹⁷³ Moreover, the European Commission (and the United States Trade Representative, USTR) have consistently claimed that the regulatory alignment will only occur in sectors where the existing regulation does not differ that much between the two parties.

Consumer goods and services safety

Friends of the Earth and BEUC fear that (as a consequence of regulatory cooperation) food and/or product safety could be at risk.¹⁷⁴ In certain sectors, such as food, the EU and the US have different systems or safety standards. If because of mutual recognition (in the automotive sector, for instance) or equivalent products with a lower standard will enter the market, they argue that consumers could be impacted negatively. Among the concerns in Europe are GMOs used in the US for final products¹⁷⁵ and differences in regulation regarding chemicals. The European Commission has stated right from the outset that the benefits of TTIP for consumers would not come at the expense of consumer safety or an erosion of standards.¹⁷⁶ This was reiterated by current Trade Commissioner Malmström, who has promised that products that do not comply with EU standards will not enter the EU market.¹⁷⁷

Impact on vulnerable consumers

The impact on different groups in society, will be discussed in the next section where the E3MG results will be introduced. Among these groups are also vulnerable consumers, who are likely to

¹⁷¹ <http://www.beuc.eu/blog/why-reassurances-that-ttip-will-not-affect-the-right-to-regulate-miss-the-point/>.

¹⁷² LSE (2015). Regulatory chill? Why TTIP could inhibit governments from regulating in the public interest. <http://blogs.lse.ac.uk/europpblog/2015/06/09/regulatory-chill-why-ttip-could-inhibit-governments-from-regulating-in-the-public-interest/>

¹⁷³ TTIP: Challenges and Opportunities for Consumer Protection.

[http://www.europarl.europa.eu/RegData/etudes/IDAN/2015/542222/IPOL_IDA\(2015\)542222_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/IDAN/2015/542222/IPOL_IDA(2015)542222_EN.pdf).

¹⁷⁴ https://www.foeeurope.org/sites/default/files/eu-us_trade_deal/2015/foe_ttip_factsheets_food_v2_web.pdf and <http://www.beuc.eu/blog/wp-content/uploads/2014/04/Factsheet-on-TTIP.pdf>.

¹⁷⁵ <http://www.globaljustice.org.uk/resources/regulatory-cooperation-ttip-blueprint-corporate-domination>

¹⁷⁶ <http://tacd.org/2013-tacd-stakeholder-forum-the-transatlantic-trade-and-investment-partnership-can-it-bring-benefits-to-the-people/>.

¹⁷⁷ <http://www.euintheus.org/press-media/cecilia-malmstrom-will-give-a-keynote-speech-on-ttip-at-the-2nd-annual-eu-us-trade-conference-organized-by-forum-europe/>

be found in the lowest income quintiles. Table 4.6 also displays the results for those *at-risk-of-poverty*. However, every consumer may become vulnerable at some point in their life, given sudden changes in their living conditions such as unemployment or illness. Other instance in which consumers may (temporarily) become vulnerable is when decision making is blurred by the complexity of the available goods and services, or failure to digest the information on which they base their choices.¹⁷⁸

Real household incomes

The CGE model output includes a measure of household incomes changes due to TTIP. This measure is compiled of consumer price effects, wage effects and effects from other sources of income. At this stage, the figures only reflect the economy as a whole and are not yet calculated for different economic groups, which we will take on in the next section. These figures can therefore not be compared to the E3MG outcomes.

Real household income is expected to increase by 0.2 percent for both the EU and the US in the less ambitious scenario. In case the ambitious scenario is negotiated, this effect doubles in size for the EU (at 0.4 percent) and increases to 0.3 percent for the US.

4.2.3. Detailed social impact analysis using E3MG

The previous section introduced the social impact-related CGE results of a potential TTIP agreement. It is important to reiterate that these results are presented at a high level of aggregation, that is, the wage changes are for average high- and low-skilled workers and employment changes are presented at sector level, but for the entire sector without a specification of the skills levels. The labour displacement index is calculated for a country as a whole. And, lastly, consumer prices are presented for a standard basket of goods, while in reality different groups of consumers consume different baskets of goods. This section will therefore introduce a more detailed analysis of the social impact of TTIP, with a focus on income and expenditure impacts for different population groups in society.

The E3MG model and social impacts

The E3MG model is well-equipped to quantitatively assess the social impacts of TTIP. Like the CGE model, it includes a number of equations that characterize the labour market, but at a more disaggregated level. Outputs from this model include consumer prices, expenditures, sectoral (un)employment and wages. This can then be linked to micro datasets from EUROSTAT to estimate the impact of TTIP on different economic groups in society. The contribution of the E3MG model lies predominantly in the inclusion of three non-working groups (the unemployed, retired and inactive).

Estimated income impacts from TTIP

For most European consumers, income from labour is not the only part of their total income. Therefore, the impact of TTIP on wages cannot directly be converted to the impact of TTIP on income. The EUROSTAT SILC database provides the relative shares of labour and other sources in total income, which allows us to calculate the impact on income for different social groups, taking into account that there are different income sources. Furthermore, this database contains data concerning indicators that are related to poverty, living conditions and social exclusion. This facilitates analysis of the impact of TTIP on different economic groups.

Estimated expenditure impacts from TTIP

The CGE model provides data on average consumer price changes. These results, however, are for a fixed basket of goods. Consumption patterns for consumers in the bottom of the income distribution are likely to be different from those in the very top. EUROSTAT data on mean consumption expenditures of different income groups allow for a more detailed analysis of what consumer price changes mean for the purchasing power of these groups. For each of the weighted parts of a consumption bundle we look at price changes. The total expenditure impact

¹⁷⁸ The consumer impact toolkit (#28 of the Better Regulation Toolbox) defines vulnerability as: "Consumer vulnerability is a dynamic concept, and every consumer may become vulnerable in certain situations, e.g. due to changes in life situations or because of the complexity of goods, services or marketing practices that make it difficult to verify the validity of their choice." http://ec.europa.eu/smart-regulation/guidelines/tool_28_en.htm

is the sum of the product of the price changes multiplied by the weighted components of each population group's unique consumption basket. Negative values denote that consumers will need more money to buy the same basket of goods, as opposed to a situation without TTIP. In Table 4.5 below, we present the different consumption baskets for different population groups that we use for the analysis. For example, we can see that the poorest quintile of the population spends 19 percent of their incomes on food, while for the richest quintile this is only 11 percent. If TTIP affects food prices more strongly than other consumption goods, the expenditure impact for the poor will be larger than for other economic groups.

Table 4.5 Weights of consumption baskets per population group, %

	All households	First quintile	Second quintile	Third quintile	Fourth quintile	Fifth quintile
Imputed rentals	14,8	10,1	14,8	16,0	16,2	14,7
Food	14.6	19.2	17.4	15.9	14.3	11.2
Petrol etc.	6.5	4.8	5.6	6.4	6.9	7.0
Clothing and footwear	5.7	5.3	5.2	5.5	5.8	6.0
Utilities	5.4	6.5	6.0	5.7	5.2	4.5
Actual rent	5.3	14.8	7.6	4.7	3.2	2.4
Catering services	5.0	4.0	4.4	4.7	5.2	5.4
Purchase of vehicles	4.8	2.6	3.5	4.3	4.7	6.4
Insurance	4.6	3.7	4.2	4.4	4.7	5.0
Recreational/cultural services	2.6	2.2	2.4	2.6	2.7	2.8
Top 10	69.4	73.2	71.2	70.2	68.8	65.5

Source: E3MG model.

Estimated total impact

The sum of the income and expenditure impacts calculated before is the total impact on each of the identified groups. These identified groups are:

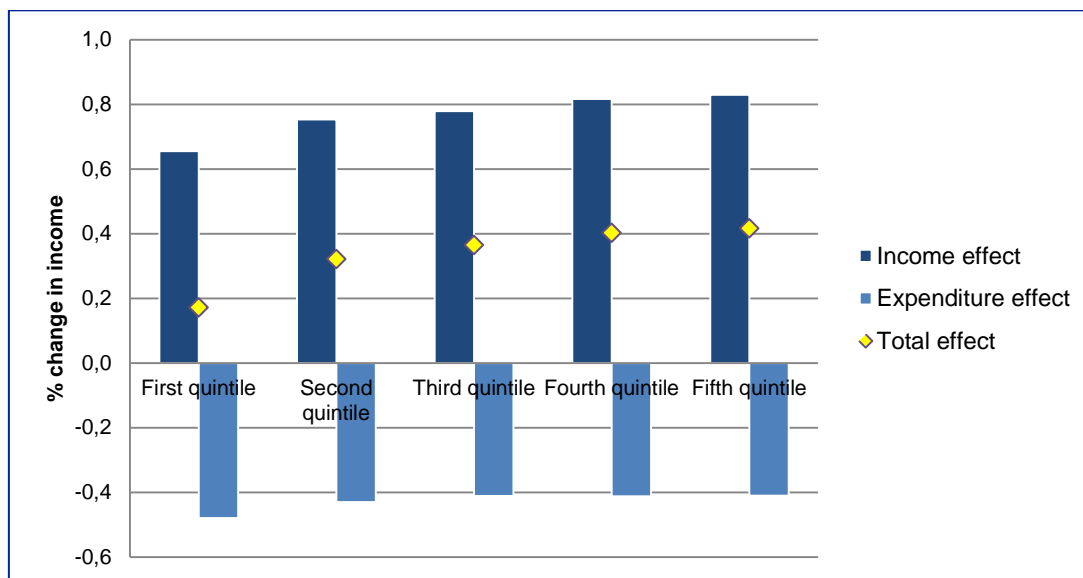
- Five income groups (equally divided over five quintiles, the first quintile covers the bottom 20% of the income distribution, the fifth quintile the richest 20%);
- Six socio-economic groups; and
- Two geographic groups.

The impact of TTIP on each group is distinct and unique, due to the different employment situations and/or different group-specific weights that determine the final consumption basket of goods.

Ambitious scenario

The effect of TTIP on the real household income of different income groups is displayed in Figure 4.3. The income effect for all income groups is positive. As we saw in the previous section, wages in the EU for skilled and low-skilled workers are expected to increase due to TTIP. These higher wages lead to higher income levels, though more so for skilled workers at the top of the income distribution than for others. The expenditure effect depends on the basket of goods that members of each quintile consume. Higher consumer prices are behind the negative expenditure effects. Food and utilities make up a larger relative share of the expenditure basket for those at the bottom of the income distribution than for the highest quintiles. For this reason, the expenditure effect is different for each quintile. As Figure 4.2 demonstrates, the largest gains in household incomes can be found for the highest quintiles. As most people in this part of the income distribution are employed in skilled jobs, they reap the benefits of higher wages. At the same time, the prices of goods in their basket increase by less than those of the poorer quintiles (in relative terms).

Figure 4.2 Changes in EU household income in 2030, %



Source: E3MG model, the total effect is the sum of the income and expenditure effects.

The model also allows for a distinction of the effect of TTIP on real household income in 2030 for different socio-economic groups. These include manual workers, non-manual workers, the self-employed and three groups of citizens without a job. These latter three groups therefore have a smaller income effect compared to their working counterparts. The total positive effect of TTIP on the real household income of the EU working population is approximately 0.4 percent. For the non-working population, the gains from TTIP are much smaller (less than 0.2 percent). There are no large differences between the effect of TTIP on the real household incomes of rural and urban populations, though both effects are relatively large and positive. Table 4.6 shows the results.

Table 4.6 Impact of TTIP on real household income in the EU in 2030, ambitious scenario

	Relative change (in %)		
	Total	Income	Expenditure
All households	0.4	0.8	-0.4
<i>Income groups</i>			
First quintile	0.2	0.7	-0.5
Second quintile	0.3	0.8	-0.4
Third quintile	0.4	0.8	-0.4
Fourth quintile	0.4	0.8	-0.4
Fifth quintile	0.4	0.8	-0.4
At risk of poverty	0.3	0.7	-0.5
<i>Socio-economic groups</i>			
Manual workers	0.4	0.8	-0.4
Non-manual workers	0.4	0.8	-0.4
Self-employed	0.4	0.8	-0.4
Unemployed	0.2	0.7	-0.5
Retired	0.1	0.5	-0.4
Inactive	0.1	0.5	-0.5
<i>Geographic groups</i>			
Densely populated	0.4	0.8	-0.4
Sparsely populated	0.4	0.8	-0.4

Source: E3MG model, the total effect is the sum of the income and expenditure effects.

Less ambitious scenario

The impact of TTIP on real household incomes in the moderate scenario is much smaller than in the ambitious scenario. Following the CGE results, the impact on wages is much smaller in the moderate scenario (0.3 percent versus 0.5 percent in the ambitious), such that the total income effect is also less than in the ambitious scenario. Remarkably, the expenditure effect is larger than in the ambitious scenario for a number of economic groups. This can be explained by different price changes of certain goods in both scenarios. For example, prices for personal services increase by more in the ambitious case than in the less ambitious case – but prices of other services decrease in the ambitious case, and increase in the less ambitious case.

If we look at specific groups in society, the effect of a less ambitious TTIP is not always positive. All results are presented in Table 4.7. It is important to note that the figures presented in Table 4.7 are sensitive to a number of confounding factors and that due to their very small absolute size, one should be careful in the interpretation of these numbers. Those who belong to the segment of society that is at risk of poverty (the lowest two quintiles of the income distribution) can expect a negligible impact, which is an average of the poorest quintile who actually are expected to see a marginal decline in their levels of household incomes combined with the second quintile who appear to have a marginal positive impact on real household income. Similarly, those citizens without a job (either unemployed, retired or inactive) will not benefit from TTIP because expenditures are expected to go up while they do not benefit from wage increases. While their income (or unemployment benefit) may rise slightly, their consumption basket becomes slightly more expensive.

Table 4.7 Impact of TTIP on real household income in the EU in 2030, moderate scenario

	Relative change (in %)		
	Total	Income	Expenditure
All households	0.0	0.5	-0.5
<i>Income groups</i>			
First quintile	-0.1	0.4	-0.5
Second quintile	0.0	0.5	-0.5
Third quintile	0.0	0.5	-0.5
Fourth quintile	0.1	0.5	-0.5
Fifth quintile	0.1	0.5	-0.5
At risk of poverty	0.0	0.5	-0.5
<i>Socio-economic groups</i>			
Manual workers	0.1	0.5	-0.5
Non-manual workers	0.1	0.5	-0.5
Self-employed	0.1	0.5	-0.5
Unemployed	-0.1	0.4	-0.5
Retired	-0.1	0.3	-0.4
Inactive	-0.1	0.4	-0.5
<i>Geographic groups</i>			
Densely populated	0.0	0.5	-0.5
Sparsely populated	0.0	0.5	-0.5

Source: E3MG model, the total effect is the sum of the income and expenditure effects.

Income inequality in the EU-28

The last quantitative social indicator that the E3MG model provides is the Gini coefficient. The Gini coefficient is a measure of the extent to which the income distribution deviates from a perfectly equal distribution.¹⁷⁹ Any increase in the Gini coefficient is to be interpreted as a step towards more income inequality.

¹⁷⁹ In the E3MG model, this measure is ranked on a range from 0 (everyone earns the same income) to 100 (one individual earns all the income). Source of definition: <http://data.worldbank.org/indicator/SI.POV.GINI>.

In the baseline, the EU-28 has a Gini coefficient of 30.00. The impact of TTIP on the EU-28 Gini coefficient is less than a 0.07 percent increase, resulting in a final value of 30.02. In the moderate scenario, the expected increase is half that. These results also follow from Tables 4.6 and 4.7. The top income bracket (the fifth quintile) will face a larger increase in their real household income than the lowest income bracket (the first quintile). While in the ambitious scenario real household income will increase for all groups, the largest (positive) impact is to be expected for the richest 20% of the income distribution.

Nevertheless, with a 0.07 percent increase in the Gini coefficient in the ambitious scenario and no significant change in the less ambitious scenario, the effect of TTIP on income inequality is expected to be very marginal.

4.3. Assessment of social impact through the trade channel

Social effects resulting from the *trade* channel are the most direct effects of trade policy. The *trade* channel covers the human health effects and access to medical devices triggered by trade provisions on certain products. Tariff provisions can make some goods cheaper, which could have a positive or negative social effect. The choice to look at human health impacts via a few categories of food and drinks, as well as medical devices and medicines is taken in close consultation with civil society. Because it is difficult to separate the potential impact channels totally, there is also an element of regulatory cooperation already involved in this section.

4.3.1. Case study 1: impact of TTIP on human health

TTIP is both about tariff liberalization and about regulatory cooperation. Both these elements have a potential impact on the prices – and therefore – quantities of goods traded. That is why – next to the case study on how TTIP could influence public health systems – this case study focuses on how TTIP could impact public health through trade liberalization (e.g. cheaper products¹⁸⁰) and through regulatory cooperation in the fields of pharmaceuticals and medical devices including intellectual property rights.

Trade between the EU-US in selected categories of consumption products and its impact on health

Trade in alcohol, tobacco and sugar

This section will look at the current trade relations between the EU and the US for a number of consumption products; sugar, tobacco and alcohol. The EU imported 15 percent of its total extra-EU imports from the US in 2014. Weighted average trade tariffs for these products range from 0.6 percent for alcohol to 22 percent for tobacco in Europe and 0.1 percent for alcohol to 120 percent for tobacco in the US in 2014. The trade tariffs function indirectly on the one hand to (partly) protect consumers from consuming these goods and provide domestic producers market protection. On the other hand trade tariffs drive up domestic prices due to a lack of competition in products and/or resources. Next to trade tariffs, trade in above commodities is hampered by non-tariff barriers. According to the MIRAGE project, NTBs for alcohol and tobacco lead to an increase in prices of approximately 14 percent for US imports and 50 percent for EU imports.¹⁸¹

Box 4.3 General impact(s) of tariff liberalization

Tariff liberalization, as part of a Free-Trade Agreement, between two countries should lead to an increase in trade between the two countries in a number of sectors. An increase in trade has economically speaking (generally) a positive effect on total welfare in both countries, caused predominantly by a reduction in prices of products and greater coherence of regulations. There are however also negative effects. Tariff liberalization can for instance lead to the closing down or outsourcing of a sector in

¹⁸⁰ We have selected a number of consumption products for this case study, after consultation with stakeholders in an earlier phase of the study. The exact impact on human health of consumption of these products is not necessarily comparable, as it predominantly depends on the level of consumption.

¹⁸¹ IFO Institut, 2013, Dimensions and Effects of a Transatlantic Free Trade Agreement between the EU and US.

country A to country B, caused by comparative disadvantages, caused by higher input prices and/or social –and environmental regulatory differences.

Table 4.8 below give an overview of current tariff lines, import volumes, and the share of EU imports from the US compared to total imports for alcohol, tobacco and sugar.

Table 4.8 EU-US trade in selected consumption products, 2014

Importance of selected imported food and drinks from the US					
Product group code	Imports from US (mIn EUR)	Total extra-EU imports (mIn EUR)	US in total extra-EU import (%)	Weighted average EU-tariff ¹⁸² (%)	Weighted average US-tariff (%)
Sugar ¹⁸³	58.4	2373.2	2.5%	11.3%	6.0%
Alcohol ¹⁸⁴	1230.5	5248.1	23.4%	0.6%	0.1%
Tobacco ¹⁸⁵	276.3	2631.7	10.5%	22.1%	120.2%

Source: Import values is Eurostat data, Ecorys calculations. Tariff data is AHS, 2014.

The Table above shows that there is a high disparity between EU and US import tariffs on selected product groups. If import tariffs for the above product groups would fall to zero c.p. a decrease in costs for consumers could be an outcome in both the EU and US.¹⁸⁶ The table also gives an indication of the importance of imports from the US in total extra-EU imports.

The impact of selected consumption products on public health

The products introduced in this section impact human health in different ways, and to different degrees. As with any consumption product, excessive consumption of these products can lead to adverse health effects. If these goods become more readily available and with lower prices than consumers are currently used to on the EU and US markets, as a result of lowering tariffs on these products in TTIP, consumers – subject to the law of demand – may be invited to consume more of these products. This potential adverse effect of TTIP on the targets of the UN Sustainable Development Goals (e.g. reduction of smoking, promotion of harmful use of alcohol, prevention of diseases, access to basic medication, etc.) is mentioned often by civil society.¹⁸⁷ Moreover, since the relatively more vulnerable groups of the population – those with relatively the lowest income levels – have the highest share of ‘food costs’ in their typical expenditure patterns (e.g. the poorest 20 percent of the EU population spends 19.2 percent of their income on food, while the top quintile spends 11.2 percent of income on food)¹⁸⁸, these effects could spread through society in an asymmetric way – implying that human health could be affected to different degrees for different population groups.

The study by Stuckler et al (2012) has shown, for instance that low-and middle income countries that signed an FTA with the US had an average increase of 63.4 percent in soft drink consumption per capita, much higher than the increase in consumption without the FTA. An increase of consumption of these products can not completely be attributed to an FTA, as for instance regulation can impact consumption levels in a similar way (for example the UK alcohol market deregulation). Middle-and-high income countries show a different development of consumption than would be reasonably expected due to TTIP. However, in the observed countries economic growth occurs without an observed increase in consumption of these

¹⁸² Based on AHS, 2014. Weighted average EU and US tariffs for sectors at the HS 2-digit level; 02 for red meat, 17 for sugar, 22 for alcohol, 24 for tobacco.

¹⁸³ Sugar contains HS codes 1701, 1702, 1703. From the WITS database, the retrieved applied US tariff for HS1701 is 5.8%, for HS1702 is 6.1%, for HS1703 is unknown. The applied EU tariff for HS1701 and HS1703 are unknown, HS1702 is 11.3%. The HS1702 tariff is therefore reported.

¹⁸⁴ Alcohol contains HS codes 2202, 2203, 2204, 2205, 2207, 2208.

¹⁸⁵ Tobacco contains HS codes 2401, 2402, 2403.

¹⁸⁶ c.p.: ceteris paribus; keeping all other things constant (such as a shift in import/export volumes or shift from/to products).

¹⁸⁷ Health and Trade Network, Health and Trade: what hope for SDG3? 28 September 2015, feedback received from the Health and Trade Network during civil society consultation. This publication is also available online, at: <https://healthandtradenetwork.wordpress.com/2015/09/28/health-and-trade-what-hope-for-sdg3/> [accessed 4 November 2015].

¹⁸⁸ According to the statistics used by Cambridge Econometrics to calculate expenditure effects from price changes predicted by TTIP.

products, showcasing the importance of (national) policies –and regulations in mitigating future NCDs risks¹⁸⁹.

Trade between the EU-US in medical innovations – and devices and the impact on public health

Trade in medicines and medical innovations

The global health sector is one of the biggest sectors in the world, amounting up to 7 trillion USD according to the World Bank. Furthermore the sector is expected to grow by 4.4 percent between 2014 and 2017 due to changes in demography and increased demand from Asia.¹⁹⁰ The health sector is of importance to both the EU¹⁹¹ and the US¹⁹² who are together responsible for 70 percent of innovative new medicines and 80 percent of global sales in these medicines.¹⁹³ The healthcare sector is next to this a pull factor for R&D investments in the EU and US. The sector accounts for one fifth of global R&D investments and in Europe the healthcare sector ranks second, after automobiles, in corporate R&D spending¹⁹⁴, making it one of the drivers in the knowledge dependent economy of Europe.

Intellectual property (IP) is very important in the pharmaceutical industry and necessary for investments in R&D. Under TTIP IP revision is seen by proponents as an opportunity for the EU and US to harmonise certain key IP issues (such as some standards, protection and enforcement approaches). An aligned IP approach could incentivise the investment in new innovative medicines according to industry.¹⁹⁵ Opponents of IP legislation alignment however stress that such a development is one of the major risks to EU health systems.¹⁹⁶ One of the main fears brought forward is that alignment of IP rules between the EU and US could lead to longer periods of regulatory data protection (RDP) than is currently the case. In addition, research from Oxfam indicates that in recent years pharmaceutical companies moved from a focus on developing innovative new medicines towards extension of patent right to increase their rate of return on investments.¹⁹⁷ When we compare the EU and US IP systems, we find that the US has a regime of 12 years for biologics, but 5 + 3 years for new chemical entities (e.g. small molecules), while the EU has 8 + 2 + 1 years for both biologics and new chemical entities – so there is not much difference between the EU and US in terms of the time periods when medicine monopolies are allowed. The EU, in its negotiating proposals, does not intend to harmonise this small difference in regulatory regimes in TTIP and hence does not aim to introduce changes to the current legislation.

Barriers to trade

The EU and US have for decades been the main health sector trading hubs, driven mainly by trade in medical devices, advanced medical technology and pharmaceuticals. As a result of this long trade relation there is close alignment between the trade blocs. Trade between the two hubs is however not optimal. The existing trade import tariffs on medical devices limits trade and market access opportunities for especially SMEs¹⁹⁸ and poses obstacles to a further reduction in healthcare costs.

Trade between companies in the pharmaceutical and the medical device industry is further hampered by regulations, regulatory practices and the general environment for protection of innovation. There is for example no clarity regarding defining of prior user rights; handling of patent applications; and/or how patentability is determined¹⁹⁹. Another example of a trade barrier, according to the sector, relates to duplicative clinical testing/product approval

¹⁸⁹ Stuckler et. al, 2012, Manufacturing epidemics: The role of global producers in increased consumption of “unhealthy commodities” including processed foods, alcohol, and tobacco. PLoS medicine, V9/I6.

¹⁹⁰ ECIPE, 2015, The health of Nations: A transatlantic trade and investment agenda for better healthcare.

¹⁹¹ Health expenditures is for most European governments one of the largest areas of government expenditure (around 20%), often only expenditures on social protection are higher (Eurostat, 2012).

¹⁹² More than 40% of Europe's export goes to the US and almost 67% of Europe's import are sourced from the US. (ECIPE, 2015).

¹⁹³ <http://globalhealthprogress.org/qa/ttipqa#question-222>, 11-09-2015.

¹⁹⁴ EFPIA estimated that in 2012 €30 million was invested in R&D by pharmaceutical companies.

¹⁹⁵ <http://www.lilly-europe.eu/global/img/PDF/Branch-of-TTIP-position-paper.pdf>.

¹⁹⁶ Feedback from Civil Society during the 9th of July workshop on the case studies for the TSIA in Brussels.

¹⁹⁷ Oxfam Novib, 2014. Trading away access to medicines “Revisited”.

¹⁹⁸ For SMEs a 1 or 2% trade barrier can already be a huge obstacle for trade due to associated administrative burden (ECIPE, 2015).

¹⁹⁹ LSE, 2015. TTIP: International trade, law, health systems and public health.

procedures, leading to higher R&D costs, hence higher prices and slower access of medicines in (the) overseas market.²⁰⁰ The EU and US already have a strong basis for regulatory cooperation in this field – both bilaterally and at the international levels at the International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use (ICH) and the International Medical Device Regulators' Forum (IMDRF) and TTIP could further strengthen this cooperation which could lead to consumer (price) gains. See Box 4.4 for a short example of the international cooperation towards a harmonized electronic submission system for drugs, and devices.

Box 4.4 Cooperation on a Harmonised Electronic Submission System for Drug, Devices

The International Medical Device Regulators' Forum (IMDRF) has in the last years focused on medical device harmonisation efforts, in the context of RPS. The IMDRF was launched in 2012 as the regulators-only successor to the Global Harmonization Task Force (GHTF), which disbanded in December 2012 after its device regulatory members decided to split off and form their own juncture without the involvement of industry. At present, organisations involved in the IMDRF include the **US Food and Drug Administration (FDA)**, Australia's Therapeutic Goods Administration (TGA), Brazil's National Health Surveillance Agency (ANVISA), Health Canada, the **European Union (EU)**, Japan's Pharmaceuticals and Medical Devices Agency (PMDA), Russian Ministry of Health and the affiliate organisations; the Pan American Health Organization (PAHO) and the Asian Harmonization Working Party (AHWP). Regulators have stated that IMDRF would maintain the regulatory workload previously discussed under the GHTF. Trautman, US FDA regulator, said: *"there is much for the medical device industry to anticipate coming out of IMDRF. No longer is the focus of global regulators just on regulatory harmonization. Instead, they are increasingly looking to a "regulatory convergence" in which additional parts of the regulatory ecosystem (e.g. the technical documents, standards, practices and scientific principles among them) are voluntarily adopted by multiple countries. The process of convergence represents an important form of regulatory cooperation which in turn makes possible additional, enhanced forms of cooperation and collaboration between regulatory authorities."*

A hot potato within the IMDRF – and the medical devices sector – was the global Unique Device Identification (UDI) system. A UDI is a labelling or marking standard by which regulators can keep track of a product—a sort of track-and-trace method for medical devices that allows anyone to determine from where a product originated and other information about a device. In addition, a UDI system is able to provide other benefits, such as allowing for the creation of a device registry to track the safety and efficacy of various products. Clearly, UDI would allow regulators to get more information about origins and other information about products, enabling them to better uphold and increase consumer health and safety protections. These constitute significant consumer benefits. The creation of UDI has been historically complicated by several regulators' attempts to put together their own systems, which have been in progress for many years. Indeed, national regulatory agencies have been drafting and publishing their own regulations, which could potentially lead to regulatory divergences. On the 17th of April 2013, the IMDRF issued a major guideline regarding UDI. This guidance provides "non-binding rules for use in the regulation of medical devices." The IMDRF explained that *"this guidance provides a framework for those regulatory authorities that intend to develop their own UDI systems - such that, when implemented, it achieves a globally harmonized approach to UDI."* *"It is expected that the regulatory authorities will follow the guidance when developing their own UDI requirements."* Furthermore, the hope, IMDRF said, is that *"UDI systems around the globe will be highly interoperable, allowing for the exchange of data on devices as they move throughout various regulatory systems and supply chains."*

The UDI example, provides a clear point in case how harmonisation can be stimulated globally – providing a global benchmark – while national regulatory authorities remain in charge of drafting their own UDI requirements.

Source: Regulatory Affairs Professional Society (RAPS) website, 19.11.2015.

²⁰⁰ http://globalhealthprogress.org/qa/ttipqa#question-222_11-09-2015.

The two tables below give an overview of current trade tariffs between the EU-US; import volumes; and the share of EU imports from the US compared to total imports for the pharmaceutical industry and medical device sectors.

Table 4.9 EU-US trade in selected sectors, 2014

Importance of selected imported medical devices from the US					
Product group code	Imports from US (mln EUR)	Total extra-EU imports (mln EUR)	US in total extra-EU import (%)	Weighted average EU-tariff ²⁰¹ (%)	Weighted average US-tariff (%)
Pharmaceutical industry (30) ²⁰²	21.449,7	53.954,0	39,8%	0.0%	0.0%
Other medical apparatus (902229)	5,3	13,3	39,8%	2.1%	0.8%
X-ray tubes (902230)	80,5	129,0	62,4%	2.1%	0.9%
Medical parts and accessories (902290)	352,5	749,8	47,0%	2.1%	0.9%

Source: Import values is Eurostat data, Ecorys calculations. Tariff data is AHS, 2014.

Table 4.9 shows that there is a disparity between EU and US import tariffs on selected sectors and product groups, excluding pharmaceuticals where no tariff exist. If import tariffs for above product groups would be reduced to zero c.p.²⁰³ – indirectly – a decrease in costs for consumers could be the outcome in both the EU and US. The removal of tariffs (specifically small tariffs) are expected to especially benefit SMEs, because – especially for them – they reduce costs disproportionately.

Table 4.9 also gives an indication of the importance of US export to the EU for selected product groups. The last column shows, for instance, the strong connection between the EU-US in the pharmaceutical industry (40 percent of all extra-EU imports come from the US) and the medical devices sub-groups (with the US share in total extra-EU imports ranging between 40 percent for other medical apparatus to 63 percent for X-ray tubes).

Impact of TTIP on trade in selected public health related sectors

This section describes the identified main extra additional economic impacts (increased exports – or other effects) that can be expected and attributed to TTIP.

Expected impact of TTIP on public health with respect to selected consumption products

The situation for this group of products is assessed by comparing the expected trade world with TTIP to the baseline trade forecasts without TTIP. In this way we can identify the potential impact of the Transatlantic Trade and Investment Partnership.

We expect, as stated before in the section on tariff liberalisation, that the removal of the trade tariffs on most of the identified categories of consumption products will lead to a decrease in price for these goods.²⁰⁴ An exemption is spirits, for which tariffs on both sides of the Atlantic are zero already. For those consumption products that will become cheaper, the expected impact of such a price decrease is difficult to predict, since this would depend on the price elasticity of demand.²⁰⁵ For instance, in the case of tobacco: will a European consumer currently

²⁰¹ Based on AHS, 2014. Weighted average EU and US tariffs for sectors at the HS 2-digit level; 02 for red meat, 17 for sugar, 22 for alcohol, 24 for tobacco.

²⁰² There are no EU import tariffs on pharmaceuticals and very few on US import.

²⁰³ c.p.: ceteris paribus; keeping all other things constant (such as a shift in import/export volumes or shift from/to products).

²⁰⁴ EPHA, 2015, EPHA contribution – public health concerns on food and agriculture in TTIP.

²⁰⁵ We should also note that decreases in intermediate goods, such as sugar as defined for this case study, do not necessarily lead to lower prices for consumers. Sugar as a consumer product is relatively

smoking start to smoke more if cigarettes become cheaper? Will EU consumers who do not smoke now start smoking? In the cigarettes example, we know cigarettes to be very price inelastic (i.e. the cigarette smokers are very price insensitive) and thus consumers are expected not to change the quantity of cigarettes they smoke very much. In the longer run, new consumers might prefer the lower priced goods, however, leading to an increase in smoking. It is important to note that these categories of food and drinks may only serve as an input for a final retail good (e.g. sugar) or face additional levies and excise duties that are more important in the determination of the price than import tariffs (e.g. tobacco).

Having described this direct tariff effect, the question that then follows is whether this is a desirable development from the perspective of the EU and EU Member State regulators and whether they can act upon this undesirable development. Currently regulators and EU Member State governments are actively trying to reduce consumption of certain types of commodities by putting high(er) taxes on these commodities and/or by dis-incentivising consumption through non-regulatory measures. The current European retail price for tobacco is for instance around 75 to 87 percent higher than global market prices due to taxes in place to discourage consumption of tobacco. In addition, governments increasingly put national regulatory barriers in place to reduce consumption of tobacco, for instance through prohibiting smoking in public places. So the potential impact of removing trade tariffs on the selected consumption products on health can be mitigated by measures taken by (national) governments. Policies and regulations can, through taxation, increase the price of these commodities and keep total consumption stable, balancing the possible increase in consumption as a result of trade liberalization.

Civil society fears, however, that through Investor Protection and (at least the 'old' version of) ISDS, (public health) regulators could be put off from responding in a regulatory manner to this price decrease (i.e. the argument of 'regulatory chill'). While under the pre-TTIP, pre-CETA Investor Protection and ISDS rules, this concern would certainly be worth debating, under the latest EU negotiating proposal on Investor Protection and Investment Court System (ICS) things look different.²⁰⁶ This new EU proposal is different from earlier ongoing practices in that it strengthens the right to regulate in a dedicated new article, a new system for resolving disputes – the Investment Court System – is proposed, and an appeal mechanism is envisaged. Especially the first innovation matters from the perspective of human health. Article 2 (Investment and regulatory measures/objectives) sub 1 reads: *"The provisions of this section shall not affect the right of the Parties to regulate within their territories through measures necessary to achieve legitimate policy objectives, such as the protection of public health, safety, environment or public morals, social or consumer protection or promotion and protection of cultural diversity."*²⁰⁷ One can for example look at tobacco policy, in which case Article 2 of the investment chapter states that governments can still draft and implement strong tobacco control legislation, without potential litigation by the tobacco industry.

Expected impact of TTIP on trade on the medical device sector

Economic impacts on the pharmaceutical and medical device industry and public health are compared to the baseline trade and the expected impact based on the goals of EU negotiators as set out in the respective position papers.

EU negotiating aims regarding medical devices

Medical devices are a vital part of both the EU and US medical systems. Currently sometimes duplicative testing is needed. Under TTIP the EU negotiators plan to remove these duplicative audit requirements to reduce costs and speed up the take-up of new innovations two-ways across the Atlantic. The main goals are to achieve convergence of the Unique Device Identification (UDI) (traceability) systems, provide for common electronic data submission forms (Regulated Product Submission) and recognise audit results of each other's Quality Management Systems (QMS).

inelastic, such that price changes may not heavily impact demand. Other industry-specific characteristics also play a role; for instance, price transmission along the supply chain may not work efficiently. For the sugar sector, see for instance http://ec.europa.eu/agriculture/external-studies/2012/sugar-price-transmission/fulltext_en.pdf

²⁰⁶ On the 12th of November, the EU sent its new proposal on Investor Protection and Investment Court System to the US.

²⁰⁷ http://trade.ec.europa.eu/doclib/docs/2015/september/tradoc_153807.pdf.

Expected economic impact of TTIP on trade in the medical devices sector

Tariff liberalisation in the field of medical devices is not expected to lead to significant changes due to current existing low tariff rates. Having said that, given the existence of complex global value chains, where raw materials, parts and components and final products are traded heavily – implying that some part or component may be crossing international borders multiple times – also low levels of tariff may have a significant impact since they are counted multiple times. A larger impact of TTIP on medical devices could come from the following regulatory elements, also highlighted in the EU's position paper on medical devices:

- Mutual recognition of manufacturer's quality management systems (QMS) audits;
- Further convergence of systems of identifying and tracing medical devices (UDI – see Box above);
- Convergence of models for marketing submissions (Regulated Product Submission).²⁰⁸

If the EU and US can further align their UDI in TTIP – flanked by the international discussions at the IMDRF – and if EU and US could mutually recognise QMS audits, producers and hence consumers are expected to financially benefit because – without affecting protection levels for consumer health, the price for medical devices could be lowered. We expect that TTIP could have a positive economic impact on the medical devices sector if these negotiating ambitions are achieved.²⁰⁹

Expected (regulatory) cooperation through TTIP and its impact on medical innovations

TTIP will affect trade between EU and US pharmaceutical if regulatory cooperation in the field of non-tariff barriers is achieved.

EU negotiating aims regarding medical innovation (pharmaceutical sector)

The main goal of the EU negotiators with respect to pharmaceuticals in TTIP is related to strengthening the already ongoing bilateral and multilateral level talks (e.g. via ICH), with a particular focus on establishing bilateral commitments that would facilitate pharmaceutical products authorisation processes and increase agencies' resources for inspections and exchange of confidential information, as well as fostering additional harmonisation of technical requirements in new areas like biosimilars, paediatrics, generics and terminology. Finally the EU and US aim to reinforce joint approaches on scientific advice and evaluation of quality by design applications.²¹⁰

'Facilitating pharmaceutical products authorization processes' is a very important goal and currently a significant non-tariff measure because there are unnecessary duplications and best practices could be shared more than is currently the case in the bilateral and multilateral dialogues. Therefore, the aims in pharmaceuticals include reducing unnecessary duplications (also with respect to clinical trials) and building on best practices for regulatory practices. If the negotiations are breaking significant ground on these two goals, patient safety, innovation, and cost-effectiveness could be the result. For example, the shorter the timeframe needed to go through an authorization process for a new medicine (on either side of the Atlantic) the faster, new EU (US) medical innovations can reach US (EU) consumers. At a macro-level that means that the rate of medical innovation is sped up by allowing innovations from elsewhere (read: the US) to reach the EU market faster than is currently the case. This does require a degree of focus of regulator's resources – but that is also a clear negotiating aim.

The second important NTM regarding medical innovation has to do with Intellectual Property protection, on which the EP said the following in 2013: *"IP is one of the driving forces of innovation and creation and a pillar of the knowledge-based economy and TTIP should include strong protection of precisely and clearly defined areas of IP..."*. Based on this and discussions with stakeholders we expect that TTIP will lead to increased cooperation between the EU and US

²⁰⁸ EU position paper on medical devices. DG Trade website, downloaded 18th of November 2015.

²⁰⁹ Note: Increased competition could lead to local negative impacts and local unemployment in sub-sectors. If such impacts are expected due to EU trade liberalization the EU can prolong tariffs to reduce short-term effects and allow companies to slowly phase out from a market.

²¹⁰ EU position paper on pharmaceuticals. DG Trade website, downloaded 19th of November 2015.

regarding IP. But from the EU position paper on IPR, it is clear that in TTIP the IPR chapter is expected to be a limited one, focusing on a few core issues only:²¹¹

- Listing of international IP agreements to which both sides are committed (i.e. information exchange);
- Listing general principles that stress the importance of IP as a tool for innovation, growth and jobs, as well as a number of high-standard agreed principles on key topics (envisaged in a preamble);
- Binding commitments on a limited number of significant IP issues (details in the EU position paper);
- Cooperation on areas of common interest.

Civil society is concerned – in particular – about the length of patents and whether this length could be increased as a consequence of TTIP, making medicines more expensive for more extended periods of time, and delaying the introduction of cheaper generic medicines to uphold the *human right to health*.²¹² They state: “IP provisions will lead to a lock up of technology and stifle independent innovation, leading ultimately not to job creation but to stagnating employment”²¹³. Indeed, from an economic viewpoint, granting longer periods of monopoly power could lead to lower levels of innovation, higher prices and lower levels of medicine production than optimal for society. On the other hand, without the option of recovering R&D investment costs no pharmaceutical company would invest in the future in developing new drugs because there would be no chance to earn back the investment.²¹⁴

Hence we looked carefully into this concern. We first of all find that the duration of patent protection is 20 years in both the EU and US so there would be no rationale for regulatory alignment in TTIP of something that is already aligned. Second, we do not come across evidence – from the accessible texts – that the EU and US seek to extend the exclusivity time on pharmaceutical products. There is, however, already the provision (not in TTIP) that the terms of a pharmaceutical patent could be extended by a supplementary protection certificate (SPC). An SPC is meant to compensate for the time needed to obtain marketing authorisation of pharmaceutical products, and could extend the patenting period by up to five years. All EU Member States already have the SPC option and the US has a very similar system to the EU. Hence it is unlikely this issue will be addressed in the IPR Chapter of TTIP. Nonetheless, it would be worthwhile to examine whether the time period on SPCs could not be shortened in case TTIP would be successful in terms of creating shorter timeframes needed to go through an authorization process and introducing a new product on the EU (US) markets.

Conclusions

This topic was selected to investigate the potential effects of combined tariff and regulatory cooperation elements in TTIP for human health. We looked at impacts of TTIP for a number of food and drinks categories and medical innovations and devices. Regarding food and drinks products we found that tariff liberalisation could lead to increased consumption of these commodities since this may have a price reducing effect, depending on the demand elasticity. This potential negative effect would be disproportionately higher for the lower income strata of the population (as food is a larger share of their expenditure).

However, we also find that the proposed provisions in TTIP regarding the states’ right to regulate in the public interest (e.g. in the area of human health) sufficiently safeguard EU Member States’ freedom to address this negative tariff effect on human health, if they wish to do so, in order to meet their human rights obligations. With respect to *medical innovation and medical devices* we found that the impact of removing the tariff on medical devices because of TTIP could be positive because hospital equipment would get cheaper, reducing health care costs. We also found that the potential impact of regulatory cooperation – for medical devices this means removing duplicative testing requirements (e.g. mutual recognition of quality audits) and speeding up the take-up of new innovations in medicines (e.g. through convergence on

²¹¹ The EU position paper on IPR. DG Trade website, downloaded 19th of November 2015.

²¹² A concern that came to the fore during the September 21st, 2015 workshop with civil society in Brussels as part of this TSIA.

²¹³ [http://www.europarl.europa.eu/RegData/bibliotheque/briefing/2014/140760/LDM_BRI\(2014\)140760_REV1_EN.pdf](http://www.europarl.europa.eu/RegData/bibliotheque/briefing/2014/140760/LDM_BRI(2014)140760_REV1_EN.pdf).

²¹⁴ Berden, K. and C. van Marrewijk (2007) ‘On the static and dynamic costs of trade restrictions’. The Journal of Development Economics, 2007.

RPS) – could be still more substantial. TTIP could flank and strengthen the ongoing EU-US dialogue at the ICH and IMDRF. This work is helping to simplify trade in medical devices while improving patient safety (e.g. regarding UDI). Finally, there is no evidence that the EU would intend to harmonise the IP regime for medicines with the US, which – some fear – could lead to longer exclusivity for patent rights.

4.4. Assessment of social impact through the rules-setting channel

Having looked at the social impacts through the economic and trade channels, we turn to the potential effects through the channel of rules-setting. In Chapter 3 we have seen that the bulk of the economic positive effects can be attributed to the processes of regulatory co-operation and regulatory coherence of non-tariff measures in goods. It is also clear that – in contrast to tariffs – there is a clear rationale for having certain rules and regulations in place, e.g. to ensure consumer safety, social protection, environmental protection, etc. As such, the economic gains presented in Chapter 3 are a potential positive effect of TTIP, but only if they do not come at the expense of what the rules and regulations were created for in the first place. The most important issues raised in the social dimension are the impact of TTIP – through rules-setting – on ILO Fundamental Labour Conventions and the potential social impact of TTIP on public healthcare services. Both issues were prioritised in workshops with civil society over the summer of 2015 and they are covered in this section.

4.4.1. Case study 2: impact of TTIP on ILO Fundamental Conventions

The ILO has identified a number of labour rights, called the core labour standards that should apply, irrespective of the stage of economic development of the country. These four core labour standards, codified in eight Conventions (the "Fundamental Conventions"), constitute the social 'floor' of the world of work and deal with the freedom of association and collective bargaining, the elimination of child labour, forced labour and discrimination.²¹⁵ All EU Member States have ratified and implement all eight of the fundamental Conventions, whereas the US has ratified just two, and tends to follow the letter of the other conventions to different degrees.

The potential impact of TTIP on ILO Fundamental Conventions as a proxy for the impact on labour standards has been identified as a significant social issue, as was echoed by stakeholders. These concerns have emanated from both sides of the Atlantic. The European Trade Union Confederation (ETUC) recognises that, should TTIP include best practices, it could bring a renewed energy to the stalled negotiations at the multilateral level. However, ETUC has concerns regarding what they see as the failure of the US to protect the right to organise and negotiate collectively.²¹⁶

On the other hand, their American counterpart (The American Federation of Labour and Congress of Industrial Organizations - AFL-CIO) voiced concerns regarding the differences between EU Member States in their level of worker protections, despite the ratification of the ILO Fundamental Conventions. It sees, however, possibilities for the institutionalization of mechanisms that go beyond the 'lowest common denominator'. These include a number of EU directives regarding the consultation between workers and MNEs, stronger worker protection related to health and safety, and equal treatment of temporary workers.²¹⁷

We will address this issue in the following way: first, we introduce the rationale and background to fundamental labour conventions and their adoption. Second, we introduce the eight ILO Fundamental Conventions. Then, taking each Fundamental Convention in turn, we discuss the different statuses of these in the EU and the US. It is important to note that ratification does not necessarily imply compliance, all the while non-ratification does not mean that parties cannot follow and respect the letter of the ILO Fundamental Conventions.

Based on the ambitions and positions of the EU and the US in this area, we review what impact TTIP could possibly have on the labour standards bilaterally (i.e. within the EU or the US as a

²¹⁵ The International Labour Organization's Fundamental Conventions
http://www.ilo.org/wcmsp5/groups/public/---ed_norm/---declaration/documents/publication/wcms_095895.pdf.

²¹⁶ ETUC position on the Transatlantic Trade and Investment Partnership. Downloaded 18.02.2016.
<https://www.etuc.org/documents/etuc-position-transatlantic-trade-and-investment-partnership>.

²¹⁷ <http://www.aflcio.org/Issues/Trade/U.S.-EU-Free-Trade-Agreement-TTIP>.

whole) and where relevant also internationally (i.e. the effect of TTIP on adoption of labour standards in international forums or in third countries). As far as possible, we will refer to the latest information from the negotiations, like – for example – the EU negotiating position.²¹⁸

Rationale and background

Both the EU and the US aim to create more growth and wealth by opening goods and services markets, co-operating more in the areas of rules, standards and regulation, and facilitating trade – and believe TTIP would contribute to this aim. While concerns have been expressed that an increase in growth and wealth should not be at the expense of workers' protection, TTIP is actually envisaged to promote the ILO core standards and benchmarks.²¹⁹ From early on in the TTIP negotiations, the EU has been clear about its intention to include an ambitious sustainable development chapter in the agreement, which aims *inter alia* to promote the protection of people's rights at work.²²⁰ The key building blocks of this section of the agreement concerning labour standards are the Decent Work Agenda, the ILO core labour standards and related Fundamental Conventions, and other ILO labour standards.²²¹

According to the EC (position) papers, the EU aims to support core international standards and conventions for labour, while at the same time governments will retain the right to define and regulate labour protection domestically at the level deemed necessary.²²² The current EU proposal for the sustainable development chapter is one of the most ambitious sustainable development chapters in a trade agreement so far.²²³ While the enforcement of the provisions by both parties remains subject of discussion, Mrs Malmström said, presenting the new proposal, that:

"Trade is not only a tool to create new economic opportunities for consumers, workers and employers, but also a tool to help the world become a more responsible place. Trade is not just about our economic interests, but also about values. Child labour, insufficient workers' rights or irresponsible corporate behaviour are global scourges that I want trade policy to help us deal with. I made it my clear priority in the new 'Trade for All' strategy and I want to put it into practice in our agreement with the US. That's why we are proposing a very ambitious approach to sustainable development in the EU-US trade talks, which will be respected, implemented and enforced when we sign up to them. Working together with the US would make us more efficient in fighting globally for more responsible practices. At the same time, we would ensure that our existing high, yet sometimes different, standards in the EU and the US are upheld."²²⁴

Although the European Commission has been very clear – especially in its latest proposal for the Sustainable Development chapter on the 6th of November 2015 – not to agree to any lowering of standards in the EU because of TTIP (or any other trade agreement), many stakeholders have expressed serious doubts as to whether this holds true. One of the main fears expressed by civil society stakeholders in this area is that labour standards would be lowered as a result of TTIP. These fears are expressed based on a number of reasons, among which is the number of ratified ILO Fundamental Conventions by each party; the EU Member States have ratified all eight, whereas the US has ratified two.

Some stakeholders interpret this difference in ratification as a lower level of labour protection in the US. Stakeholders therefore argue that increased competition (due to lower labour standards and thus lower labour costs) from the US lead to a downward pressure on the existing levels of labour protection in the EU. This current level of labour protection in the EU may be above the bare minimum as stipulated in the ILO Fundamental Conventions, which can therefore be lowered as a result of competitiveness pressure without violating these ILO conventions. It should be stressed that the EU is not going to 'un-ratify' any ILO convention as a result of TTIP. In this case study, we will consider and assess the validity of this claim. To do so, we first cover

²¹⁸ EU negotiating proposal for the chapter on Sustainable Development, DG Trade website, downloaded 18.11.2015. http://trade.ec.europa.eu/doclib/docs/2015/november/tradoc_153923.pdf.

²¹⁹ European Parliament briefing, The Transatlantic Trade and Investment Partnership and Labour.

²²⁰ European Commission fact sheet on Trade and Sustainable Development in TTIP.

²²¹ http://trade.ec.europa.eu/doclib/docs/2015/january/tradoc_153014.1%20SD%20discussion%20paper%20-%20approach,%20issues,%20questions.pdf.

²²² EU initial position paper on trade and sustainable development, DG Trade website, downloaded 12.10.2015.

²²³ EU negotiating proposal for the chapter on Sustainable Development, DG Trade website, downloaded 18.11.2015. http://trade.ec.europa.eu/doclib/docs/2015/november/tradoc_153923.pdf.

²²⁴ Website DG Trade on the EU's new proposal to the US regarding the Sustainable Development chapter, DG Trade website, downloaded 19.11.2015.

the ILO Fundamental Conventions and then turn to the concerns about a downward pressure on labour rights in practice.

ILO Fundamental Labour Conventions²²⁵

The ILO classifies all international labour standards as either conventions (that are, upon ratification, binding) or as recommendations, which are non-binding guidelines. Within the list of conventions, eight have been identified as Fundamental Conventions and cover subjects that are considered fundamental principles and rights at work.²²⁶ Both the EU and the US are integrating labour provisions in their trade agreements and these provisions in the respective agreements show a number of similarities. However, the Fundamental Conventions of the ILO have become a standard for EU trade agreements, while this is not the case in trade agreements negotiated by the US.²²⁷ This is highlighted as one of the main differences between the two jurisdictions and how they treat Fundamental Conventions in trade agreements.

The eight Fundamental Conventions are:

- No. 87 - Freedom of Association and Protection of the Right to Organize (1948);
- No. 98 - Right to Organize and Collective Bargaining (1949);
- No. 29 - Forced Labour (1930);
- No. 105 - Abolition of Forced Labour (1959);
- No. 138 - Minimum Age (1973);
- No. 182 - Worst Forms of Child Labour (1999);
- No. 100 - Equal Remuneration (1951);
- No. 111 - Discrimination (Employment and Occupation) (1958).

Article 4 of the Trade and Sustainable Development chapter as proposed by the EU in November 2015 deals horizontally with all ILO Fundamental Conventions. The value of global standards and agreements regarding labour protection is stressed in these provisions, as well as the promise to promote and realize the Decent Work Agenda. This includes commitments in the fields of health and safety at work and decent working conditions for all in terms of wages, working hours and other conditions.

All EU Member States have ratified each of these fundamental labour conventions. The US, on the other hand, has only ratified two; the Abolition of Forced Labour (No. 105) and Worst Forms of Child Labour (No. 182) conventions. A third convention, Discrimination (Employment and Occupation – No.111) has been submitted to the US Senate in 1998 and is still pending consent.²²⁸

The fact that the US has not ratified the remaining five conventions does not mean that the US can simply ignore them. The ILO Declaration on Fundamental Principles and Rights at Work, which applies to all member states of the ILO, covers the principles embodied in these eight Fundamental Conventions. However, the Fundamental Conventions themselves are international treaties that are subject to supervision by the ILO supervisory machinery, whereas the provisions laid out in the Declaration result in legal uncertainty and can therefore not be enforced, according to a recent ILO analysis.²²⁹

²²⁵ Other labour issues, such as the Decent Work Agenda, CSR and multilateral cooperation are discussed elsewhere in the report.

²²⁶ <http://www.ilo.org/global/standards/introduction-to-international-labour-standards/conventions-and-recommendations/lang--en/index.htm>.

²²⁷ The Transatlantic Trade and Investment Partnership (TTIP) and Labour. EP Briefing. [http://www.europarl.europa.eu/RegData/etudes/BRIE/2014/536315/IPOL_BRI\(2014\)536315_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2014/536315/IPOL_BRI(2014)536315_EN.pdf).

²²⁸ <https://www.congress.gov/treaty-document/105th-congress/45>.

²²⁹ Labour Provisions in Free Trade Agreements: Fostering their Consistency with the ILO Standards System. http://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/genericdocument/wcms_237940.pdf. as discussed in the The Transatlantic Trade and Investment Partnership (TTIP) and Labour. EP Briefing. [http://www.europarl.europa.eu/RegData/etudes/BRIE/2014/536315/IPOL_BRI\(2014\)536315_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2014/536315/IPOL_BRI(2014)536315_EN.pdf).

For an explanation of the decision of the US to not ratify these conventions, one has to look at the US federal political system and its laws and practices.²³⁰ Non-ratification of the US does not mean that the US fails to meet some of the substantive commitments set out in these core labour standards. In some cases, US policy is broadly in line with the ILO Fundamental Conventions. This follows from an analysis of the independent free-trade business advocacy group United States Council for International Business (USCIB), where it was found that the ratification of Fundamental Conventions would supersede existing, at times more specific laws that are currently in place at the federal and state level.²³¹ For some other core labour standards such as the first two Conventions to be discussed, US policy is markedly different from the ideal behind the ILO Fundamental Conventions, according to AFL-CIO.²³²

The remainder of this section will address the degree to which US federal and state law leads to a similar level of worker protection that the ILO Fundamental Conventions aim to achieve. Each convention will be addressed separately.

Freedom of association and right to collective bargaining

The EU proposal for a Trade and Sustainable Development chapter includes Article 5 that deals with the first two Fundamental Conventions; 87 and 98. These two conventions are among those identified by the ETUC and other literature as most pressing in the US. ILO reports have criticized the US on not fulfilling the provisions in both Fundamental Conventions.²³³

Convention 87: Freedom of Association and Protection of the Right to Organize (1948)

"This convention entails the rights of both worker and employers to "join organizations of their own choosing without previous authorization".²³⁴ ILO members should ensure: "all necessary and appropriate measures to ensure that workers and employers may exercise freely the right to organise".^{235 236}

EU ratification:	US ratification:	Number of ratifications:
Yes	No	153 ILO members

All EU Member States ratified and implement the provisions of this convention. In the US, law and practice are based on the principle of individual employee rights to organise and bargain collectively, as opposed to the ILO focus on organizational rights and privileges. The former approach sees collective bargaining as a derivative of individual rights, whereas the latter takes the opposite view and would argue that individual rights are derivative to rights of organizations. Moreover, certain classes of workers are not covered by the Federal or National Labor Relations Act (FLRA and NLRA, resp.) and therefore do not have the legal right to collectively bargain (such as employees in a few sectors of the public sector). While there are several exceptions to the above Acts, there is no federal protection of the legal right to collectively bargain, which leaves significant room for State or local legislation to modify this protection.

Furthermore, the Landrum-Griffin-Act²³⁷ would have to be substantially modified: prohibitions against persons with criminal records from holding union office should be eliminated. Another significant difference regarding convention 87 and US legislation concerns the right to strike, including the many limitations and restrictions placed on the right to strike.²³⁸

²³⁰ Lance Compa (2003). Workers' freedom of association in the United States: The gap between ideals and practice. In J. A. Gross (ed.), *Workers' rights as human rights* (pp. 23-52). Ithaca, NY: Cornell University Press.

²³¹ USCIB, Issue analysis, U.S. Ratification of ILO Core Labor Standards, April 2007.

²³² <http://www.publications.parliament.uk/pa/ld201314/ldselect/lducom/179/17912.htm>

²³³ The Institute of Employment Rights. *TTIP and Labour Rights*. <http://www.ier.org.uk/sites/ier.org.uk/files/TTIP%20and%20Labour%20Rights%20January%202015.pdf>.

²³⁴ Article 2(1) of the Freedom of association and protection of the right to organize convention (No. 87) of the ILO.

²³⁵ This sentence is expanded upon in the right to organise, and collective bargaining convention, 1949.

²³⁶ Article 11(2) of the Freedom of association and protection of the right to organize convention (No. 87) of the ILO.

²³⁷ <https://www.nlr.gov/who-we-are/our-history/1959-landrum-griffin-act>.

²³⁸ USCIB, Issue analysis, U.S. Ratification of ILO Core Labor Standards, April 2007.

Convention 98: Right to Organize and Collective Bargaining (1949)

“This convention covers the rights of union members to organise independently, without interference by employers and it requires the positive creation of rights to collective bargaining, and that each member state’s law promotes it.”

EU ratification:	US ratification:	Number of ratifications:
Yes	No	164 ILO members

As is the case for convention 87, all EU Member States have ratified this convention. Moreover, the provisions on *Right of collective bargaining and action* are included in the Charter of Fundamental Rights of the European Union, which have a legally binding character since the entry into force of the Lisbon Treaty.²³⁹

The US, on the other hand, has not ratified this convention. In an extensive legal analysis of this convention in relation to US law and practice, it was found that a number of obstacles persist. US law and practice includes substantial constraints that are currently in place on collective bargaining in state and local jurisdictions, while ratification would lead to a limitation of wage-price control discretion by Congress or the President and it would infringe on the rights that states possess in the determination of employment terms and conditions of their own employees.²⁴⁰

Impact of TTIP on (the provisions of) conventions 87 and 98.

The EU-proposed Trade and Sustainable Development chapter contains provisions on key principles related to this convention such as the right to form and join trade unions and the right to strike. Moreover, it calls for the implementation of effective social dialogue and tripartite consultation and contains relevant provisions regarding the right to establish and join employers’ organisations and the effective recognition of the right to collective bargaining.

The impact of TTIP on the provisions of these two conventions is likely to be limited, even if the Trade and Sustainable Development chapter includes all the elements in the EU text proposal. The obstacles in US law and practice identified above are of such a nature that they will remain barriers for ratification and/or changes in practices.

Elimination of forced or compulsory labour

Article 6 of the EU text proposal on Trade and Sustainable Development contains provisions that guide the policies of the EU and US on the topic of forced labour. In its original Convention on the subject, the Forced Labour Convention, 1930 (No. 29), the ILO defines forced labour for the purposes of international law as “all work or service which is exacted from any person under the menace of any penalty and for which the said person has not offered himself voluntarily”.²⁴¹ In this definition, forced labour can occur in any industry, including agriculture and fishing, manufacturing, but also the informal economy. Many victims of forced labour are women and girls in situations of sexual exploitation, but it also concerns men, women and children in slavery-like situations.²⁴²

Convention 29: Forced Labour (1930)

“Each Member of the ILO which ratifies this Convention undertakes to suppress the use of forced or compulsory labour in all its forms within the shortest possible period.”²⁴³

EU ratification:	US ratification:	Number of ratifications:
Yes	No	178 ILO members

²³⁹ Article 28. See Charter here; http://www.europarl.europa.eu/charter/pdf/text_en.pdf.

²⁴⁰ David Weissbrodt. (2014) Compliance of the United States with International Labour Law. http://scholarship.law.umn.edu/cgi/viewcontent.cgi?article=1372&context=faculty_articles

²⁴¹ Article 2(1) of the Forced Labour Convention, 1930, (No. 29) of the ILO.

²⁴² The protocol to the forced labour convention, ILO 2014.

²⁴³ Article 1(1) of the Forced Labour Convention, 1930, (No, 29) of the ILO.

All EU Member States have ratified this convention. In the US, on the other hand, this convention cannot be ratified without a change in the US State practice of subcontracting prison facility operations to private parties. More specifically, the circumstances under which the private sector generates profits from prison labour conflict with the provisions laid down in convention 29.²⁴⁴ Other than this point, US law and practice is in line with the other provisions of the convention. Both the EU and the US therefore voted in favour of the latest protocol on forced labour, but neither has ratified this protocol as of February 2016.²⁴⁵

Convention 105: Abolition of Forced Labour (1959)

“Each Member of the ILO which ratifies this Convention undertakes to suppress and not to make use of any form of forced or compulsory labour; such as means of political coercion, labour discipline, and as a punishment for having participated in strikes.”²⁴⁶

EU ratification:	US ratification:	Number of ratifications:
Yes	Yes	175 ILO members

This convention has been ratified by 175 ILO members, including all EU Member States and the US.

Impact of TTIP on (the provisions of) conventions 29 and 105

If we take into account that the US has already ratified convention 105 and is in favour of the protocol on forced labour, we do not foresee any impact of TTIP on either party. Regarding convention 29, TTIP is unlikely to affect the circumstances under which proceeds from prison labour are generated by the private sector, as this falls outside the scope of the agreement. Therefore little impact on changes in practice and ratification can be expected.

All other provisions of these conventions are included in the EU text proposal for the Trade and Sustainable Development chapter, and specifically identifies the opportunity to promote the key principles on the elimination of forced or compulsory labour on a global scale. These key principles include the suppression of human trafficking, the prevention of the use of forced labour and protection and access to appropriate and effective remedies. These goals are then to be reached through active involvement in relevant international cooperation, processes and initiatives.²⁴⁷

Effective abolition of child labour

Article 7 of the EU text proposal on Trade and Sustainable Development aims at promoting improvements to the lives of all children through the abolition of child labour, and to protect the rights of the child. Moreover, it supports the promotion of decent working conditions for young people in employment and protects them from performing hazardous work.

Convention 138: Minimum Age (1973)

“Each Member for which this Convention is in force undertakes to pursue a national policy designed to ensure the effective abolition of child labour and to raise progressively the minimum age for admission to employment or work to a level consistent with the fullest physical and mental development of young persons.”²⁴⁸

EU ratification:	US ratification:	Number of ratifications:
Yes	No	168 ILO members

Both the EU and the US are committed towards the goal of a minimum age for admission to the labour force, but the US has not yet ratified this convention. All parties to this convention are free to set their own minimum age for admission to the labour market, but it cannot be lower than the age of completion of compulsory schooling.²⁴⁹ For this analysis, two exceptions to this provision are noteworthy. In case the compulsory schooling age is lower than 15, child

²⁴⁴ http://www.uscib.org/docs/US_Ratification_of_ILO_Core_Conventions.pdf.

²⁴⁵ http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:P029.

²⁴⁶ Article 1 of the Abolition of Forced Labour, 1959, (No, 105) of the ILO.

²⁴⁷ http://trade.ec.europa.eu/doclib/docs/2015/november/tradoc_153923.pdf.

²⁴⁸ Article 1 of the Minimum Age Convention, 1973, (No, 138) of the ILO.

²⁴⁹ Article 2(1) and 2(3) of the Minimum Age Convention , 1973 (No. 138) of the ILO.

employment is prohibited for children younger than 15. Secondly, the minimum age may be lowered to 14 in case of a developing economy, which will then have to report to the ILO on the reasons to do so.²⁵⁰ US labour law (the Fair Labor Standards Act, FLSA²⁵¹) contains many of the provisions of convention 138, including the federal minimum age set at 16 for work in most non-agricultural sectors. However, an exemption exists for work on the farm, in which case the minimum age is lower than 15. Another identified difference between the ILO convention and US law and practice is the list of exemptions in the youth employment provisions, which would require changes both in state and federal labour laws.²⁵²

Convention 182: Worst Forms of Child Labour (1999)

“Each Member which ratifies this Convention shall take immediate and effective measures to secure the prohibition and elimination of the worst forms of child labour as a matter of urgency such as slavery, prostitution or other pornographic performance, illicit activities and other work which is likely to harm the health, safety or morals of children under the age of 18.”²⁵³

EU ratification:	US ratification:	Number of ratifications:
Yes	Yes	180 ILO members

This convention has been ratified by 180 ILO members, including all EU Member States and the US.

Impact of TTIP on (the provisions of) conventions 138 and 182

Bilaterally, there is not much to be gained within the EU and the US as both parties are generally committed to meeting the obligations as formulated in conventions 138 and 182. That said, by more direct co-operation, exchanging information and promoting implementation of shared principles worldwide, third countries may be pushed to address child labour faster than without TTIP. This would be a positive impact on third countries.

Equality and non-discrimination in respect of employment and occupation

Among the most important concerns of the ILO is the elimination of discrimination in respect of employment and occupation.²⁵⁴ Article 8 of the EU text proposal on Trade and Sustainable Development underlines the commitment to equality and non-discrimination at the workplace. In these conventions, the ILO defines the term discrimination to include any distinction, exclusion or preference which is not made based on the inherent requirements of a job. Examples of such characteristics are race, nationality, gender, and political opinion, which may have the effect of nullifying or impairing equality of opportunity or treatment in employment or occupation.²⁵⁵

Convention 100: Equal Remuneration (1951)

“The Equal Remuneration Convention lays down that the principle of equal remuneration for work of equal value should apply to men and women.”²⁵⁶

EU ratification:	US ratification:	Number of ratifications:
Yes	No	171 ILO members

Over the past five decades, the gender pay gap has decreased in both the EU and the US. In 2013, women earned 16.5 percent less than men in the EU, versus 18 percent lower wages for female workers in the US compared with their male counterparts.²⁵⁷

²⁵⁰ Article 2(4) and 2(5) of the Minimum Age Convention , 1973 (No. 138) of the ILO.

²⁵¹ <http://www.dol.gov/whd/regs/statutes/FairLaborStandAct.pdf>.

²⁵² USCIB, Issue analysis, U.S. Ratification of ILO Core Labor Standards, April 2007.

²⁵³ Article 1, Article 2 and Article 3 of the Worst Forms of Child Labour Convention, 1999, (No. 182) of the ILO.

²⁵⁴ <http://www.ilo.org/legacy/english/dialogue/ifpdial/llg/noframes/ch7.htm>.

²⁵⁵ Article 1 (1) and Article 1 (2) of the Discrimination Convention, 1958 (No. 111) of the ILO.

²⁵⁶ Article 2 of the Equal Remuneration Convention, 1951 (No. 100) of the ILO.

²⁵⁷ EU data from Eurostat table tsdsc340, US data from US Bureau of Labor Statistics, 2014.

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In the EU, the provisions of this convention affect the common rules of the internal market and therefore fall under the exclusive competence of the Union.²⁵⁸ All EU Member States have ratified the convention. The United States is not one of the parties that have ratified this convention. US labour law contain a similar, though slightly differently phrased provision regarding equal pay for women: the Equal Pay Act.²⁵⁹ The differences can be found in the terminology used. While the ILO convention focuses on equal pay for 'comparable work', US labour law provides for equal pay for 'equal work'.²⁶⁰

Convention 111: Discrimination (1958)

*"Each Member for which this Convention is in force undertakes to declare and pursue a national policy designed to promote equality of opportunity and treatment in respect of employment and occupation, with a view to eliminating any discrimination in respect thereof."*²⁶¹

EU ratification:	US ratification:	Number of ratifications:
Yes	Pending Congress approval	172 ILO members

In the EU, all Member States have ratified this convention. Moreover, two Directives have been enacted (the Racial Equality Directive and the Employment Equality Directive), which aim to establish a general framework for equality and non-discrimination in employment and occupation.²⁶² In case a Member State incorrectly implements these Directives, the case may be referred to the Court of Justice of the EU. This happened to Poland in May 2010 and resulted in the successful adoption of its new anti-discrimination law on December 2010 complying with EU law.²⁶³

In the US, the discrimination convention has been submitted to the Senate for consent in 1998 after finding there were no legal obstacles. However, the Senate has not yet considered this convention, despite the President's Committee on the ILO agreeing on working towards successfully completing the ratification process for Convention 111.²⁶⁴

Impact of TTIP on (the provisions of) conventions 100 and 111

In the EU proposal for the Trade and Sustainable Development chapter, Article 8 (2.d) refers to equal remuneration for 'work of equal value'. At first sight, this seems to be in line with the Equal Pay Act of the US. Therefore, this chapter is unlikely to lead to any change in US legislation, nor to the ratification of convention 100. As US law and practice is not in conflict with convention 111, TTIP may lead to renewed interest in the US Senate to approve the ratification.

Third country effects

a full analysis of the positions taken by the EU and US regarding international labour standards goes beyond the scope of this report, some impact on third countries can be discussed. The EU aims to incorporate measures specifically aimed at third countries, in particular developing countries. The proposals include cooperation in supra-national organisations, exchange of information, views and experiences and cooperation with and in third countries in order to promote, respect and give effect to all ILO core labour standards. Should the EU and US decide to act on the proposed multilateral approach to the provisions and core labour standards, co-operation and assistance towards third countries can be more effective through a unified and combined approach.

Broader impact on labour standards

Having covered each of the ILO Fundamental Labour Conventions, it is clear that no or very limited direct impact from TTIP is expected regarding the ratification of ILO Fundamental Conventions. However, in our stakeholder consultations, some stakeholders argued that the

²⁵⁸ European Commission (2013). Analysis – in the light of the European Union acquis – of the ILO Conventions that have been classified by the International Labour Organisation as up to date.

²⁵⁹ <http://www.eeoc.gov/laws/statutes/epa.cfm>.

²⁶⁰ David Weissbrodt & Matthew Mason (2014). Compliance of the United States with International Labor Law. *Minnesota Law Review* 98, pp. 1875.

²⁶¹ Article 2 of the Discrimination Convention, 1958 (No. 111) of the ILO.

²⁶² http://ec.europa.eu/justice/discrimination/law/index_en.htm.

²⁶³ European Anti-Discrimination Law Review, December 2011.

²⁶⁴ http://www.ilo.org/washington/ilo-and-the-united-states/brief-history-and-timeline/WCMS_CON_TXT_WAS_TIM_EN/lang--en/index.htm.

removal of tariffs could lead to a downward spiral on labour standards. If we assume that adhering to labour standards is related to higher labour costs, which seems likely to be the case, removal of tariffs and enhanced trade could lead to economic pressures to look for cheaper solutions. These solutions may be found by 'cutting corners' regarding labour standards, if, and only if, these labour standards are above the bare minimum as enshrined in the ILO conventions. The exact magnitude of this downward pressure, if any, is rather difficult to quantify. It may also be expected that consumers on both sides of the Atlantic actually prefer goods that are produced in an environment that protects reasonable labour standards.

It is for this reason that a Sustainable Development Chapter needs to be clear in terms of its ambition to uphold the highest levels of labour and environmental levels of protection, create a level playing field and be legally binding. Upon studying the latest EU proposal for the Trade and Sustainable Development Chapter, we note the following:

- The Trade and Sustainable Development Chapter proposal supports all strategic objectives of the Decent Work Agenda of the ILO, including employment promotion, workers' rights, social protection, social dialogue, as well as non-discrimination and gender equality;
- The Trade and Sustainable Development Chapter proposal sets obligations with regard to the ILO core labour standards (see above);
- The Trade and Sustainable Development Chapter proposal stresses the elimination of discrimination with respect to employment and occupation, including effective implementation in law and in practice of ILO Fundamental Conventions to which either is a party and support for ongoing efforts towards ratification of fundamental ILO Conventions;
- The Trade and Sustainable Development Chapter proposal refers to structures to facilitate social dialogue and consultation of workers;
- The Trade and Sustainable Development Chapter proposal commits to promoting objectives globally to immediately and effectively eliminate the worst forms of child labour and to suppress forced or compulsory labour in all its forms, including through domestic laws;
- The Trade and Sustainable Development Chapter proposal protects other ILO standards in addition to the core ones, such as health and safety at work;
- The Trade and Sustainable Development Chapter proposal – in its cross-cutting part – contains provisions to ensure no relaxation of labour standards or environmental protection levels.

Legally binding

The EU has a clear stance on the Sustainable Development chapter being fully legally binding. As is normal practice in EU trade agreements, it intends to make it part and parcel of the agreement itself.

Enforcement

Mrs Malmström was clear when she said that "... we are proposing a very ambitious approach to sustainable development in the EU-US trade talks, which will be respected, implemented and enforced when we sign up to them..."²⁶⁵ Indeed, the EC asserts that the EU will work to ensure that all provisions of the Sustainable Development chapter are respected, implemented and enforced. Despite these statements, the exact enforcement mechanism is not yet detailed, which is a concern for civil society. As one civil society representative put it: "The EU is always full of lofty texts on labour and the environment, but enforcement is weak. While the US proposals contain strong enforcement mechanisms, of a not very ambitious sustainable development proposal".²⁶⁶ The EU proposal on institutions and procedures still has to come: "Once the work on substance is in a more advanced stage, the Commission will make its proposals for institutional set-up, involvement of civil society and enforcement. In the meantime, discussions with stakeholders and civil society will continue."²⁶⁷ This proposal,

²⁶⁵ Website DG Trade on the EU's new proposal to the US regarding the Sustainable Development chapter, DG Trade website, downloaded 19.11.2015.

²⁶⁶ Informal comment during the TSIA stakeholder scoping workshop on 9th of July 2015 in Brussels.

²⁶⁷ Website DG Trade on the EU's new proposal to the US regarding the Sustainable Development chapter, DG Trade website, downloaded 19.11.2015.

combined with the current ambitious proposal for Sustainable Development, will give more insight in how strong the total set of provisions in TTIP on Sustainable Development will be.

4.4.2. Case study 3: Impact of TTIP services liberalisation on public health services

Introduction

Healthcare services²⁶⁸ are included in this TSIA as a separate case study for two reasons. Firstly, because various stakeholders clearly indicated the need to focus on the issue of access to healthcare services. Secondly, because there is a more general need to better understand the potential impact of TTIP on the provision of public health services in order to separate fact from fiction at a time of fierce public debates. In this case study we focus on how healthcare services could potentially be impacted by TTIP, by considering how the services liberalisation envisaged under TTIP – in large part through removal of NTMs such as regulatory divergence – could potentially affect public healthcare services. It is important to note that the EU approach to health services was established 20 years ago in the context of the General Agreement on Trade in Services (GATS) and the establishment of the World Trade Organization (WTO), and the EU will not change this approach for TTIP. This implies, among other things, that TTIP will not lead to changes in national legislation.

It should be noted that the case study focuses on services trade liberalisation under TTIP and not on the impact of tariff liberalisation on specific products used in healthcare services.

From the literature and our engagement with stakeholders it becomes clear that two main impact channels for how TTIP could impact on healthcare services need to be considered and assessed.²⁶⁹ Firstly, the impact of possible entrance of private health care providers from the US for EU healthcare services. Will this affect the provision of healthcare services in the EU and/or the access EU citizens have to healthcare services? Secondly, the potential for a ‘regulatory chill’ affect coming from regulatory cooperation and the Investor Protection mechanism that is being discussed. Will investor protection lead to regulatory chill that scares EU governments from changing healthcare policies for fear of company retaliations?

We first provide some background information as to how healthcare services are expected to be treated, in trade agreements in general and in TTIP in particular, followed by a description of the current healthcare system situation in the EU (a very fragmented picture). Combining these two sections, we assess potential impacts of TTIP in this area.

EU (Member States) and US Healthcare systems – the current situation

The EU Member States’ healthcare systems

The EU Member States’ various healthcare systems and their performance are subject to significant regulatory differences. In addition, the way in which health insurance is organised, as well as how hospital care is financed, varies considerably between EU Member States – e.g. public in the UK (National Health Service) and private in the Netherlands. Publicly financed healthcare systems are often divided into sub-sectors such as dental care, physiotherapy and general practitioners that may have different financing models. As Jeurissen (2010) confirms, it is important to note that only a small share of all hospitals in the EU operate for profit.²⁷⁰ In order to provide an insight into the healthcare systems in the EU Member States – it is important to explore how they could potentially be affected by TTIP in the longer term – we have made a grouping of the EU Member State healthcare systems. Table 4.12 below provides a summary of the healthcare systems of 19 of the 28 EU Member States based on common

²⁶⁸ The WHO (2015) defines healthcare services as: Health services include all services dealing with the diagnosis and treatment of disease, or the promotion, maintenance and restoration of health. They include personal and non-personal health services and insurance is also included in our definition. The terminology ‘public’ health is much debated, since the healthcare sectors in various EU Member States are privatised.

²⁶⁹ During the 9 July 2015 and 21 September 2015 workshops with stakeholders, the potential channels of private health care providers as well as of regulatory chill from investor protection clauses were mentioned.

²⁷⁰ Market share of FP hospitals (% of beds, 2005) Germany: 16% US: 14%, UK: 7% and Netherlands: 0%. Jeurissen (2010) *For Profit Hospitals: A comparative and longitudinal study of the for-profit hospital sector in four Western countries*.

organisational institutions according to Journard *et al.* (2010).²⁷¹ This is important in the context of the principle of subsidiarity (the power to regulate healthcare sectors at EU Member State levels) and the regulatory power that EU Member States maintain irrespective of any trade agreements, including TTIP. In other words: the effect of TTIP is likely to be asymmetric and depends on EU Member States' domestic healthcare systems and policies.

Table 4.10 Healthcare systems

Group	Characteristics	Countries
Group 1	Relies extensively on market mechanisms in regulating both insurance coverage and service provision. Gate-keeping ²⁷² arrangements are in place.	Germany, the Netherlands, Slovak Republic
Group 2	Public basic insurance coverage and extensive market mechanism in regulating provisions. Differs per country in terms of degree of reliance on private health insurance to cover expenses beyond basic packages. Gate-keeping arrangements are in place.	Belgium, France
Group 3	Idem as Group 2, but without gate-keeping arrangements in place.	Austria, Czech Republic, Greece and Luxembourg.
Group 4	Regulatory rules provide patients with choice among providers; extremely limited private supply, also regarding insurance. No gate keeping in place. Prices tend to be highly regulated.	Sweden
Group 5	Heavily regulated public systems. Patients' choice is limited. Role of gate-keeping important. Public insurance, but private options available.	Denmark, Finland, Portugal and Spain.
Group 6	Heavily regulated public systems. Patients' choice tends to be large. Public insurance, but private options available.	Hungary, Ireland, Italy, Poland and the United Kingdom.

Source: Joumard et al (2010).

As demonstrated in Table 4.12, the mix of market instruments and regulatory approaches varies widely among EU Member States, from very heavily regulated public systems (with or without patient choice) to systems that rely more on market mechanisms. These differences, however, need to be viewed in a historical and institutional context per EU Member State and therefore cannot be taken to simply explain the effective outcomes of each of the healthcare systems. A system that has worked well in one EU Member State cannot simply be implemented in another and yield the same results. This means that, when it comes to potential impact of TTIP, we can only make more general inferences on potential effects, without reporting detailed impacts.

The US healthcare system

The Institute for the Study of Civil Society CIVITAS (Elliot Bidgood January 2013) points out that the health sector in the United States is characterised by a mix of public and private funding and provisions. In both the private and public sectors, medical services are generally regarded as high quality although the system is not without its problems, especially with regard to the access to health services. Insurance and coverage are, for example, limited compared with EU standards. In 2010 the Obama administration tried to address some of these problems with the Affordable Care Act (ACA), which has gone some way towards introducing universal medical care coverage in the US. Currently, two public healthcare programmes are dominant: Medicare and Medicaid. Medicare is the federal government's health programme that primarily serves Americans over the age of 65 and Medicaid is a joint federal-state programme principally designed to finance healthcare for people with lower incomes.

²⁷¹ Journard et al (2010) *Health Care Systems: Efficiency and Institutions*. OECD Economics Dep't Working Paper No. 769.

²⁷² A gatekeeper is a physician, typically a primary care physician (family practice, internist or pediatrician) who is responsible for determining a patient's primary services and coordinating the care so that appropriate services are given. In many insurance plans that have networks of hospitals and doctors, the primary care physician is the gatekeeper who provides referrals to specialists.

Besides these public programmes the US has private community-based 'Health Centres'. These centres are not-for-profit facilities that provide health care to uninsured citizens. Besides these services, the US is characterised by a private health system: in 2010 64 percent of the US population was privately insured and a small part is benefiting from an employer-provided health insurance.²⁷³ The private health care sector is also called the 'managed care' system: healthcare providers do not set payment rates for individual services, but customise the bill per patient. In practice, this means that patients need verify with their health plan for approval before visiting a specialist or receiving a medical procedure.

Treatment of public services in TTIP

Public services in TTIP

It is important to note that we are discussing the healthcare sector as a public service in the EU. Also, the TTIP negotiations are ongoing and therefore no final treaty text is available. The EU's approach to protecting public services in TTIP and all other trade agreements has been largely the same over the 20 years since GATS.²⁷⁴ Commissioner Malmström confirmed in early 2015 the EU's commitment to protecting public services in current and future free-trade agreements, including TTIP.²⁷⁵ In all its trade agreements the EU takes a broad horizontal reservation that reserves the right to have monopolies and exclusive rights for public utilities in EU Member States at all levels of government (even if such public utilities are not publicly funded or do not receive state support in any form).²⁷⁶ In addition, the EU retains certain reservations in its trade agreements for public services, on a sectoral basis (public education, public health and social services, and water). This means that public authorities at all levels do not have to treat foreign companies or individuals the same way as EU parties, and thus do not have to provide access to their markets.²⁷⁷ But even without the above reservations and exceptions, EU trade agreements leave EU governments at all levels free to regulate all services sectors (private or public) in a non-discriminatory manner.

Health services protected: public versus private

It is important to note that most countries in the EU have publicly financed healthcare systems. Nevertheless, some countries, including Germany, the Netherlands and Slovakia, have partly privatised healthcare systems. In the Netherlands, insurance companies are privatised and hospitals may in the near future become for profit organizations. Therefore these sectors are – at least in part – no longer 'publicly funded' (although we need to note that the term 'publicly funded' is applied very broadly: if a fully privatised UK hospital supplies services to the NHS and gets paid for it, the hospital falls under the definition of 'publicly funded'). Even if services are partially publicly funded, or receive state support in any other form, such as tax incentives, financial guarantees or indirect subsidies, they are excluded from the agreement. However, even 100 percent non-public services are regulated if part of an EU Member State's healthcare system, because an EU Member State, although it cannot discriminate based on nationality, can still heavily regulate also those private suppliers from abroad as long as this happens in a non-discriminatory manner. In other words, in theory health service providers from the EU and the US could come to compete with one another, but only within the framework set by the regulator. In fact, this has already been the case since GATS.

In previous trade agreements and partnerships, the EU has successfully negotiated four important guarantees for public health services. It is likely that the EU negotiators will uphold these in TTIP as well²⁷⁸:

1) *Regulation*

TTIP leaves governments free to regulate their public health sector and they can set their own quality standards that suppliers need to meet;

²⁷³ US census bureau <http://www.census.gov/hhes/www/hlthins/data/incpovhlth/2010/highlights.html>.

²⁷⁴ <http://trade.ec.europa.eu/doclib/press/index.cfm?id=1115>.

²⁷⁵ Joint statements on public services by Malmström and Froman, http://europa.eu/rapid/press-release_STATEMENT-15-4646_en.htm;

http://trade.ec.europa.eu/doclib/docs/2015/july/tradoc_153613.pdf;

<http://trade.ec.europa.eu/doclib/press/index.cfm?id=1115>

http://trade.ec.europa.eu/doclib/docs/2015/march/tradoc_153266.pdf.

http://trade.ec.europa.eu/doclib/docs/2015/july/tradoc_153614.pdf.

²⁷⁶ Please refer to the following parts of the EU services offer: P. 88, Annex II reservation number 20 on health and social services; P. 119, the EU's overarching reservation for public services from any market access liberalisation; P. 155, EU's reservation on privately funded health and social services.

²⁷⁸ European Commission (3rd of July 2015) Protecting public services in TTIP and other EU trade agreements. <http://trade.ec.europa.eu/doclib/press/index.cfm?id=1115>.

2) **Access to the market**

For public health services that receive public funding or support in any form, governments do not have to give access to service providers from outside the EU;

3) **Monopolies**

If they wish, national, regional or local governments can organise public services in such a way that only one supplier provides the service. The single supplier can be publicly owned as well as a private firm with the exclusive right to offer a particular service. And it can operate at any level – nationally, regionally or locally;

4) **Subsidies**

EU governments at all levels are free to provide subsidies to the public health sector. On top of that, governments will not have to treat companies from outside the EU in the same way as EU businesses. This means that governments can actually exclude non-EU companies from such subsidies if they wish.

Furthermore, TTIP will not contain a “ratchet” clause for public services whereby services that are “privatised” cannot be returned to a public monopoly following a change of political direction. A ratchet clause means that a contracting party cannot backtrack from any future autonomous level of liberalization irrespectively of what was bound in the trade agreement.

Potential impact of TTIP on public health services

Now that we have summarised differences in EU Healthcare systems and stipulated what may be expected to be included in the TTIP agreement regarding public services in general and more specifically regarding public health services, we can turn to what impacts from TTIP for EU Member States’ health care services are to be expected.

Private health services and TTIP

Civil society groups are concerned by the fact that the EU has never explicitly defined the concept of ‘state support’.²⁷⁹ In particular, the text of the reservation refers to “state support in any other form” and as such seem to be a very broad exclusion giving sufficient flexibility in capturing all current and future health systems in various Member States, even if these services are supplied by a variety of providers (including private parties) and if they have commercial aspects (even though they are not meant for profit generation). However, civil society considers that this language is not precise enough and this causes uncertainty with regard to the protection of ‘public’ services. If private healthcare services are excluded, some privately provided health care services may be affected by potentially heightened competition from non-public US health services.²⁸⁰ At the same time we are not aware of any specific examples which could demonstrate that there are health services in the EU which would not receive any state support and where the EU would like to retain the right to discriminate based on nationality.

We already stipulated that TTIP is not going to require any changes to EU laws and practices (legislation is not amended) related to the health sector. We base this on the clear words from negotiators and the European Commissioner for Trade, Mrs Cecilia Malmström, that public health services will be and are protected in the TTIP negotiations. According to the European Commission there is no concrete evidence that the EU's model of protecting public health services has deficiencies.²⁸¹

TTIP itself will not open up the health care market. A key determinant is whether EU Member States will allow private US healthcare providers onto their domestic markets as this is their prerogative: the EU Member State governments are in the driving seat here. Civil society organisations like EPHA and EPSU fear that when TTIP states that Member States need to open up their healthcare markets, the principle of subsidiarity could be circumvented. As a result, they fear that TTIP will result in increasing pressure to privatise healthcare services, which

²⁷⁹ Civil society Dialogue Meeting on TTIP and Health, 27 May 2015 (Brussels) as well as feedback during the 9 July and 21 September 2015 workshops with civil society about this case study (and other case studies) for the TSIA.

²⁸⁰ It is important to take note of the limited health care globalization. We did not find significant evidence of health service providers operating in both the EU and in the US, except of pharmaceutical companies and medical device producers.

²⁸¹ Protecting public services in TTIP and other EU trade agreements.
<http://trade.ec.europa.eu/doclib/press/index.cfm?id=1115>

might also affect the performance of healthcare services.²⁸² However, at this stage these seem unfounded fears since EU's current offer states how each Member State has decided to limit, or even deny, access to private healthcare services onto their local markets. Furthermore, there are no provisions in TTIP that would require EU governments to privatize public services or to bring them back into public domain once they were privatized.

Regulatory co-operation and investor protection

Civil society organisations are very concerned that regulatory co-operation and a form of Investment Protection and/or possibly some form of investor-state dispute settlement (ISDS), may eventually have an indirect impact on the provision of public health services in the EU through the possibility of 'regulatory chill' with respect to health policies.

Regulatory co-operation

Regulatory coherence is an important element of TTIP that sets this trade agreement apart from previous ones (with perhaps the exception of the Comprehensive Economic and Trade Agreement, CETA between Canada and the EU). TTIP has high ambitions for reaching more regulatory coherence but within certain boundaries. It aims to "*reduce unnecessarily burdensome, duplicative or divergent regulatory requirements affecting trade or investment [...], without restricting the right of each party to maintain, adopt and apply timely measures to achieve the [overall] legitimate public policy objectives*"²⁸³. This statement is preceded by: "*while pursuing a high level of protection of [...] consumers, [...] human, animal and plant life, health and safety;*

[...]"²⁸⁴. The preamble to the regulatory co-operation Chapter states clearly that regulatory cooperation is to take place without challenge to each party achieving its desired public policy objectives, in particular while pursuing a high level of protection of health and safety. When looking at the various ways in which regulatory co-operation is pursued – ranging from information exchange, using international agreements together, mutual recognition agreements of conformity assessments or of test results, to mutual recognition of functionally equivalent technical requirements or harmonised technical regulations – there is no tool where TTIP is meant to 'legislate'. That is clearly the prerogative of the US and EU (and EU Member States) domestic law-making systems. As such, regulatory cooperation cannot impose any changes to EU Member State or the US domestic health care system.

Investment protection and resolution of investment disputes²⁸⁵

We often hear – and this is also a major concern communicated by various stakeholders – that Investor Protection clauses and Resolution of Investment Disputes could be the cause of a so-called 'regulatory chill' for governments. In July 2015 the European Parliament (EP) has adopted its recommendations to the commission on TTIP. The EP has called for a mechanism that would be "subject to democratic principles and scrutiny" and where cases would be dealt with by "publicly appointed, independent professional judges [in] public hearings", reads the text.²⁸⁶ There had previously been fears that investment protection would rely on private arbitration, giving corporations too much power over national governments. The latest EU proposal stipulates that EU Member States will continue to be able to legally govern their public services and, for example, decide to privatise or reverse privatisation of public services as they see fit – based on the guarantees negotiated at the inception of GATS in 1995. The inclusion of Investor Protection in its pre-CETA form could possibly lead to the fear of being sued by investors and thus could indirectly prevent EU Member States from implementing new policies and (reverse) privatization. The latest EU proposal to the US on Investor Protection (IP) and Investment Court System (ICS) is fundamentally different, however. IP is much more narrowly defined and eligibility of a case is subject to very clear and strict criteria first. ISDS is withdrawn in favour of

²⁸² Both the European Public health Alliance (EPHA) and the European Public Services Union (EPSU) have made content submissions that express their fears of a TTIP-induced pressure to privatise public health care services and a pressure not to re-nationalise privatized health care services.

²⁸³ European Commission, DG TRADE, 2015, *Textual proposal for legal text on Regulatory Cooperation in TTIP*, May 2015.

²⁸⁴ European Commission, DG TRADE, 2015, *Textual proposal for legal text on Regulatory Cooperation in TTIP*, May 2015.

²⁸⁵ Based on the document which is the European Union's proposal for Investment Protection and Resolution of Investment Disputes. It was tabled for discussion with the United States and made public on 12 November 2015. The actual text in the final agreement will be a result of negotiations between the EU and US.

²⁸⁶ <https://www.theparliamentmagazine.eu/articles/news/ttip-eu-parliament-vote-paves-way-new-isds>.

ICS – with clearly a different process, including the right to appeal.²⁸⁷ Article 3 of Regulation 1219/2012, establishes transitional arrangements for bilateral investment agreements between Member States and third countries. This Regulation stipulates that bilateral investment agreements between EU Member States (read: employing the ‘old’ IP and ISDS provisions) and the US can be maintained in force only until they are replaced by an agreement at the EU level (read: until TTIP comes into force).

The many uncertainties regarding the final agreement make it still difficult to predict the final outcome of TTIP for public health services. However, if CETA were to be the benchmark for TTIP on how to treat and protect public services, no major impact on EU Member States’ health care systems is to be expected – which is in concordance with the EU treaties on subsidiarity. This means that civil society’s concerns regarding the definition of public services in the context of TTIP are unnecessary.

Concluding remarks

All countries in the EU have some form of state-supported healthcare system, and the current trend of liberalisation does not seem to be changing this. Furthermore, TTIP may not increase competition for (non/semi-) public health services, for the simple fact that TTIP will not include any additional obligations as compared to the EU’s GATS commitments and as such will not require EU governments to change their laws. Besides, it remains up to the sovereignty of EU Member States whether or not to allow other healthcare providers to enter their market. TTIP would only open the door to more competition if the EU Member State authorities allow it to, but this might happen autonomously irrespectively of trade agreements pursued by the EU.

To conclude, it seems that EU’s trade agreements provide guarantees for the protection of public services. TTIP is not expected to deviate substantially from previous trade agreements.

- First, TTIP will not include any additional obligations as compared to the EU’s GATS commitments;
- Second, healthcare systems vary considerably across the EU, but despite this, there is no evidence that any of the EU’s Member States would require more protection as it is afforded by the current EU’s approach to health services in trade agreements;
- Third, it is important to take into consideration that harmonization of healthcare systems in the EU is not anticipated and the principle of subsidiarity is firmly protected by the EU treaty;
- Finally it is important to recognise that, if not properly excluded from the Investor Protection articles, a form of Resolution of Investment Disputes could be the cause for ‘regulatory chill’ among governments. The risk of regulatory chill is mitigated by the new proposal on Investment protection/ ICS. If public health services are carved out from Investor Protection – i.e. investors cannot claim any compensation for public authorities’ decisions to carry out changes in public healthcare systems – then the risk for ‘regulatory chill’ would be further reduced, if not completely removed.

4.4.3. Horizontal issues

In this section we shortly address some of the key aspects of the ILO Decent Work Agenda. As the fundamental labour rights, social protection and employment creation are already discussed above we will only discuss occupational health and safety, gender equality and social dialog here.

Occupational health and safety

The ILO has held many conventions on occupational health and safety, such as the Occupational Safety and Health Convention of 1981 (n0. 155) and sector wise there were occupational safety and health (OSH) conventions for dock work, constructions, mining and agriculture.

²⁸⁷ The “right the regulate” provision is stated in Article 2.1 of the EU draft TTIP investment text, and reads: *The provisions of this section shall not affect the right of the Parties to regulate within their territories through measures necessary to achieve legitimate policy objectives, such as the protection of public health, safety, environment or public morals, social or consumer protection or promotion and protection of cultural diversity.*
http://trade.ec.europa.eu/doclib/docs/2015/september/tradoc_153807.pdf.

The ILO estimated that 4percent of Global GDP is lost due to poor OSH practices. A Global Strategy to improve occupational health and safety was adopted in 2003. This global OSH strategy is built on national preventative safety and health cultures and a systems approach to OSH management.

In the EU there is the European Agency for Safety and Health at work trying to improve working condition in Europe (www.osha.europa.eu). The Agency runs from time to time questionnaires on general OSH risks and how they are managed. In the US there is the OSH Administration as part of the US Department of Labor that aims to assure the safe and healthful working conditions of working people (www.osha.gov).

Gender equality

The ILO has since its mandate in 1919 been active on equal remuneration for work by men and women. In the EU gender equality has been a founding principle with 'equal pay for equal work'. Within the framework of the EU 2020 Strategy, a Strategic engagement for Gender equality 2016-2019 was released in December 2015 with the following five existing thematic priority areas:

- Increasing female labour market participation and the equal economic independence of women and men;
- Reducing the gender pay earnings and pension gaps and thus fighting poverty among women;
- Promoting equality between women and men in decision making;
- Combatting gender-based violence and protecting and supporting victims;
- Promoting gender equality and women's right across the world.

The Obama government is promoting gender equality as well as women's empowerment.

The EU position paper on trade and sustainable development in the context of TTIP mentions 'the negotiations should reflect the Parties' commitment in the labour area with respect to ILO principles and rules and a resolve to promote the ILO Decent Work agenda.

Social dialogue

Social dialogue according to the ILO includes 'all types of negotiation, consultation and exchange of information between or among representatives of governments, employers and workers on issues of common interest'.

The EU promotes social dialogue for which it has a budget line to financially support transnational projects of social partners in the field of industrial relations. Also for each change in policy the EU invites the social partners to provide information on the intended policy change and for consultations.

On the other hand, the US has at least not in the past embraced social dialogue. The US labour law, outside collective bargaining, has discouraged systems of dialogue with workers²⁸⁸. Only with the Clinton administration the government began with public policy to see that achieving labour stability was a public good. Still there are worries at European NGOs that the European social model can be regarded as a Non-Tariff Barrier in the TTIP negotiations.

²⁸⁸ Acocella and Leoni (2007), Social Pacts, Employment and Growth: A reappraisal of Ezio Tarantelli's Thought, p.225.

4.5. Human Rights

4.5.1. *The international human rights framework*

Before turning to the specific human rights context of TTIP and the potential impact of TTIP, it is important to give a brief introduction to human rights and the international human rights framework.

Human rights are “those activities, conditions, and freedoms that all human beings are entitled to enjoy, by virtue of their humanity. They include civil, political, economic, social and cultural rights. Human rights are inherent, inalienable, interdependent, and indivisible, meaning they cannot be granted or taken away, the enjoyment of one right affects the enjoyment of others, and they must all be respected.”²⁸⁹

Additionally, only governments must put in place laws and policies necessary for the protection of human rights. States have a duty not only to refrain from violating human rights of the human beings living within their territories, they should also take pro-active steps to protect human rights and influence them positively, i.e. respect, protect, and to fulfill the enjoyment of human rights in their territories. As such, international human rights law is not static, but in a constant dynamic flux, in particular through evolving jurisprudence at international and national levels.

The international human rights framework has developed a set of human rights that States must respect, and has established mechanisms to promote States’ compliance with human rights obligations through (non-binding) declarations and binding treaties. Most important is the Universal Declaration of Human Rights.²⁹⁰ In addition in the US the American Declaration of the Rights and Duties of Man²⁹¹ was spelled out, while in the EU the European Convention for the Protection of Human Rights and Fundamental Freedoms was established.²⁹² Today the international human rights framework consists of both international universal components and regional components to human rights. In the US the regional component is the Organisation of American States (OAS), while in Europe this is the Council of Europe.

The European Convention on Human Rights (ECHR) was drafted by the Council of Europe as an international treaty to protect human rights and fundamental freedoms in Europe. The ECHR entered into force on 3 September 1953. All Council of Europe Member States are party to the Convention. As part of this Convention the European Court of Human Rights (ECHR) was established. Any citizen of a Member State could take a case to this Court. The Council of Europe oversees also, for example, the European Social Charter – focusing on social rights.

The Charter of Fundamental Rights of the European Union (‘The Charter’) became legally binding on EU institutions and EU Member States, when implementing EU law with the entry into force of the Lisbon Treaty in 2009. Where the Charter contains rights which correspond to rights guaranteed by the ECHR, the meaning and scope of those rights shall be the same as those laid down by the ECHR. The Charter includes a number of new rights such as the prohibition of forced labour (Article 5), data protection (Article 8), labour rights (Article 27-31), prohibition of child labour (Article 32), social rights (Article 34), as well as rights to health care (Article 35), access to services of general economic interest (Article 36), environmental protection (Article 37), consumer protection (Article 38), a right to good administration (Article 41), and the right to effective remedy before the court (Article 47). Most of these rights will be addressed in this section of the report, but not all. Access to health care and basic medication are explained in two case studies in sections 4.3 and 4.4 of this report, the social human rights – in particular the core labour standards – are explained in section 4.4, and the human right to a clean environment is explained in Chapter 5. The right of access to services of general economic

²⁸⁹ International Justice Resource Centre website: <http://www.ijrcenter.org/ihr-reading-room/overview-of-the-human-rights-framework/> [Accessed 6 January 2015].

²⁹⁰ Universal Declaration of Human Rights, G.A. Res. 217A (III), U.N. Doc. A/810 at 71 (1948).

²⁹¹ American Declaration on the Rights and Duties of Man, May 2, 1948, O.A.S. Res. XXX, reprinted in Basic Documents Pertaining to Human Rights in the Inter-American System, OAS/Ser.L/V/I.4 Rev. 9 (2003); 43 AJIL Supp. 133 (1949).

²⁹² Convention for the Protection of Human Rights and Fundamental Freedoms, Nov. 4, 1950, ETS 5; 213 UNTS 221, entered into force Sept. 3, 1953 [hereinafter European Convention on Human Rights].

interest (Art. 36 CFR) and the right to effective remedy before the court (Art. 47 CFR) are addressed under the environmental chapter, Chapter 5.

4.5.2. EU context for TTIP

In line with the Lisbon Treaty, which establishes human rights as one of the principles that guide external activities of the Union (Art. 21(1) of the TEU and Art. 207(1) of the TFEU), the European Commission is committed (and legally bound) to promote respect for human rights worldwide and to incorporate human rights in the impact assessment of the trade agreements.²⁹³ As explained above, because the Charter of Fundamental Rights of the European Union was given binding legal effect equal to that of the Treaties in the Lisbon Treaty, the EU's commitment to human rights in TTIP is a core element of the negotiations and potential outcomes. In order to ensure early focus on human rights in the policy cycle, DG Trade has issued guidelines on how to look at human rights in trade impact assessments.²⁹⁴ In addition, the Commission has adopted the Better Regulation agenda on 19 May 2015, containing the Better Regulation Guidelines (first level guidance) and the Better Regulation Toolbox (second level guidance).²⁹⁵

The EU's Trade Policy focus was first driven by the communication Trade, Growth and World Affairs – where openness to trade was viewed as a key element to successful growth and development strategies, with a particular focus on sustainable development.²⁹⁶ The current Communication that lays out the EU's approach to Trade Policy is 'Trade for All'. In her foreword, Mrs. Malmström states that: "It is clear Europeans want trade to deliver real economic results for consumers, workers and small companies. However, they also believe open markets do not require us to compromise on core principles, like human rights and sustainable development around the world or high quality safety and environmental regulation and public services at home. European citizens also want to know more about trade negotiations carried out in their name",²⁹⁷ focusing on a more responsible trade policy that is also more effective and transparent.

TTIP is the most important and largest bilateral trade agreement that the European Union has ever negotiated. Given that, along with its regulatory co-operation component, and because it is often said that TTIP provisions may become the template for other future trade agreements, it is high-profile and under heavy scrutiny.^{298 299} TTIP – being an EU Trade Agreement – must promote and respect human rights. EU Member States as well as the US are party to several international human rights treaties.³⁰⁰ Stakeholders and civil society follow TTIP closely and also express their views on TTIP and human rights matters – from recommendations on how to guarantee them to concerns that they have. This also means that companies should be encouraged to respect human rights, both offline and online, in line with UN Standards (e.g. Ruggie Principles), and Council of Europe recommendations.³⁰¹

Typically, the human rights that are mainly influenced by trade agreements are the social and economic rights and not so much the civil and political rights.³⁰² On the other hand, by including

²⁹³ European Commission, Directorate-General for Trade, Guidelines on the analysis of human rights impact in impact assessments for trade-related policy initiatives, available at: http://trade.ec.europa.eu/doclib/docs/2015/july/tradoc_153591.pdf [accessed 10 November 2015].

²⁹⁴ European Commission, Directorate-General for Trade, Guidelines on the analysis of human rights impact in impact assessments for trade-related policy initiatives, available at: http://trade.ec.europa.eu/doclib/docs/2015/july/tradoc_153591.pdf [accessed 10 November 2015].

²⁹⁵ See http://ec.europa.eu/smart-regulation/guidelines/docs/swd_br_guidelines_en.pdf.

²⁹⁶ See http://trade.ec.europa.eu/doclib/docs/2012/january/tradoc_148992.EN.pdf.

²⁹⁷ See http://trade.ec.europa.eu/doclib/docs/2015/october/tradoc_153846.pdf.

²⁹⁸ UK Parliament, The Transatlantic Trade and Investment Partnership – European Union Committee Contents. Chapter 2: the Purpose of TTIP, Jobs and Growth, para. 39, available at: <http://www.publications.parliament.uk/pa/ld201314/ldselect/lducom/179/17905.htm> [accessed 10 November 2015].

²⁹⁹ Labor and Globalization, Scherrer, Ch. (Ed.) The Transatlantic Trade and Investment Partnership: Implications for Labour, Muenchen, Mering, 2014, available at: <https://www.uni-kassel.de/einrichtungen/fileadmin/datas/einrichtungen/icdd/Publications/Volume5.pdf> [accessed 10 November 2015].

³⁰⁰ Full overview of the ratifications of the International Human Rights Treaties is presented in the Annex.

³⁰¹ Submission of EDRi to the draft interim report, 9th of June 2016.

³⁰² See TSIA studies on EU-Georgia and Moldova, See also European Commission, Directorate-General for Trade, Guidelines on the analysis of human rights impact in impact assessments for trade-related policy

regulatory cooperation as an element of TTIP, also other human rights – not traditionally affected – may be influenced. When we therefore look at the human rights mentioned in the EU guidelines, our first step is to focus on those human rights that are likely to be most affected by TTIP: the social and economic human rights and core labour rights.

However, human rights are interrelated and interdependent, so the affected economic and social human rights sometimes spill over into the civil and political rights. To provide a ‘holistic’ overview but at the same time not to focus on human rights that are not likely to be affected by TTIP, next to experience from previous knowledge on trade agreements and human rights, we apply two more screening methods: screening of the inputs from civil society and screening of the impact of TTIP on human rights according to the results of the economic and social quantitative and qualitative analyses.

4.5.3. Structure

We base this analysis on the EU guidelines on the analysis of human rights in impact assessments for trade-related policy initiatives of July 2015.³⁰³ In this section we focus on the main human rights issues that are the potential consequence of TTIP:

- In the first step, and since in this report, we have already looked at overall social impacts in previous sections (e.g. the case study on impact of TTIP on main ILO Labour Conventions), we make clear what other human rights impacts (not covered elsewhere) we cover here;
- In the second step of our analysis, we identify the key human rights issues through a screening process. We rely on the information from the negotiating texts on TTIP provided on the website of the European Commission,³⁰⁴ a literature review and extensive feedback from civil society;
- In the third step, we study the economic impacts that were found in the CGE and E3MG modelling exercises and interpret these findings for the possible impact on human rights. This leads us to focus the detailed analysis on those human rights where the main impact can be expected;
- Finally, in step 4, we will – in line with the EU impact assessment guidelines on human rights – look at further possible impacts on human rights that might occur as a result of TTIP, depending on what is included in the negotiations and/or negotiating proposals.

4.5.4. Step 1: Human rights analysed elsewhere in the report

In this Trade SIA, the focus is on looking at the potential economic, social and environmental effects, including human rights effects. Some rights can be grouped under the social analysis, but also under the human rights analysis – this, for example, is the case for the ILO Core labour conventions with *socio-economic human rights* and the *human right to health*, and the *human right to access to health care*. The same holds – on the environmental front – for the *human right to a clean environment*. The following human rights are already covered in other sections of this report:

- The human right to access to health care – section 4.4;
- The human right to basic medication – section 4.3;
- The human right to a clean environment – chapter 5.

Labour rights (human right to work, human right to fair and just working conditions, human right to collective bargaining and action, human right to protection in the event of unjustified dismissal, prohibition of child labour and protection of young people at work) are covered in section 4.4. The right of access to services of general economic interest (Art. 36 CFR) and the

initiatives, available at: http://trade.ec.europa.eu/doclib/docs/2015/july/tradoc_153591.pdf [accessed 10 November 2015].

³⁰³ European Commission, Directorate-General for Trade, Guidelines on the analysis of human rights impact in impact assessments for trade-related policy initiatives, available at: http://trade.ec.europa.eu/doclib/docs/2015/july/tradoc_153591.pdf [accessed 10 November 2015].

³⁰⁴ European Commission website, EU negotiating texts in TTIP, available at: <http://trade.ec.europa.eu/doclib/press/index.cfm?id=1230> [accessed 9 November 2015].

right to effective remedy before the court (Art. 47 CFR) are addressed under the environmental Chapter when ISDS is discussed.

In order to avoid doubling of our analysis, we will not cover these rights again in this chapter, but rather focus on other human rights not covered elsewhere.

4.5.5. Step 2: Human rights potentially affected by TTIP

Based on an assessment of the proposed trade and trade-related measures (including regulatory co-operation elements), we see what human rights are possibly going to be affected. Documents published on the website of the European Commission are grouped into three parts (pillars of the TTIP): market access, regulatory co-operation and rules. These three elements are explained in detail in section 1.1 and 4.4. We therefore cover them from a human rights perspective in a concise manner below – highlighting various impacts that might be expected (depending on the final negotiation outcome). A literature review and concerns among civil society groups about the potential impact of TTIP on human rights are also included in this section. It should be noted that the EU Member States and the US face different obligations under international human rights law. More specifically, and while we refer to the ICESCR regularly in this section to clarify the exact meaning of the human right, the US has not ratified this treaty.

Tariffs and market access

Trade in goods and services and the lowering or scrapping of customs duties may have a positive or negative impact on human rights, depending on the nature of the goods being traded.

On the one hand, the consequence of lowering of tariff lines for goods could be that goods prices decrease, leaving more space for the people to spend that extra household income on something else, or to save (i.e. consume more in the future). This increases their living standards (*human right to adequate standard of living*, Article 11 ICESCR). Through economic growth, increased income (levels) of the population, increased state tax revenues, and the creation of jobs, TTIP as a trade agreement promotes the growth and resources necessary for the progressive realisation of human rights.³⁰⁵ This effect is expected to spread throughout the EU economy and the US economy. On the other hand, in trade agreements there are winners and losers: some sectors grow and others are expected to decline. These model results need to be analysed further.

Moreover, removing tariffs, could also mean that there is less tariff revenue for the EU and US. For 2012, € 21 billion in customs duties were collected by the EU on imports from outside the EU. This is 0.4 percent of total EU 28 tax revenues (€ 5 270 billion in 2012). The estimated loss from TTIP on the basis of 2012 trade data is expected to be € 2.1 billion, which is 10 percent of total customs revenue. This 10 percent equals 0.04 percent of total EU tax revenues, of which 80 percent (or 0.032 percent) goes to the EU budget. This loss in tariff revenue is – in the medium to longer run – more than compensated for by additional income, value added and corporate tax incomes. In the short run, this marginal loss of tariff revenue may potentially reduce the (financial space) for upholding human rights (that relate to social services that depend on state funding), e.g. *human right to education* (Art. 13 ICESCR, Art. 14 CFR, Art. 17 ESC), *human rights of persons with disabilities* (Art. 26 CFR, Art. 15 ESC, CRPD), *human right to culture* (Art. 15 ICESCR, Art. 22 CFR), *human rights of children and women* (CRC, CEDAW, Art.10(2) ICESCR, Art. 8 ESC), *human right to health* (Art. 12, ICESCR, Art. 11 ESC), *human right to access to health care* (Art. 12(d), ICESCR, Art. 35 CFR), *human right to social security* (Art. 9 ICESCR, Art. 34 CFR), *rights of the elderly* (Art. 25 CFR, Art. 23 ESC), *minorities* (Art. 27 ICESCR, Art. 2 TEU, Art. 21 CFR), etc. A similar effect (though of a slightly different magnitude) is expected for the US.

If tariffs on goods that are used in public services are removed (e.g. MRI scanners in hospitals), costs go down, which could lead to a positive effect on the *human right to access healthcare* (Art. 12 (d), ICESCR, Art. 35 CFR). The *human right to basic medication* (part of the human right to health, Art. 12 ICESCR, Art. 11 ESC, General Comment No. 14 CESCR) could be positively affected if tariffs on internationally traded medicines are removed or lowered. In more general terms, lower tariffs on goods that are used in public services (e.g. health care,

³⁰⁵ See Ten Categories of Impact of Trade Agreements on Human Rights in Walker, S. (2009), *The Future of Human Rights Impact Assessments of Trade Agreements*, Intersentia.

education) can also positively affect the human right to access to services of general economic interest (Art. 36 CFR). The former is discussed in section 4.3 of this report.

However, if the goods traded are potentially harmful to people's health (e.g. alcohol and tobacco or sugars), reducing tariffs and increasing market access could conflict with the UN Sustainable Development Goals and puts the the right to *consumer protection* (Art. 38 CFR) at risk, threatening human rights values by the embedded trade 'values', unless addressed – in parallel – by flanking measures (e.g. by EU Member States)³⁰⁶ This potential adverse effect of TTIP on the targets of the UN Sustainable Development Goals (e.g. reduction of smoking, promotion of harmful use of alcohol, prevention of diseases, access to basic medication, etc.) is mentioned often by civil society.³⁰⁷ Since the relatively more vulnerable groups of the population – those with relatively the lowest income levels – have the highest share of 'food costs' in their typical expenditure patterns (e.g. the poorest 20 percent of the EU population spends 19.2 percent of their income on food, while the top quintile spends 11.2 percent of income on food),³⁰⁸ these effects will spread asymmetrically through society – implying that *the right to health* (Art. 12, ICESCR, Art. 11 ESC) could be affected to different degrees for different population groups that are protected under the international human rights treaties, like *children* (Art.24 CRC), *children with disabilities* (Art. 23 CRC), *women* (Art. 12 CEDAW), *persons with disabilities* (Art. 25 CRPD)). Exposing consumers more openly to products that are known to be hazardous for human health could also constitute a breach of the right to consumer protection (Art. 38 CFR) in the EU. This is further explained in section 4.3; the case study on human health.

In general, the removal of tariffs on goods that are produced in the US with different labour, health and/or safety standards will have competitive effects. If a US standard is higher, EU producers gain a competitive edge, but if an EU standard is higher, US producers will become relatively more competitive. For example, products produced without standards for animal welfare in the US could become more competitive when tariffs are lifted, putting pressure on EU producers to cut costs, as EU producers that have to uphold EU norms and standards. From a human rights perspective, without tariff protection, competitive pressures in an EU industry could potentially affect labour rights negatively (as could other factors at the same time), (*the right to work* (Art. 6 ICESCR), *the right to fair and just working conditions* (Art. 7 ICESCR, Art. 31 CFR), *the right of collective bargaining and action* (Art. 8 ICESCR, Art. 28, CFR), *the right to protection in the event of unjustified dismissal* (Art. 30 CFR), *prohibition of child labour and protection of young people at work* (Art. 10(3) ICESCR, Art. 32 CFR, ILO Conventions No. 138 and 182), etc. This concern was also raised by civil society groups, the Swedish Confederation of Professional Employees, Saco (Swedish Confederation of Professional Associations) and LO (the Swedish Trade Union Confederation).³⁰⁹ For the US this effect could sometimes be the opposite (e.g. in the example case of animal welfare, where the US does not have the same level standard as the EU). In cases, however, where the US has more costly standards, negative competitive effects for US industry could ensue. In either case it is important that companies should be encouraged to respect human rights, both offline and online, in line with UN Standards (e.g. Ruggie Principles), and Council of Europe recommendations as was put forward by EDRI.³¹⁰

Reducing trade in services barriers can also have an impact on human rights. For example, if barriers to work in the EU or US for professional services (e.g. lawyers, doctors) are reduced, international availability of experts in health care could go up, supporting the *right to health and access to health care*. However, trade in services may require a certain level of data sharing between the EU and the US which can eventually affect *the right to protection of personal data* (Art. 8 CFR). According to the negotiating mandate of TTIP, however, personal data sharing is

³⁰⁶ Ibid.

³⁰⁷ Health and Trade Network, Health and Trade: what hope for SDG3? 28 September 2015, feedback received from the Health and Trade Network during civil society consultation. This publication is also available online, at: <https://healthandtradenetwork.wordpress.com/2015/09/28/health-and-trade-what-hope-for-sdg3/> [accessed 4 November 2015].

³⁰⁸ According to the statistics used by Cambridge Econometrics to calculate expenditure effects from price changes predicted by TTIP.

³⁰⁹ Saco, LO, TCO, Swedish trade unions' policy on the negotiations between USA and EU on a Transatlantic Trade and Investment Partnership (TTIP), 10 February 2014, feedback received from the Swedish trade unions during civil society consultation. This publication is also available online, at: [https://www.lo.se/home/lo/res.nsf/vRes/lo_in_english_1366027847830_ttip_lo_tco_saco_pos_pdf/\\$File/TTIP_LO_TCO_Saco_pos.pdf](https://www.lo.se/home/lo/res.nsf/vRes/lo_in_english_1366027847830_ttip_lo_tco_saco_pos_pdf/$File/TTIP_LO_TCO_Saco_pos.pdf) [accessed 10 November 2015].

³¹⁰ Submission of EDRI to the draft interim report, 9th of June 2016.

not included. Were the provisions on the flow of personal data to be included in the agreement in the future, we could expect some positive and some negative effects. Given the current Mandate, however, we do not foresee any effect of TTIP on *the right to protection of personal data*.

Increased access to public procurement markets in the US for EU firms – a clear goal for the EU negotiators – could have a significant effect on economic growth, potential for business (both for larger firms as well as for SMEs), which could lead to the creation of jobs in the EU. The potential effect is expected to be larger for the EU than for the US because the former already has a quite open public procurement market; hence there is a smaller potential gain in further opening public procurement markets for the US than for the EU. This would – in general – lead to promotion of the *human right to adequate standard of living* (Article 11 ICESCR). However, regarding public procurement, civil society is wary that more open procurement markets because of TTIP could limit a government's capacity to choose for a bidder not based on price but based on other aspects of an offer, like for example, the focus on and attention for promoting a clean environment. Thus, civil society is concerned that through TTIP, governments could see the usefulness of public procurement as a tool to promote human rights law, including *the right to clean environment* (Art.12 ICESCR), be diminished.

Advocates see TTIP as an opportunity to 'green' public procurement, on the other hand. Civil society also argues that the public procurement chapter should be used as an opportunity to include – for example – labour and/or environmental conditions into procurement processes, thus – for example – greening public procurement. On the US side, various stakeholders are concerned for US jobs. If US markets open to EU firms in public procurement (i.e. address divergences like the Buy American act, the Jones Act, or the Fly American act) economists expect prices to drop significantly, but also jobs to be lost in the US. For those (few) directly affected because of job losses, this could have a negative effect on the human right to adequate standard of living (Art. 11 ICESCR). For the large majority of US consumers, however, the human right to adequate standard of living would improve because prices would drop significantly, especially for those products where transport costs are a substantial part of total production costs.

Rules of origin (RoO) affect the degree of access of third countries and companies producing from third country markets to the EU and US markets and thus significantly the direction of the effect on the *human right to an adequate standard of living* (Article 11 ICESCR).³¹¹ Without TTIP, a third country producer would have to obtain market access twice: once for the US – adhering to the US regulatory system – and once for the EU – adhering to the EU regulatory system. If TTIP led to a significant degree of alignment between the EU and US regulatory systems (e.g. through regulatory coherence, MRA, regulatory equivalence, or through any other form of convergence) – without RoO provisions, third country producers would experience automatic increased market access to both markets. However, with RoO provisions, this 'third country effect' or 'geoeconomic effect' of TTIP would be significantly reduced alongside the potential benefits of TTIP for third countries – in part predicted by the updated study results that shows positive effects for third countries (i.e. the direct spill-over effect). So the degree to which RoO are included influences in a major way the size and direction of potential economic effects for third countries.

The updated analysis has modelled TTIP as a rather open agreement with geoeconomic impact through spill-over effects. As it is stated in the Factsheet on the Rules of Origin in TTIP published on the website of the European Commission, however, "*goods from other countries do not enjoy the same benefits*" which can lead to decrease in exports of these third countries, less market access to the TTIP market that was relatively already most closed at the outset, and a higher degree of discrimination. Most sensitive to this change in the level of 'openness of TTIP' would be the Least Developed Countries (LDC). The more open TTIP is, the less discriminatory, the greater the potential for positive third country effects, the stronger the *human right to adequate standard of living* (Article 11 ICESCR) is promoted in third countries. The more closed the TTIP agreement is (i.e. the more RoO provisions), the lower the potential third country spill-over effects. If the RoO provisions are sufficiently restrictive, third countries may not benefit at

³¹¹ Jim Rollo et al, Potential Effects of the Proposed Transatlantic Trade and Investment Partnership on Selected Developing Countries, CARIS, University of Sussex for the Department for International Development, 2013, available at: http://tradesift.com/Reports/Potential%20Effects%20of%20the%20Proposed%20Transatlantic%20Trade%20and%20Investment%20Partnership%20on%20Selected%20Developing%20Countries_DFIG_Final%20Report_July2013.pdf [accessed 10 November 2015].

all, turning the overall TTIP effects into those of a more traditional tariff-based, 20th century, FTA.

Regulatory co-operation

In the previous section, we covered the potential effects of tariff liberalisation and market access. In this section we look at the potential effects of regulatory coherence (in relation to), technical barriers to trade and food safety.

In cases where tariff removal would reduce trade costs of and stimulate trade in products that may be harmful to people's health (e.g. cigarettes, alcohol, fast food), it is important that TTIP does not circumvent government capacities to take (regulatory) measures to uphold their international human rights obligations when being faced (potentially) by these effects. The Charter explicitly states in Article 36 that the EU has the obligation to provide access to services of general economic interest for EU citizens (Art. 36 CFR). So both the EU and EU Member States (through their constitutions) have the obligation to pursue and advance the human right to health. We expect them to apply domestic laws and policies to safeguard this obligation. If, however, in the unlikely case that states would voluntarily choose not to retain their rights to regulate, TTIP would risk to limit government capacities to promote human rights and to meet their international human rights obligations, and TTIP would negatively affect the *human right to health* (in this example).

Civil society is concerned about the potential impact of TTIP on public services (a sub-section of services) – already mentioned through the lense of tariff removal above. The potential risk of restricting the regulatory space of states' governments not only with respect to companies operating in public services but also to other private companies operating on its territory (Guiding principle 9 of the UN Guiding Principles on Business and Human Rights) was voiced by UN experts in June 2015.³¹² Some stakeholders fear that public services could be affected by TTIP through regulatory co-operation if they are not clearly and unequivocally excluded from the TTIP negotiations leading to potential impacts on human rights such as the *human right to access to services of general economic interest* (Art. 36 CFR), the *human right to culture* (Art. 15 ICESCR, Art. 22 CFR), *human right to education* (Art. 13 ICESCR, Art. 14 CFR, Art. 17 ESC), and the *human right to health* (Art. 12 ICESCR). This potential impact channel will be further investigated in Section 4.

Lowering of protection for consumers and the environment is the general concern of civil society. The European Commission addressed this concern clearly by stating that lower standards and levels of protection will not be accepted.³¹³ Moreover, in the most recent proposal for the Sustainable Development chapter in TTIP, the EU has indeed put forward one of its most ambitious proposals regarding sustainable development in any EU trade agreement to date.³¹⁴ In fact, lowering levels of consumer protection would go against the Charter of Fundamental Rights of the EU (Art. 38 CFR on consumer protection). If TTIP does not lead to a lowering of health and safety standards, does not threaten the state's right to regulate, and does not negatively affect the right to a clean environment, then a potential negative effect of TTIP on human rights is very unlikely.

Trade facilitation can lead to less red tape and bureaucratic procedures at the EU and/or US borders, lowering costs, without affecting product standards and regulations. This would have potential positive effects for the *right to an adequate standard of living*. It could also affect the *right to work* positively if more jobs are created when costs of doing business go down.

³¹² OHCHR, UN experts voice concern over adverse impact of free trade and investment agreements on human rights, Geneva, 2 June 2015, available at: <http://www.ohchr.org/FR/NewsEvents/Pages/DisplayNews.aspx?NewsID=16031&LangID=E> [accessed 4 November 2015].

³¹³ European Commission, Factsheet on Regulatory Cooperation in TTIP published on the web-site, available at: http://trade.ec.europa.eu/doclib/docs/2015/january/tradoc_153002.1%20RegCo.pdf [accessed on 5 November 2015].

³¹⁴ European Commission proposal for the Sustainable Development Chapter in TTIP, published on the web-site, available at: http://trade.ec.europa.eu/doclib/docs/2015/november/tradoc_153923.pdf [accessed 13 January 2016].

Trade Rules

“New rules to make it easier and fairer to export, import and invest”.³¹⁵ Trade rules include sustainable development, as a basis to promote the protection of labour rights and the environment. Not just ambitions matter here, but whether these ambitions will be monitored and are legally enforceable. Civil society – especially trade unions – are wary that TTIP could lead to a deterioration of labour standards in the EU.³¹⁶ They are concerned that trade liberalisation can potentially exacerbate competition which in its turn might exert excess pressure on the working conditions, salaries, labour standards and the functioning of the trade unions, thereby threatening the ILO decent work agenda³¹⁷ and by extension further affect the *human right to adequate standard of living*.

Climate change and the use of energy and raw materials are posed as potential risks to the *human right to a clean environment and the human right to health* that can indirectly also spill-over into other rights. If TTIP would be concluded, asking for export permissions for LNG from the US Department of Energy will become a formality. That could facilitate LNG exports to the EU, which in turn could support a shift to LNG, away from oil and coal. This could then impact the *human right to health, and human right to a clean environment*. On the other hand, it could further stimulate fracking in the US, which has a negative environmental impact in its own right.³¹⁸

The potential impact of TTIP on public services may also vary depending on what is going to be the final TTIP text on Investor Protection. There is a fear that Investor Protection will come at the expense of the state’s power and space to regulate and protect the population.³¹⁹ If there is a lot of room for investors to sue for compensation when governments change public policies (i.e. if the investor protection specifications are defined in a broad sense up front in TTIP), ‘regulatory chill’ could be the consequence, affecting *the human right to health, water, culture, education as well as the human right to clean environment* and highest labour and social standards. The European Commission has confirmed its intention to safeguard EU governments’ rights to run public services just as they wish.³²⁰ Moreover, the latest negotiating proposal of the EU has dropped the contentious ISDS system in favour of an Investment Court System (ICS) that addresses many of the concerns.³²¹

Civil society has frequently raised the issue of ‘access to generic and essential medicine’ and fears that intellectual property rights will be extended, leading to more expensive medicines to the detriment of (especially the poor) citizens,³²² affecting their *human right to access to basic medicine*. ETUCE, for example, makes it very clear that IPR obligations have to be in line to uphold human rights.³²³

³¹⁵ European Commission website, EU negotiating texts in TTIP, available at: <http://trade.ec.europa.eu/doclib/press/index.cfm?id=1230> [accessed 9 November 2015].

³¹⁶ Saco, LO, TCO, Swedish trade unions’ policy on the negotiations between USA and EU on a Transatlantic Trade and Investment Partnership (TTIP), 10 February 2014, feedback received from the Swedish trade unions during civil society consultation. This publication is also available online, at: [https://www.lo.se/home/lo/res.nsf/vRes/lo_in_english_1366027847830_ttip_lo_tco_saco_pos_pdf/\\$File/TTIP_LO_TCO_Saco_pos.pdf](https://www.lo.se/home/lo/res.nsf/vRes/lo_in_english_1366027847830_ttip_lo_tco_saco_pos_pdf/$File/TTIP_LO_TCO_Saco_pos.pdf) [accessed 10 November 2015].

³¹⁷ Saco, LO, TCO, Swedish trade unions’ policy on the negotiations between USA and EU on a Transatlantic Trade and Investment Partnership (TTIP), 10 February 2014, feedback received from the Swedish trade unions during civil society consultation. This publication is also available online, at: [https://www.lo.se/home/lo/res.nsf/vRes/lo_in_english_1366027847830_ttip_lo_tco_saco_pos_pdf/\\$File/TTIP_LO_TCO_Saco_pos.pdf](https://www.lo.se/home/lo/res.nsf/vRes/lo_in_english_1366027847830_ttip_lo_tco_saco_pos_pdf/$File/TTIP_LO_TCO_Saco_pos.pdf) [accessed 10 November 2015].

³¹⁸ http://energy.gov/sites/prod/files/2013/04/f0/shale_gas_challenges_surface_impacts.pdf

³¹⁹ Uni Europa, various feedback received during civil society consultation. Among others, Q&A on TTIP to leading trade expert Dr Gabriel Siles-Bruegge, University of Manchester, 6 July 2015, also available online at: <http://www.uniglobalunion.org/news/qa-ttip-leading-trade-expert-dr-gabriel-siles-bruegge-university-manchester> [accessed 4 November 2015].

³²⁰ European Commission, Factsheet on Services in TTIP, available at: http://trade.ec.europa.eu/doclib/docs/2015/january/tradoc_152999.2%20Services.pdf [accessed 11 November 2015].

³²¹ For more specific details on the ICS system, see chapter 5.4.2.

³²² Health and Trade Network, Health and Trade: what hope for SDG3? 28 September 2015, feedback received from the Health and Trade Network during civil society consultation. This publication is also available online, at: <https://healthandtradenetwork.wordpress.com/2015/09/28/health-and-trade-what-hope-for-sdg3/> [accessed 4 November 2015].

³²³ FFIA submission to draft interim report, June 2016.

Other issues

Transparency

The issue of transparency in the negotiations cannot be captured by any of the three content-areas of the TTIP negotiations. Civil society is of the opinion that there is an insufficient level of transparency despite commitments of the European Commission to share the EU negotiating documents publicly to increase transparency.^{324 325} Transparency encompasses the entire TTIP negotiations and could affect the *human right to information* (Art. 19 ICCPR) and the *right to take part in the conduct of public affairs* (Article 25(a) ICCPR, General Comment No. 25 CCPR). This issue will be covered in Step 4 in more detail.

Human rights in a trade agreement

On a separate note from the expected impacts on specific human rights, civil society often raises the issue of the relative importance of human rights in general vis-à-vis trade and trade-related provisions in trade agreements in general, and – in this case – TTIP. During the protests in Seattle in 1999 against the WTO, protesters used posters with a big turtle on them swimming in the ocean stating: “I am not a trade barrier”. Regarding TISA, the Trade in Services Agreement, NGOs are concerned that health care services, education services, and water and energy sectors are treated as ‘tradeable commodities’ or ‘consumer goods’ rather than as human rights – that need protecting by ‘carving them out of the commitments’ (ETUC, 2015).³²⁶ This concern has also surfaced regarding the TTIP negotiations – and as such could be lined to the right of access to services of general economic interest (Art. 36 CFR). By nature – TTIP being a trade agreement – the focus of the negotiations and goals of the agreements is on trade and trade-related measures. However, it is also clear that – especially in regulatory co-operation – regulations have a valid purpose – in part to guarantee specific human rights for EU and EU Member State citizens. Citizens are concerned that regulations that have been created for valid societal human rights concerns are viewed as ‘trade barriers to tradeable commodities’ rather than as human rights. In TTIP, therefore, ample attention must be paid – not just in a preamble to the Treaty – to guaranteeing and protecting human rights in practice. This view is also supported by various civil society organisations.³²⁷

A very important piece of evidence on how the negotiators have picked up on these civil society and citizens concerns, is the ambitious EU proposal for the Sustainable Development chapter.³²⁸ In there, the levels of social and environmental protection are very clearly safeguarded and upheld. This chapter is legally binding once part of the Treaty text. Some of the main provisions tabled, are:

- No relaxation of labour standards or environmental protection;
- Promotion of fair and ethical trade through open, impartial and transparent initiatives;
- Implementing best practices regarding transparency and public participation;
- CSR – recognising the roles for governments, business and consumers;
- Cooperation between EU and US to fight against illegal logging, fishing, or illegal trade in endangered wildlife (see section 5.4 of this report);
- Commitment to conservation of biodiversity and ecosystems;
- Propoting trade and investment in green goods and technologies;
- Formulating policies to minimize adverse effects on human health and environment related to trade of chemicals/waste;

³²⁴ European Commission, FRAME Project, FRAME Magazine, Trade and Human Rights: What’s under the TTIP of the Iceberg? By Nicholas Hachez, 22 December 2014, available at: <http://www.fp7-frame.eu/trade-and-human-rights-whats-under-the-ttip-of-the-iceberg/> [accessed 4 November 2015].

³²⁵ EPHA letter to Mrs Emily O’Reilly, European Ombudsman, 30 October 2015, available at: <http://www.eph.org/6223> [accessed 10 November 2015].

³²⁶ ETUC, Statement on the goals and principles of the Trade In Services Agreement (TISA), 17 June 2014, available at: https://www.etuc.org/sites/www.etuc.org/files/Statement_on_the_goals_and_principles_of_TISA_-_August_2013-2.pdf [accessed 29 December 2015].

³²⁷ EDRI, for example, clearly states in ‘Red Line No. 4’ that Human Rights should be included and clear elements therein, related to: confirmation of states obligations under the Universal Declaration of Human Rights, interpreting provisions in TTIP in line with international human rights law, fundamental rights remain protected, carry out periodic HR impact assessments, exceptions permitting suspension of obligations if breaches of fundamental rights are observed, etc.

³²⁸ On November 6, 2015, the EU released its proposal for the Sustainable Development chapter in TTIP; its most ambitious proposal on sustainable development, environmental and social protection levels to date: http://europa.eu/rapid/press-release_IP-15-5993_en.htm [accessed 13 January 2016].

Trade SIA on the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the USA

- Support for all strategic objective of the Decent Work Agenda of the ILO;
- Affirmation of ILO Core Labour standards – including effective implementation in law and practice of ILO conventions;
- Commitment to promoting objectives globally to immediately and effectively eliminate worst forms of child labour and forced or compulsory labour;
- Protection of other ILO standards in addition to core conventions (e.g. health and safety at work).

The ways in which this chapter – and all others – are monitored and enforced (embedded institutionally), are not yet known.

Conclusions Step 2

The above concise overview of what human rights could potentially be affected sums up results from literature, concerns from civil society, and formal negotiating positions. This section does not draw any conclusions as to the potential effect of TTIP we expect – that will follow further down below. The human rights that are potentially affected by TTIP are the ones mentioned in Table 4.13 below.

Table 4.11 Summary of human rights potentially affected by three pillars of TTIP

Human Right affected	Tariffs and market access	Regulatory cooperation	Trade rules	Other issues
Human right to health	√	√	√	
Human right to access health care	√	√		
Human right to education	√	√		
Human right to an adequate standard of living	√	√		
Human right to culture	√	√		
Human right to work	√	√	√	
Human right to fair and just working conditions	√	√	√	
Human right to water	√	√		
Human right to clean environment	√	√	√	
Human rights of persons with disabilities	√	√		
Human rights of children	√	√		
Human rights of women	√	√		
Human right to access basic medication		√	√	
Human right to information		√		√
Human right to social security and social insurance	√	√		
Human rights of the minorities	√	√		
Human right to collective bargaining and action	√	√	√	
Human rights of the elderly	√	√		
Human right to protection in the event of unjustified dismissal	√	√	√	
Human right to privacy	√	√		
Human right to protection of personal data	√	√		
Human right of access to services of general economic interest	√	√		
Human right of consumer protection	√	√		
Prohibition of child labour and protection of young people at work	√	√	√	

4.5.6. Step 3: Analysis of economic results from the CGE and the E3MG modelling

In this section we bring in the economic results from the CGE and E3MG modelling exercises that can be used to shed light on the potential impact of TTIP on certain human rights. The CGE

model is used to get a ball-park figure for main indicators given the long-run time horizon needed for all trade and trade-related provisions in a potential TTIP to work through the economy. The E3MG model is then used to detail these general impacts a lot further. For example, the CGE model allows us to look at what a potential TTIP agreement could do with household incomes; ie. the net effect of wage effects and consumer price effects in TTIP. In the CGE setting this is an average household income for the EU28 – which is expected to go up by 0.38 percent as a consequence of an ambitious TTIP agreement. But we know there may be large differences depending on whether someone lives in a city or on the countryside, whether someone is employed, self-employed, unemployed or inactive, etc. The E3MG model allows us to dig into these relative differences. For example, the 0.38 percent average household real income rise is 0.43 percent for the self-employed, 0.41 percent for manual workers, but 0.08 percent for retired people, 0.05 percent for inactive people and 0.17 percent for the unemployed. This difference stems from the fact that the different categories of the population are affected differently by TTIP: those in the labour force will experience (positive) wage effects and because they are also consumers, consumer price effects. The categories of the population that are not in the labour force (e.g. inactive people, unemployed or retired people) the wage effect is almost absent, which implies the total effect for these categories of the population are driven by changes in consumer prices only – yielding much smaller results. Those are important differences.

CGE modelling results

The CGE model shows moderate potential annual gains from TTIP. GDP and National Income are expected to rise for the EU and US – although GDP increases are higher than National Income increases, suggesting that though both companies and consumers gain, the former gain marginally more. Looking at household incomes, we see that they are expected to rise in all country groups, except for India and low income countries, where there is no effect. Household incomes are the combination of wage effects and consumer price effects. If wages rise faster than consumer prices (or if wages increase and consumer prices drop) household income will increase. The potential effects for India and LDCs can have an effect on various human rights which is difficult to predict at the moment.

At a disaggregated product level, prices for wood and wood products are seen to decline significantly. This could put pressure on the environment and thus affect *the human right to health and the human right to a clean environment*. For example, international (illegal) timber and fish trade could be analysed further. Another effect that is found is that water transport services increase strongly in price in the EU and drop in the US. This leads to a relative decline in competitiveness of the water transport services in Europe vis-à-vis other modes of transport. Since water transport is the cleanest mode of transport, this could raise environmental pressures in terms of emissions in the EU. In the US, the opposite effect could happen. In the first case the human right to a clean environment may be under pressure, while in the latter case it could improve.

E3MG modelling results

Based on the results from the E3MG modelling on the social analysis of the impact of TTIP, we find that TTIP benefits the population that is involved in economic activity. While the overall impact for all the groups of population is not large, specific subsections of the population (e.g. retired persons, unemployed persons and persons registered as inactive) benefit less than the persons involved in work; i.e. in economic activities. Based on data that split the household population into five quintiles, we see that though all households are expected to gain, households with the lowest incomes benefit marginally less than households with the highest incomes.³²⁹ These quantitative results show that – from a perspective of potential impact of TTIP on human rights – the results show a negligible to minimal impact. *The right to an adequate standard of living* is expected to be affected when the income of the population increases. There is a marginal increase in income inequality predicted, but all five quintiles of households gain from TTIP.

Based on the results from the E3MG modelling on the environmental analysis, the impact of TTIP on energy demand is small but positive, especially in the EU. Demand for hard coal, natural gas and middle distillates is expected to go up both because total demand for energy goes up as a consequence of more economic activity (scale effect) and because of the sectoral

³²⁹ For a more detailed analysis of the results, please see the Chapter on social analysis.

re-allocation (composition effect) – where energy-intensive sectors grow. Especially coal (going up both in the EU and US as a consequence of the relative low price of coal compared to other energy sources) could have negative environmental effects, affecting *the human right to a clean environment*. The composition effect drives the results regarding more or less CO₂ emissions per product. For textiles, clothing and footwear there is a shift towards more polluting production, while for non-ferrous metals the opposite is the case. Some of the price effects in the US are driven by the shale-oil and shale-gas revolutions. The technique itself could put pressure on the *human right to a clean environment, human right to water, human right to health*, and potentially put human lives at risk. Moreover, due to the shale gas revolution, the Middle East (notably Saudi Arabia's) response not to cut production, and low levels of economic growth in different parts of the world (in the US from 2008 to 2011, the EU from 2008 to 2014 and emerging economies in 2014 and 2015) energy prices for fossil fuels are very low – reducing the incentive to switch to cleaner alternative energy sources (e.g. renewable energy), despite the fact that also the energy price for renewable energy has dropped. This could be negative for *the human right to a clean environment*. On the other hand, the end process of generating energy from natural gas has a much smaller environmental footprint than other fossil fuels like oil and coal and could therefore still have the least negative effect on the environment. Regardless, the environmental footprint of the entire life-cycle of shale gas is generally larger than that of conventional gas, and highly debated due to the risk of high levels of methane leakage and in specific instances (looking at a long time scale) might even be negatively impacting the environment.³³⁰

Conclusions – Step 3

From the perspective of potential impact on *social human rights*: if the projected economic and social results can be obtained with full respect for *social and economic human rights* (which is subject to a qualitative analysis not included in the model), TTIP is not expected to have a negative effect on social and economic human rights in the long run – as long as labour and social rights and levels of social protection are upheld or increased. In the short-run labour displacement could put pressure on the human right to an adequate living as workers move from one sector to the other. However, the wage data suggest that most mobility will be a consequence of workers being drawn into growing sectors that offer higher wages, as opposed to being made redundant against their will. For LDCs the situation on human rights is difficult to predict and it needs to be monitored, but it is clear that it depends to a significant degree on how open TTIP is going to be; i.e. how many third country spill-overs will occur.

If the EU and US turn TTIP into a transatlantic fortress with substantial RoO provisions, MRAs that only apply to EU and US firms, and do not propose to – in the future – open up to third countries that want to join, LDCs may lose out as spill-over effects will disappear. Price effects due to TTIP could affect beverages and tobacco and wood and wood products potentially affecting *the human right to health and the human right to a clean environment*. The latter human right could also be affected by the potential effects of TTIP on water transport services. Increased demand for hard coal (and other fossil fuels) due to TTIP could negatively affect the human right to a clean environment. The shale gas revolution in the US, affecting gas and oil prices, could mitigate some of these potential negative effects *if* gas is used to substitute other – more carbon intensive – fossil fuels and *if* these other fossil fuels stay in the ground. On the other hand, low gas prices reinforce our dependency on fossil fuels, and fracking and horizontal drilling are not without impacts and risks (e.g. through methane leakage, and water and land use) for the environment and thus *the human right to health, human right to a clean environment and human right to water*.

4.5.7. Step 4: Human Rights Impact Assessment

In this section we analyse the impact of TTIP on the human rights that are left after having filtered a broad range of human rights in sections 1, 2 and 3. The human rights that are mentioned in the literature and civil society, that could be affected by the potential economic effects of TTIP and that are not covered elsewhere in the report (grouped together also by impact channel), are:

- Human right to adequate standard of living;
- Human right to culture;
- Human right to education;
- Human right to information;

³³⁰ Howard et al, 2011 (http://ec.europa.eu/environment/integration/energy/uff_studies_en.htm)

- Human right to persons with disabilities, human rights of children, human rights of women, human rights of the elderly, human rights of minorities;
- Human right to protection of personal data.

According to the EC's guidelines for human rights impact assessments of trade agreements, we present the results in this Step in the following way:

- We briefly present the human right's legal background;
- We present how the human right could possibly be impacted if a TTIP-agreement would be concluded.

Some of the human rights are affected directly while other human rights are impacted only in an indirect way. An example of an indirect effect is that if investor protection does safeguard public policy space clearly, the inclusion of Investor Protection (and ISDS/ICS) is not going to lead to ambiguity which would then not negatively affect the regulatory space of EU Member States. We would then not foresee (*indirectly*) the potential for adverse effects on human rights. Moreover, Article 47 of the Charter states clearly that the EU has enshrined the right to an effective remedy and a fair trial (Art. 47 CFR). Guidelines on the analysis of human rights impacts in impact assessments for trade-related policy initiatives indicate that the focus of the analysis should be on 'the areas which are more directly trade related and likely to be directly affected by the proposed options'.³³¹ Therefore, we address most human rights separately because they are impacted directly. However, the indirectly affected human rights in this analysis are grouped together.

Human right to an adequate standard of living

Right to an adequate standard of living is guaranteed under Article 11 of the International Covenant on Economic, Social and Cultural Rights. In General Comments by the Committee on Economic, Social and Cultural Rights this right includes the right to adequate housing (General Comments No.4 and No.7), the right to water (General Comment No.15), the right to social security (General Comment No.19) and right to food (General Comment No.12).

Based on the results of the economic analysis from the CGE and E3MG models, the general picture emerges of a potential positive impact of TTIP for both the EU and US (in the ambitious scenario) in the long run on the *human right to an adequate standard of living* because expected income increases are higher than expected expenditure increases. When we look at more detail for the EU, we find that the *human right to an adequate standard of living* is more positively affected for those in employment, because TTIP is expected to positively affect wages. For the unemployed, retired, and inactive strata of the population, the income effects are still positive in the ambitious scenario, but to a much lesser degree.

When we compare the five quintiles of the population split into five 20 percent income groups, we find that in the ambitious scenario all real incomes go up. But they do go up marginally more for the higher income groups than for the poorer ones. The picture is, however, different when we look at the less ambitious TTIP scenario. In that scenario, the poorest 40 percent are expected to lose out (income gains are more limited while expenses are roughly the same as in the ambitious scenario). This also holds for the unemployed, retired, and inactive citizens. In that case, *the human right to an adequate standard of living* for these parts of the population is at risk. From the perspective of the *human right to an adequate standard of living* it is therefore preferable to aim for an ambitious and not less ambitious TTIP agreement.

However, when we look at the short run, we see that in some sectors opportunities increase, while in others they decrease: in trade agreements there are winners and losers. And these winners and losers are different in the EU versus the US. For both the EU and US, the model results show, first, that overall wages (at the macro-level) are poised to increase (by 0.5 percent for high- and low-skilled workers in the EU and by 0.3 percent for high- and 0.4 percent for low-skilled workers in the US). Rising wages on average imply that the pull effect of growing sectors – pulling workers towards them by offering higher wages – dominates the push effect

³³¹ European Commission, Guidelines on the analysis of human rights impacts in impact assessments for trade-related policy initiatives, available at: http://trade.ec.europa.eu/doclib/docs/2015/july/tradoc_153591.pdf [accessed 6 November 2015].

(sectors shedding workers, causing unemployment). This observation supports – still – the fact that the *human right to an adequate standard of living* (Article 11 ICESCR) is affected positively. Second, we see that some sectors grow, while others contract. In the EU growing sectors *in absolute terms* are the motor vehicles (1.5 percent), construction (0.5 percent), other machinery (0.4 percent), distribution (+0.5 percent) and business services (0.2 percent) sectors where TTIP creates growth. On the other hand in sectors like electrical machinery (2.7 percent), and fabricated metals (1.3 percent) output declines.

For the US, in absolute terms, other services (5.2 percent), other machinery (+.0 percent) and construction (3.9 percent) grow, while sectors like motor vehicles (2.9 percent), financial services (1.0 percent) and food and beverage (0.7 percent) are expected to decline. In the short run, the *human right to an adequate standard of living* (Article 11 ICESCR) may therefore be negatively affected temporarily for some workers in the declining sectors in the EU and US. This requires close monitoring on behalf of EU/EU Member States and US federal and state governments – supporting those workers that may lose out, having funds and supporting policies available to address this potential negative short-run effect. However, the economic analysis also suggests that because wages rise on average in the EU and the US and both for low- and high-skilled workers, most workers are pulled out of these sectors, rather than being made redundant.

Our analysis, finally, suggests there is a third element that could influence the *human right to an adequate standard of living*: loss in tariff revenue. As explained above, based on data for 2012, the estimated loss in tariff revenue for the EU is an estimated €2.1 billion following lower tariff barriers in TTIP. This is 0.04 percent of EU tax revenues – which is a small percentage. Moreover, in the long-run this loss in tariff revenue is more than compensated for by additional other (value added) tax revenues. However, in the short run that may not be the case and the EU will have to cover this short-term gap. If not, there may be a potential pressure, because of more limited (financial space) to uphold human rights that relate to social services that depend on state funding. This could limit opportunities especially for the vulnerable groups in society, in particular, the elderly (Art. 25 CFR, Art. 23 ESC), minorities (Art. 27 ICESCR, Art. 2 TEU, Art. 21 CFR), persons with disabilities (Art. 26 CFR, Art. 15 ESC, CRPD), and children and women (CRC, CEDAW, Art.10(2) ICESCR, Art. 8 ESC), lowering potentially their standards of living.

Human right to culture

The human right to culture is embedded in Article 22 of the EU Charter. In Article 167 (4) of the TFEU it is explicitly noted that *'the Union shall take cultural aspects into account in its action under other provisions of the Treaties, in particular in order to respect and to promote the diversity of its cultures'*. 'Action under other provisions of the Treaties' includes trade agreements negotiated by the EU and thereby raises the obligation to promote and respect the human right to culture in all trade agreements, including TTIP. Furthermore, the EU has legally binding obligations with respect to culture in line with the 2005 UNESCO *Convention on the Protection and Promotion of the Diversity of Cultural Expressions*.

The negotiating mandate on TTIP does not include audio-visual services and broadcasting services.³³² The European Commission has made it clear in its publication on TTIP and culture that services that relate to culture will receive special treatment in TTIP, like in other trade agreements: that subsidies will be excluded from TTIP, and that governments will enjoy their freedom in regulating financial support to cultural activities. Furthermore, the investment provisions of TTIP will not expose EU industries operating in cultural services.³³³ These measures imply – if they end up in the final TTIP treaty text – that the level of risk of TTIP directly impacting negatively on the human right to culture is expected to be non-existent. A study that is interesting to mention in this respect is the one carried out by Gomez and Munoz Larroa (2014) on the effect of NAFTA on cultural industries and policy in Mexico and Canada after 20 years of NAFTA.³³⁴ In NAFTA also, a cultural exception provision was included, as is envisaged in TTIP. They conclude that post-NAFTA audio-visual and cultural services have grown in all three NAFTA members – in relative terms most in Mexico, in absolute terms (because of sheer size) most in the US. Especially the province of Quebec has used the cultural

³³² European Commission, the European Union's proposal for services, investment and e-commerce text in TTIP, available at: http://trade.ec.europa.eu/doclib/docs/2015/july/tradoc_153669.pdf [accessed 7 November 2015].

³³³ European Commission, TTIP and Culture, available at: http://trade.ec.europa.eu/doclib/docs/2014/july/tradoc_152670.pdf [accessed 8 November 2015].

³³⁴ Gomez, R., and A. Munoz Larroa (2014), "Cultural industries and policy in Mexico and Canada after 20 years of NAFTA", *Norteamerica*, year 9, Issue 2, July-December 2014.

exception to continue to subsidise and promote culture in its province. Some asymmetries could be observed but they would be largely the consequence of domestic market imperfections and policies (e.g. market concentration in the sector in Mexico).

TTIP could marginally, and in an indirect way, affect, however, the human right to culture (Art. 15 ICESCR, Art. 22 CFR) in the short run if the fall in tariff revenues is not compensated for by other income sources (in the long run the additional economic activity is expected to outweigh this short-run effect).

Human right to education

The right to education is guaranteed under Articles 13 and 14 of the International Covenant on Economic, Social and Cultural Rights and under Article 14 of the EU Charter. The State bears the primary responsibility for respecting, fulfilling and protecting the right to education through acting as a 'guarantor and regulator of education'.³³⁵

The UN, represented by the Special Rapporteur on the right to education, Kishore Singh, expressed its concern over commercialisation of education arising from liberalisation of education services and argues that increasing number of private education providers has been characterised as having a negative impact on the norms and principles of the international legal framework on the right of education.³³⁶ As it is stipulated in the General Comment No.13: *States parties agree that all education, whether public or private, formal or non-formal, shall be directed towards the aims and objectives identified in article 13 (1)*.³³⁷

This means that States have an obligation to regulate both public and private educational institutions. Guiding Principles on Business and Human Rights strengthen this obligation specifying in its foundation principle No.1 that states remain responsible for protecting their people from human rights abuse by third parties. The states need to ensure that their human rights obligations are being met by the private companies.

In her letter to the European Social Platform, a civil society group, the EU Trade Commissioner Malmström assured that TTIP will not affect the 'publicly funded services, no matter how they are delivered'.³³⁸ She highlights the safeguards the EU has since the GATT in 1995 upheld in all of its trade agreements:

- First, a broad horizontal so-called "reservation" that preserves the right to run monopolies and grant exclusive rights for a wide range of public services sectors at all levels of government, including the local level. It reads: "In all EU Member States, services considered as public utilities at a national or local level may be subject to public monopolies or to exclusive rights granted to private operators.[...]". So EU governments – TTIP or not – are free to decide what they consider to be public 'utilities' or services;
- Second, if a public authority decides to organize a public service with help of private firms, it has to follow EU public procurement law, except in the areas of health, social or educational services;
- Third, the EU always excludes from liberalization commitments sectors like publicly funded healthcare and social services, as well as publicly funded education services. No market access needs to be provided;
- Fourth, EU Member State authorities are free to regulate how services have to be supplied – regulating through safety and quality standards all suppliers have to meet. No EU trade agreement affects the right to fully regulate services, whether they are publicly funded or not.³³⁹

³³⁵ A/HRC/29/30, para. 49, p.8.

³³⁶ A/HRC/29/30.

³³⁷ UN, General Comment No. 13 – the right to education, article 13 of the ICESCR, available at: [http://www.ohchr.org/EN/Issues/Education/Training/Compilation/Pages/d\)GeneralCommentNo13Therighttoeducation\(article13\)\(1999\).aspx](http://www.ohchr.org/EN/Issues/Education/Training/Compilation/Pages/d)GeneralCommentNo13Therighttoeducation(article13)(1999).aspx) [accessed 10 November 2015].

³³⁸ Open letter of the EU Trade Commissioner Cecilia Malmström to the European Social Platform, 2 February 2015, available at: http://trade.ec.europa.eu/doclib/docs/2015/february/tradoc_153172.pdf [accessed 10 November 2015].

³³⁹ Ibid.

In this respect, it may be useful to consider the regulatory framework proposed by the Special Rapporteur on the right to education that includes prescriptive, prohibitory and punitive types of regulations to control the private providers of educational services.³⁴⁰ Since the power to regulate the services is in the hands of the states, it is to the states to consider mitigating effects or impacts they do not like to see (see also the response above of the European Commissioner for Trade). This is true for the EU (and EU Member States) and the US.

So, if educational institutions are not 'publicly funded', and the number of private educational institutes increases, it is up to an EU Member State to regulate the education sector. If the EU Member State allows private educational institutes, competition with public educational institutes, could increase. This could result in adverse effect for the *right to education* as it is provided for in the international human rights treaties and the EU Charter. But this has nothing to do with TTIP – given the above four guarantees – but with EU Member States. If the right for free basic education (Article 14 of the EU Charter), education without discrimination (Article 21 of the EU Charter) is not guaranteed, and if the state does not take actions to promote and ensure this right, it constitutes a violation. The final TTIP text is of course not available, but the main picture that emerges is that any direct effect on the human right to education does not come from TTIP, but from the EU Member States and the US directly – outside TTIP.

One marginal and indirect effect of TTIP on the human right to education (Art. 13 ICESCR, Art. 14 CFR, Art. 17 ESC) in the short run could come from the fall in tariff revenues that is not immediately compensated for by other income sources (in the long run the additional economic activity is expected to outweigh this short-run effect).

Human right to information

The *human right to information* is guaranteed by Article 19 of the International Covenant on Civil and Political Human Rights as a part of the right to expression. This right is not so much affected by the trade measures of TTIP in itself but more by the negotiating process that is taking place. Although in some sectors the trade measures also have an influence. The discussion below therefore focuses on policy choices of the EU, as opposed to obligations of states under the ICCPR.

Before turning to the transparency in the negotiating process, it is important that the right to information as pertains to certain sectors is relevant. This is especially the case for telecommunications and e-commerce. Regarding the communications sector a well functioning and competitive market is an important precondition for the human right to information in that it allows users to impart, seek, and receive information.

Regarding trade negotiations and transparency: having looked at many free-trade agreements before TTIP, it is fair to say that the TTIP negotiations have – so far – been the most transparent negotiations that have ever been conducted in the EU. It is also fair to say that a major contributing factor to this degree of transparency – *the human right to information* – has been strong and continued pressure from EU civil society and EU citizens. The European Commission has started to engage – as the negotiations moved on – more and more with the European Parliament, EU Member States and EU stakeholders and civil society – which is a very positive development from the perspective of the *human right to information*:

- All negotiating proposals from the EU side are made public on the website of the European Commission;³⁴¹
- After each negotiating round, EU officials provide everyone with an update on the negotiations;
- After each negotiating round held in the US, a civil society meeting is organised in the EU to discuss with civil society their points of view and provide further negotiating updates;
- The European Parliament is informed after each negotiating round of the progress in the negotiations, and so are the EU Member States;
- The draft negotiating texts are – in a reading room – available for those who have access;

³⁴⁰ A/HRC/29/30.

³⁴¹ European Commission, Factsheet How we're listening and engaging, available at: http://trade.ec.europa.eu/doclib/docs/2014/march/tradoc_152276.pdf [accessed 4 November 2015].

- The European Commissioner for Trade and her senior staff have been and are available – their schedules permitting – to come to conferences, seminars and workshops about TTIP to discuss and explain what is going on;
- The Advisory Group on TTIP was set up in January 2014 to provide information and feedback to the EU negotiating team from a broad range of experts from industry and agriculture to consumer, labour and environmental organisations (see Box 4.2 below);
- The final negotiated text will be available one year before approval is asked from the European Parliament to allow for extensive discussions and debates about the final TTIP agreement.

Despite these significant improvements, it also is true, however, that at a fundamental level, there will always be some interference between 100% open information for EU citizens and achieving the best negotiating objectives for these same citizens.

Civil society remains concerned about the level of transparency offered by the European Commission and characterises it as an ad-hoc measure rather than consistent sharing of information.³⁴² In a latest move to improve transparency, on 2 December 2015, DG Trade announced that all Members of the European Parliament will have access to all categories of confidential documents (i.e. the 'consolidated texts') relating to TTIP in a secure reading room in the European Parliament. The documents are also available in EU Member States, giving national governments wide access.

This move is in line with the new trade and investment strategy of the European Commission that was launched on 14 October 2015, 'Trade for All'. One element in this new strategy is the implementation of the pledge of the Juncker Commission to listen and respond to EU citizens' concerns. The new strategy is based on three pillars:

- Effectiveness;
- Transparency; and
- Values.

The European Commission initiatives stand out more clearly in light of the fact that one needs to acknowledge it is difficult to be totally transparent. The first reason for this is that the European Commission cannot publish certain documents without permission of the US counterpart.³⁴³ The US counterpart is clearly much less transparent and forthcoming in sharing publicly negotiating positions, nor does it – for the moment – allow joint draft texts (that include to larger and lesser degrees US negotiating positions and results) to be shared. Something else that complicates the transparency issue is the difficulty to draw a line between more transparency and the risk of creating a negative impact on the negotiations because too much is known about the negotiating position of the European Commission.³⁴⁴

Box 4.5 The Advisory Group on TTIP

Launched on the 27th of January 2014, the special Advisory Group is a representation of experts who cover a broad range of interests, from environmental, health, consumer and workers' interests to different business sectors to provide EU trade negotiators with high quality advice in the areas being negotiated in the Transatlantic Trade and Investment Partnership (TTIP) talks. The group's advice will help the European Commission to ensure that a future TTIP genuinely facilitates trade between the EU and the US, and benefits all citizens in Europe. The members' broad representation of interests will also help to ensure that Europe's high standards in, for example, protection for consumers and the environment, are respected and upheld in

³⁴² EPHA letter to Mrs Emily O'Reilly, European Ombudsman, 30 October 2015, available at: <http://www.eph.org/6223> [accessed 10 November 2015].

³⁴³ European Ombudsman, Decision of the European Ombudsman closing her own-initiative inquiry OI/10/2014/RA concerning the European Commission, 6 January 2015, point 15, available at: <http://www.ombudsman.europa.eu/en/cases/decision.faces/en/58668/html.bookmark> [accessed 10 November 2015].

³⁴⁴ European Ombudsman, Decision of the European Ombudsman closing the inquiry into complaint 119/2015/PHP on the European Commission's handling of a request for public access to documents related to TTIP, 4 November 2015, point 17, available at: <http://www.ombudsman.europa.eu/en/cases/decision.faces/en/61261/html.bookmark> [accessed 5 November 2015].

the negotiations. The group's role is consultative and it is chaired by Mr Ignacio Garcia Bercero, the EU Chief Negotiator. Important to note is that for the group to be able to advise the EU negotiators well, detailed information about progress in the talks and also – when necessary – EU negotiating documents are accessible to the members of the Advisory Group. The members of the Advisory Group are the following (as of 1st of April 2015):

- Edward Bowles – Regional Head of Public Affairs, EMEA, Standard Chartered bank – Services interest;
- Jos Dings – Director, Policy Team, Transport & Environment – Transport and environment interests;
- Benedicte Federspiel – Transatlantic Consumer Dialogue Steering Committee – Consumer interests;
- Mella Frewen – Director-General of FoodDrinkEurope;
- Monique Goyens – Director-General BEUC – Consumer interests;
- Ivan Hodac – Senior advisor to the Board of Directors and Director General, ACEA – Manufacturing interests;
- Tom Jenkins – Senior advisor to the General Secretary, European Trade Union Confederation – Labour and trade union interests;
- Pascal Kerneis – Managing Director, European Services Forum – Services interests;
- Susanne Logstrup – Director European Heart Network (EHN);
- Guido Nelissen – Economic Advisor to Industrial European Trade Union;
- Felix Neugart – Managing Director for International Economic Policy at DIHK;
- Pekka Pesonen – Secretary-General COPA-COGECA – Agricultural sector interests;
- Pieter de Pous – EU Policy Director, European Environmental Bureau – Environment interests;
- Reinhard Quick – Director VCI – Manufacturing interests;
- Nina Renshaw – Secretary-General, European Public Health Alliance – Health sector interests;
- Luisa Santos – Director, International Relations, BusinessEurope – Business interests.

Having said this, there are still two steps that can be taken to further the degree of transparency in the TTIP negotiations and engage stakeholders:

- Greater transparency on the US side in sharing US negotiating proposals would allow the TTIP negotiations to become more transparent still – as well as more balanced from the perspective of transparency;
- The European Commission might consider developing a legal ground for a structural approach on the inclusion of different stakeholders in future FTA negotiations at an early stage, in order to make this practice a clear and consistent exercise. The Advisory Group on TTIP is a first step in this direction.

Having carefully studied the various ways that have been used to reach out – described above – the degree to which the US, the EU counterpart, deals with transparency in TTIP, and the way transparency was dealt with in previous trade agreements, we do not consider this to be a valid concern anymore, with the exception of the US degree of transparency.

Human right of persons with disabilities, human rights of children, human rights of women, human rights of the elderly, human rights of minorities

It has been stated by the European Commission that TTIP will not limit states' decisions on public services. If states are free to regulate the provision of the services themselves,³⁴⁵ if the definition of 'public services' is such that it is broad enough, and if public services are 'future-proof', TTIP is not likely to have an impact on public services (health, education, social services or water) – and thus on various related human rights. It has been and will remain vital for democratically elected EU Member State governments to take measures and ensure that the regulations on the provision of public services as well as the setting of their prices – if

³⁴⁵ Blog Post by Cecilia Malmström from 17 April 2015, Debating TTIP, today and tomorrow, available at: https://ec.europa.eu/commission/2014-2019/malmstrom/blog/debating-ttip-today-and-tomorrow_en [accessed 10 November 2015].

governments choose to do so – are in place. However, if TTIP limits the governments' policy freedom over the provision of public services, for example through Investor Protection provisions that do not explicitly exclude public policy space, TTIP can have a direct effect on the ability of governments to meet their human rights obligations.

Limiting a government's space to uphold and monitor its human rights obligations is not expected to have an evenly distributed effect throughout society. Limiting policy space could have a potentially negative effect, especially for those relatively more in need of public policy support: persons with disabilities, children, elderly and minorities. The same holds for the US – at federal and state level: provision of public services is a matter of the federal US government and the states. Further, in case of violation of social human rights, the most vulnerable population groups are affected relatively most which by extension means that next to the rights mentioned above the rights of specific population groups are impacted too - women, children, persons with disabilities, minorities, elderly, etc.³⁴⁶ Because the agreement is still in the process of negotiations, it is difficult to see what will be in the final treaty text. However, the known EU negotiating positions clearly contain the guarantees for safeguarding public services that have been used since GATS in 1995 (as explained above).

Investor protection is not expected to limit the regulatory space of the government if properly detailed and defined in the final TTIP text. Civil society is concerned that protection of investors will happen at the expense of state regulation and protection of the population;³⁴⁷ According to the negotiating mandate, the EU should strive for the highest possible protection of investors in the US. The most recent text proposal for investor protection and court system for TTIP published on 6 November 2015 is determined to create an Investment Court System with an appeal mechanism based on clearly defined rules, qualified judges, and transparent proceedings. Moreover, in this official EU proposal to the US, the second article states in clear terms: *"The provisions of this section shall not affect the right of the Parties to regulate within their territories through measures necessary to achieve legitimate policy objectives, such as the protection of public health, safety, environment or public morals, social or consumer protection or promotion and protection of cultural diversity."* This also helps to clarify the non-binding obligations that apply to investors in accordance with the OECD Guidelines for Multinational Enterprises and the UN Framework for Business and Human Rights. The Maastricht Principles on Extraterritorial human rights obligations of the states might also be taken into account in setting the rules for investor protection. The new proposed ICS is a substantial improvement in comparison with the ISDS mechanism – especially in the areas of possibility of appeal, a permanent court instead of rotating judges, and the clear statement on a state's 'right to regulate', addressing the main concerns raised in the public consultation. However, it is too early to say whether the EU proposal will find its way into the final legal text on TTIP. It also needs to be noted, that like ISDS before, also this system will not be without costs and will fall on the shoulders of companies who are primarily interested in investor protection if they lose the case (as per the latest proposal regarding 'frivolous claims').

Finally, in the short run, TTIP could marginally, and in an indirect way, affect human rights of vulnerable groups if the EU and US budgets are (temporarily) reduced because the (marginal) loss in tariff revenue, in the short run, is not compensated for by other income sources (in the long run the additional economic activity is expected to outweigh this short-run effect).

Human right to protection of personal data

The collection, use or even storing of information by public authorities about an individual is a limitation of the human right to protection of personal data, guaranteed under Article 8 of the EU Charter. The US holds a different position from the EU in this respect, is no party to the CFR and hence the obligations regarding this human right do not apply to the US. However, we do not expect TTIP to have a direct impact on the *human right to the protection of personal data* because the TTIP talks do not include the personal data sharing, so the expected effect is non-

³⁴⁶ See concerns of the civil society in, for example, Social Platform, Open letter to the EU Commissioner for Trade from 10 April 2015, available at: http://www.socialplatform.org/wp-content/uploads/2015/04/20150410_SocialPlatform_letter_Commissioner-Malmstrom.pdf [accessed 9 November 2015].

³⁴⁷ Uni Europa, various feedback received during civil society consultation. Among others, Q&A on TTIP to leading trade expert Dr Gabriel Siles-Bruegge, University of Manchester, 6 July 2015, also available online at: <http://www.uniglobalunion.org/news/qa-ttip-leading-trade-expert-dr-gabriel-siles-bruegge-university-manchester> [accessed 4 November 2015].

existent. In this case, GATS article XIV would apply. Civil society organisations are, however, concerned that indirectly encryption provisions, the data localisation discussion, and confidentiality of communications, could influence the protection of personal data indirectly.³⁴⁸

Were the provisions on the flow of personal data to be included in the agreement in the future, we could expect some positive and some negative effects. Potential positive effects would concern the ease of access to data in case of medical emergency or in assisting police to solve criminal cases, for example. Potential negative effects would concern, for example, the sharing of the data without clear legal basis for it, sharing of sensitive or confidential data without consent of the individual. At this moment, when personal data is not included in the TTIP mandate, there is no reason to talk about the effect of TTIP on the human right to protection of personal data.

Conclusions – Step 5

The below Table summarises the potential human rights effects of TTIP that have not been addressed elsewhere in this report:

- In the first column, we present the human right (or group of human rights) that are not addressed elsewhere in this report and that have been screened to be impacted (Steps 1 and 2). We present each human right two times in order to be able to distinguish between the short-run and long-run;
- In the second column we present whether there is a Direct (D) effect, an Indirect (I) effect or both effects of TTIP on the human right;
- In the third column, we indicate whether this effect is expected to be Major (Ma), Minor (Mi) or non-existent (No);
- In the fourth column, we show whether this effect is expected to be positive (++ for Ma or + for Mi) or negative (-- for Ma or – for Mi), a mix of the two (+/-), or none (0);
- In the final column we add a short explanation and/or elements in TTIP that have to be covered in order to obtain these expected effects.

³⁴⁸ EDRI submission to the Draft Interim Report, 9 June 2016.

Table 4.12 Summary of potential Impact of TTIP on human rights

(1) Type of human rights	(2) Direct / Indirect effect (D/I)	(3) Major / Minor / No effect (Ma/Mi/No)	(4) Positive / Negative effect (++)/+/0/-/--)	(5) Explanation, provisions that are crucial
Human right to an adequate standard of living (<i>long-run</i>)	D	Ma / Mi	++ Amb + / - LessAmb	<ul style="list-style-type: none"> Higher incomes in the long-run increase the standard of living – if tariff liberalisation and ambitious regulatory cooperation take place (Amb). More limited liberalisation will lead to less positive results for the poor (LessAmb); Governments will receive more income from tax revenues – more than compensating losses in tariff revenues, enabling them to better uphold their human rights responsibilities.
Human right to an adequate standard of living (<i>short-run</i>)	D	Ma / Mi	++ / --	<ul style="list-style-type: none"> The largest potential HR risk from TTIP comes in the short-run for the HR to an adequate standard of living: declining sectors see workers leave, structural adjustment between sectors take place, leading to labour migration (wanted and forced) in the short-run. Workers in electrical machinery and fabricated metals in the EU lose out. Workers in the motor vehicles and financial services sectors lose out; In other sectors employment will go up and overall wages rise; Governments will receive less income from tax revenues – not compensating losses in tariff revenues – putting pressure on them to uphold their human rights responsibilities.
Human right to culture (<i>long-run</i>)	D / I	Mi	0 / +	<ul style="list-style-type: none"> No direct effect is expected because cultural and audio-visual services are excluded from the negotiations; An Indirect effect could be marginally positive if governments get more funds available (tax income) due to more economic activity of firms (corporate tax), and consumers (jobs = income tax, consumption = value added tax) – and this more than compensates for loss in tariff revenue.
Human right to culture (<i>short-run</i>)	D / I	Mi	0 / -	<ul style="list-style-type: none"> No direct effect is expected because cultural and audio-visual services are excluded from the negotiations; An Indirect effect could be marginally negative if governments face direct losses in tariff revenue while only in the longer-run getting more funds available (tax income) due to more economic activity of firms (corporate tax), and consumers (jobs = income tax, consumption = value added tax) – to compensate for these immediate losses.

Trade SIA on the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the USA

(1)	(2)	(3)	(4)	(5)
Type of human rights	Direct / Indirect effect (D/I)	Major / Minor / No effect (Ma/Mi/No)	Positive / Negative effect (++)/+/0/-/--)	Explanation, provisions that are crucial
Human right to education (<i>long-run</i>)	D / I	Mi	0 / +	<ul style="list-style-type: none"> The Direct effect is expected to be non-existent if the right to publicly funded services is upheld in the legal text of TTIP, and if safeguarded as defined in GATS, 1995; i.e. remains in the hands of the states without TTIP influencing this right; The Indirect effect could be marginally positive if governments get more funds available (tax income) due to more economic activity of firms (corporate tax), and consumers (jobs = income tax, consumption = value added tax) – and this more than compensates for loss in tariff revenue.
Human right to education (<i>short-run</i>)	D / I	Mi	0 / -	<ul style="list-style-type: none"> The Direct effect is expected to be non-existent if the right to publicly funded services is upheld in the legal text of TTIP, and if safeguarded as defined in GATS, 1995; i.e. remains in the hands of the states without TTIP influencing this right; The Indirect effect could be marginally negative if governments face direct losses in tariff revenue while only in the longer-run getting more funds available (tax income) due to more economic activity of firms (corporate tax), and consumers (jobs = income tax, consumption = value added tax) – to compensate for these immediate losses.
Human right to information (<i>long-run</i>)	D	Mi	+ (EU) - (US)	Contrary to earlier trade negotiations, from the EU side, the TTIP negotiations are as transparent as can be expected without giving up a strategic negotiating position. The US is much less transparent, so overall the TTIP negotiations still pose a challenge. Also, there is always a friction between transparency and achieving the best outcomes for citizens.
Human right to information (<i>short-run</i>)	D	Mi	+ (EU) - (US)	
Human rights of persons with disabilities, Human rights of children, Human rights of women, Human rights of the minorities, Human rights of the elderly (<i>long-run</i>)	I	Mi	0/+	<ul style="list-style-type: none"> This outcome hinges on clear provisions being in the final text safeguarding state's 'right to regulate' – w.r.t. IP/ICS; This outcome hinges on clear provisions being in the final text to carve-out public services and the 'right to regulate' for states (GATS, 1995); This outcome hinges on the exclusion of cultural services from TTIP; In the long run, new (tax) incomes more than compensate for losses in tariff revenues;
Human rights of persons with disabilities, Human rights of children, Human	I	Mi	-	<ul style="list-style-type: none"> This outcome (only marginally negative) hinges on clear provisions being in the final text safeguarding state's 'right to regulate' – w.r.t. IP/ICS;

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(1)	(2)	(3)	(4)	(5)
Type of human rights	Direct / Indirect effect (D/I)	Major / Minor / No effect (Ma/Mi/No)	Positive / Negative effect (++)/+/0/-/--)	Explanation, provisions that are crucial
rights of women, Human rights of the minorities, Human rights of the elderly (<i>short-run</i>)				<ul style="list-style-type: none"> • This outcome hinges on clear provisions being in the final text to carve-out public services and the 'right to regulate' for states (GATS, 1995); • This outcome hinges on the exclusion of cultural services from TTIP; • Loss in tariff revenue may have a marginal and temporary negative effect.
Human right to protection of personal data (<i>long-run</i>)	D/I	No/Mi	0	Views on the protection of personal data differ between the EU and US. It is stated clearly that the issues of 'data flows' and 'data protection' are not included in TTIP. As such no Direct impact is expected. Through other elements like data encryption and localisation of data the human right to protection of personal data could be impacted in an indirect manner.
Human right to protection of personal data (<i>short-run</i>)	D/I	No/Mi	0	

5. Overall environmental impacts

5.1. Introduction

This chapter outlines our approach with respect to the analysis of the environmental impacts that can be expected due to implementation of TTIP. At its core, the approach of the environmental impact analysis is straightforward and combines quantitative and qualitative methods.

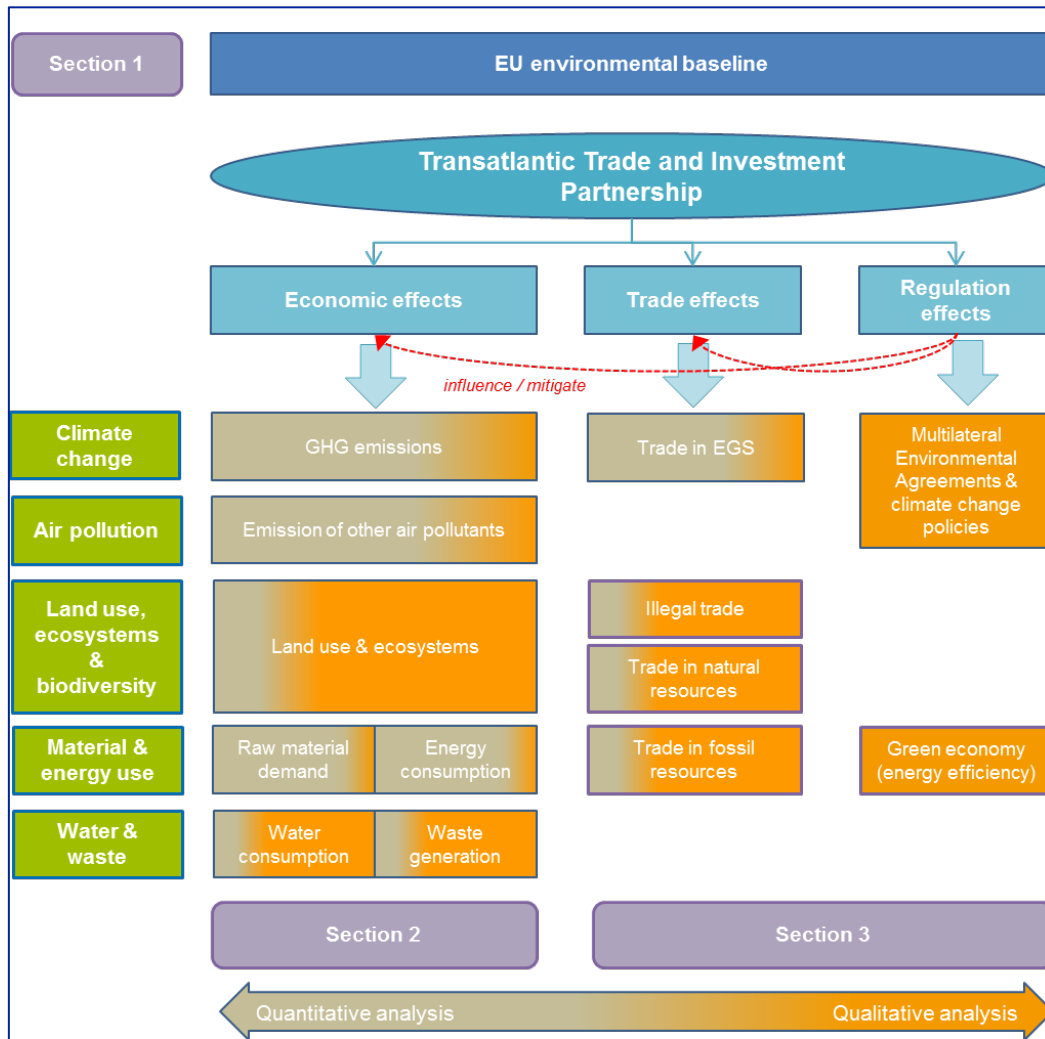
First, we assess the current situation for the most important environmental areas in the EU in order to understand what the current developments are and to distinguish between these 'exogenous' developments and the impact of TTIP. Secondly, the expected impact of TTIP will be estimated by reviewing available information on the likely (environmentally-related) provisions included in TTIP and analyse the impact of these on the main environmental themes using quantitative and qualitative research methods. To further structure the impact analysis and distinguish between the different impacts that TTIP can create, we determined the main channel (economic-, trade- and/or regulatory) through which TTIP can create an impact on each of the five core environmental themes described below. In addition to the above quantitative and qualitative approach to assess the environmental impacts an in-depth analysis on three topics is included in the form of case studies. Case studies are an excellent tool for 'filling the gaps' that are left behind by comprehensive quantitative assessments and general literature reviews. They additionally allow for a focusing on a specific selected issue that deserves closer attention.

TTIP covers market access issues related to all goods and services as well as regulatory co-operation in different areas, the associated environmental impacts can therefore be diverse. It is as such important to define what we understand to be 'the environment' in the context of this impact assessment. Based on the technical specifications of the contract, as well as extensive interaction with stakeholders across the entire study and specifically on the environmental analysis, five environmental themes have been selected as the core of the analysis:

1. **Climate change** – through the impact on the volume of greenhouse gas (GHG) emissions, trade in Environmental Goods and Services (EGS) and regulatory co-operation in the field of climate change policies;
2. **Air pollution** – through the impact on the volume of emissions of other (non-GHG) air pollutants as well as the co-operation and enforcement of multilateral commitments;
3. **Land use, ecosystems and biodiversity** – particularly through the pressure on ecosystems and biodiversity from the TTIP-induced production impacts in economic sectors such as agriculture, as well as specific provisions on (illegal) trade in natural resources;
4. **Material & energy use** – particularly through the TTIP-induced production impacts and the associated change in demand for energy and materials, specific trade provisions on the trade in energy carriers or materials with significant environmental impacts as well as regulatory cooperation foreseen to stimulate greening of the economy;
5. **Water and waste** – through the TTIP-induced change in output in certain economic sectors with concomitant changes in water consumption and waste generation, as well as specific provisions foreseen for trade in hazardous waste.

Figure 5.1 summarizes the focus of this environmental analysis schematically and also shows through which channel each (sub) topic is affected and which research method (qualitative or quantitative) will mainly be used to assess the impact of TTIP.

Figure 5.1 Approach of the environmental analysis



The environmental analysis is structured along three impact channels, with a dedicated section on the expected environmental effects of each channel, where we focus on the most significant impacts. Depending on the impact channel, different research methods will be used. The economic impacts can to a large extent be assessed quantitatively and are based mainly on the E3MG model outcomes. The trade and regulatory impacts are assessed more qualitative and are supported by three in-depth case studies (in these case studies we focus each on a specific channel but we do not hesitate to expand the impact assessment to other channels if this provides valuable insights). In this way, we quantify environmental impacts as far as possible and, on the other hand, take regulatory issues into account, which are the main concern of most stakeholders when looking at the environment.

In the baseline assessment possible environmental impacts are identified. Based on this information, public debate and talks with the negotiators a list of possible interesting case studies was created, which we then reduced – in two workshops with environmental stakeholders – to the following case-study topics:

- The impact of regulatory co-operation in the field of energy efficiency labelling;
- The impact of TTIP on trade in unconventional oil and gas resources; and
- The impact of TTIP on trade in illegal natural resources (timber, fish & wildlife).

These case studies cover, additionally, the impact of TTIP through the economic, trade and regulatory channels in three interesting sectors. They allow us to gain further knowledge, detail and insight on key sectors and provide stakeholders with a (near) complete overview of the state of play, ongoing discussions and possible environmental impacts.

Furthermore, this chapter discusses consumer protection issues and outlines TTIP's investor-dispute mechanism. Consumer protection issues are a special case as they are not traditionally covered under a TSIA.³⁴⁹ Nevertheless, given their importance in the TTIP negotiations, they are covered here under the heading of environmental impacts – not least because they are often related to environmental issues, such as agricultural practices, human, animal and plant health, or biodiversity. They are therefore discussed in the same context as interactions between the different environmental issues. A more in-depth assessment on consumer issues can be found in the sector studies on agriculture and chemicals. TTIP's mechanism for the enforcement of investment protection standards, known as ISDS and/or ICS, is included in this chapter as concerns have been raised by environmental stakeholders on the possible impact this mechanism can have on environmental legislation.

5.2. Environmental baseline assessment

We begin with a brief description of the baseline situation for the main environmental issues and their corresponding Multilateral Environmental Agreements (MEAs).³⁵⁰ The core MEAs and their ratification status are mentioned for each topic, especially if environmental goals of the EU and the US are diverging/different.

5.2.1. Air pollution

The table below shows baseline emissions of pollutants in 2012, in the EU and the US. The EU has lower values in particulate matter and volatile organic compounds (VOCs) and slightly higher emissions of CFCs. In sulphur dioxide, the EU and US values are roughly in the same range in 2030, where the EU is forecasted to have an increase and the US a decrease in emissions.

Table 5.1 Pollutant emissions in EU and US, base year (2012 and forecast of baseline, 2030), million tonnes

Pollutant	Baseline EU	Baseline US	Baseline EU (2030)	Baseline US (2030)
2 Sulphur dioxide	3.99	14.96	7.80	9.85
3 Nitrogen oxides	8.56	12.26	11.10	15.46
4 Carbon monoxide	21.55	54.53	26.09	51.04
6 Particulates	1.89	1.24	2.43	1.63
7 VOCs	7.4	13.3	13.04	16.77
10 CFCs	0.02	0.00	0.03	0.00

Sources: Emissions Database for Global Atmospheric Research (EDGAR)³⁵¹ and CLRTAP352.

In terms of policies, the establishment of the database used here is a good example of EU monitoring efforts. The EU has quite an advanced level of air pollution legislation, addressing both emission levels in the air (exposure) and emission sources. Most of the legislation is in the form of emission limits and compliance schemes, which need to be transposed into national law, or in the form of overall national emission ceilings for which the Member States can choose the means of how to achieve them. Legislation and regulation at the EU level *“complement measures taken at national level, including, for example, policies setting national emission ceilings, regulating emissions from mobile and stationary sources, introducing fuel quality regulations and establishing ambient air quality standards.”*³⁵³ Recently, a new “Clean Air Policy Package” (CAPP) was adopted, which includes proposals for reviewed and new policies.

³⁴⁹ CPR. European Commission (2006), Handbook for Trade Sustainability Impact Assessment.

³⁵⁰ MEAs are often invoked in trade agreements to stress both parties' adherence to their provisions, especially if they are trade-related.

³⁵¹ <http://edgar.jrc.ec.europa.eu/index.php>.

³⁵² <http://www.eea.europa.eu/publications/lrtap-emission-inventory-report/>

³⁵³ EEA (2012): Evaluation of progress under the EU National Emission Ceilings Directive. EEA Technical report no 14/2012, available at <http://www.eea.europa.eu/publications/evaluation-progress-nec-2012>.

The most important EU legislation on air quality and emissions is described in Annex V. The most important emission sources in a direct trade context are, of course, motor vehicles; the regulatory differences on their emissions are covered in Chapter 11 on the motor vehicles sector. The core MEAs with respect to air pollution are: the Montreal Convention and the Stockholm Convention on Persistent Organic Pollutants (POP), which has been signed by both the EU and US, but only ratified by the EU (not by the US due to additional POPs); amendments to the Heavy Metals protocol; the Minamata Convention on mercury, which has been signed and ratified by the US (the EU has signed this convention and is preparing to ratify it); the UNECE Convention on Long Range Transboundary Air Pollution (LTRAP); and the 1999 Gothenburg Protocol³⁵⁴ (the last two are signed and ratified by both the EU and US).

5.2.2. Climate change

This section presents the emissions of CO₂ and other greenhouse gases (based on EDGAR) as well as figures for energy consumption (broken down by sector), with the goal of gaining greater insight into what drives EU and US CO₂ emissions. In addition, this paragraph provides an overview of international commitments under the UNFCCC, Kyoto Protocol and EU policies and measures. Given the importance of regulatory differences between the EU and the US in the climate policy field, we conclude with a short description of main US climate policy actions and measures.

Table 5.2 shows the baseline for 20 CO₂ emitting sectors in 2012, in the EU and the US. EU emissions are lower than those in the US emissions across most sectors, with the notable exceptions of construction, energy (own use and transport) and iron and steel. For both the EU and US, the largest emitting sector is power (own use & transport) followed by road transport.

Table 5.2 CO₂ emissions from energy use by sector, base year (2012), mtCO₂

Emitting sector	EU	US	Emitting sector	EU	US
1 Power own use & trans.	1,085.95	2,494.37	12 Other Industry	48.10	19.35
2 Energy own use & trans.	189.13	76.55	13 Construction	11.86	1.46
3 Iron & steel	69.27	30.76	14 Rail transport	4.17	27.18
4 Non-ferrous metals	7.32	23.52	15 Road transport	793.98	1,334.14
5 Chemicals	62.76	101.52	16 Air transport ³⁵⁵	22.53	262.65
6 Non-metallics nes	121.54	171.69	17 Other transport services ³⁵⁶	22.39	9.36
7 Ore-extra.(non-energy)	6.63	0.00	18 Households	318.40	321.15
8 Food, drink & tobacco.	39.00	71.08	19 Agriculture, forestry	46.40	20.44
9 Textile, clothing & footwear	8.05	12.49	20 Fishing	0.97	0.00
10 Paper & pulp	17.74	37.13	21 Other final use	133.42	185.14
11 Engineering, etc.	54.65	37.01	Total	3,064.25	5,236.98

Source: Emissions Database for Global Atmospheric Research (EDGAR)³⁵⁷, matched to E3MG model sectors.

³⁵⁴ In 2012 the Gothenburg Protocol has been updated and the following goals (reduction in emissions) should be met:

Reduction of: sulphur dioxide emissions by 59%, nitrogen oxides by 42%, ammonia by 6%, volatile organic compounds by 28% and particles by 22% (this includes black carbon).

³⁵⁵ Air transport emissions are related to domestic aviation (flights within Member States). The amount of kerosene sold, when including continental consumption, the mtCO₂ would be about 150 mt.

³⁵⁶ The model does not cover higher emission resulting from higher demand on international transport and distribution network as a result of trade agreements. According to the WTO and International Maritime Organization, most of the goods trade between regions are transported by sea. But the size of sea shipping emission is small (less than 10% of emissions from transport sector).

³⁵⁷ <http://edgar.jrc.ec.europa.eu/index.php>.

Table 5.3 Greenhouse gas (GHG) emissions in EU and US, base year (2012), mtCO₂ equivalent

Greenhouse gas	EU	US
Carbon dioxide	3,064.25	5,236.98
Methane	588.90	698.91
N ₂ O (GHG)	319.77	242.28
HFCs (GHG)	140.27	467.73
PFCs (GHG)	8.60	12.16
SF ₆ (GHG)	0.00	0.00
Total	4,121.79	6,658.07

Currently, the US is a larger emitter of carbon dioxide than the EU (both in absolute terms and per capita or per GDP).³⁵⁸ Compared with the EU, the US is also a much larger producer of fossil fuels. US production of oil and gas is increasing mainly because of developments in the extraction of shale gas and oil (sometimes referred to as “shale oil”; it is more precise to use the term ‘tight oil’³⁵⁹). The extraction method for these unconventional energy sources, hydraulic fracturing (‘fracking’), involves injecting a chemical mix into subsurface rock formations to create small cracks through which the fossil resource can migrate to the drilled well. This extraction method has caused significant environmental concern due in particular to potential impacts and risks to water and air quality (e.g. risk of methane leakage), possible induced seismicity, and the impact of further (unconventional) fossil fuel extraction on climate change. The potential environmental impacts and risks of shale gas extraction in the EU have been studied by the European Commission,³⁶⁰ resulting in a Commission Recommendation³⁶¹ to Member States with general, non-binding guidelines regarding the management of environmental impacts and risks. Decisions on the energy mix are taken by Member States: some Member States have banned the use of hydraulic fracturing and/or shale gas extraction on their territory, while others permit exploration activities.

5.2.3. Material use

Measured in tonnes, significant amounts of different materials are used in the EU (domestic consumption is defined as domestic extraction minus exports plus imports). While construction minerals account for the largest share, this is also the most local market (where Europe is largely self-sufficient).³⁶² Owing to their higher value/weight ratio, the other materials are more relevant in a trade context.

Table 5.4 Material use in EU

Material type	Domestic consumption in EU 2012, million tonnes
1 Food	1,147.09
2 Feed	828.93
3 Wood (or forest products)	496.04
4 Construction Minerals	3,769.18
5 Industrial Minerals	117.42
6 Ferrous metals	189.71

³⁵⁸ See for example IEA (2013): CO₂ emissions from fuel combustion – highlights.

³⁵⁹ In precise terms, “shale oil” is oil produced from oil shales, i.e. shales which are rich in kerogen, which is in turn converted to oil. There is no significant production of shale oil in the US; by contrast, Estonia is one of the world’s largest producers of shale oil. The US however is one of the leading producers of tight oil and shale gas. See e.g. Andrews, A. (2008), Developments in Oil Shale; EIA (2013), Technically Recoverable Shale Oil and Shale Gas Resources; Bundesanstalt für Geowissenschaften und Rohstoffe (BGR) (2009), Energierohstoffe 2009: Reserven, Ressourcen, Verfügbarkeit. Teil 1: Erdöl, Erdgas.

³⁶⁰ http://ec.europa.eu/environment/integration/energy/uff_studies_en.htm.

³⁶¹ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32014H0070>.

³⁶² http://ec.europa.eu/enterprise/sectors/metals-minerals/non-energy-extractive-industries/construction-minerals/index_en.htm.

Material type	Domestic consumption in EU 2012, million tonnes
7 Non-ferrous metals	170.51

The overarching EU policy document related to material use and its reduction is the Resource Efficiency Roadmap,³⁶³ which looks at producer and consumer perspectives and takes a broad view of resources, including natural capital and ecosystem services. The Roadmap does not, in itself, contain rules or regulations, but rather sets milestones to be reached and provides a framework for steps to take in the next years.

More concrete policies are in place for specific materials, such as industrial minerals and metals in the Raw Materials Initiative. Its first pillar is particularly trade-related, focusing on access to raw materials on global markets via bilateral and multilateral agreements. In this context, the US is classified as a fellow 'resource-dependent country' with which common interests are assumed³⁶⁴ and joint projects have already started, such as EU-US workshops on raw material flows and data³⁶⁵. The other two pillars are concerned with framework conditions for the sustainable supply of raw materials from within the EU, and with a reduction of consumption through increased resource productivity, recycling, and a switch to renewable raw materials. This also relates to waste (and waste shipment) policy, where the EU's underlying principle is the idea of the circular economy: avoiding waste whenever possible, but when it is unavoidable, using it as a resource (see also section on water and waste).

Food, feed and forestry products are subjects of a resource-efficiency drive in the Common Agricultural Policy (CAP)³⁶⁶, a reform to phase out environmentally harmful fisheries subsidies³⁶⁷, and a reduction in food waste through Member States' National Waste Prevention Programs.

Recently, the European Commission adopted an ambitious Circular Economy Package,³⁶⁸ which includes revised legislative proposals on waste to stimulate Europe's transition towards a circular economy, which will boost global competitiveness, foster sustainable economic growth and generate new jobs. The Circular Economy Package consists of an EU Action Plan for the Circular Economy that establishes a concrete and ambitious programme of action, with measures covering the whole cycle: from production and consumption to waste management and the market for secondary raw materials. The proposed actions will contribute to 'closing the loop' of product lifecycles through greater recycling and re-use, and bring benefits for both the environment and the economy.

5.2.4. Waste and water

Solid waste is not only an issue related to material use, but also a potential source of pollution of soil and water. In the Annex, precise data on EU waste generation and treatment is shown. In the EU-28 countries, 2.6 billion tonnes of solid waste was generated in 2010, of which 2.3 billion tonnes were treated. Most of the waste generated in the EU is industrial, with the majority coming from the construction (34 percent) and mining (27 percent) sectors. However, the volume does not provide the full picture of the environmental effects of waste generation – different types of waste and their treatment can have very different impacts.

The EU's waste framework directive (WFD)³⁶⁹ defines different ways of waste treatment as part of the EU waste hierarchy (see statistics in the Annex) and sets targets for their achievement. It also sets out principles of waste management (e.g. avoiding risk for water and soils) and requires Member States to run waste prevention programmes. Like water management,

³⁶³ European Commission (2011), Roadmap to a Resource Efficient Europe, COM(2011) 571; this is a follow-up to the flagship initiative on a resource efficient Europe under the 2020 strategy, cpr. European Commission (2011), A resource-efficient Europe – Flagship initiative under the Europe 2020 Strategy, COM(2011) 21.

³⁶⁴ See European Commission (2008), The raw materials initiative, COM(2008) 699 final, p. 6.

³⁶⁵ See http://ec.europa.eu/enterprise/policies/raw-materials/documents/index_en.htm#h2-4.

³⁶⁶ See e.g. <http://www.eea.europa.eu/themes/agriculture/greening-agricultural-policy>.

³⁶⁷ See http://ec.europa.eu/fisheries/documentation/publications/leaflet_reform_en.pdf.

³⁶⁸ See http://ec.europa.eu/environment/circular-economy/index_en.htm.

³⁶⁹ European Commission (2008), Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.

municipal waste management can be regarded as a public service, but in practice it is more liberalised. It is executed in the EU by a diverse range of players and organization forms, ranging from municipalities via public-private partnerships to multinational companies (which may be partly state-owned). In recent years, in some Member States a re-municipalisation of certain waste streams has taken place, although private companies retain the largest share of employment in the waste sector.³⁷⁰

Regarding water, the WIOD database provides 2009 data of blue, green and grey water use by broad economic sectors in the EU and the US. In this categorization, blue water stands for consumption of surface and ground water (mainly consisting of the water provided by water suppliers); green water is the volume of rainwater consumed, mainly in crop production; and grey water is the volume of freshwater that is required to assimilate the load of pollutants based on existing ambient water quality standards.³⁷¹ The three indicators together thus give a good picture of both freshwater use and water pollution issues. Tables showing EU and US water use by sector and type can be found in the Annex.

Both in the EU and the US green water use by agriculture takes the major share (around 66 percent) of water consumption. Agriculture is also a major user of blue water (27 percent and 56 percent, respectively), although especially in the EU, the electricity, gas and water supply sector is significant (with 63 percent of blue water use). This can be attributed to hydropower, for which large water consumption is calculated due to evaporation from the water reservoirs next to dams.³⁷² For grey water (i.e. water pollution), it is again agriculture that contributes most (55 percent and 64 percent, respectively), although households and some particular sectors (e.g. food and beverages, chemicals) also show high numbers of grey water use.

US water use is higher than in the EU in both absolute and relative terms (per capita as well as per GDP), for all three categories.³⁷³ In terms of sectors, notable differences are the high grey water use in the US metals sector, whereas the EU shows a higher use of both blue and grey water in the chemicals sector. These statistics generally show the water polluting characteristics of these sectors. It also becomes clear from the data that the agricultural and food processing sectors are significant consumers and polluters of water. The impact of the TTIP on these sectors will therefore have an effect on water use and environmental quality.

In terms of policies, the EU's Water Framework Directive is the main piece of legislation governing the quality of surface waters; the urban wastewater treatment directive concerns the collection, treatment and discharge of domestic and industrial wastewater, with the Drinking Water Directive setting standards on drinking water quality (setting contaminant levels). Water services (distribution and sewage) are provided in the EU by a mix of public (mostly municipal) and private actors as well as mixed ownership organisations. Recognising the special status of water services, they are excluded from the application of the cross-border freedom to provide services, as established in the Services Directive. Responding to an EU-wide citizens' initiative regarding the *human right to water*, which argued against commercialisation and liberalisation of the water sector, the Commission also excluded water services from the scope of the Directive on the award of concession contracts.³⁷⁴ The situation in the US is generally similar, with 'moderate' (10-30 percent) private-sector participation in water supply and sanitation services,³⁷⁵ often in the form of public-private partnerships.

5.2.5. Land use, ecosystems and biodiversity

The main factors impacting ecosystems and biodiversity are ecosystem use (e.g. by fisheries, forest-based industries, agriculture, etc.) and ecosystem loss/degradation (through human

³⁷⁰ Hall, D. and Nguyen, T.A. (2012), Waste management in Europe: companies, structure and employment.

³⁷¹ See Genty, A. et al. (2012), Final Database of Environmental Satellite Accounts: Technical Report on their Compilation.

³⁷² See Mekonnen, M.M. and Hoekstra, A.Y. (2011), The water footprint of electricity from hydropower.

³⁷³ Total water use: 713,365 million m³ (EU), 1,215,279 million m³ (US); water use per capita: 1,433 m³ (EU), 3,954 m³ (US); water use per 1000 € GDP: 60 m³ (EU), 117 m³ (US). EU figures are for EU-27 (note that WIOD does not provide data for Croatia). Sources: own aggregation / calculations based on WIOD Environmental Accounts and additional data from IMF WEO database and Eurostat.

³⁷⁴ European Commission (2014), Commission says yes to first successful European Citizens' Initiative, Press release.

³⁷⁵ The figures describe the percentage of the population served by the private sector. See Pérard, E. (2009), Water Supply: Public or Private?

infrastructure, pollution, climate change and the unsustainable use of natural resources). Land fragmentation and/or the conversion of land/land use change are considered an indicator of the above impacts (e.g. human infrastructure development can fragment natural habitats through road/rail construction). In the context of trade, an additional danger to ecosystems and biodiversity to consider is the illegal wildlife trade, invasive alien species (IAS) crossing borders alongside traded goods and increased trading in natural resources. Another aspect brought up by stakeholders is animal welfare – although not strictly related to ecosystems and biodiversity, it is connected to the use of nature and ecosystems, and expected impacts are therefore addressed in the corresponding impact assessment to this section. Another important issue for the EU concerns the potential undercutting, via TTIP, of the viability of extensive agricultural systems in the EU that provide biodiversity services. This applies in particular to the extensive livestock sector (especially beef), where biodiversity is often inseparably linked with extensive farming practices.

EU legislation on these issues takes a multi-perspective approach via e.g.:

1. Protection and conservation of existing ecosystems, species, and biodiversity-rich areas, such as the Birds and Habitats Directives³⁷⁶ and the Natura2000.
2. Legislation addressing the users of land and ecosystem services, and activities threatening ecosystems and biodiversity such as, the Common Agricultural Policy, Common Fisheries Policy, Cohesion Policy, but also the Wildlife trade, Invasive Alien and Species Regulation.
3. Animal welfare legislation such as, Food production, live animal transport and animal testing.
4. Environmental assessment of projects, plans and programmes, namely Strategic Environmental Assessments and Environmental Impact Assessments (see box below).

Box 5.1 EU environmental assessment programmes

Environmental Impact – and Strategic Environmental Assessments (EIAs/SEAs) are the most cross-cutting EU environmental pieces of legislation ensuring, among other things, a level playing field for economic operators, minimum principles for the assessment of more than 200 project categories and public plans and programmes. SEAs apply to a wide range of public plans and programmes and require, in short, that environmental authorities are consulted during the screening phase; reasonable alternatives have been studied; and that Member States monitor the environmental effects and take remedial action on unforeseen impacts. EIAs need to be conducted on a set list of public and private projects (see Annex I of the EIA Directive, e.g. large waste water treatment plants, long distance roads/railways and hazard waste disposal sites). In Annex II projects are taken up, for which countries can decide that an EIA is wanted. An important step in any EIA is the obligation of a developer to provide the respective authorities with an EIA report and the final decision on a go/no-go by the competent authority can be challenged by the public in court.³⁷⁷

The EU Biodiversity Strategy to 2020 contains provisions on trade, included in its Target 6, which requires for example to 'enhance the contribution of trade policy to conserving biodiversity and address potential negative impacts'.³⁷⁸ Recently, the Mid-term review of the EU Biodiversity Strategy to 2020³⁷⁹ found that if the EU had taken initial steps to reduce indirect drivers of global biodiversity loss and to integrate biodiversity into its trade agreements, progress was insufficient, e.g. in reducing the impacts of EU consumption patterns on global biodiversity. Council conclusions on the Mid-term review (Environment, 16 December 2015; §52, 55, 58, 59 & 61), reiterated the Council call on the Commission to increase its efforts in fully implementing the trade-related aspects of the EU Biodiversity Strategy, hence calling on increasing the positive contribution of EU Trade policy to conserving biodiversity. In addition, after its 2012 resolution on the EU Biodiversity Strategy for 2020,³⁸⁰ the European Parliament

³⁷⁶ Original version of the Habitats Directive: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:01992L0043-20070101&from=EN>.

³⁷⁷ <http://ec.europa.eu/environment/eia/home.htm>.

³⁷⁸ http://ec.europa.eu/environment/nature/biodiversity/strategy/target6/index_en.htm.

³⁷⁹ http://ec.europa.eu/environment/nature/biodiversity/comm2006/pdf/mid_term_review_summary.pdf.

³⁸⁰ The EP had stressed there that more and more concrete measures need to be taken, given that the EU already failed to achieve its 2010 Biodiversity target. Most importantly, the resolution points out that

adopted as well a resolution on the Mid-term review on 2 February 2016, where it, for example, called again on the Commission to integrate biodiversity provisions into on-going trade negotiations and to integrate biodiversity objectives into EU trade policies.

Given the importance of these sectors in trade, this angle also seems to be most relevant in the context of this study. It will be extremely important for biodiversity to ensure that the extensive farming sector can continue to provide ecosystem services, maintain existing levels of animal welfare and is not put out of business by cheaper imports (i.e. related to differences in legislation).

Of the main Multilateral Environmental Agreements related to ecosystems and biodiversity, the EU and/or its member states have ratified (or otherwise approved) all. The US has approved CITES, ITTA, and the Ramsar Convention. However, it has not ratified the International Treaty on Plant Genetic Resources for Food and Agriculture; it has not ratified the Rio Convention on Biological Diversity (CBD) and its Protocols. Another important environmental law in the US related to environmental protection and enhancement is the 1969 National Environmental Policy Act (NEPA). The most significant outcome of this law is the requirement that all executive federal agencies need to prepare environmental (impact) assessments (EAs or EISs) for both (partly) federal funded projects and in recent years also projects that need federal permits. According to Taylor (1984) the main strength of the NEPA and its requirements is the fact that policy makers need to think about the environmental costs of a project, thus increasing the overall influence of environmental experts and agencies in the developing phase of a large project.³⁸¹ This benefit is however perhaps somewhat overestimated according to Felleman (2008) as environmental impacts are difficult to determine, analysts are influenced by the political atmosphere and the public is not always aware that an environmental analysis (even if negative) does not necessarily mean that a policy maker abandons his project proposal.³⁸²

5.2.6. Interactions and consumer protection issues

Many of the environmental issues presented are related and interact with each other. This is relevant firstly because these interactions need to be taken into account when assessing impacts comprehensively. Secondly, many of the issues are (jointly) related to consumer protection issues.³⁸³ Put broadly, the usual environmental impacts assessed in a TSIA derive from the production, and possibly the disposal, of goods, and their negative environmental externalities; consumer protection issues are mainly connected to the consumption of goods and their compliance with health standards and consumer preferences.

Table 5.5 summarises the main interactions of policy areas and environmental/consumer protection issues, and lists the main related Multilateral Environmental Agreements.

"the real key to this issue (...) is not the new strategy, but rather the forthcoming reforms of the common agricultural and fisheries policies and the Multiannual Financial Framework", into all of which biodiversity targets have so far been integrated insufficiently.

³⁸¹ Taylor, S., 1984, "Making Bureaucracies Think

³⁸² Felleman, J., 2008, Environmental Impact Assessment

³⁸³ It is important to note that environment and climate (as well as consumer protection) are fields where the European Union's power to shape policies is relatively large compared to other policy areas (such as social security or foreign policy, which still is largely determined by and applied in the individual member states). Nevertheless, there are still considerable differences between member states, be it due to competences remaining at MS level, or due to the freedom that EU directives give to member states in implementing them.

Table 5.5 Main policy areas where environmental and consumer protection interact

Policy area	Related environmental issues	to	Relevant MEAs
Agriculture/forestry/fisheries	Land ecosystems, biodiversity; material use; waste; water; consumer protection	use,	Convention on Biological Diversity*, Cartagena Protocol* on Biosafety (requires advanced informed agreement procedure for imports of living GMOs) ³⁸⁴ International Treaty on Plant Genetic Resources for Food and Agriculture* International Tropical Timber Agreement (ITTA), 2006** Ramsar Convention on Wetlands** UN Fish stocks agreement** ³⁸⁵ , FAO Compliance Agreement** ³⁸⁶ , FAO Code of Conduct for Responsible Fisheries (voluntary) ³⁸⁷
Resource efficiency	Related to all areas		
Fossil fuel extraction and transport (particularly fracking, LNG transport)	Climate change, water		UN Framework Convention on Climate Change (UNFCCC)** and Kyoto Protocol* Paris Agreement
Emission standards (for industry / products in use)	Air pollution, atmosphere, climate change, indirectly: material use		Montreal Protocol**, UNFCCC**/Kyoto Protocol*, Geneva Convention on Long-Range Transboundary Air Pollution (LRTAP)**
Hazardous substances (POPs and other chemicals, pollutants and waste)	Waste, water, air pollution, consumer protection		Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*, Stockholm on Persistent Organic Pollutants (POPs)*, Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides on International Trade* Minamata Convention on Mercury*(*)

*: only EU has ratified / is a party to this Convention.

** : EU and US have ratified / are parties to this Convention.

In the context of consumer protection, the interaction between biodiversity policy and GMO policy is most visible at the international level, where the GMO-focused Cartagena Protocol is subordinated to the Convention on Biodiversity. Another area where environmental and consumer protection are closely linked are hazardous substances, which are internationally regulated by the Basel, Stockholm and Rotterdam Conventions. All of these affect numerous environmental issues and potentially consumers, are important in a trade context, and have not been ratified by the US.

³⁸⁴ For details see McKenzie, Ruth et al. (2003), An Explanatory Guide to the Cartagena Protocol on Biosafety.

³⁸⁵ Agreement Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks". Although the agreement is under UNCLOS, which the US has not ratified, the US has ratified the fish stocks agreement. See http://www.un.org/depts/los/convention_agreements/reviewconf/FishStocks_EN_C.pdf and also <http://www.fao.org/fishery/topic/14839/en> and http://www.un.org/depts/los/convention_agreements/convention_overview_fish_stocks.htm.

³⁸⁶ "Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas", in force since 2003, both EU and US are parties, see <http://ec.europa.eu/world/agreements/prepareCreateTreatiesWorkspace/treatiesGeneralData.do?step=0&redirect=true&treatyId=558>.

³⁸⁷ See <http://www.fao.org/fishery/topic/14766/en>.

Box 5.2 Conventions on hazardous substances

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal is the oldest of the three conventions on hazardous substances (1992). The European Regulation on shipments of waste implements this Convention, which in its annexed 'Basel Ban' prohibits exports of waste from OECD countries to non-OECD countries. The Convention and its implementing Regulation imply that all hazardous waste and some other defined wastes need to be notified to authorities before being exported. "Despite the Regulation, illegal shipments of waste are still a significant problem (some estimates suggest that the overall non-compliance rate with the Regulation could be around 25 %). To strengthen Member States' inspection systems, the Regulation was amended in 2014 [...]. Member States are required to apply the new changes in the years 2016/17."³⁸⁸ The United States has signed, but not yet ratified the Basel Convention. It therefore requires bilateral or multilateral agreements in order to transfer waste from and to Basel countries; a multilateral agreement with the OECD is in place which governs transboundary movements of waste for recovery purposes.³⁸⁹

In 2004, the Stockholm and the Rotterdam Convention entered into force. The Stockholm Convention on Persistent Organic Pollutants (POPs) is concerned with persistent chemical substances that bio-accumulate, have toxic effects on the environment and are prone to long-range transport. In the EU, Regulation (EC) No 850/2004 implements its provisions, which include prohibition or restrictions of production and trade, as well as management and disposal of POPs wastes. The US has regulations in place for the initial 12 chemicals under the Convention, but is did not ratify the Stockholm Convention on POPs. Furthermore, the EU submitted a list of additional POPs soon after entry into force of the Convention (see also chemicals sector study). The REACH legislation requires testing on PBT (persistent, bio-accumulative and toxic) properties as part of the registration process.³⁹⁰

The Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides on International Trade (Rotterdam Convention) requires exchange of information on certain traded hazardous substances (the list of covered substances is increasing over time, based on recommendations).

5.3. Assessment of impact on the environment through the economic channel

Environmental impacts on air pollution, climate change and material use triggered through economic changes arise as trade policy can affect the production pattern, scale and technology in both EU Member States and the respective trade partner. The environmental topics affected through economic changes and can be studied using quantitative methods are typically GHG emissions and air pollutants, since global databases exist for these types of pollutants. Other themes, such as resource use, waste and water depend more strongly on the availability of local data and can thus not always be researched quantitatively. This paragraph first describes the relevant parts of the E3MG model, which is used to determine quantitatively impacts on air pollution, climate change and material use.

5.3.1. E3MG: Assessing environmental impacts

E3MG, as explained before, is a computer-based E3 (energy-environment-economy) macro-econometric model. The model is frequently used to conducting impact assessments using a scenario-based analysis. E3MG model features are summarised in Figure 5.2.

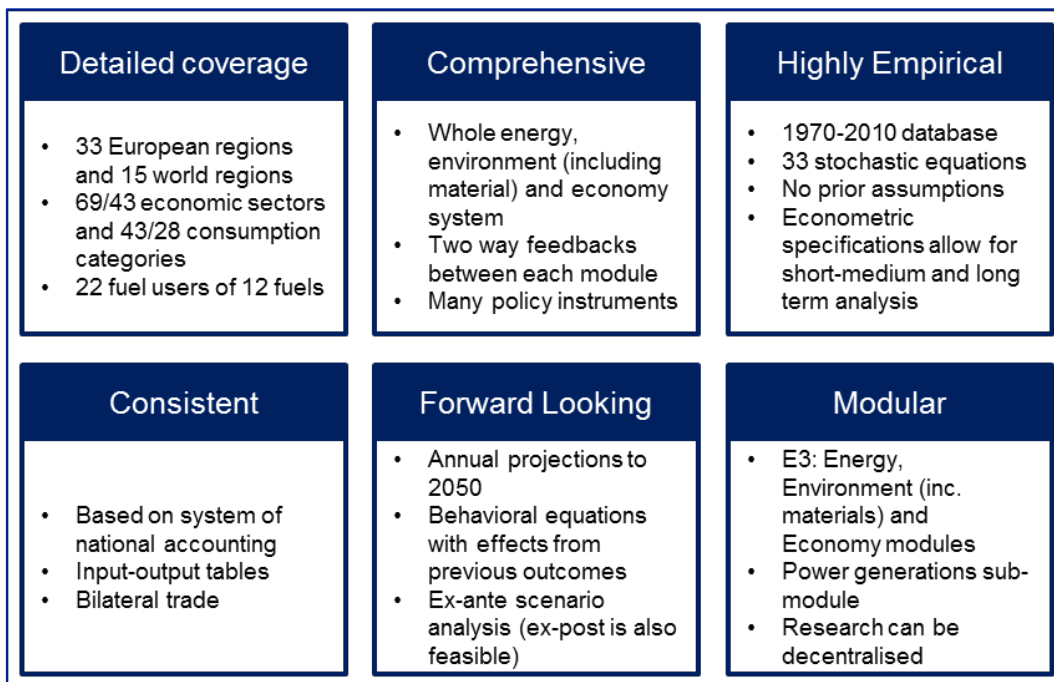
³⁸⁸ European Commission (2014), Waste shipments. For the amendment of the regulation see Regulation (EU) No 660/2014 of 15 May 2014.

³⁸⁹ EPA (n.d.), Chapter V - Basel Convention.

³⁹⁰ http://ec.europa.eu/environment/consultations/pdf/pops_consultation.pdf (POPs consultation document)

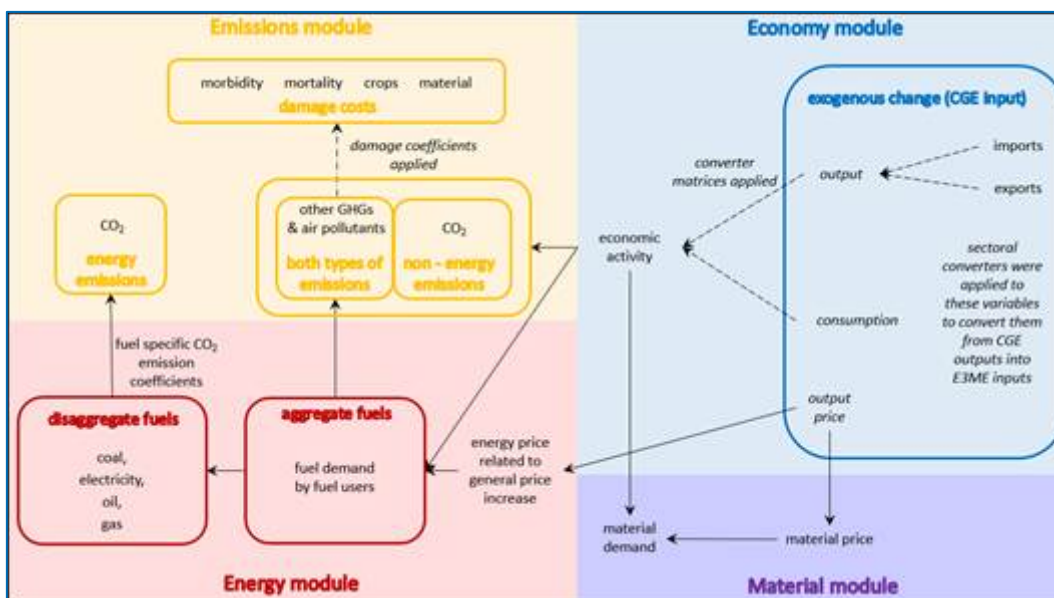
<http://www.google.nl/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&cad=rja&uact=8&ved=0CCAQFjAA&url=http%3A%2F%2Fec.europa.eu%2Ftransparency%2Fregexpert%2Findex.cfm%3Fdo%3DgroupDetail.groupDetailDoc%26id%3D9017%26no%3D4&ei=57PjU7PsOcGSO8uvgdgD&usq=AFQjCNFBczTNogfkNO3aBoAbC6iTrvTI7A&sig2=WugkzBqpR6Oud3R-fyrt1A&bvm=bv.72676100.d.ZWU>

Figure 5.2 E3MG summary model features



The E3MG model normally contains two ways feedbacks between energy, material, environment and economy. However for this environmental impact analysis of TTIP, the economic module has been 'switched off' in order to use economic results from previous analysis carried out by the CGE model of CWE (2015). Figure 5.3 provides an overview of linkages between CGE economic results and the E3MG energy, material and emission modules.

Figure 5.3 CGE and E3MG links



A set of converters was used to convert CGE economic sectors to E3MG sectors (see Annex). Another set of converters was used to convert from economic sectors to energy and material users. The model data sources for energy, material, and environment indicators include the EDGAR database of emissions, IEA energy balance and price, Eurostat Material Flows Account, World Bank commodity prospect, and ExterneE/Ecosense-LE database. The E3MG model baseline

for energy demand in the EU was made consistent to the DG Energy's *Reference Scenario* in 'Trends to 2050'³⁹¹, publication. For the US and other regions outside Europe, the baseline for energy demand was made consistent to the IEA's *Current Policy Scenario* in 'World Energy Outlook 2013'³⁹².

5.3.2. Impact on climate change and energy

Two scenarios are modelled throughout environmental impacts analysis. These scenarios are consistent with the scenarios carried out during economic impacts analysis using the CGE model. The two scenarios are:

- Ambitious experiment with 20 percent spill-overs;
- Less Ambitious experiment with 20 percent spill-overs.

For the full model description we refer to Chapter 1 and Annex 1.

Energy consumption by user and fuel (EU & US)

Energy demand in E3MG is driven by three key factors: economic activity of energy users, energy prices and technological change. It is important to note that in this analysis the energy results are driven mainly by changes in economic activity of the energy users as a results of TTIP agreement. All energy prices are assumed to move with the CGE output price of 'Other primary sectors'. This means that prices of coal, oil, and gas are changing by the same amount, creating no incentive for switching between fuels. Furthermore, technology is not assumed to change explicitly in the scenarios except one that can be derived from change in economic outputs from the CGE model.

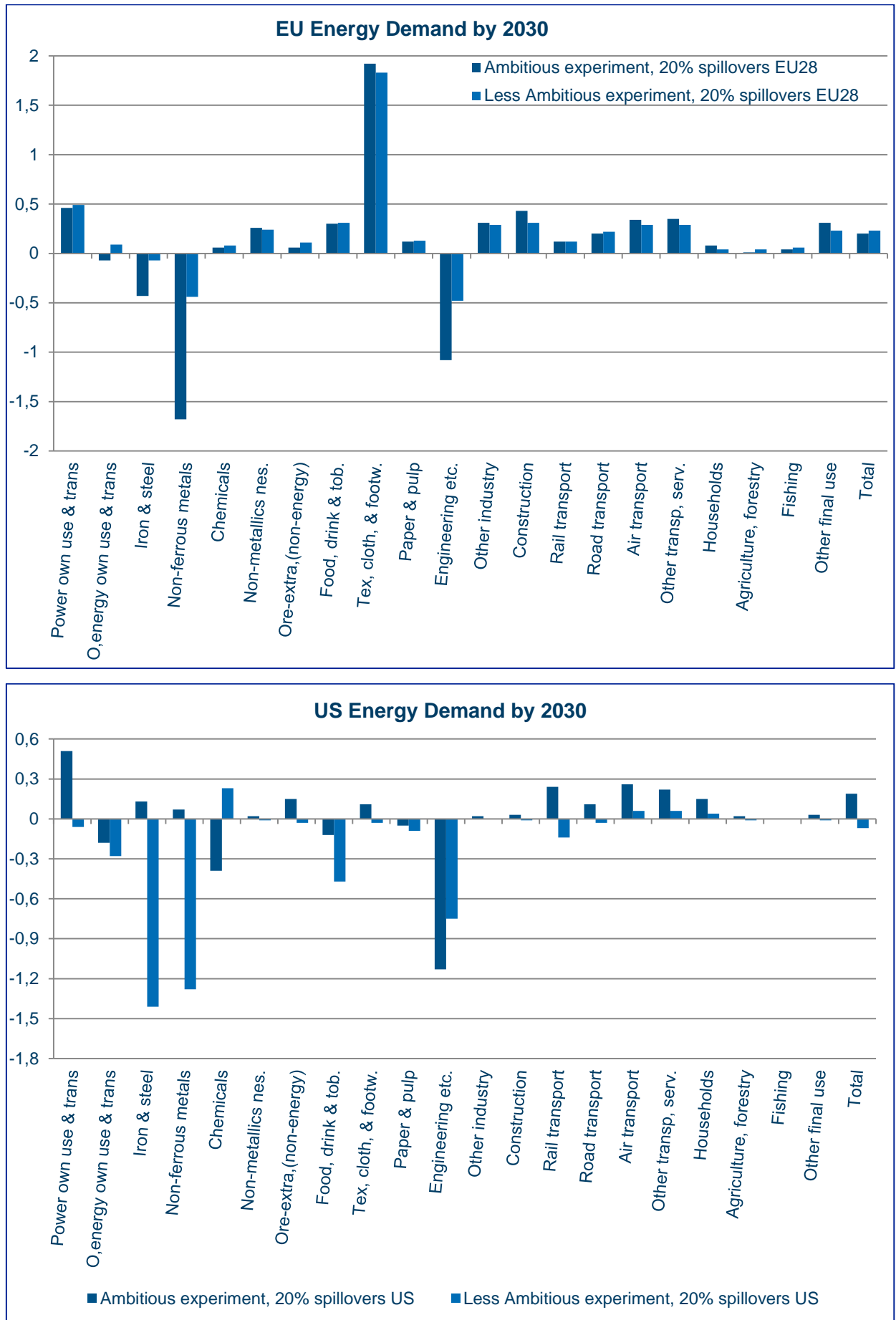
Figure 5.4 shows the E3MG energy demand results. The key message is that these results reflect economic activity of the energy users. Overall, there are small increases in total energy demand but the results can vary significantly between energy users:

- In the EU: the biggest reduction of energy demand comes from the engineering and metals sectors – reflecting negative economic activities results from the CGE model or composition effects (see Table 3.), as well as the relatively energy-intensive nature of these sectors;
- In the EU: services and households see small increases in their energy demand, again reflecting change in economic activity and relatively non-energy-intensive nature of these users;
- In the US: the iron & steel and metals sectors demand for energy decreases reflecting the economic activity and (compared with the EU) a higher share of energy input in the metal sectors. This can partly be explained by the fact that in the EU, metals sector is included in the EU-ETS, which indirectly make it relatively more expensive to use fossil fuels in production;

³⁹¹ <https://ec.europa.eu/energy/en/statistics/energy-trends-2050>.

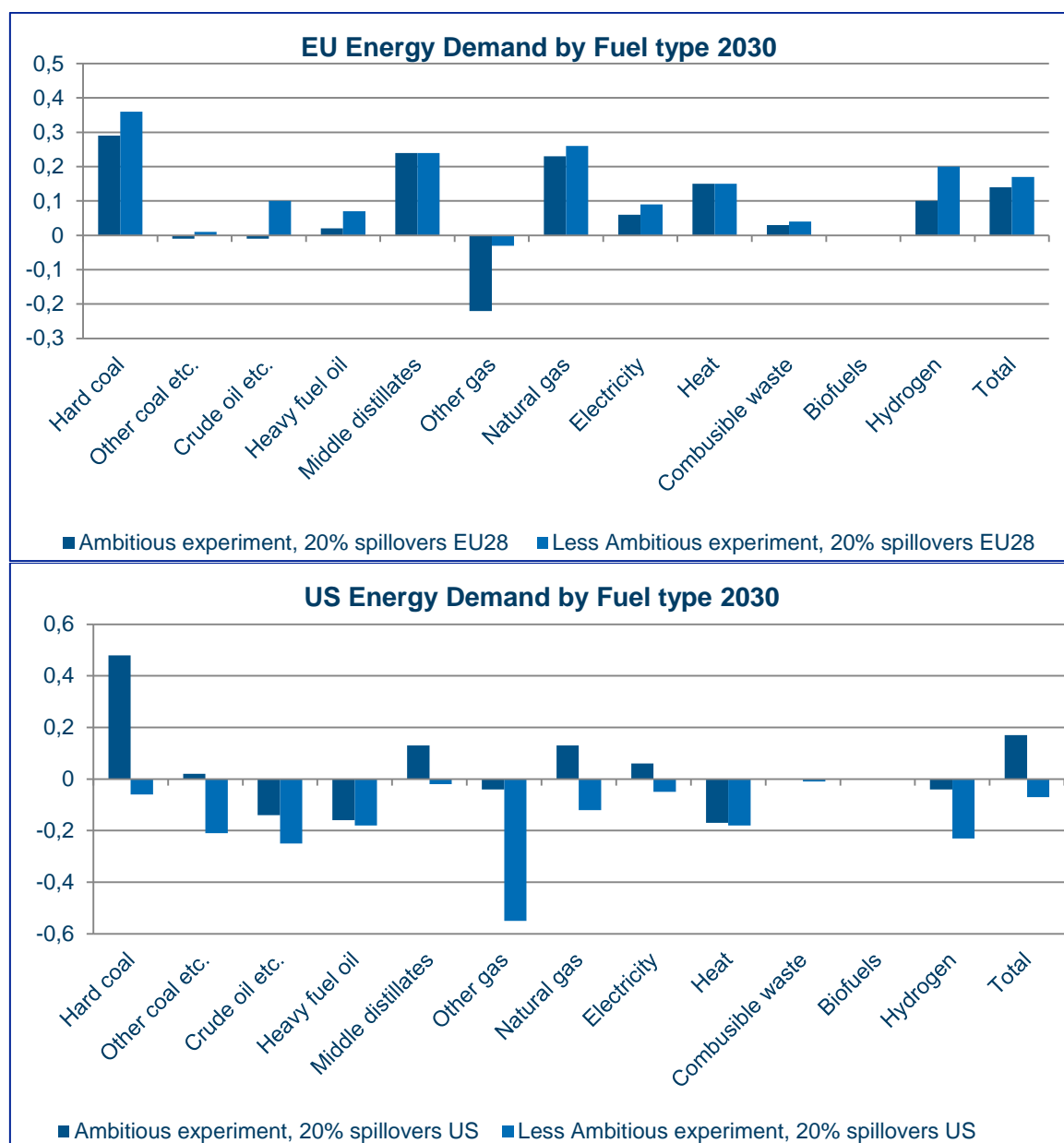
³⁹² <http://www.worldenergyoutlook.org/publications/weo-2013/>.

Figure 5.4 EU and US energy demand results in 2030, percentage change



Since prices of all fuels are assumed to increase by the same amount as CGE: 'Other primary sectors', the results of energy demand by fuels therefore reflect a different pattern of fuel use by different fuel users, rather than a switch to alternative cheaper fuels. Figures 5.5 and 5.6 show the percentage change in energy demand due to TTIP in 2030 compared to the 2030 baseline. In the EU demand for natural gas, middle distillates and hard coal increases somewhat. Demand for other gas is expected to decrease by just over 0.2 percent. The main drivers for an increase in a specific type of fuel can be linked back to an increase in output of the sector demanding that specific type of fuel.³⁹³ The increase in demand for hard coal stems mainly from the expected increase in demand for power as a result of higher output³⁹⁴ and own use and other industry (steel) sector classifications. Notably, most EU sectors see an increase in energy demand, this coincides with an increase in overall demand for fuel and vice versa for the US. The model does, however, not take into account changes in fuel use as a result of policy changes, like for example the Paris Agreement.

Figure 5.5 EU and US energy demand results by fuels in 2030, percentage change



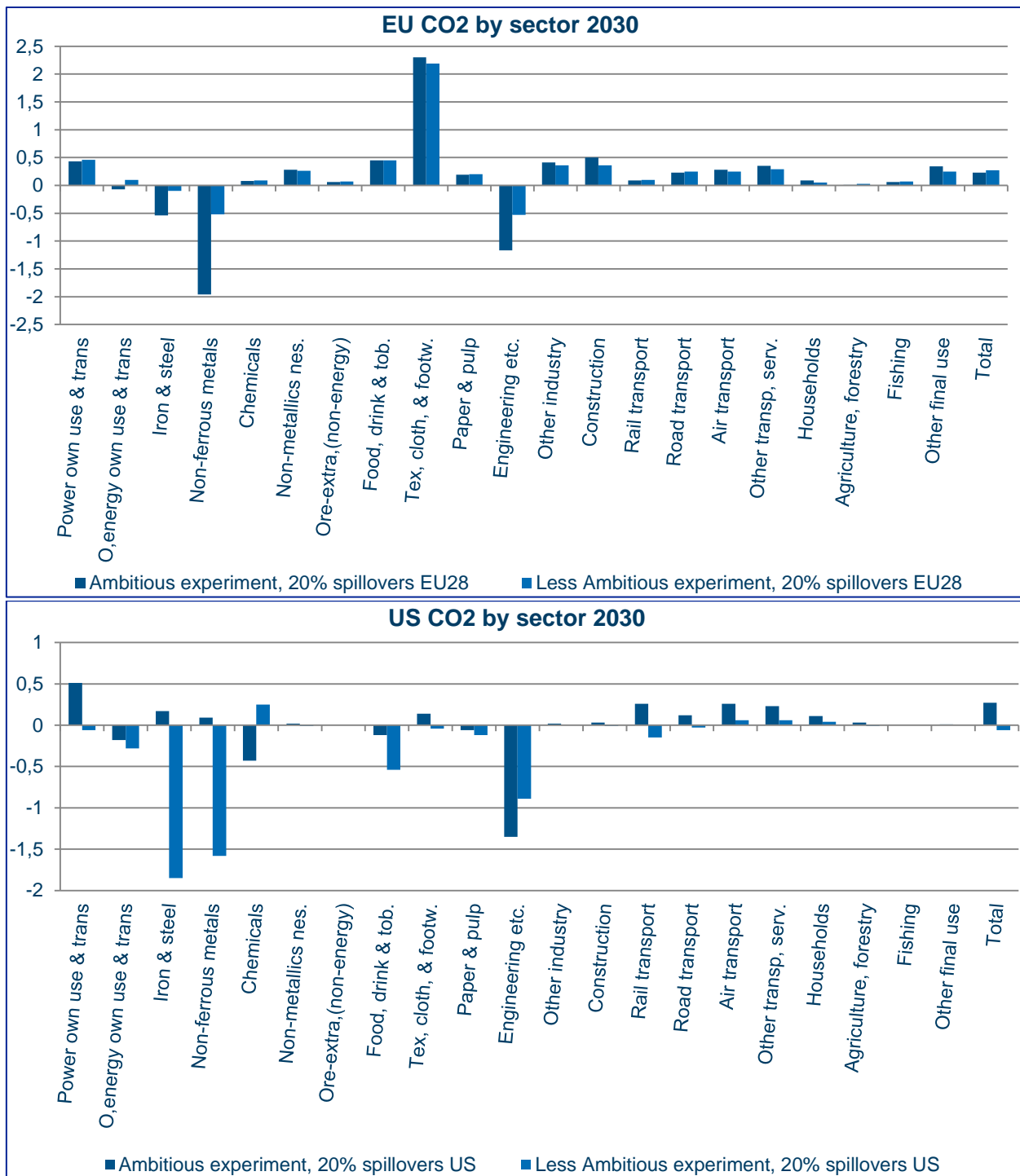
³⁹³ We note again that the model is not taking any changes in fuel use due to COP21 into account. COP21 is expected to impact the baseline fuel use, this will also have an impact the total impact of TTIP.

³⁹⁴ EURACOAL estimates that around 30% of power is generated using coal in 2015. (<https://euracoal.eu/euracoal/>)

Emissions of CO₂ and other GHGs (EU & US)

Carbon dioxide emissions from energy use are derived by applying CO₂ emission coefficients to the energy demand results by fuels and users. Figure 5.6 shows CO₂ emissions as a percentage change from the baseline for each energy users. The outcomes show that CO₂ results move closely with the results of energy demand by users, which is a logical outcome since the model does not take price-elasticity of demand into account. We expect that an increase in energy prices would lead to a (small) reduction in consumption (although effects are small according to various empirical studies). Furthermore, the model does not take into account the effect of policies to reduce energy demand.

Figure 5.6 EU and US CO₂ by users in 2030, percentage change



Other GHGs emissions are linked to both economic activities and energy used. GHGs results are shown in Table 5.6. Since CO₂ accounts for around three quarters of GHGs emissions in the EU and the US, changes in total GHGs emissions are mostly driven by changes in CO₂.

Table 5.6 GHG results, 2030, percentage differences from the baseline

	EU		US	
	Amb exp, 20% spill-overs	Less Amb exp, 20% spill-overs	Amb exp, 20% spill-overs	Less Amb exp, 20% spill-overs
CO ₂	0.2	0.3	0.3	-0.1
CH ₄	0.1	0.3	0.1	0.0
N ₂ O	0.0	0.0	0.1	0.0
HFCs	-3.0	-1.6	-1.6	-1.4
PFCs	-3.2	0.1	-1.5	-0.9
SF ₆	-1.3	-0.4	-0.7	-0.2
Total	0.1	0.1	0.2	-0.2

In the EU, significant reductions in HFCs and PFCs emissions are expected by 2030 under TTIP. These emissions are mostly linked to refrigeration and air-conditioning equipment that are classified as '*Electrical Machinery*', which see a significant reduction in economic output (production). In the US, results for CH₄, N₂O and HFCs largely reflect the economic activity of the chemical sector.

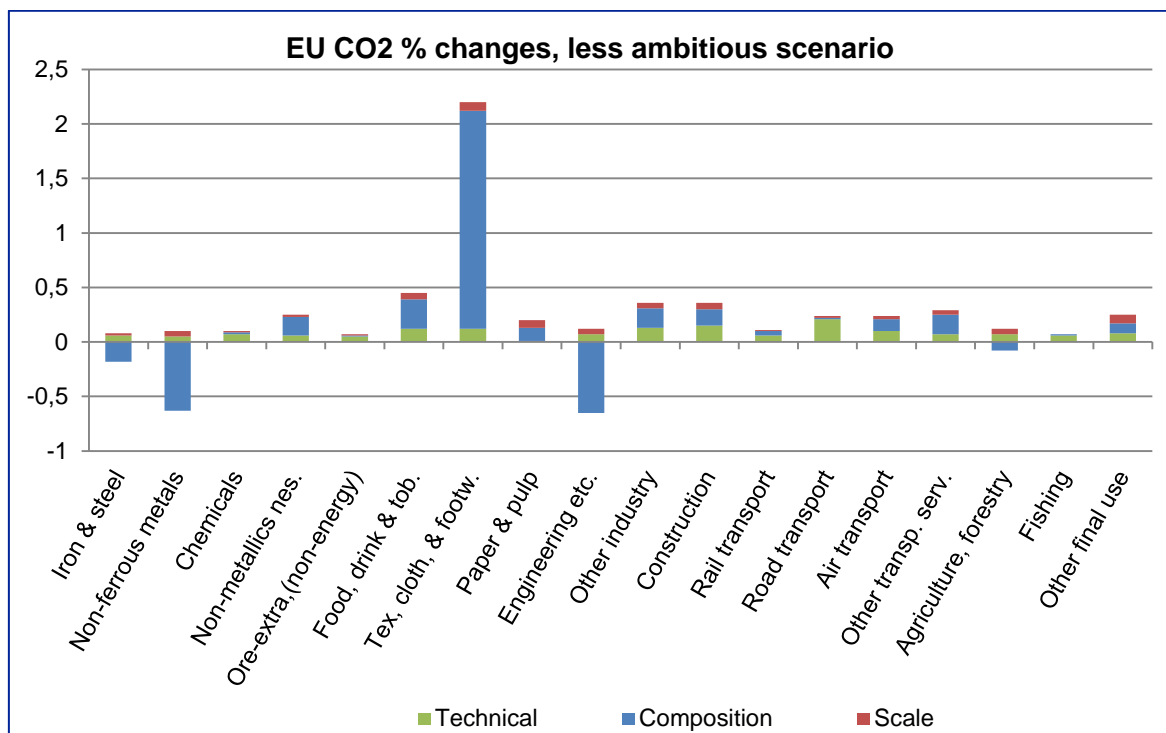
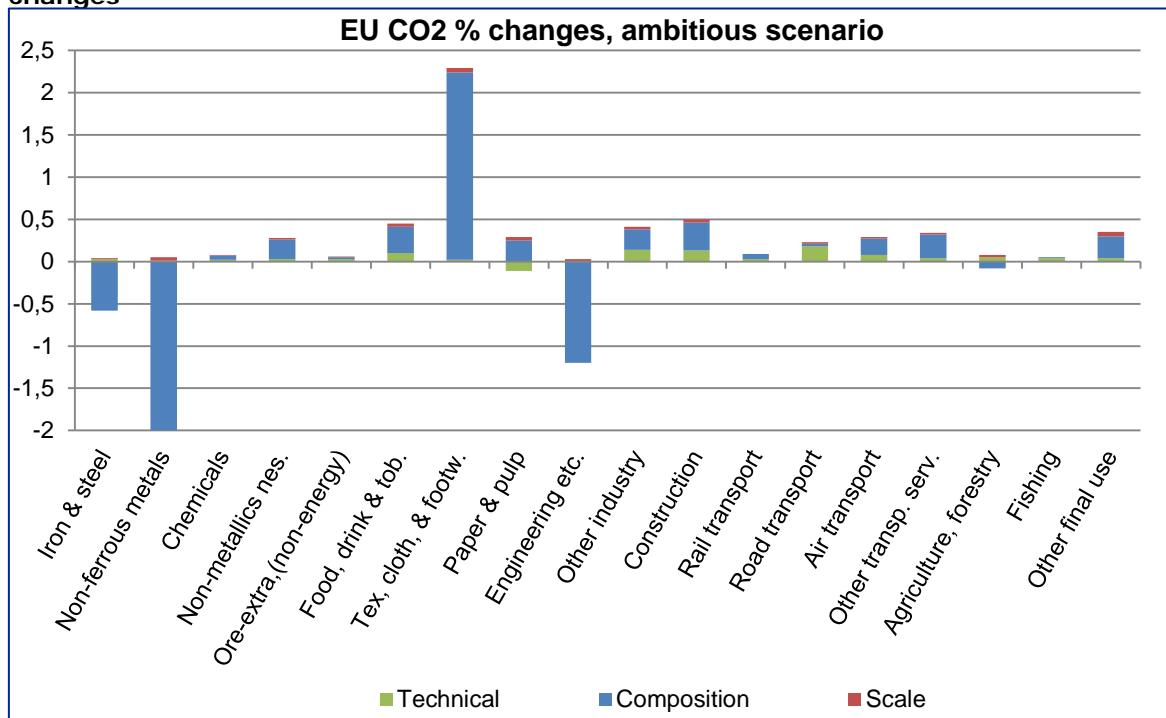
CO₂ emissions with decomposition of effects (EU & US)

Additionally, the environmental analysis tried to split CO₂ results by three effects: scale, composition and technique. These effects are calculated using the following assumptions:

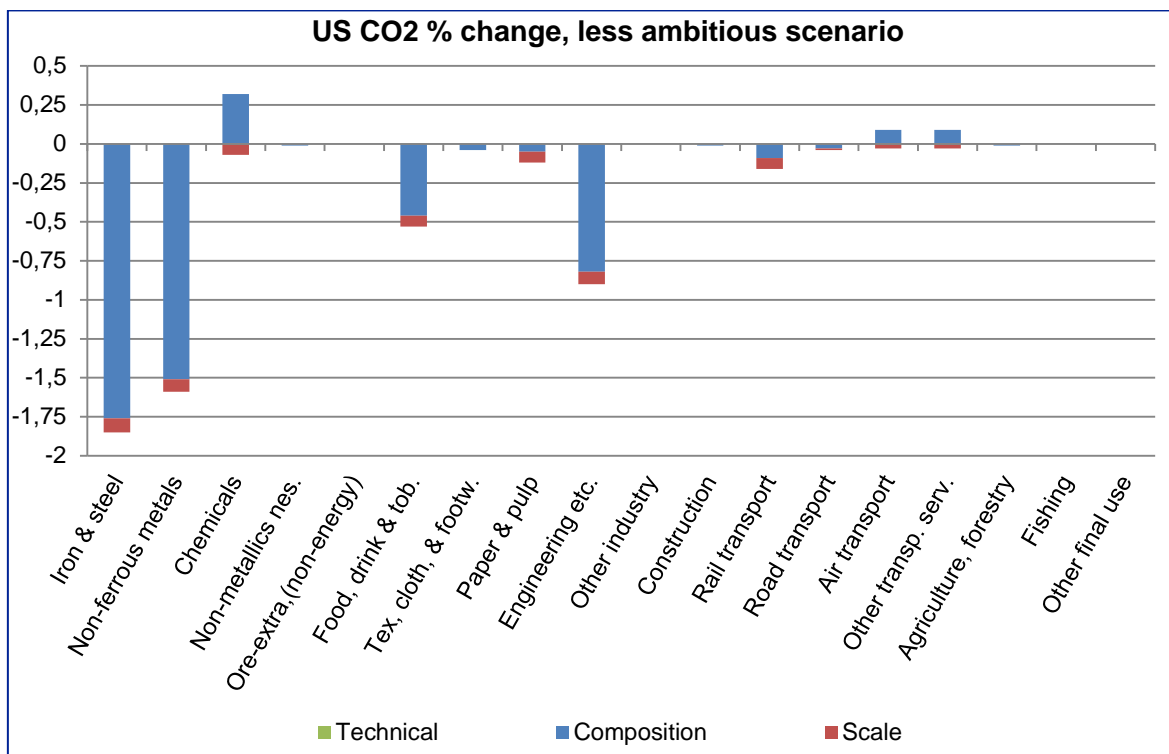
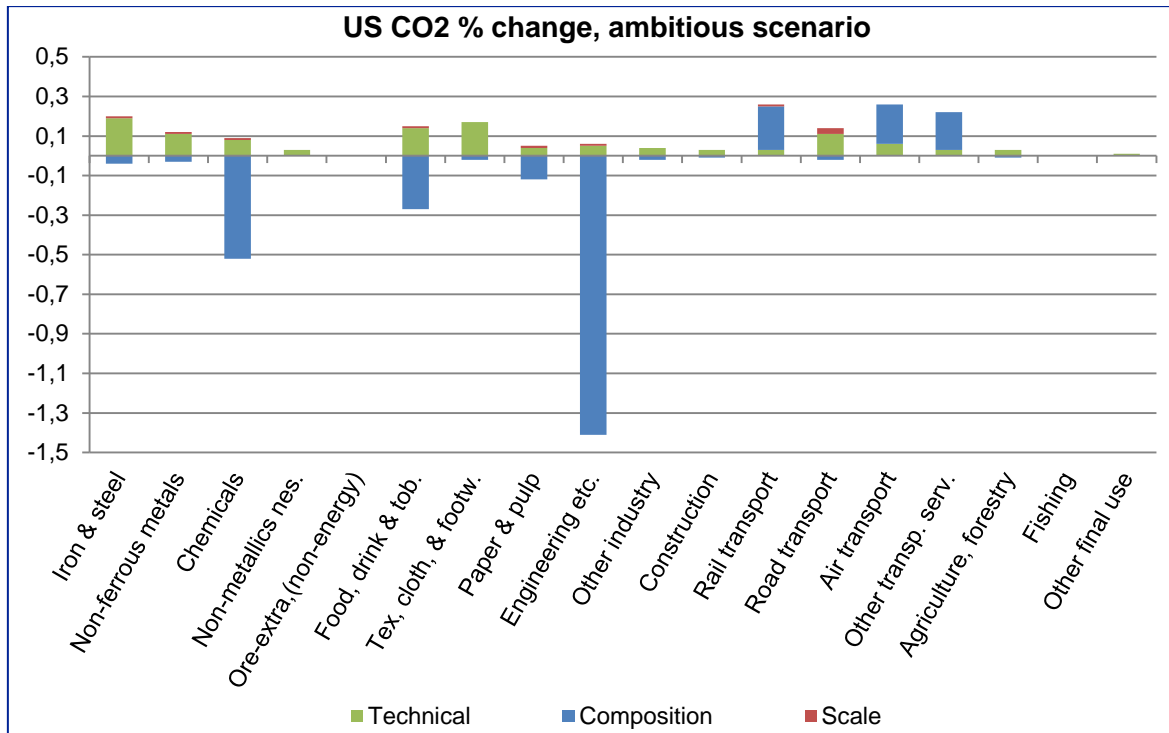
- Scale effects are calculated from total change in economic output from the output results by sectors. The total growth rate in output is then applied to all sectors using the sectoral share in the baseline. As a result, all sectors are growing at the same rate as total output at the country level;
- Composition effects are calculated from constraining total output to be the same as the baseline and change the sectors composition according to the scenario economic output results by sectors;
- Technique effects are derived from the difference between the main scenarios and the results from the scale and composition effects. As mentioned previously, technologies are not assumed to change explicitly in the scenarios. Only technology changes that can be derived from economic output results are included.

The blue markers in the figure below represent overall CO₂ impacts for each fuel user in the two scenarios, and the three separate effects are represented in different colours in the bar chart. The figure suggest that most of the CO₂ impacts are driven by composition effects, i.e. from the change in sectors composition in the EU and the US as a result of TTIP. The economic output results by sector from the CGE model are largely cancelled out at aggregate level, making the scale effects of energy and emissions small. It should be noted that CO₂ impacts from scale effects are not the same for all users despite the same increase in economic activities. This is because different users have a different level of energy-intensity and different profile of fuels mix. The technique effects are small as given by assumptions of no explicit change in technology.

Figure 5.7 CO₂ results by scale, composition and technique effects, 2030, percent changes



Trade SIA on the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the USA



Social costs of CO₂ emissions

Due to a wide range of estimates for social costs of carbon (SCC), this study took a value of € 20 per tonne of CO₂ from the previous Trade SIA studies³⁹⁵ as a guideline. The SCC of TTIP is estimated by applying this SCC value to the CO₂ results (see Table 5.7).

³⁹⁵ See <http://www.trade-sia.com/jordan/wp-content/uploads/sites/4/2014/04/TSIA-EU-JORDAN-final-inception-report-infec.pdf> for example.

Table 5.7 Estimated social costs of carbon, (millions of euro difference from baseline)

	EU		US	
	Ambitious experiment, 20% spill-overs	Less Ambitious experiment, 20% spill-overs	Ambitious experiment, 20% spill-overs	Less Ambitious experiment, 20% spill-overs
Social costs of CO ₂ (million euro)	91.0	58.5	84.4	84.4

5.3.3. Impact on air pollution

Emissions of air pollutants (EU & US)

Air pollutants in E3MG are modelled to grow with indicators that are linked to the source of those pollutants. These sources are driven mostly by economic output results from the CGE model. In the US for example, NMVOCs results reflect the emission associated with chemicals and solvents, which are linked to chemical sector output.

Table 5.8 EU and US emissions of air pollutants, 2030, percentage differences from baseline

	EU		US	
	Ambitious experiment, 20% spill-overs	Less Ambitious experiment, 20% spill-overs	Ambitious experiment, 20% spill-overs	Less Ambitious experiment, 20% spill-overs
SO ₂	0.16	0.36	0.18	-0.09
NOX	0.2	0.22	0.22	-0.05
CO	0.06	0.11	0.12	-0.06
PM10	0.13	0.14	0.13	-0.05
NMVOCs	-0.08	0.09	0.09	-0.11

Associated damage costs (EU only)

Damage costs are calculated from damage coefficients (from ExternE-Ecosense-LE³⁹⁶ database) which cover four aspects; human mortality, human morbidity, crops, and materials. The database covers only EU members and four pollutants: NO_x, SO₂, PM10 and VOCs. This means that the analysis can only covers damage costs of these pollutants. The damage parameters are obtained by running a set of queries for a unit increase in emissions. These parameters are then associated with E3MG sectors based upon their characteristics and the pollution source (e.g. urban/rural, height of release). In addition, it should be noted that many of the impacts of the other emissions (e.g. PM10) are localised and cannot be captured by a model that operates at national level.

Damage coefficients provide information on damage costs in € per tonne of emission. Table 5.9 summarises these costs in absolute term in additional to the baseline.

³⁹⁶ http://ecoweb.ier.uni-stuttgart.de/ecosense_web/ecosensele_web/frame.php

Table 5.9 EU Damage costs from pollutants, 2030, € 2005 million

	Ambitious experiment, 20% spill-overs EU28	Less Ambitious experiment, 20% spill-overs EU28
Health mortality	87	94.5
Health morbidity	40.8	47.8
Crops	-4.4	9.1
Materials	4.1	4.7
Total	127.6	156.1

The damage costs mostly reflect damage to human health, which is valued at much higher costs per unit of emissions than crops or materials. For crops, the results show small benefits from reduction of NMVOCs. VOCs contribute to ozone formation and can harm crop yields. In relative terms, these damage costs compared to the baseline are less than 0.2 percent.

5.3.4. Impact on material use

Material use is measured in E3MG using the Domestic Material Consumption (DMC) indicator. DMC is equivalent to material extracted domestically plus imports minus exports of material. Raw materials are modelled in physical units and represent materials consumption of natural resources.³⁹⁷ Like energy demand consumption, material consumption is determined in E3MG by economic activity of each material users, material prices (taking into account of both international commodity price and domestic industry price) and technologies.

Figure 5.8 EU Material demand DMC in 2030

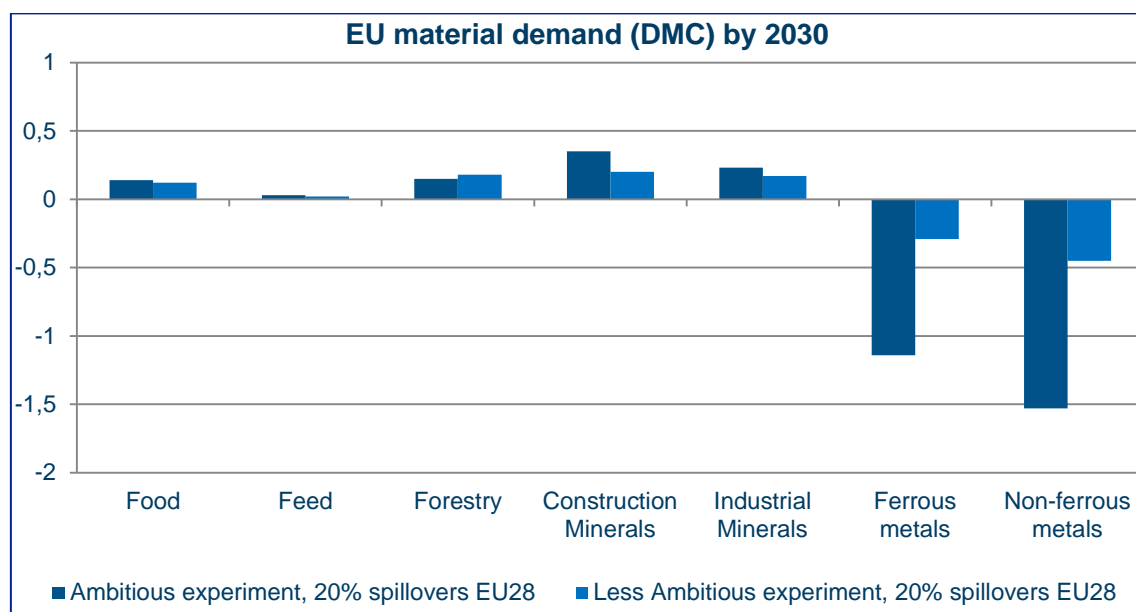


Figure 5.8 summarises changes in EU material demand compared to the baseline in 2030. Like energy demand, material demand in the EU is driven mostly by changes in the economic activities of each material user, i.e. economic results from the CGE model – at sector level. For example, the metals sector is expected to experience a decline in its economic output as a result of TTIP and this translates into less demand for raw metals input in its production. In these scenarios, global commodity prices are assumed to be fixed and no explicit change in resource efficiency technology is simulated. The share of material demand is met by domestic production, and imports are more or less the same as in the baseline since there is no specific driver except change in economic activity of material users in these scenarios.

³⁹⁷ See <http://www.materialflows.net/background/importance/> for more information.

5.3.5. Other environmental impacts through the economic channel

The above results and the effects of TTIP on economic sectors (directly from the CGE model) can be used in an additional causal chain analysis to derive possible indirect environmental effects. For example, agricultural output can influence fuel use (as captured in the E3MG model), but also water use and land use, and indirectly ecosystems. Similarly, emissions to air can have an effect on water quality. This section provides a brief qualitative analysis of the quantitative results, using the information on important interlinkages established in the baseline description. This section will not provide an in-depth assessment of these impacts, however, as explained in the introduction.

Natural (energy) resources and ecosystems

According to the CGE model, TTIP is expected to have an upward effect on energy demand in both the EU (0.2 percent in the ambitious experiment and also in the less ambitious experiment for the EU) and US (0.2 percent in the ambitious experiment and -0.1 percent in the less ambitious experiment for the EU). This increase in demand will be compensated for both through increased internal extraction³⁹⁸ (or production through renewable sources) and/or increased imports and thus contribute to the depletion of fossil fuel resources. The way in which energy demand will be satisfied (coal, gas, oil or renewables for instance) is largely dependent on pricing (which is mainly influenced by competition, technology and regulation) but also on public policy which is currently favouring clean energy. It is therefore difficult to conclude, for the long term, whether the increase in energy demand will lead to a ditto increase in CO₂ emissions.³⁹⁹

Ecosystems are (mostly) affected by the development of economic activities which put pressure on them, including agriculture, forestry, fisheries, tourism, and energy. This makes assessing impacts of TTIP on ecosystems hard. This is further explained by the following short storyline: If a reduction in, for instance, extractive industries would occur through TTIP, this will have a positive effect on the environment, whereas increased environmental tourism usually puts pressure on ecosystems. Given these both positive and negative potential effects of the TTIP on ecosystems, the net overall impact of TTIP on ecosystems is difficult to predict at this moment. In the case study on illegal trade in natural resources illegal trade in natural resources and trade in unconventional resources the possible impacts of TTIP on specific ecosystems and natural (energy) resources is assessed in more detail.

Animal welfare

There is a difference between current animal welfare protection in the EU and US. This difference is, to some extent, due to differences in regulation, which is partly driven by differences in how constituents value (farm) animal welfare. As example, we refer to the difference in preferred treatment methods of chicken between the EU and US.⁴⁰⁰ Recent information regarding the will of EU citizens on animal welfare (Eurobarometer 442) shows that consumers find protection of animals important. This information is to some extent related to the increasing demand of consumers in the EU to have more green and local products and that products have been produced in an ethical and environmentally sustainable way. In TTIP the EU currently proposes to include an article on animal welfare in the SPS chapter. The proposed article has two main aspects:

- The article includes the recognition of sentience of animals ; and
- It aims to align regulatory standards related to breeding, holding, handling, transportation and slaughter of animals.

³⁹⁸ Natural gas and oil are due to methods of hydraulic fracturing and horizontal drilling available domestically for the US and current estimates are that the US will become a net exporter of both commodities before the end of this decade. We refer to the Case study on trade in unconventional resources for more background information.

³⁹⁹ Model assumptions do / cannot take additional regulation or changes in competition (as expected due to the US gas boom) into account.

⁴⁰⁰ It is in general accepted that the EU laws ensure that chickens have, during their life, a more healthy treatment compared to US methods. However the US argues that their approach of 'cleaning' the end product leads to a safer product for consumers. This difference in views on animal versus consumer wellbeing is exemplified in this area, but is presumably also in effect on other areas where livestock is involved.

Aligning regulatory standards would facilitate importing and exporting these goods and alignment of standards would lead to an increase in exports of animal-related products for the EU and/or US. If EU standards for animal welfare are adopted by the US as a result of TTIP, and good enforcement to comply with set standards is in place, this generates a trade enhancing impact. A problem however arises with respect to compliance to the set standards, as animal welfare is a non-product related PPM, and ensuring compliance of such imported goods is difficult. As such, we stress that in case there will be alignment of standards (towards EU level), the EU needs to investigate how to ensure that all imported animal products are compliant with set standards. Examples to ensure that EU citizens consume food, that is produced by or through usage of animals, in line with current standards are production labelling, certification of producers (both local and overseas) or licensing. This would however create new barriers for US exporters.

Water as a natural resource

Looking at economic impacts on water consumption, we do not expect direct economic impacts on water as natural resource, based on the following statement:

Answer given by Ms Malmström on behalf of the Commission (16 08 2015)

“The Commission acknowledges the importance of water as a natural resource. That is why in TTIP and all other EU trade agreements, the EU has ensured that EU Member States remain free to take any measure which affects the way they manage, collect, purify or distribute water. TTIP will not affect this right in any way. Confirming the important role of public services in general, Commissioner Malmström, together with Mr Froman, United States Trade Representative, publicly stated on 20 March 2015 that nothing in US and EU trade agreements, including the Trade in Services Agreement (TiSA), will constraint governments at all levels in regulating their public services. And even if a country did choose to allow foreign firms to provide water services, it would still have the right to set levels of quality or safety, or prices, or take other such measures. Its laws and regulations would apply in the same way to foreign and national suppliers alike. TTIP or any other trade agreement will therefore not have any impact on water as a natural resource”.⁴⁰¹

However, in the case of water legislation (with baseline legislation for MS stemming from, among others, the WFD and DWD) there are differences between the EU and US. When looking at chemical legislation we see that in the EU authorities can regulate a chemical substance in case risk to the environment or human health is identified (there is a margin for scientific uncertainty), where in the US scientific evidence of harmful effects is needed before regulation of a substance can take place. To build further on this, the EU negotiators informed during an ENVI committee hearing that the US authorities are not willing to adapt their legislation on chemicals to the current EU framework.^{402 403} Based on the above section on water legislation and intention of negotiators we can conclude that water quality standards will be upheld under TTIP, but that there will be a discrepancy between EU and US legislation.

Waste generation

The case of solid waste is similar to that of (waste) water – since EU negotiators state that public services are exempt of trade agreements. We assume that municipal solid waste production develops in line with GDP (GDP change is often used in trade studies as indicator for changes in waste generation), so TTIP, assuming a GDP increase, will lead to an increase in total generated waste.⁴⁰⁴

Hazardous waste is mostly generated by the chemical, metallurgical and automotive sectors; this means the TTIP effect is ambiguous, since it is expected to increase the transport-sector output, but to decrease output in total non-ferrous metals and chemicals. Although drilling wastes do not fall under the definition of hazardous waste, they may be relevant; since it is

⁴⁰¹ <http://www.europarl.europa.eu/sides/getAllAnswers.do?reference=E-2015-009982&language=EN>.

⁴⁰² Main EU chemical legislation: REACH, PPPs Regulation and Biocides Regulation. For more information see the Annex and the sector study on chemicals.

⁴⁰³ Eureau, 2015. TTIP and chemicals: TTIP negotiations on the authorization of chemical substances and their impacts on water.

⁴⁰⁴ Waste generation in the GCE model is depending on GDP change. From practice we know that not all sectors have a linear increase in waste generated according to their change in GDP. This simplification is a result from modelling limitations with respect to change in waste generation.

expected that the engineering sector will shrink slightly (based on E3MG reduction in energy demand compared to the baseline scenario).

5.4. Environmental impacts through the trade channel

Environmental effects resulting from the *trade* channel are the most direct effects of trade policy. The *trade* channel covers the environmental effects triggered by trade provisions on certain environmental topics or environmental goods. **Increased trade** may also stimulate trade in environmentally friendly goods (such as green technology and sustainable trade in natural resources (see case study 4)) and environmentally unfriendly goods (such as fossil fuels). Increased trade is also often associated with more (potentially partly illegal) trade in natural resources, such as wildlife and fisheries, and therefore can have an indirect impact on the management of these resources.

The impact of a trade policy on the environment through the trade channel is measured both quantitatively, by disaggregation of relevant sectors and in more detail when more data is available, as well as qualitatively by assessing potential regulatory harmonization and potential special trade barrier reductions. This paragraph discusses the impact of TTIP on trade in environmental goods and services, hazardous waste, illegal natural resources (case study) and unconventional fossil fuels (case study).

5.4.1. Trade in environmental goods and services

The focus of this section is on 'environmental goods and services sector' (EGSS). The definition of EGSS is broad but for this study it is defined as:

"a heterogeneous set of producers of technologies, goods and services aimed at measuring, controlling, restoring, preventing, treating, minimising, investigating and sensitizing environmental damages and resource depletion as well as problems related to waste, noise, biodiversity and landscapes".

The definition taken here follows the Eurostat definition as defined in the European Handbook⁴⁰⁵.

The approach for establishing impacts of TTIP on EGSS is straightforward. This is partly due to the lack of sector details provided by the CGE model output and the complexity of defining and measuring EGSS itself. Given the existing legislative background the data gathering exercise reflected the low availability of data in both regional and sectoral dimensions. As such, the analysis from this task ought to be considered a rough guide of the situation within the EU only.

The steps taken to estimate EGSS impacts from TTIP are:

- Gathering information at country level to identify shares of EGS in E3MG-NACE sector classification;⁴⁰⁶
- Work out weighted average of these shares from countries where data are available;
- Aggregate EGS shares by E3MG sectors to CGE sectors using sector output weights;
- Try to draw conclusion on ESG impacts from CGE economic output results by sectors.

The shares of EGSS in E3MG-NACE sectors are given in the Annex. It can be seen that distribution of EGSS varies across sector greatly but for some sectors (e.g. sewage and waste management), can be completely allocated to EGSS. However, this information was lost when mapping these sectors to the less detailed CGE sectors. For example, sewage and waste management falls under a broad sector of 'Other Manufactures' and the weighted average share of this sector became around 30 percent (see Table 5.10).

⁴⁰⁵ Eurostat (2009), 'The Environmental Goods and Services Sector', a data collection handbook, Unit E3, Environmental statistics and accounts, Luxembourg.

⁴⁰⁶ Eurostat does not provide this information.

Table 5.10 Estimated EGSS impacts from TTIP in the EU

CGE sectors	Share of EGS in industry output	EU Output 2027, Ambitious, 20% spill-overs	Implied EGS change	EU Output 2027, Less ambitious, 20% spill-overs	Implied EGS change
Agr forestry fisheries	5.7	0.1	0.0	0.1	0.0
Other primary sectors	0.4	0.0	0.0	0.0	0.0
Processed foods	0.9	0.6	0.0	0.3	0.0
Chemicals	1.8	0.4	0.0	0.1	0.0
Electrical machinery	4.2	-7.3	-0.3	-3.7	-0.2
Motor vehicles	1.8	1.5	0.0	0.2	0.0
Other transport equipment	1.1	-0.1	0.0	-0.2	0.0
Other machinery	2.3	0.4	0.0	0.4	0.0
Metals and metal products	3.2	-1.5	0.0	-0.7	0.0
Wood and paper products	2.5	0.1	0.0	0.1	0.0
Other manufactures	28.9	0.8	0.2	0.7	0.2
Water transport	0.9	1.0	0.0	0.6	0.0
Air transport	2.1	0.4	0.0	0.3	0.0
Finance	1.5	0.4	0.0	0.2	0.0
Insurance	1.5	0.8	0.0	0.4	0.0
Business services	2.2	0.3	0.0	0.2	0.0
Communications	1.4	0.2	0.0	0.1	0.0
Construction	7.0	0.5	0.0	0.3	0.0
Personal services	1.9	0.3	0.0	0.2	0.0
Other services	1.9	0.3	0.0	0.2	0.0

Source(s): CE own calculation, CGE modelling output, and national statistic sources (see Annex).

After mapping to CGE sectors, most of the impacts of TTIP on EGSS are almost negligible for most sectors in the EU. The two exceptions are Other Manufactures and Electrical Machinery. Other Manufactures includes waste and recycling as subsector and is set to benefit from TTIP. In contrast ESG in Electrical Machinery, which is specific to manufacturing of machineries that relate to cleaner technology, renewables and are more energy efficient, sees a small decrease in output as a result of the trade deal.

As mentioned previously, the methodology of calculating EGSS impacts is rather simplistic due to lack of sector details and data availability. Furthermore, tariffs on environmental goods are low within the EU and US and value added may come from regulatory co-operation.

5.4.2. Investment court system (ICS)

An important aspect of the TTIP public discourse at EU level and in Member States has focused on the Investor-State Dispute Settlement (ISDS). ISDS is an international law instrument that provides for a dispute settlement system between a nation state and a foreign investor.⁴⁰⁷ While the discussion of *standing* in front of the dispute settlement body is beyond the scope of this study, an overview of the reasoning behind investment protection as part of FTAs, the dispute settlement mechanism within TTIP, the reforms through the new institutional elements of the

⁴⁰⁷ Arbitral tribunals are "courts" that are not open for general public and the original TTIP ISDS [AW: What is the "original TTIP ISDS" ?] foresaw in total 3 adjudicators (one from each side and a chairman to reduce chances of deadlock).

Investment Court System, and some of the main pro's and cons of stakeholders regarding investment protection, ISDS and ICS are set-out below.

Investment protection and ISDS

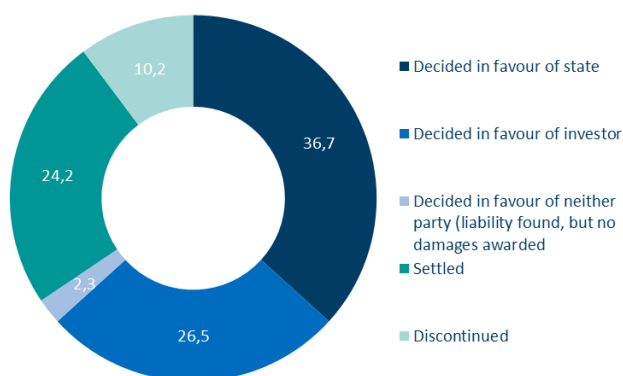
Investments, including FDI, are a critical factor in boosting growth and jobs. The importance of boosting growth and jobs through trade is agreed upon by all MS when they signed the Lisbon treaty, which made negotiating investment agreements an EU competence. Investment protection clauses are included in trade agreements as companies that invest abroad could encounter problems that are not dealt sufficiently/ objectively through the domestic legal system. Some of the risks relate: to expropriations by the host country or without proper compensation; discrimination (through new/adjustments of laws); changes in the political 'colour'⁴⁰⁸; revocation of business licenses and/or other abuses by the host state. Because of these risks, EU MS have been part of 1400 Bilateral Investment Treaties (BITs) since 1960s that include investment protection. The main goal of partnership in BIT's (that include investment protection) is to provide business with legal certainty to reduce the risk of their investment. Investment protection is as such a tool to attract and maintain FDI (see also the box below).⁴⁰⁹

The International chamber of commerce position in investment protection

"International investment agreements provide essential protections for investors putting their capital, intellectual property, management resources, and reputation at risk outside the security of their home markets. Strong bilateral investment treaties (BITs) and investment chapters in bilateral or regional free trade agreements (FTAs) are important tools to facilitate and protect FDI flows (ICC, 2016)."

Investment protection systems generally provide for a set of four key guarantees, namely protection against: discrimination (most favoured nation treatment and national treatment); expropriation which is not for a public policy purpose (and not fairly compensated); unfair and inequitable treatment (denying basic procedural fairness); and possibility of capital transfer. These four key guarantees may be enforced by an investor-state dispute settlement system (ISDS), which allows an investor to bring a claim against the host country in front of an international tribunal. An investor can bring a claim forward if it can allege that one of the above four key guarantees have been breached by the host government. In the period 1987-2016 739 ISDS cases have been brought forward, of which 257 are still pending and 11 have an unknown outcome. The following graph provides information on the ruling of each concluded case.⁴¹⁰

Figure 5.9: Ruling on ISDS cases (1987-2016)



Source: UNCTAD

Investment protection under TTIP

The investment protection and ISDS were initially proposed as part of TTIP negotiations. The initial proposed investment dispute resolution system received however much criticism from

⁴⁰⁸ Explanation wording political colour: a country that is at the moment of investment by a foreign party 'blue' (more open towards external corporations), might be after a next election period 'red' (socialistic and protective of own industries).

⁴⁰⁹ http://trade.ec.europa.eu/doclib/docs/2013/november/tradoc_151916.pdf

⁴¹⁰ <http://investmentpolicyhub.unctad.org/ISDS?status=1000>

various MS, lobby groups, environmental NGOs and various media. The main points of criticism were related to the lack of transparency, the lack of an appeal court and the possible risk of 'regulatory chill', which is defined as the possibility that investment arbitration influences the course of policy development.⁴¹¹ 'Regulatory chill', however not empirically proven, is according to critics an increasing problem stemming from investment protection systems and is caused by the high cost and risk of losing a case that is brought forward to a tribunal. Governments, due to this risk of high cost, tend to avoid bringing ISDS lawsuits down upon themselves. According to an article from 2001 by The Nation, detailing events under NAFTA, companies are well aware of this and have actively used the mere threat of ISDS to prevent the introduction of new laws and regulations.⁴¹²

Other aspects of the system that have been the topic of public debate are, among other, the method of selecting judges, possible 'double hatting'⁴¹³ of judges and lack of provisions against multiple and abusive claims. The opponents of a mechanism providing for investment dispute resolution in international trade and investment agreements claim that such a mechanism reduces the capacity of governments in their right to regulate, specifically when looking at policies related to public health, occupational safety and environmental protection. An additional argument against the use of investment dispute resolution mechanism is that the chosen adjudicators in the arbitration procedure are not necessarily judicially independent and not accountable to the public. According to opponents, only domestic courts would offer the necessary guarantees, ensure equal access to justice and have to take into account all the interests at stake including, for example, the protection of the environment. Contrary to this, proponents of an investment dispute resolution system state that the above confidentiality of arbitrary outcomes is a standard feature of all arbitration systems and as such the outcome (*and/or public opinion of the foreign investor*) is not influenced by politics and/or public opinion.

In order to address the concerns expressed about ISDS in TTIP the EC launched a public consultation in 2014 and on the basis of the outcome further consulted Member States, the EP and stakeholders. As a result of this process, the EC has developed a new system aiming to strengthen the right to regulate and replacing the existing ISDS mechanism. The new system should resolve disputes between investors and states (Investment Court System) and includes an appeal mechanism and transparent proceedings.

The Investment Court System – changes, pro's and cons

On the 16th of September 2015 the EC proposed the new Investment Court System (ICS)⁴¹⁴ that should replace ISDS in the TTIP discussions (and in future trade agreements, e.g. CETA and the EU-Vietnam trade agreement). Vice-President Frans Timmermans stated the following on the Investment Court System:

"With our proposals for a new Investment Court System, we are breaking new ground. The new Investment Court System will be composed of fully qualified judges, proceedings will be transparent, and cases will be decided on the basis of clear rules. In addition, the Court will be subject to review by a new Appeal Tribunal. With this new system, we protect the governments' right to regulate, and ensure that investment disputes will be adjudicated in full accordance with the rule of law."

It is clear that the new proposed ICS, currently subject to negotiations with the US,⁴¹⁵ has as aim to take away most of the previous concerns. The main change between the ISDS and ICS system relates to article 2 of the proposed section on investment protection. This article is providing additional guidance to judges to ensure that substantive obligations are properly

⁴¹¹ Tienhara, 2010, Regulatory chill and the treat of arbitration: A view from political science.

⁴¹² <http://arstechnica.co.uk/tech-policy/2015/05/ttip-explained-the-secretive-us-eu-treaty-that-undermines-democracy/4/>

⁴¹³ A recent discussed issue is the double hatting syndrome. According to Hortvath and Roberta (2013) double hatting is related to the question of the propriety of lawyers that act both as counsel and arbitrator in cases that are dealing with very similar legal issues.

⁴¹⁴ http://trade.ec.europa.eu/doclib/docs/2015/september/tradoc_153807.pdf (ICS text) and http://europa.eu/rapid/press-release_MEMO-15-5652_en.htm (ICS reading guide).

⁴¹⁵ The ICS proposal is submitted to the US on the 12th of November 2015.

interpreted⁴¹⁶ in a way that is respectful of the right to regulate – namely in a manner respectful of the right of governments to regulate in the public interest.

The following aspects of the ICS (although not novelties, e.g. part of CETA) are also relevant:

- taking of a case by an investor to the Tribunal is more precisely defined and limited to cases relating to discrimination (race/gender/nationality);
- an introduction of a first instance Tribunal and an Appeal Tribunal;
- judges will need to have similar qualifications to those being member of the International Court of Justice; and
- expropriation without compensation (see also the Annex on expropriation), or denial of justice.

The changes should ensure that proceedings are transparent, forum-shopping is not possible, frivolous claims are dismissed quickly (and all legal costs need to be covered by the losing party), a distinction between international and domestic law is maintained and multiple proceedings are avoided.

Despite above efforts, to take away concerns, stakeholders still see a number of risks related to inclusion of ICS in TTIP. For instance the German Magistrates Association (GMA), who do not see the need for the establishment of a special court for investors. They argue that Member States, being constitutional states, already provide and guarantee access to justice in all areas where the state has jurisdiction to all law-seeking parties.⁴¹⁷ Secondly, they are concerned with the selection procedure of the judges. The judges are namely to be selected based on their experience in the field of public international law and investment law with experience in the resolution of international commercial disputes. According to the GMA these selection criteria will lead to a limited pool of judges that, additionally have insufficient experience when it comes to specific social and environmental sectors.⁴¹⁸ Furthermore, consumer organisations find that the new ICS fails to address their concerns related to the governments' right to regulate in areas of public interest. The European consumer organisation (BEUC) criticizes the 'traditional trade terminology' used in the ICS proposal and states that the used wording is not sufficient to protect the public interest. They state that indeed a government has the right to regulate, but they nevertheless might be forced to pay compensation to investors. The possibility of needing to pay compensation might lead to a 'regulatory chill' (see discussion earlier).⁴¹⁹

Assessing whether the EU's reformed approach to investment protection is ensuring e.g. a government's right to regulate is hard to analyse at this moment in time as the ICS is new and exists only as a proposal, i.e. no cases have been brought forward and/or are assessed following the new set of guidelines. Based on a number of opinion papers and very recent articles, of which most are set-out above, we however note that having any dispute settlement mechanism could have an impact through the assumed but empirically unproven 'regulatory chill' effect as discussed by Tienhara (among others).

A possibly effective method that could lead to better understanding and acceptance of ICS would be the provision of a number of 'mock-cases', through which it becomes (even more) apparent in what case/ which circumstances a foreign investor is entitled to issue a claim against (environmental) legislative changes under the TTIP ICS investment protection clause.⁴²⁰ These kind of practical examples would undoubtedly reduce the effectiveness that trade lawyers have in lobbying for a reduction/ lowering of environmental regulations or standards.⁴²¹

⁴¹⁶ Note: the Parties to the Agreement (EU and US) have the possibility to issue interpretations that are binding on the Tribunal.

⁴¹⁷ Note: this does not apply for breaches of international agreements that have no direct effect in the domestic system, such as EU FTAs, Source: DG TRADE

⁴¹⁸ http://ttip2016.eu/files/content/docs/Full%20documents/english_version_deutsche_richterbund_opinion_ics_feb2016.pdf

⁴¹⁹ <http://www.beuc.eu/blog/from-isds-to-ics-still-a-long-way-to-go/>

⁴²⁰ Note: drafting of ICS mock cases can probably not be done in extreme detail, as 'real' cases are often very specific and the objective of these mock cases should be to increase overall understanding – it should not have as aim to provide 1-on-1 legal templates to be adopted by the Tribunal or other parties.

⁴²¹ See the article by The Nation, 2001, on lobbying of trade lawyers under NAFTA.

Note: the cases discussed in above article have been ruled in favour of the state.

Lastly, as the ICS proposal is supposedly a template for future FTAs and the EU and US are focussing on details of the proposal, this would be a good moment to create understanding and support by addressing or further explaining 'difficult' sections of the proposal as reaching an agreement now will lead to efficiency gains in future FTA negotiations.

5.4.3. Case study 4 – Impact of TTIP on illegal trade in natural resources

Natural resources are materials that exist in the natural environment that are scarce and are associated with (negative) externalities during production, trade and/or consumption (WTO, 2010). Trade can indirectly contribute to accelerated resource depletion or negative environmental impacts if production or consumption is not adequately managed, even in cases the resources are renewable. Curbing the illegal trading in natural resources is a critical element in ensuring the sustainable management of natural resources in order to avoid depletion and other negative consequences. Trade agreements are an excellent policy tool (in combination with national regulations and multilateral conventions) to address illegal trade in natural resources and indeed – based on the EU ambitions in the negotiations – TTIP is foreseen to include specific provisions in the Sustainable Development chapter on (illegal) trade in species of wild fauna and flora and derived products (Article 12 of the EU proposal) and on sustainable management of forests and trade in forest products (Article 13 of the EU proposal). Owing to the specific focus of the EU ambitions in the field of wild fauna and flora, forests products (timber) and fisheries, which thus constitute areas with potential TTIP-induced impacts, this case study focuses on these (technically renewable) natural resources and the potential effect that the TTIP might have on addressing the illegal trade in natural resources. Taken together, the illegal trade in these three selected biological natural resources is commonly referred to as trafficking of wildlife and timber products. The case study focusses on the commercial (trade) activity/ aspect rather than the illegal 'production' stages of traded natural resources.⁴²²

Stakeholder input during the identification workshop and throughout the study⁴²³ has drawn the attention to the topic of illegal trade in wildlife and timber and indicated that illegal wildlife trade is a serious threat and the impact of TTIP in the area is potentially significant⁴²⁴, as wildlife trade constitutes an important share of EU overall imports. In 2012, the (legal) trade in timber, fish and fishery products and other wildlife (i.e. CITES listed species, see next) constituted 2 percent of the total value of total extra-EU imports.⁴²⁵ Among the three types of wildlife imports, the value of fish and fishery products imports into the EU were by far the highest in 2012 (where the EU is the world's largest importer with 23 percent of global import market share, excluding intra-EU imports). The value of timber imports (HS44) is also significant (also when excluding intra-EU imports and wood-based products (mostly in HS94⁴²⁶)).

⁴²² For timber this implies that a relevant share of illegal logging is not considered part of total reported illegal logging (Bisschop, 2015).

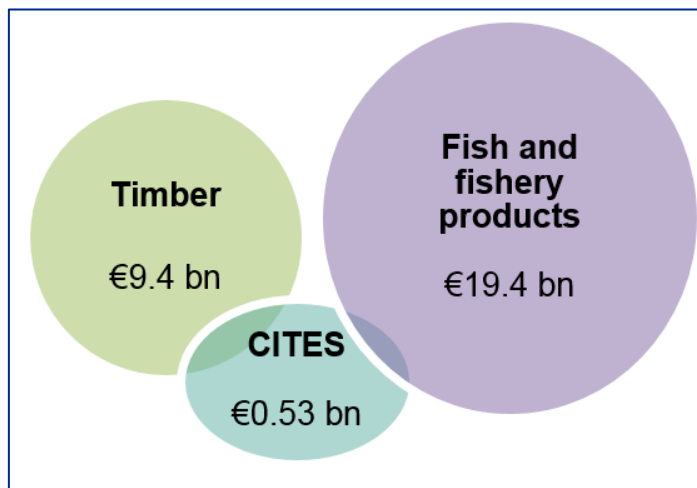
⁴²³ See Chapter 14 for a general overview of the inputs received and in the remainder of the case study for more specific contributions in the field of natural resources.

⁴²⁴ <http://www.trade-sia.com/ttip/wp-content/uploads/sites/6/2014/02/Summary-case-study-workshop.pdf>.

⁴²⁵ Own calculations based on COMTRADE, EU Annual Reports to CITES 2012 and FAO (2014).

⁴²⁶ Wood-based products included in HS94 are: furniture, bedding, lamps, supports, etc.

Figure 5.10 Value of wildlife and timber trade (EU imports from extra-EU partners, 2012)



Source: COMTRADE, EU Annual Reports to CITES 2012, FAO (2014⁴²⁷).

Even though the value of total EU and global imports of wildlife are significant, it does not reflect the share or value of trade in these resources that were obtained in breach of national or international law (*illegal* wildlife trade), since illegal trade in natural resources flows are either not registered or disguised as a legal trade transaction. In order to understand the potential impact of the TTIP on addressing the flow of illegal wildlife trade, we first outline the relevant existing regulatory framework on which TTIP will build and/or might add on and then establish the EU' and US' participation in illegal wildlife trafficking. Secondly, based on a careful review of the proposed provisions in TTIP and their additional commitments to existing policies we then assess the type and magnitude of impacts that TTIP could create in this area, given the influence of the EU and US in this domain. Submissions and interactions with EU and US stakeholders have pointed to illegal trade in animal species (and related products) as the area with the largest scope for impact as well as one of the important areas as regards environmental pressures, which therefore receives particular attention.

Relevant regulatory framework

The relevant regulatory framework in this context is summarised in Table 5.11. Trade in endangered species of flora and fauna in the world is regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The CITES Convention has 182 Parties, including the USA, all EU Member States and the EU. The regulated species (over 35,000) are included in three Annexes and include animals (including certain fish species) and plants (including certain timber species) and their derivatives. The trade in species listed in Annex I (2.5 percent of total of listed species; those that face extinction) is banned, save some exceptions. Trade of species listed in Annex II (97 percent of all CITES listed species, those that *may* face extinction if not closely controlled) and Annex III (0.5 percent, species that are regulated in a particular member country and therefore need assistance from others too) is not strictly banned, but closely monitored and regulated.

The EU is a Party to the Convention, and implementation at Member State level is ensured by means of the EU Wildlife Trade Regulations. The EU Wildlife Regulations (WTR) also contain annexes similar to the CITES annexes, but the EU has four annexes and many CITES-listed species are on 'higher' EU annexes, such that the EU Regulation can be believed to be more strict and ambitious than CITES (EU, 2010). Furthermore, the EU has the Habitats Directive and Birds Directive in place to protect wildlife.

With respect to illegal logging (thus relating to illegal timber trade) the EU launched in 2003 the Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan, which set up a range of demand and supply-side measures to combat illegal logging and associated trade. The establishment of a FLEGT licensing scheme to ensure that only legally harvested timber is imported from countries participating in the scheme is one of the main elements of the FLEGT

⁴²⁷ Note that the €0.53 billion value for CITES refers only to import into the EU of **animal** species listed in CITES (the majority of listed species are however plants).

Action Plan. Regulation (EC) 2173/2005 lays down EU procedures for the implementation of the FLEGT licensing scheme through the conclusion of Voluntary Partnership Agreements (VPAs) with timber producing countries, including a requirement for imports into the Union of timber products originating in FLEGT partner countries to be covered by a FLEGT licence.

Under the VPA, exporting countries develop systems to verify the legality of their timber exports to the EU and a licensing system to ensure that timber imported into the EU has complied with the legal requirements of the partner country. Six VPAs have so far been concluded by the EU (Ghana, Cameroon, Republic of Congo, Central African Republic and Liberia and Indonesia) while 15 additional countries are currently negotiating similar agreements with the EU (Côte d'Ivoire, Democratic Republic of the Congo, Gabon, Guyana, Honduras, Laos, Malaysia, Thailand and Vietnam). Another key measures taken by the EU under the FLEGT Action Plan is the Regulation (EU) No 995/2010 laying down the obligations of operators who place timber and timber products on the market (the EU Timber Regulation or EUTR). The EUTR prohibits the placing on the EU market of illegally harvested timber or timber products derived from such timber and to that end requires operators who place timber products on the EU market for the first time to exercise 'due diligence'.

In the US, the Endangered Species Act (ESA) constitutes the general framework to conserve and protect endangered and threatened species, both by implementing CITES protections and by establishing independent domestic protections for endangered and threatened species. The Lacey Act (relevant for wildlife, fish and – since 2008 – also timber) makes it unlawful to import, export, transport, sell, receive, acquire, or purchase in interstate or foreign commerce any fish, wildlife, or plant specimen taken or traded in violation of foreign law or the laws or regulations of a US State, or to import, export, transport, sell, receive, acquire, or purchase any fish, wildlife, or plant specimen taken or trade in violation of other United States laws or the laws of any federally recognized tribe.⁴²⁸ AS in the EU, both laws in the US focus on the conservation of species in general and sometimes provide additional restrictions beyond those provided by CITES.

Figure 5.11 EU-US regulatory frameworks covering illegal trade in natural resources in selected areas

Regulatory frameworks on illegal trade			
CITES			
	Wildlife	Timber	Fish
EU	EU Wildlife Trade Regulations	EU Timber Regulation	EU IUU Regulation
US	Lacey Act (1900) Endangered Species Act	Lacey Act (2008)	Reauthorization Act (2006) Lacey Act (1900) Magnuson-Stevens

For timber and for fish, additional specific legislation exists that aims to address the trade in illegally logged timber or caught fish beyond those listed in CITES. The EU has strongly developed legislation to address IUU fishing, including for example the need for catch certificates. Additionally, in terms of enforcement, the EU can effectively enact trade restrictions such as import bans in case there is evidence of illegal, unreported and unregulated (IUU) fishing.⁴²⁹ In this field, the US currently has a similar, although less advanced, legislative framework in place. In particular, The Magnuson-Stevens Reauthorization Act allows the National Oceanic and Atmospheric Administration to identify nations whose vessels are engaged in IUU fishing, work collaboratively with those nations on actions to address the activities, and then issue a certification decision; if the nation receives a negative certification, it may result in denial of U.S. port access for fishing vessels of that nation and potential import restrictions on fish or fish products. In addition the White House has recently launched an Action Plan in 2015

⁴²⁸ https://www.aphis.usda.gov/plant_health/lacey_act/downloads/faq.pdf.

⁴²⁹ There have already been cases that prove the functioning of this mechanism, as for example fish imports from Cambodia and Guinea have been blocked in 2014.

combatting Illegal, Unreported and Unregulated Fishing and Seafood Fraud which identifies concrete and specific actions, including establishing regulations creating a risk-based traceability program to provide information regarding legality of fished products entering US commerce. As called for by the Action Plan, NOAA Fisheries issued a Proposed Rule in early February 2016 that represents a first phase of establishing a comprehensive traceability program for all seafood species entering the U.S. commerce. This first phase targets a set of priority seafood species previously identified as being particularly at-risk of IUU fishing and/or seafood fraud. It is anticipated that the proposed rule would become effective in September.⁴³⁰ Further strengthening these good intentions in both the EU and the US is a Memorandum of Understanding that was signed in September 2011 to jointly combat IUU.⁴³¹

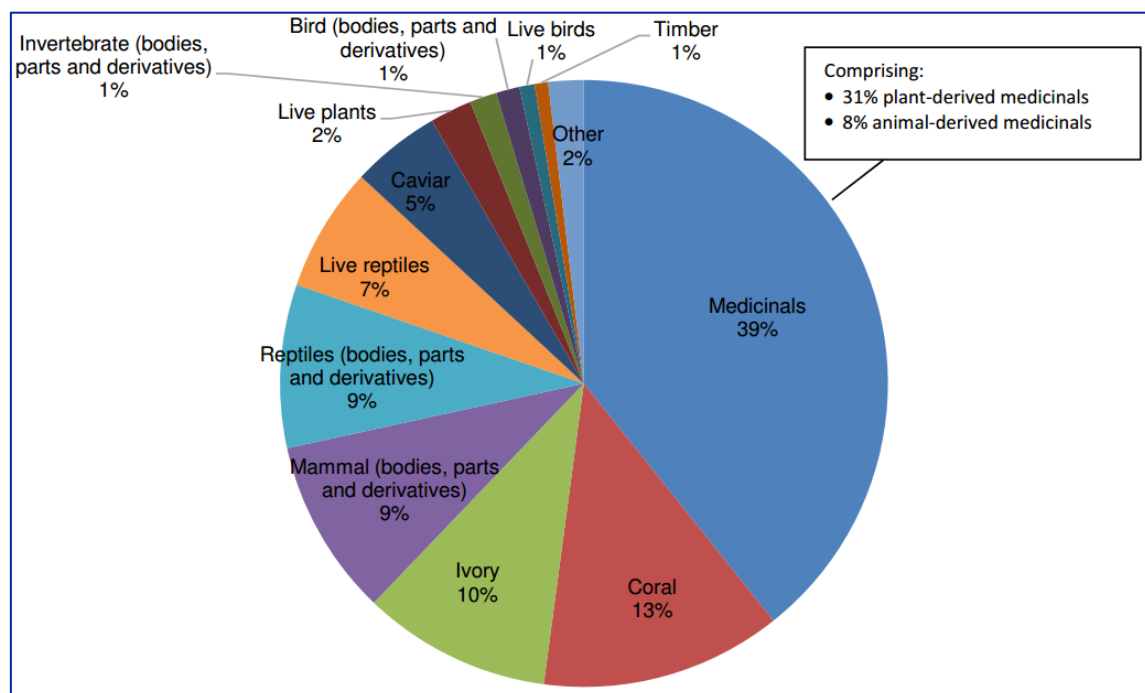
In the field of timber, as described above, the EU (EUTR) and the US (Lacey Act amendment) exert similar checks on the origin of timber in order to ensure legality of harvests.⁴³² Regardless, for all legislation, certain implementation problems remain and both in the EU and the US and certain loopholes in legislation exist. For example, in the case of timber, both in the EU and in the US, addressing the illegal imports of non-CITES listed timber involves checks on whether “due diligence” (EUTR) or ‘due care’ (US Lacey Act) has been exerted by traders, which provides scope for arbitration (Bisschop, 2015).

Scale of illegal trade in natural resources

CITES listed Animal and plant species

The seizure reports drawn up in the context of the EU regulations implementing CITES provide a valuable source of information on the scale and type of *illegal* trade activity in the EU. Figure 5.10 and Figure 5.11 show that the majority of the seizures in 2014⁴³³ reported by EU Member States related to medicinals, of which the majority were plant-derived.

Figure 5.12 Total seizures of CITES-listed species by EU Member States, by species type, 2014 (seizure reports of 18 Member States)



Source: Analysis of ‘Overview of important international seizures in the EU’ (2011-2014) reports compiled by TRAFFIC for the EU and the ‘Analysis of the 2010-2013 EU Annual Reports to CITES by UNEP-WCMC.

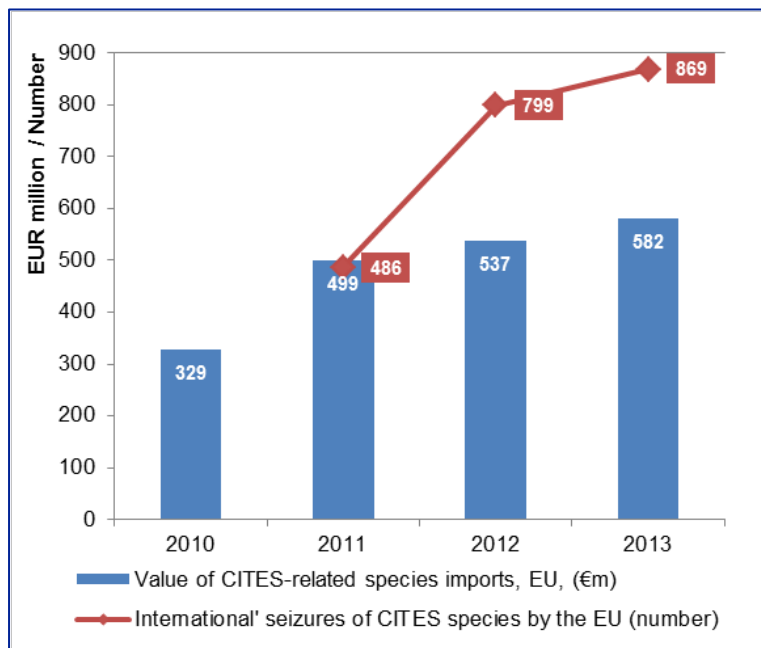
⁴³⁰ <http://www.euractiv.com/sections/sustainable-dev/fight-against-illegal-fishing-eus-role-global-challenge-314123>.

⁴³¹ http://europa.eu/rapid/press-release_IP-11-1007_en.htm?locale=en.

⁴³² Note that both the EU and US only check legality and currently not the sustainability of imported timber.

⁴³³ Only one year (2014) is presented, but the pattern in seized species does not change much in the years 2011-2014.

Figure 5.13 Total value of EU CITES-related imports and seizures (2010-2013)



Source: Analysis of 'Overview of important international seizures in the EU' (2011-2014) reports compiled by TRAFFIC for the EU and the 'Analysis of the 2010-2013 EU Annual Reports to CITES by UNEP-WCMC.

The US constitutes a major counterpart of the EU in both legal *and* illegal wildlife trade, mainly due to its CITES 'mega-diversity' status, implying that it hosts more than 1,000 different CITES-species. The scope of influence of TTIP therefore covers an important share of currently known illegal (and potentially illegal) trade flows. In 2014, 25 percent of all EU's 'international' seizures came from the US which made the US the largest single origin of illegal trade in natural resources.⁴³⁴ The majority of the seizures (80 percent) concerned medicinals, which in turn consisted mostly of seizures related to medicines containing derivatives of Aloe, African Cherry and Hoodia without proper CITES documentation (see Figure 5.10). In three years before, the US has always constituted one of the top-three origin countries of illegal imports of the EU. The EU also functions as transit for re-exports to other countries.

The international seizures of 2014 indicate that most of the illegal transit trade was destined for Asia, particularly China, Vietnam and Hong Kong accounting for the lion's share of total transit seizures. Most of these seizures dealt with elephant ivory (TRAFFIC, 2015). Also the US is a major party in the trade of wildlife. According to Alacron (2001), the US is believed to purchase nearly 20 percent of all legal wildlife (and products) on the global market. In terms of *legal* imports of CITES-related species, the US also constitutes a major EU trading partner. In 2013, the US was the second largest partner (after Switzerland) with imports valued at somewhat more than US\$ 80 million (UNEP-WCMC, 2015). The bulk of the legal imports from the US constituted skin from the *Alligator mississippiensis*, an alligator. In total, leather products and skins constituted the major imported animal products into the EU in 2013, with 50 percent and 34 percent of the total estimated imported CITES-species value (UNEP-WCMC, 2015). Reports from stakeholders draw the attention to concerns about the trade of wildlife (particularly exotic pets) from the US and to the EU that are successfully masked as legal trade, but in reality are in conflict with animal protection and welfare laws (such as wild-caught animals registered as captive-bred and violations of animal welfare rights during transport).⁴³⁵ For example, reptiles are a popular exotic pet and the US is a particularly large exporter of reptiles (>10 million per year until 2009).⁴³⁶ However, the majority (>95 percent) of reptile exports involved turtles, which were in turn destined largely for Asia.

⁴³⁴ TRAFFIC, 2015, *Important international seizures in the EU in 2014*.

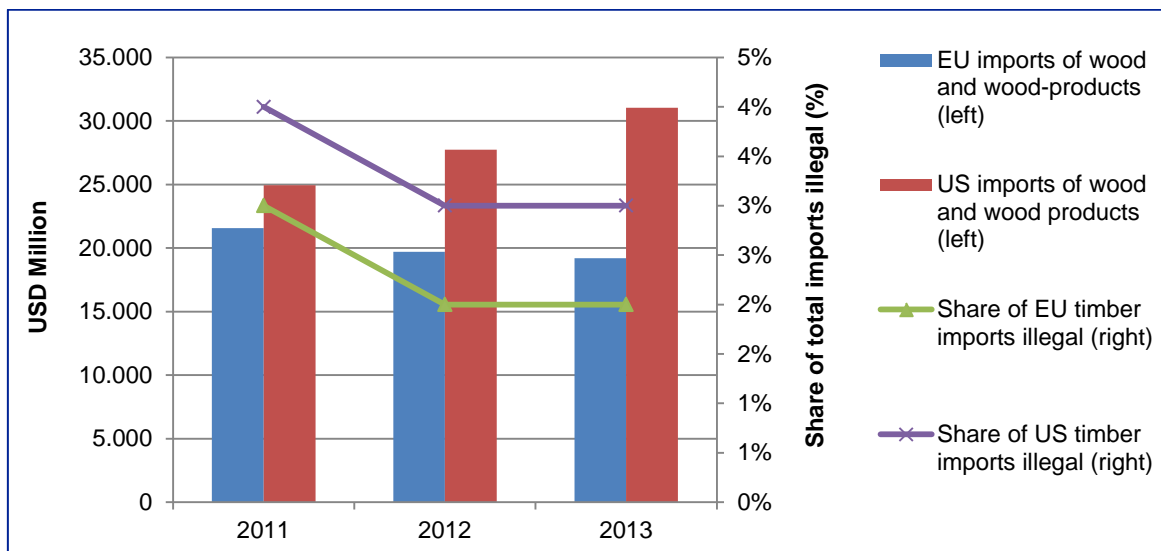
⁴³⁵ Bilateral exchange with M. Kalina (HSI), J. Swabe (HSI) and A. Mayhew (World Animal Protection), 27-07-15.

⁴³⁶ Collis, A., Fenili, R., 2011, *The Modern U.S. Reptile Industry*.

Timber and fish

As shown in Figure 5.12, the *scope for* illegal trade in timber and fish is much larger due to the sheer size of existing (legal) imports into the EU and the US. In the case of timber, despite that the fact that the role of the EU and the US in international trade flows is decreasing since 2000 due to the emergence of China, both regions are still among the top three importers of timber and timber products in the world (Chatham House, 2015). Annex V and Figure 5.12 below show that the value of timber imports for the US has been increasing since 2011, whereas for the EU it has been decreasing. Brazil and China are important trading partners for both the EU and the US. The share of these imports in the EU and the US that are believed to have a high risk of illegality was approximately 2-3 percent in 2013 (Chatham House, 2015), much lower than the global average of approximately 10 percent in 2013, which was equivalent to US\$ 9.5 billion in 2013 (for 10 significant processing and consumer countries). The common major sources of illegal wood imports for both the EU and the US are China (as processing country of illegally imported wood) as well as Brazil, where approximately 50 percent of tropical wood production is believed to be illegal. Indonesia plays another critical role as origin of illegal timber exports, either through China to the EU and the US, or directly to the EU (much less directly to the US). Approximately 60 percent of total timber production in Indonesia is illegal (Chatham House, 2015).

Figure 5.14 Value of wood (-related products) imports by EU & US and share of illegality, 2011-2013



Source: UN COMTRADE, Ecorys calculations, Chatham House (2015).

The influence of the EU and the US on the global fish trade market is also large, if not larger than on the wood and wildlife markets. The United States imports more than 90 percent of its seafood,⁴³⁷ thereby constituting the third-largest global importer of fish, and the EU is the world's largest importer of fish and fish-related products. The EU represented 23 percent (excluding intra-EU trade) and the US 14 percent of total global fish imports in 2012.⁴³⁸ Annex V shows that both the EU and the US increasingly import fish and are also reliant on fish imports as net importers. Illegal trade in fishing is globally pervasive and as the top two seafood importers in the world,⁴³⁹ the EU and the US are potentially subject to a high share of illegal fishing. According to the most recent estimates (from 2000-03), some 13-31 percent of global fish catch (depending on the fishing region) could have been illegally caught in the studied areas. Based on these estimates, global illegal fishing was estimated to represent a value between US\$ 10-23.5 billion in 2003 (Agnew et al, 2009) and represents roughly 15 percent of total catches.⁴⁴⁰ Annex V shows that also fishing regions close to the EU and the US could suffer

⁴³⁷ NOAA, Illegal, Unreported, and Unregulated (IUU) Fishing, http://www.nmfs.noaa.gov/ia/iuu/iuu_overview.html.

⁴³⁸ FAO (2014), pp. 50.

⁴³⁹ The top three consist of the EU, US and Japan.

⁴⁴⁰ <http://www.euractiv.com/sections/sustainable-dev/fight-against-illegal-fishing-eus-role-global-challenge-314123>.

from high shares of illegal fishing, though the most problematic areas in the South Pacific and South Atlantic. More specifically, Pramod et al (2011) show that indeed for the US estimated IUU catches represented some 20-32 percent of total US imports in 2011. To combat trade in illegally caught fish the EU adopted in 2010 its illegal fishing regulation (IUU), which is an innovative tool that places Europe at the forefront of combatting global efforts to address illegal fishing. Since 2010 the EU has blocked entry to the EU to over 100 consignments of fish. In addition, the U.S. has a regulatory framework in place to help curb IUU fishing through the identification and possible limitations on those nations whose vessels are engaged in IUU fishing. The U.S. also established an Action Plan to combat illegal fishing in March 2015. In February 2016, the U.S. published a proposed rule setting forth the first stage of a seafood traceability program. The new regulatory actions in both countries however can be more effective if the EU and US cooperate (perhaps also with Japan and other large importer/consumers) to tackle IUU at international level (currently much of the previous for EU destined illegal fish is moved to more easily accessible markets).⁴⁴¹

Potential impacts of TTIP

Owing to the value of bilateral trade in wildlife between the EU and the US (particularly for wildlife) as well as the sheer size of their consumer markets for fish, timber and wildlife for third countries, any potential trade provision in TTIP could have significant effects on the sustainable management of these natural resources. Both the EU (based on its negotiation positions published in the draft Sustainable Development chapter) and the US have expressed high ambitions to jointly address illegal trade in natural resources and sustainable management of wildlife, timber and fish in TTIP.⁴⁴² Based on the Sustainable Development textual proposal published by the EU, TTIP could potentially include the following provisions in the area of trade in wildlife, timber and fish (selected most relevant):

- Reconfirm the commitment to CITES and to other relevant multilateral agreements concerning trade and environment of which the EU and US are parties and promote them and undertake, where relevant, domestic efforts complementary to CITES (regulating trade in additional endangered species);
- Adopt measures to promote the conservation and sustainable use of biological diversity and co-operate at regional and global levels with the aim of promoting the conservation of biological diversity;
- Affirm importance of combating illegal trade in wild flora and fauna and adopt effective measures to combat illegal trade in wild fauna and flora (monitoring and enforcement measures, awareness raising), as well as co-operate internationally to combat wildlife trafficking in wild fauna and flora;
- Co-operate internationally to combat illegal trade in natural resources in threatened and endangered/other protected species, including through coordinated efforts towards third countries and in support of international initiatives;
- Commit to improving co-operation to address IUU fishing, particularly commit to:
 - Recognising the importance of international instruments, such as the 2009 FAO agreement on Port State Measures (to prevent, deter and eliminate IUU fishing);
 - Implementing catch documentation or Certification Schemes established by RFMOs;
 - Co-operating bilaterally and internationally to support the implementation of measures to combat IUU fishing, including on establishing multilateral catch documentation schemes.

A selection of these commitments have been included directly or indirectly in the MOU in IUU (of September 2011), but we expect that including them specifically in TTIP will further encourage (international) policy action in the area.

The ambitions mentioned in the EU position paper either cover ambitions or measures tackling illegal trade in natural resources between the EU and the US (*bilateral*), or ambitions to

⁴⁴¹ <http://www.euractiv.com/sections/sustainable-dev/fight-against-illegal-fishing-eus-role-global-challenge-314123>.

⁴⁴² USTR, 2015, *IUU Fishing and Seafood Fraud Action Plan: Using Trade to Combat Illegal Fishing*, available at: <https://ustr.gov/about-us/policy-offices/press-office/blog/2015/march/iuu-fishing-and-seafood-fraud-action-plan-using>.

cooperate internationally and towards third countries to address global flows of illegal trade in fish, timber and wildlife (*multilateral*). We thus distinguish between the expected bilateral and multilateral impacts in any of the three areas (fish, timber, wildlife) from TTIP. Since the EU and the US have a mutual interest in strengthening current co-operation, we expect that TTIP will lead to an increase in (mainly international) co-operation to reduce illegal trade in natural resources.

Bilateral impacts

The impacts from the TTIP on either the EU or the US markets from addressing the flow of *bilateral and illegal trade* in wildlife, timber and fish are in general expected to be marginal, largely due to the existence of generally very strong regulatory frameworks addressing the illegal trade in natural resources in combination with the expectation (based on the position papers) that TTIP will likely in most areas ('only') strengthen commitments to enforce existing bilateral efforts or international agreements (e.g. CITES) in the area. In addition, both the EU Wildlife Trade Regulations and the US ESA in combination with the Lacey Act impose more stringent requirements on trade in endangered species. On top of that, specific regulation in the field of fish and timber in both the EU (Timber Regulation, IUU Regulation) and the US (Amended Lacey Act, Magnuson Stevens Reauthorization Act) could be considered to be part of the most far-reaching global regulation to curb illegal flows in wood and fish. Therefore, given the presence of a strong regulatory framework and the fact that TTIP will (and cannot) not 'legislate', it is unlikely that TTIP will trigger significant impacts from introducing new ambitious measures. Amongst the three areas, the most significant impacts from TTIP can be expected in the field of IUU fishing as the EU's IUU ambitions for TTIP are most detailed and the scale of illegal fishing is the largest.

Even though large-scale impacts are unlikely, the previous sections showed that there is evidence that illegal trade in natural resources flows (or certain legal trade flows with certain illegal characteristics) for especially endangered animal and plant species and IUU fishing are likely significant from the US to the EU so that potential TTIP provisions on improving enforcement and implementation of existing regulations can still have important positive impacts on addressing the illegal exports in these products. Based on the information of illegal trade in natural resources known, this could have particular positive impacts for (potentially) endangered plant species (such as aloe, African cherry or big-leaf mahogany, based on seizure reports). Intensifying cooperation between the North American Wildlife Enforcement Group and the EU Wildlife Enforcement Group could be a useful existing platform to make progress in this area. In addition, when "*additional domestic measures complementary to CITES*"⁴⁴³ (as noted in the EU position paper) will be adopted as a result of TTIP and these go beyond existing domestic legislation, this might lead to enhanced cooperation and reduce the amount of illegal natural resources ending up in the EU and US. Secondly, due to scale of global IUU fishing and the EU and US consumer markets, the specific IUU provisions in TTIP proposed could further help to stimulate implementation and follow-up of the US Action Plan, which would help bring US regulation in some final areas similar to EU practise. For example, a wider use of catch documentation and certified product sources similar to that in EU, would further increase effectiveness of US IUU curbing efforts. TTIP's provisions could provide the platform for the EU to press for further US IUU efforts. The other way around, TTIP also provides the platform for the US to hold the EU to the foreseen commitment to enforce IUU fishing and particularly address the alleged IUU practices in Spain, Italy and Portugal.⁴⁴⁴

Multilateral impacts

TTIP is likely to include provisions regarding the cooperation of the EU and the US towards addressing their sources of illegal trade in wildlife, fish and timber in third countries. The *multilateral* impact of TTIP is likely to be larger than the bilateral impacts as the average scale of illegal practices in third countries is often (much) larger, but of course TTIP will not include commitments from third countries to increase their efforts to tackle illegal trade in natural resources. In addition, any measure foreseen under the expressed intention to "*cooperate*

⁴⁴³ European Commission, 2015, *Position Paper on Trade and Sustainable Development in the TTIP negotiations*, January 2015.

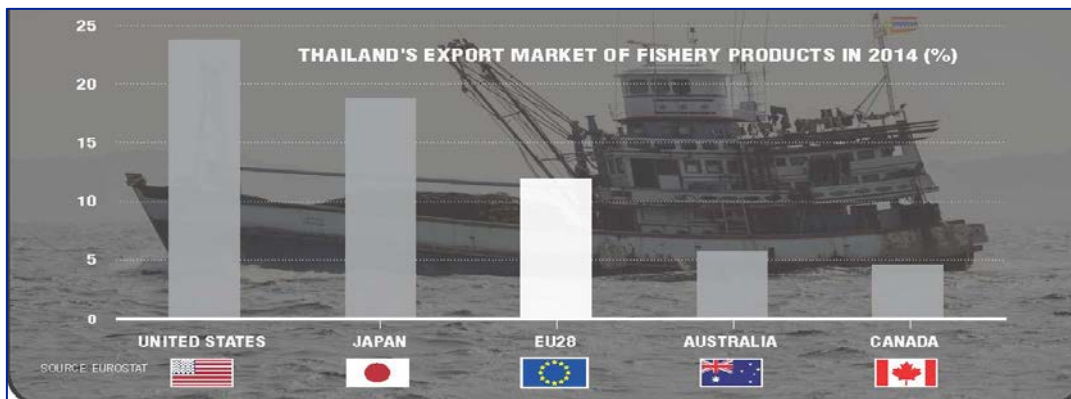
⁴⁴⁴ NOAA, *Improving International Fisheries Management: Summary of 2015 Biennial Report to Congress*, 2015, pg. 2 and NOAA, *United States continues global leadership to address IUU fishing*, <http://www.noaa.gov/stories/2015/20150208-united-states-continues-global-leadership-to-address-illegal-unreported-and-unregulated-fishing.html>.

*internationally to combat wildlife trafficking in wild fauna and flora*⁴⁴⁵ is assumed to positively contribute to ongoing global efforts to tackle illegal wildlife trafficking.

As mentioned above, the most significant impacts from TTIP might be expected in the area of IUU fishing, where the expressed intentions to cooperate internationally in TTIP might for example lead to a speedier adoption of the 2009 FAO Port State Measures Agreement,⁴⁴⁶ which defines minimum standards for checks on incoming foreign vessels and entry restrictions for vessels that are found to engage in IUU activities. The agreement has been signed and approved by the EU and signed and ratified by the U.S. In order for it to come into force, 25 countries or regional economic integration organisations need to have joined the Agreement. An example illustrating the potential effectiveness where joint EU and US action in the field of IUU fishing could lead to benefits is the 'yellow-carding' of Thailand by the EU recently⁴⁴⁷, and the 'yellow-carding' carding by the EU and the U.S. identification under the MSRA of the Republic of Korea, who has since had the yellow card removed, was positively certified by the U.S. for progress on IU fishing and acceded to the Port State Measures Agreement in 2016.

Based on the ambitions and commitments made in its IUU regulation, the EU warned Thailand for not complying with international fisheries laws and for not showing enough progress in addressing IUU fishing. If Thailand does not make sufficient progress in improving IUU regulation and addressing IUU fishing, the EU can ban seafood imports from Thailand based on its IUU regulation (red card). Since the EU and the US share a similar ambition in addressing IUU fishing and TTIP foresees provisions on international co-operation, the US could join the EU in its investigations of non-compliance and jointly warn Thailand. The threat of banning seafood imports from Thailand in the EU and the US can form a strong incentive for Thailand to improve IUU efforts, as both markets together represent 36 percent of all Thai seafood exports (see Figure 5.13). This example illustrates how joint international cooperation towards third countries could effectively address illegal trade in natural resources.

Figure 5.15 Thailand's export partners of fishery products



Source: WWF (2015) – based on Eurostat figures.

Conclusion

Through the significance of bilateral trade flows in wildlife, timber and fish and the sheer size of their consumer markets (both the EU and the US represent significant export destinations), potential trade provisions in TTIP could trigger substantial impacts on the sustainability of these natural resources globally. This case study showed that illegal trade in natural resources between, through and destined for the EU and US markets is significant. For (potentially) endangered species, the illegal trade in natural resources flow from the US to the EU is particularly significant, with the highest number of CITES seizures in the EU originating from the US. Illegal timber represents approximately 2-3 percent of total EU and US timber imports. Illegal, Unreported and Unregulated fishing activities are estimated to be the largest scale of illegal activity for the EU and the US (globally 13-31 percent of fish catch is IUU). In combination with the most concrete and detailed provisions proposed by the EU for TTIP's Sustainable Development chapter, the area of IUU fishing is likely to be most significantly (positively) impacted by TTIP. In general, although both the EU and the US have developed – or

⁴⁴⁵ European Commission, 2015, Position Paper on Trade and Sustainable Development in the TTIP negotiations, January 2015.

⁴⁴⁶ <http://www.fao.org/fishery/topic/166283/en>.

⁴⁴⁷ WWF, NGOs support EU's warning of trade ban against Thailand for illegal fishing.

are planning to develop – a very strong and comprehensive legislation in all three areas to tackle the illegal trade in wildlife, timber and fish. In many areas, the implementing legislation goes beyond international commitments (e.g. CITES). Therefore, TTIP's provisions that relate to binding international agreements are not likely to create significant additional impacts. The most significant impacts in this field are likely to stem from joint co-operation towards third countries. Joint warnings or import bans (such as through 'yellow carding') could potentially be very effective in addressing illegal flows of wildlife, fish and timber based on the combined sizes of their markets.

5.4.4. Case study 5 – Impact of TTIP on trade in unconventional resources

Our standard of living and economies fully depend on and are related to access to energy sources. Though the development of renewable energy resources ('renewables') is a key priority for the EU, coal, oil, gas and uranium are still important sources of energy. However, the sources of energy (i.e. extraction locations) are often not in the same place where the energy is needed and consumed. Hence we see – mainly – global coal, oil and gas trade patterns shifting over time, depending on supply and demand and oil and gas prices – and at the same time technological developments into renewables to decrease our dependence on fossil fuels. The International Energy Agency (IEA) in its latest outlook (IEA, 2015) identifies the following four main pillars that assist political leaders in creating a clear expectation of global and national low-carbon developments to support the set Intended Nationally Determined Contributions (INDCs) of the Paris Agreement:

- Peak in emissions – set out the conditions that will achieve an early peak in global energy-related emissions;
- Five-year revision – review contributions regularly, to test the scope to lift the level of ambition;
- Lock in the vision – translate the established climate goal into a collective long-term emission goal, with shorter-term commitments that are consistent with the long-term vision;
- Track the transition – establish an effective process for tracking achievements in the energy sector (IEA, 2015).

With this global background in mind, this Case study, selected and further detailed during two stakeholder consultation sessions in July and September 2015, aims to shed light on the potential impact of an increase in exports of energy, including unconventional energy, because of TTIP. That means we look at the current (and likely future) situation regarding the EU and US energy markets and the challenges they face, the negotiating positions of the EU and US in TTIP regarding fossil fuels, and how a likely outcome of the TTIP negotiations (i.e. degrees of removal of trade barriers) impact the EU and US economically, socially and environmentally.

The US (unconventional) oil and gas market

Energy sources have very specific locational (geological) characteristics providing comparative advantages to specific countries/ areas, which lead to price differences and trade.⁴⁴⁸ One of the major influencers of global energy trade flows is technical innovation. One of the most recent technical innovations in the field of oil and gas production is the development of high volume hydraulic fracturing⁴⁴⁹, combined with directional drilling,⁴⁵⁰ which resulted in a significant increase in shale oil and gas output in the United States, which led to the so-called "unconventional oil and gas" revolution. This combination of technologies enables the US gas operators to extract two sources of unconventional gas at commercial scale, namely: shale gas, which is recovered from shale rock; and coal-bed methane, which is stored in coal beds and

⁴⁴⁸ Prices are also influenced by transport costs and available infrastructure (for instance a gas liquefaction facility is needed to transport gas overseas).

⁴⁴⁹ Hydraulic fracturing the process by which *fracturing fluids* – a mixture consisting primarily of water, sand and chemical substances are injected under high pressure into a geological formation that contains hydrocarbons so as to break the rock and to connect the pores that trap the hydrocarbons.

⁴⁵⁰ Horizontal drilling, or horizontal well, is depicted by the industry as a much more cost-efficient approach compared to conventional vertical drilling, because for each made well a horizontal well can reach a much larger area compared to a vertical well. However, the productivity of an unconventional well is typically lower than the one for a conventional well, as such it remains to be seen whether is the new approach is "more cost and resource efficient").

plays a significant role in US gas production.⁴⁵¹ Between 2005 and 2013 the production of these types of natural gas rose by 35 percent, to 11.3 TCF (trillion cubic feet) in 2013 (EIA). Recent projections by the US Energy and Information Administration (EIA) indicate that extraction of shale gas will further increase between 2013 and 2040 by another 40 percent (EIA).

In line with the increase in production of natural gas the US also experienced a rapid increase in light tight oil (LTO) extraction. According to EIA's energy outlook, future LTO extraction is somewhat uncertain and ranges from a decrease from 2010 levels in the low oil price scenario to almost a tripling of extraction compared to 2013 levels in the high oil and gas scenario. Growth in LTO extraction is however reaching its limit,⁴⁵² because US crude oil refineries are reaching their maximum utilization rates (currently they operate approximately at 90 percent utilization) and investments in new refineries are very capital intensive (ITRE, 2015, p34/35).⁴⁵³ In addition, current refineries are specialized in cracking long hydrocarbon chains and are not configured to refine very light oil, which requires a different process.⁴⁵⁴

According to US EIA 2016⁴⁵⁵ the changes in domestic energy extraction – and production – have led to a reduction in US imports of both oil and gas and it is forecasted that the US could become a net exporter of natural gas from 2018 onwards if the current increase in production continues (EIA). As a direct result of the changes in US energy extraction and production energy prices in the US have dropped by approximately 50 percent in 2013 compared to 2008.⁴⁵⁶ This drop in US energy prices is also in part mirrored by low prices globally due to the economic crises that has affected the global economy since 2008, but the main factor remains the increase in unconventional shale gas supplied to the market. This fall in energy prices has been to the advantage of the average US consumer due to an overall reduction in energy costs (i.e. less cost for personal heating/transportation in case gas is used as propagation/combustion mechanism).

The drop in gas prices also led to an increase of 10 to 12 percent in power generation based on natural gas at the expense of coal fired plants. The environmental impact assessment carried out by IDDRI (2014) on the change in US GHG emissions due to the price change in natural gas indicated that the coal-to-gas-shift effect led to a local (US) reduction in emissions of 1.4 percent when comparing 2011-12, but this effect may have been cancelled out by 'carbon and/or methane leakage'.^{457,458} According to the IDDRI report this suggests that the shale gas developments in the US will not impact energy prices sufficiently to switch structurally from coal to gas in the short run. However, the IDDRI report findings are based on 2011-12 information and do not reflect/take into account the current 'volatile market' changes in the US energy market or the fact that the oil/gas market operates globally and a local reduction in coal can be offset if this coal is then exported to for example the EU. Furthermore, more recent information (July 2015) from the EIA indicates that natural gas surpassed coal in total power plant energy output. This change was mainly due to the conversion of coal and gas prices (gas prices in July 2015 in New York were below coal prices). As such, the impact of a lower gas price on the energy mix might be larger than previously expected. Furthermore, other external effects (e.g. the Clean Power Plan) are also encouraging this switch.

Europe's energy market

The EU – like the US – is a net energy importer at present. The EU's dependency on energy imports increased from less than 40 percent of gross energy consumption in the 1980's to 53 percent, or 909 million tonnes of oil equivalent (Mtoe) in 2013. In 2013, 66 percent of natural gas gross inland consumption was imported (Eurostat)⁴⁵⁹ and has been supplied mainly by

⁴⁵¹ The remainder of the paragraph will function on shale gas, its development and expected environmental impacts and less on coal-bed methane.

⁴⁵² We are currently not taking the low oil price into account as a barrier to extraction.

⁴⁵³ Equipment/investments needed for US refineries (which are focused on more expensive types of refining to obtain more valuable products) can cost between a hundred million and a few billion dollars.

⁴⁵⁴ For more information on how refiners can possibly overcome this problem we refer to the April 2015 study by the EIA: <https://www.eia.gov/analysis/studies/petroleum/lto/>

⁴⁵⁵ <http://www.eia.gov/todayinenergy/detail.cfm?id=24672>.

⁴⁵⁶ The 2013 prices are likely below long-run marginal costs and are projected to increase.

⁴⁵⁷ During extraction of shale gas methane leakage occurs and depending on the severity (the severity is quite debated in literature) it can have similar negative impacts on our climate as coal.

⁴⁵⁸ Total emission reduction 2011-2012 was 3.8%.

⁴⁵⁹ [http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Energy_dependency_rate,_EU-28,_2003%E2%80%9313_\(%25_of_net_imports_in_gross_inland_consumption_and_bunkers,_based_on_tonnes_of_oil_equivalent\)_YB15.png](http://ec.europa.eu/eurostat/statistics-explained/index.php/File:Energy_dependency_rate,_EU-28,_2003%E2%80%9313_(%25_of_net_imports_in_gross_inland_consumption_and_bunkers,_based_on_tonnes_of_oil_equivalent)_YB15.png)

Russia (25 percent), Norway (23 percent), Algeria (10 percent) and Qatar (9 percent). According to Ernst & Young (2013), the EU dependence on gas imports is expected to increase in the coming years due to a decline in domestic production⁴⁶⁰. This development will increase the amount of gas that needs to be imported.⁴⁶¹ So, whereas both EU and US have been importers of fossil fuels, the EU will remain a net importer in the foreseeable future, while the US (see section above) is expected to turn into a net exporter of natural gas from 2018 onwards. In light of the above, the EU is taking steps to actively improve its energy security and self-sufficiency – an agenda that has become of an even higher priority because of the Russia-Ukraine crisis that clearly showed the EU's energy vulnerability. Together with efforts to enhance energy efficiency, the EU encourages the Member States to diversify their energy mix through a search for increased domestic energy production, in particular renewable energy, and new import markets. These actions should lead to diversification in the external sources of energy supplies and an improved bargaining position in general.

Other energy resources that already are commercialized are the various methods for generating renewable energy, i.e. biomass, wind, solar, geothermic, tidal, etc. and almost all EU Member States are actively investing in or operationalising one or more of these sources (often depending on locational geographic-/but also cultural and/or social (e.g. society leans more towards more sustainable energy options) characteristics). An increase in the share of renewables in the energy mix can lead to a lower dependency on imports of fossil fuels. However, some renewables, in particular bioenergy, can increase the dependency on imported materials. Overall an increased use of renewables will contribute significantly to a reduction in GHG emissions.⁴⁶² In recent years, the US has emerged as the largest supplier of wood pellets for energy imported to the EU. This has raised questions about the impacts of the production of these pellets on the environment (mostly coming from increased forest harvest, often in environmentally sensitive areas) as well as on the US timber markets (competition with the US pulp and paper sector and other wood users). Furthermore, the EU is actively promoting a reduction in energy use with a higher energy efficiency of, for example, houses, products and industrial processes, which in turn is expected to reduce gas import needs. This is in line with the EU's 2030 environmental goals that state: "27 percent increase in energy efficiency compared to the baseline, 40 percent reduction of CO2 emissions (compared to 1990 levels), and 27 percent of renewable energy consumption".⁴⁶³ However, in the short run the shift towards more renewable energy sources will not be sufficient to compensate for current/increasing demand and decreasing domestic gas production.

It is unclear to what extent European shale gas might become available in the EU market, considering the current low level of exploration in the EU and the fact that no commercial gas flows have yet been discovered. Furthermore, concerns regarding shale gas extraction and production have been raised by European citizens. The potential environmental impacts and risks of shale gas extraction in the EU have been studied by the European Commission, resulting in a Commission Recommendation to Member States with general, non-binding guidelines regarding the management of environmental impacts and risks. The European Parliament has urged MS – on the bases of the precautionary principle and the principle that preventive action should be taken – not to authorize any new hydraulic fracturing operations in the EU.⁴⁶⁴ Decisions on the energy mix are the responsibility of the Member States: some Member States have banned the use of hydraulic fracturing and/or shale gas extraction on their territory, while others permit exploration activities. It is also worth noting that availability of shale gas on a larger scale may at best lead to a partial compensation of the decline in conventional gas production and avoid an increase in EU gas dependency on foreign producers in the near/medium future. This is due to the fact that the technical shale gas potential in Europe is estimated to be around 605 TCF (9 percent of the global shale gas potential) in 2011 by the US EIA. This number was revised upwards after a new study, conducted in 2012, towards 885 TCF,

⁴⁶⁰ European gas production is expected to decline by 30% or more until 2035 (*ENVI: Impacts of shale gas and shale oil extraction on the environment and on human health, 2011*). Since 1990 the production of renewables increased by 81%, crude oil decreased by 53%, natural gas by 35%, coal/lignite by 21% and nuclear energy by 11%.

⁴⁶¹ The assumption here is that gas demand stays equal. Gas demand is (based on EU forecasts) going to increase, but actual gas demand is in recent years stagnant or slightly declining (E3G, 2015, Europe's declining gas demand) and forecasts might be overestimating actual increase in demand.

⁴⁶² UNEP, 2016, green energy choices

⁴⁶³ <https://ec.europa.eu/energy/en/topics/energy-efficiency>

⁴⁶⁴ EU Parliament, 2016, mid-term review of the EU's Biodiversity Strategy.

or 12 percent of global shale gas potential.⁴⁶⁵ The revision in estimated in shale gas potential – only one year after the first estimate – shows the degree of uncertainty surrounding reliable numbers of Europe's shale gas reserves.

The above raises the question whether EU shale gas could fulfil the same role for the EU – decreasing energy dependence and lowering energy prices in the EU – as it did in the US. The answer is that this is highly unlikely in the short to medium term for a number of reasons. Firstly, European shale gas reserves are, compared with the US, located much deeper underground. Secondly, they spread beneath the territories of many different EU Member States (see Figure 5.14). Europe is also more densely populated and has different subsoil ownership rights compared to the US. Analysts estimate that production costs might be twice as high as in the US for these geologic and geographic factors.⁴⁶⁶ A shale gas cost comparison between the UK and US by Bloomberg NEF estimates that the costs for shale gas in the UK are even 50 to 100 percent higher.⁴⁶⁷ Therefore the possible amount of European shale gas coming to the market seems, in the short run, limited⁴⁶⁸ and depends on the following five main factors: (1) the geology and resource potential; (2) environmental and social factors; (3) fiscal and regulatory regimes; (4) development of energy prices and gas demand; and (5) the availability of infrastructure and service capability.⁴⁶⁹ Based on this shale gas in Europe is forecasted to increase in importance only slowly (depending on energy prices and regulatory developments) and not cause a swift change of the (global) energy market, as we have seen in the US. In addition, and arguably more important, various EU Member States have currently imposed temporary bans (moratoriums) due to pending studies on environmental impacts and risks or permanent bans on the use of hydraulic fracturing on environmental grounds.

Europe's search for domestic energy sources that will lead to increased energy security, namely renewable energy and shale gas (in those Member States that decide so), as well as improvements in energy efficiency, can probably reduce some of its import demand. It is, however, not expected that shale gas production will make Europe self-sufficient in gas in the long run (JRC, 2012)⁴⁷⁰ and because of this the EU is looking for other import markets. One of these markets could be the US, which is forecasted to become a net (shale) gas exporter from 2018 onwards.

In the next section the current trade in fossil fuels between the EU-US will be explained, followed by an assessment of how TTIP could impact trade volumes through for instance the removal of trade barriers (i.e. via NTM's, national changes in the legal system and/or tariff reductions).

Baseline EU-US energy trade

Eurostat data (2013) shows that the EU imports 18 percent of its coal demand from the US⁴⁷¹, making it the largest energy trade flow between both economies. Other significant energy commodities the EU and US trade are coke and semi coke; petroleum oil and oils obtained from bituminous minerals; waste oils; residual petroleum products; liquefied propane and butane and petroleum gases; and other gaseous hydrocarbons; and biomass (mostly wood pellets) (ITRE). In 2016, the first cargo of US LNG also arrived in the EU.

The two most important imported energy sources into the EU are crude oil and natural gas (respectively 88 percent and 66 percent of European demand). Until 2016, these was limited traded between the EU and US due to heavy US export licensing procedures dating back to the mid 1970's. Note that gas exports from the US are regulated by the 1938 Natural Gas Act⁴⁷².

The **Energy Policy and Conservation Act (1975)** directed that the US President to prohibit the export of crude oil and natural gas produced in the US, unless the President determines that the export is "consistent with the national interest" and other purposes of the act (with some

⁴⁶⁵ Note that this 12 percent is a best (uncertain) estimate as the number of exploration wells drilled is low.

⁴⁶⁶ EU shale gas production costs are estimated to range between US\$6 and US\$15.5 per mln BTU.

⁴⁶⁷ [http://www.europarl.europa.eu/RegData/etudes/BRIE/2014/542167/EPRS_BRI\(2014\)542167_REV1_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2014/542167/EPRS_BRI(2014)542167_REV1_EN.pdf), p. 7.

⁴⁶⁸ For a more thorough overview of current EU shale gas development/legislation look at: http://ec.europa.eu/environment/integration/energy/unconventional_en.htm.

⁴⁶⁹ Ernst & Young, 2013, shale gas in Europe: revolution or evolution?

⁴⁷⁰ http://ec.europa.eu/environment/integration/energy/unconventional_en.htm.

⁴⁷¹ The EU imported in 2013 103 mln tons of US coal. The second largest energy commodity imported from the US are petroleum oils (just under 18 mln tons).

⁴⁷² <http://energy.gov/fe/services/natural-gas-regulation>.

exceptions for exchanges in similar quantity for convenience, temporary exports for convenience and historical trading relations with Canada and Mexico). *De facto*, there was a ban on the exports of crude oil.⁴⁷³ On December 18, 2015, the U.S. ban on exporting of crude oil was lifted, partly due to the recent drop in global oil prices.

The **Natural Gas Act (1938) and Energy Act (1992)** states that for gas to be exported from the US, one needs an exporting license. Such a license will be granted if that is in the “public interest”. The US Dep. of Energy (DoE) determines whether specific export is in the public interest before issuing a license. If one wants to export gas to a third country with which the US has a FTA that confers national treatment, public interest is deemed to be present automatically (since 1992).

The above means, in practice, that a license will be granted by the DoE (semi)automatically if the gas is exported to a country that has an FTA with the US, and that the other licenses will only be granted after a long approval procedure. This procedure can take up to three years. The lengthy, and for investors uncertain procedure, is the main reason why there are currently almost no LNG export facilities (liquefaction terminals) at the US East Coast who have Europe as destination. It is important to note that, as some approvals for LNG export facilities have been granted, the lack of infrastructure is in the near future a smaller obstacle for EU-US gas trade than the export license requirement.⁴⁷⁴

Economic impact of TTIP on trade in unconventional resources

This section looks at potential economic impacts that could be the consequence of a TTIP agreement. We base ourselves on the EU ambitions as set out in the initial EU position paper on raw materials and energy:

“The main goal of the EU negotiators is to create a set of trade and investment rules to facilitate access to energy and raw materials, and to diversify access to raw materials and energy suppliers. They aim to achieve this through: 1) increased transparency regarding the process of licensing and allocation conditions of licenses that could be required for trade and investment activities; 2) the removal of export restrictions and the mutual restriction to impose local content requirements for the operation of an energy or raw material project; 3) mandatory third party access (TPA) for pipelines or electricity grids; 4) ruling out government intervention in price setting of industrial users with export purposes; and 5) liberalisation of trade in green goods and services.”⁴⁷⁵

Based on the EU negotiating position and the clear geo-political implications, we will examine the implications of removing the export licensing procedure of natural gas (this includes both conventional and unconventional (shale) gas) from the US to the EU. TTIP should enable gas to be exported to the EU on the basis of the (semi)automatic approval,⁴⁷⁶ under the provision that the conditions for providing national treatment for natural gas are included in TTIP. An alternative could be that the US may change its domestic legislation.

In the case of the removal of the export licensing requirement, there can be various potential long and short term economic impacts depending on relative prices of the different energy sources and the availability of the necessary infrastructure. In the (very) short term, the export of LNG from the US to the EU is expected to be limited. This is mainly because of the limited export capabilities of the US. Currently there are a few LNG terminals that have signed contracts with EU traders/utilities, but there is only a couple of them that will be operational in the near future (several LNG terminals will be operational by 2018/19). For instance, the Cheniere liquefaction facility at Sabine Pass (operational in 2016),⁴⁷⁷ will ship around 700 Mcf

⁴⁷³ However, the Department of Commerce (DoC), in charge of exports licenses for crude oil, has allegedly also allowed for the exports of so-called condensates. Since condensates have a different ‘chemical’ nature than crude oil, they may not be considered as crude in the context of the EPCA. Recently, the House (and to a certain extent also the Senate) have taken initiatives to lift the ban.

⁴⁷⁴ There are currently 39 licenses for LNG export facilities in the US, of which only 1 is having contracts with European importers. See also: <http://www.reuters.com/article/eu-usa-trade-idUSL6NOMB2MS20140314>.

⁴⁷⁵ Interpretation of: EU’s position paper and factsheet on energy and fossil fuels regarding TTIP.

⁴⁷⁶ The current absence of national treatment and requirement of an export license for natural gas between the EU and US in a FTA will in further sections of this chapter be referred to as: the ‘export restriction’.

⁴⁷⁷ <http://www.cheniere.com/terminals/sabine-pass/>.

per day to Europe according to the EIA. Furthermore, it is expected that there will be considerable extra liquefaction capacity at the East Coast in 2018 and 2019.

The expected economic impact from the removal of the export restriction of LNG to Europe through TTIP is in the short run thus limited and centralized around the Chierchiere liquefaction terminal. As new export facilities become operational (from 2018 onwards), US exporters will choose Europe as an export destination if the price is attractive. In the long term the development of prices of competing sources, such as Russian pipeline gas, will impact the volumes of US gas reaching the EU. Nonetheless, US LNG will have an important impact on energy security by offering a further diversification of suppliers. Thus if the export restriction will be removed through TTIP, this would liberalise trade in LNG between the EU and the US, which could lead to a reduced dependency on current suppliers, something the EU would welcome from an economic and political perspective. Furthermore, TTIP will create legal certainty of the possibility to import US LNG.

Recent events have led to a lift of the US oil export restriction in general. As such, the TTIP will not have an impact on trade in oil between the EU-US (the lifting of the US oil ban may in any case result in EU imports of oil from the US, subject to economic criteria). The economic and environmental impact of TTIP on the EU from imports of crude oil are thus zero. However, TTIP, as a platform for EU-US negotiations, will likely have a positive impact on possible future trade in crude oils as it brings like-minded trading partners closer together. As TTIP does not have a direct impact on trade in crude oil we will not discuss the possible environmental impacts on this trade in the next section.

The EU and US have recently stated that they agreed to remove 97 percent of tariffs, with the ambition to remove more (TTIP negotiation round 11). Based on this understanding, we also look at the potential effect of removing tariff lines on refined petroleum products. Because of the removal of the tariff lines on refined petroleum products⁴⁷⁸, it is likely that TTIP will lead to a small increase in trade in refined petroleum products, such as gasoline and diesel. These types of commodities could thus become more price competitive compared to possible alternatives. The trade in refined fuels is already significant, standing at € 25 billion for the year 2012 (ITRE). The expected economic impact of the removal of these tariffs – based on economic theory – is that prices for these products go down (the larger the tariff liberalisation, the larger the drop in prices), trade increases, and also production of refined petroleum products increases. The degree to which this happens depends on input prices and demand and supply elasticities – i.e. sensitivity to changes in prices on producer and consumer sides and changes related to price changes of other energy commodities (such as LNG) – and are thus difficult to quantify.

TTIP could have also an indirect impact on the fossil fuel market. It could lead to a reduction in the amount of coal imported by the EU from the US (i.e. a substitution away from coal to more gas imports), because of the possibility to diversify between suppliers. A change in the energy mix depends however to a certain extent on Europe's aim to replace coal with LNG in the energy mix.⁴⁷⁹

Expected environmental lifecycle impacts of TTIP on trade in unconventional resources

This section tries to identify the environmental lifecycle impacts of the above-mentioned expected economic effects from TTIP with respect to unconventional resources and place these effects in their appropriate timeframe.

Depending on the cost competitiveness, we would expect that quantities of US LNG will be imported into the EU provided that there is the necessary infrastructure in place in the US. TTIP should underpin this by removing the constraints resulting from the current US requirement to licence LNG terminals wishing to export to the EU. It is unclear whether the import of US LNG will lead to a net increase of total GHG emissions. On the one side there are direct negative effects due to the environmental footprint of this trade flow and liquefaction of shale gas to

⁴⁷⁸ The US tariff is based on a fixed price per barrel and ranges from €0.41 to €0.81 depending on API (source ITRE, 2015, p29). The EU does not charge an import tariff.

⁴⁷⁹ A change from coal to LNG is perhaps an energy mix that is less negative on the environment, it depends however on the US production method of natural gas (e.g. risk of methane leakage, among other environmental impacts and risks), and a local greening of the energy consumption does not imply that globally the impact on environment is positive (e.g. if coal is exported to be consumed elsewhere).

LNG, which stems from local extraction & energy used during production, and shipping of liquefied LNG towards Europe. On the other side the imported LNG could replace coal to a certain degree in the EU's energy mix, reducing the EU's dependency on coal. Whether the newly imported LNG will partly replace coal in the energy mix will mainly depend on relative prices of the energy sources and the EU's and/or EU Member States' efforts towards reaching the 2030 environmental goals. In the medium to long term, new licenses might be granted and new US LNG export facilities might be opened, which will increase the positive and negative environmental impacts related to a further change in the energy mix. An indirect impact of the availability of US LNG in Europe will be increased competition on the EU gas market..

An increase in the trade in natural gas between the US and EU could have a potentially negative impact on the environment, if it replaces less emission intensive energy sources (e.g. wind). Furthermore, it was found for the US that a somewhat lower gas price will probably not lead to strong environmental effects in the short run (IDDRI, 2014).⁴⁸⁰ In the long run and for Europe this could be different, for instance through an ETS reform the price of coal can be increased to reflect better the environmental costs associated with coal. Additionally, a strong reduction in the price charged for gas could have a more significant effect and replace more coal in the energy mix than initially expected.

Conclusions and recommendations

We expect that as part of TTIP the US export restriction on LNG could be lifted. We also note an ambition among EU and US negotiators to address by far most of the remaining tariff lines. Assuming these tariff lines also include – for example – refined petroleum products, TTIP could have significant economic and environmental impacts. The impact analysis therefore has focused on lifting the restrictions on exports of LNG and lowering tariffs for refined petroleum products.

Lifting the US export restriction on gas will mean that US gas could be imported easier into Europe (currently there is a lengthy export licensing procedure required) provided that Asian prices are not more attractive and depending on competition with pipeline supplies. The amount of LNG that can be traded is limited in the short run. This is mainly because of limited export capabilities on the US South-East Coast (this is expected to change from 2016 to 2020 onwards). In the near future the removal of the LNG export restriction could lead to a diversification of Europe's energy mix towards LNG, if LNG is able to compete pricewise with coal, and/ or if EU policies negatively impact the price of perhaps more polluting energy sources changes. Furthermore, the political will to move from cheaper coal towards US LNG matters.⁴⁸¹ An indirect impact of the availability of US LNG in Europe will be increased competition on the EU market. Finally, we expect that trade in refined petroleum products will increase due to the removal of the US trade tariff which will benefit this sector.

For the environment we expect that lifting the US export restriction on gas could lead to a shift away from coal in the EU with locally some environmental gains, depending on the pricing situation of each fuel. However, when placing this in a global environmental perspective we find that coal will still be exported by the US⁴⁸² and environmental benefits from LNG over coal (which are debatable due to methane leakage during extraction and energy needed during production, conversion and transport) are perhaps even negative if a combination of LNG+coal crowded out 'greener' energy sources such as renewables in the global energy mix (i.e. due to price differences, which partly depends on pricing of climate change impacts per type of energy source).

5.5. Environmental impacts through the regulatory channel

In recent years, trade policy increasingly includes provisions affecting **regulatory systems** in the EU or the partner country or includes the adoption of common **(international) standards**. The harmonization of regulation and standards could mean an upgrade of environmental

⁴⁸⁰ <http://www.iddri.org/Publications/Collections/Syntheses/PB0514.pdf>, p.2.

⁴⁸¹ The Commission is issuing a LNG strategy in February 2016 and is looking what role LNG can play.

⁴⁸² Based on latest US EIA projections that predict that the US will keep exporting coal over the next 20 years (EIA, energy outlook 2016 (pre-release)).

protection in the EU and its trade partners: this can affect areas as diverse as biodiversity, soil quality and industry pollution. The areas in which provisions of regulation can play a role could be topics such as climate change policies; biodiversity protection; management of natural resources and ecosystems; management of public utility services; and health and consumer protection. The environmental effects on these areas can often only be analysed qualitatively, because environmental effects triggered through the regulatory changes can also mitigate, increase or decrease environmental effects through the trade and economic channel the analysis of effects through regulations should take a holistic and broad approach, potentially including elements from the economic or trade channel analyses as well.

The approach to the environmental impacts through the regulatory channel is, as set out in the introduction of this chapter, slightly different from the other sections. Where other sections are based completely and/or partially on quantitative results this would not be possible for impacts through the regulatory channel, as explained above. Therefore the environmental impact through the regulatory channel are split out over three case studies to provide in-depth detail and show some local and/or sector impacts. The two previous case studies put, if appropriate, light on expected regulatory impacts (for instance the removal of the oil and/or gas ban), but did not have this as main goal. The case study on regulatory co-operation in the field of energy efficiency labelling, presented below, has as main focus regulatory co-operation and should lead to a good understanding of the environmental impact of TTIP through the regulatory channel.

5.5.1. Case study 6: The impact of regulatory co-operation on energy efficiency of products

Saving energy has been a key overall policy objective in the EU as well as in the US as it constitutes an important tool in combating climate change as well as reducing the dependency on imported energy. Given the recognition by global policymakers of the society-wide (and global) benefits of EE, a myriad of regulation has arisen in order to stimulate overall EE of products. As a result of these legislative efforts, many products that are traded across the Atlantic are subject to various EE requirements or part of (voluntary or mandatory) labelling or incentive programmes to promote energy efficiency. However, despite international collaboration in the field of EE regulation, regulation is in various instances different in the EU and the US, which affects the production processes of many internationally active EU and US companies producing and trading energy-using-products. The TTIP negotiators have recognised that despite similar overall policy ambitions (increasing energy efficiency), diverging regulatory requirements and associated procedures could mean unnecessary costs (barriers) to trade, which ultimately hinder a faster development towards the common overall objective (energy efficiency) by not fully exploiting the opportunities from trade⁴⁸³.

The unique characteristics of TTIP with its high ambitions for reaching more *regulatory coherence* and tackling Technical Barriers to Trade (TBTs) between the EU and the US, the high degree of cross-border trade in energy-using-products that are affected by EE regulation in both the EU and the US and the importance of both markets for EU and US businesses make the potential impact that TTIP can create in this area significant. Also input received from environmental (e.g. Sierra Club⁴⁸⁴) and industry (e.g. TABC⁴⁸⁵ and CECED⁴⁸⁶) stakeholders during this study⁴⁸⁷ as well as in the context of TTIP in general drew attention to both concerns (e.g. lowering environmental standards) as well as opportunities (e.g. cost savings) from increased transatlantic co-operation. In this case study, we review the potential impact of regulatory cooperation in TTIP in the field of energy efficiency by assessing the ways in which regulatory cooperation can be achieved in this field (including EE labelling schemes) and the associated potential economic and environmental impacts. We do so by first reviewing the regulatory regimes in both the EU and the US in order to understand the source of regulatory differences. Secondly, we discuss the ways in which TTIP could achieve more regulatory co-

⁴⁸³ The example of technical requirements on energy efficiency of domestic appliances are mentioned in the EU's fact sheet in reducing Technical Barriers to Trade (TBT) in TTIP – available at: http://trade.ec.europa.eu/doclib/docs/2015/january/tradoc_153003.2%20TBTs.pdf.

⁴⁸⁴ http://action.sierraclub.org/site/DocServer/TTIP_Report.pdf?docID=13541.

⁴⁸⁵ http://www.transatlanticbusiness.org/wp-content/uploads/2014/05/TABC-position-paper_Energy-Efficiency-in-TTIP_July10-2015.pdf.

⁴⁸⁶ <http://www.ceced.eu/dam/site-ceced/PUBLIC-WEBSITE-ASSETS/NEWS-FRONT-PAGE/2014-07/PP-14-09-CECED-TTIP-Position-Paper-on-Regulatory-Issues/PP%2014-09%20CECED%20TTIP%20Position%20Paper%20on%20Regulatory%20Issues.pdf>.

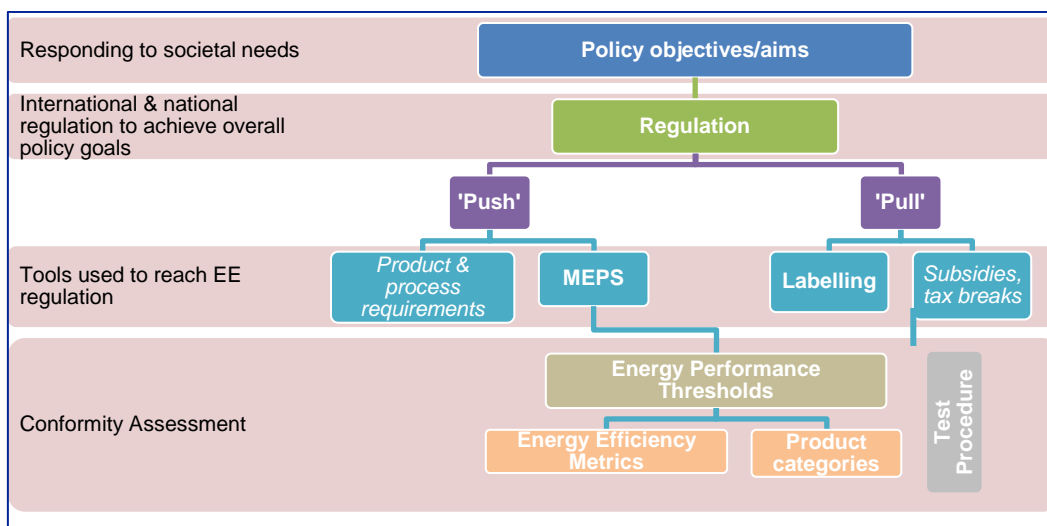
⁴⁸⁷ See Chapter 14 for an overview and summary of stakeholder input received.

operation and what the EU negotiators' ambitions are in this field. Thirdly, we shortly summarize the potential economic and environmental impacts from the proposed cooperation.

EU and US regulatory approaches to energy efficiency

In order to understand the potential impacts of the TTIP of regulatory co-operation, it is imperative to have a better understanding of both the regulations in place in the EU and the US in the field of EE. As shown in Figure 5.14, it is important to distinguish the overall policy aim from regulation put in place. In the case of EE, the EU and the US share a similar aim of increasing energy efficiency in order to address global warming, reduce energy dependency, improve competitiveness and increase sustainable economic growth. Regulation, in turn, is often either of two types: regulation to incentivise and stimulate the placement of more EE efficient products on the market ('pull') and regulation to 'push' the least EE products out of the market. Amongst others, 'push' regulation in the field of EE includes setting **Minimum Energy Efficiency Performance Standards (MEPS)**, by defining the threshold levels of energy use for operation of the product. Relevant 'pull' regulations in this field are the (mandatory or voluntary) EE labelling schemes that require retailers to display the energy performance data on (the packaging of) the product. At a technical level, both energy labelling and MEPS rely on the specification of energy performance thresholds, which are in turn based on energy efficiency metrics, which measure efficiency by the amount of energy used per unit of useful service provided (Ecofys, 2014). These metrics are often defined as energy efficiency indices that result from a series of calculations of energy consumption at various user levels.

Figure 5.16 Policy aims, regulation and related processes



Source: Own illustration.

Defining useful services in turn implies dividing products into product categories. EE regulation often directly cites and specifies the relevant product groups. Lastly, test procedures (sometimes called measurement standards) are the manner in which energy and service levels are measured (Ecofys, 2014). These test procedures are designed and developed by standardization bodies, such as CEN-CENELEC in the EU and the ISO at international level. The threshold *levels* are, in turn, developed by regulators.

In the EU, the **Eco-design Directive** (2009/125/EC) constitutes the most important 'push' regulation and the **Energy Labelling Directive** (2010/30/EU) the most important 'pull' regulation. These Directives provide a general policy framework by outlining the principles for achieving more energy efficiency by banning the worst performing products (Eco-Design) and stimulating the uptake of more energy efficient products by informing consumers (Energy Label). Product specific *delegated acts* and *implementing acts* define the threshold levels for energy labelling and for eco-design respectively (EC, 2015). In relation to the above framework, the Eco-Design Directive defines EU's MEPS and the Energy Labelling Directive presents a *mandatory* labelling scheme.

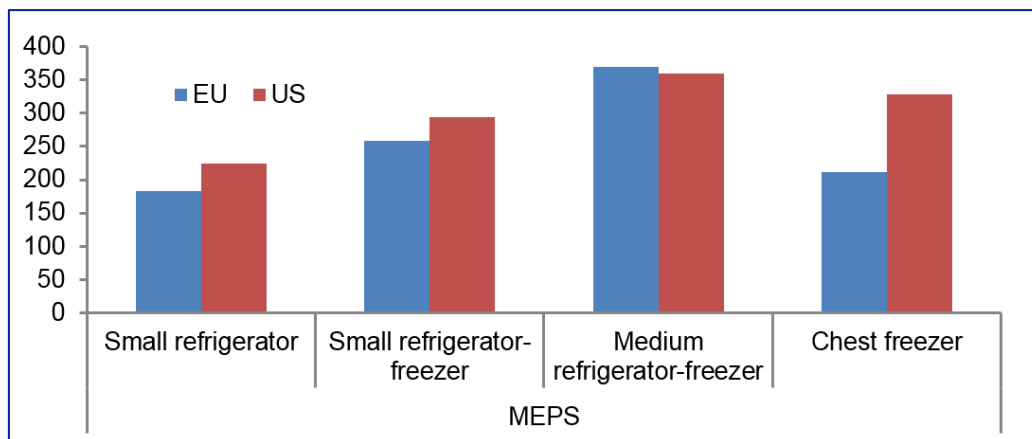
The products covered by these Directives range from domestic appliances to industrial equipment. The Eco-design Directive includes a conformity assessment procedure, whereas the

Labelling Directive does not. At this moment, MEPS for 62 and energy labels for 35 product groups have been defined in the EU, with three self-regulation measures by industry that have received endorsement from the EC (complex set top boxes, game consoles and imaging equipment) (CLASP, 2014). Acts for more product groups will be produced in the future, but at this stage the Directives cover products that jointly are responsible for some 80-90 percent of final energy consumption (VHK, 2011). A recent evaluation of both Directives showed that (in terms of energy saved) they have a positive impact (Ecofys, 2014). The EU's energy test procedures for MEPS and for the energy labels are for the most part (some exceptions) practically equivalent to corresponding (ISO/IEC) test procedures, due to the ambition to follow international standards as closely as possible, unless no suitable international standard exists. The product manufacturers themselves are permitted to check whether products meet the EE thresholds ('self-declaration' of product performance) based on the agreed measurement tests (the conformity assessment process). However, many distributors and retailers demand that the CE mark and energy-efficiency requirements are certified by third-party test agencies (certification bodies).

In the US, EE regulation is based on three pillars. Federal agencies developed **MEPS** for 47 product groups, issue **mandatory labels** (EnergyGuide) for 22 product groups and **voluntary labels** (ENERGY STAR) for 63 products. Jointly they cover some 52 percent of all product electricity use and 95 percent of all residential sector oil and gas use in 2010 (Waide et al, 2011). In addition, some States (e.g. California) set their own MEPS levels. The US started developing MEPS as one of the first in the world and with a large manufacturing base and internal consumer market, traditionally developed most of the MEPS internally. The development of related test procedures in the US has been conducted with strong involvement of domestic manufacturers. As a result, there has been less use of international standards or processes in the US, although recently the US has been actively looking for alignment with international standards. As regards to conformity assessment, a similar situation as in the EU applies in the US, as many retailers also demand third-party certification.

Regulation, related standards and test procedures have thus developed differently in the EU and the US. Despite some good examples of international co-operation on either energy labels (e.g. EU ENERGY STAR label) or certain test procedures, differences between the EU and US implementing regulations remain. Ecofys (2014) compared the degree of alignment of the EU and other countries' MEPS and energy labelling schemes (see Figure 5.15).

Figure 5.17 Selected converted MEP



Source; CLASP (2014), pp. 24/25.

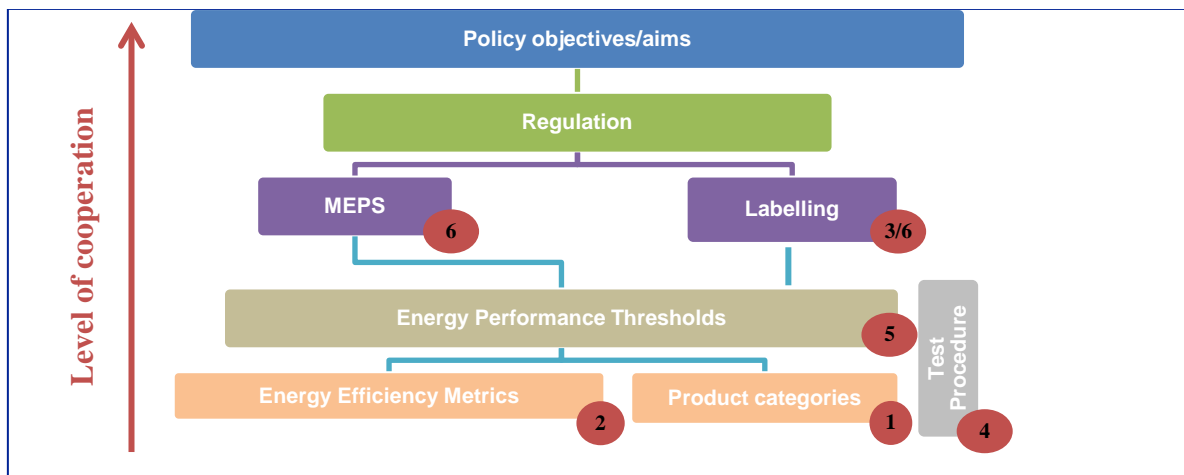
As shown, there is **little to no alignment** between the EU and US MEPS or energy labels. To illustrate, Figure 5.16 shows the comparison for the converted test results of the threshold levels for MEPS based on a large comparability study conducted by CLASP (2014). Conversion factors have been used to make the threshold levels comparable across continents. A lower value means a more efficient operation. As the figure shows, the threshold levels for a selected range of domestic appliances for both labels and MEPS are hardly ever the same, and in most cases the EU threshold values are lower. On test procedures, Ecofys (2014) concludes that **alignment is better** due to collaboration in international standardisation bodies such as ISO and IEC.

Regulatory co-operation on energy efficiency in TTIP

At various levels of the overall regulatory framework (Figure 5.16) – from the level of MEPS to test procedures – differences in approaches between the EU and the US exist. In the TTIP, EU and US negotiators aims to “reduce unnecessarily burdensome, duplicative or divergent regulatory requirements affecting trade or investment [...], without restricting the right of each party to maintain, adopt and apply timely measures to achieve the [overall] legitimate public policy objectives”⁴⁸⁸. Moreover, the EU negotiation position firmly states that regulatory cooperation should support the EU and the US to stimulate growth and jobs, “while pursuing a high level of protection of [...] the environment”⁴⁸⁹. In addition, in the TBT chapter of the agreement, the EU and the US aim to improve the way in which both work together on technical requirements, reduce unnecessary repetition and costs for checking products and facilitate access to information on rules applicable to products⁴⁹⁰. Indeed, diverging MEPS or other product requirements or differences in testing methods for practically similar product requirements cost trading businesses extra money, which when translated in higher foreign retail prices, makes foreign products be able to compete less effectively and reducing the opportunities from trade. However, NGOs and civil society groups⁴⁹¹ have expressed concerns that the potential trade provisions could lower environmental protection levels in the EU as the reasons for regulatory differences could sometimes be stricter energy performance thresholds or more careful and diligent testing procedures.

TTIP negotiators continue to emphasise that existing environmental protection levels on both sides will be ensured. In order to better understand how the regulatory cooperation could work for EE under the TTIP, we shortly review the different types of regulatory cooperation at the varying levels of the regulatory framework (Figure 5.17) next. We distinguish six areas or forms in or through which TTIP could ensure co-operation in the field of energy efficiency, which are explained in detail below (ordered by the level of bilateral cooperation and trust that is needed to achieve the coherence, from low to high). In the Figure below, we also introduce the six areas or forms (red circles) of cooperation at the corresponding ‘levels of regulation’ that have previously been introduced. This illustrates that achieving the highest levels of regulatory cooperation (at MEPS or labelling level) requires the most difficult form of regulatory cooperation (#6 harmonisation of energy efficiency standards).

Figure 5.18 Potential forms/areas of regulatory cooperation in energy efficiency in TTIP



Source: own illustration.

⁴⁸⁸ European Commission, DG TRADE, 2015, *Textual proposal for legal text on Regulatory Cooperation in TTIP*, May 2015.

⁴⁸⁹ European Commission, DG TRADE, 2015, *Textual proposal for legal text on Regulatory Cooperation in TTIP*, May 2015.

⁴⁹⁰ European Commission, DG TRADE, 2015, *Factsheet on Technical Barriers to Trade (TBTs) in TTIP*, Jan 2015, available at: <http://trade.ec.europa.eu/doclib/html/153003.htm>.

⁴⁹¹ Including during this study, see Chapter 14.

1. Exchange of information

The 'easiest' way in which co-operation could facilitate transatlantic business is by creating more clarity and transparency about the MEPS, labelling requirements and required measurement processes. Particularly important in the area of EE, are the *product definitions and classifications*, which are often made using local market considerations and therefore are almost never the same at detailed levels. A continuous dialogue where both parties inform each other about the development of new MEPS or labelling programs could also stimulate the other to learn from or use another's standards as reference. China has in this manner for example partially harmonised some of their EE thresholds to those in the EU. The EU has clearly expressed the ambition to "*ensure easy access to information on regulation and standards in the US and the EU*".⁴⁹² Committing to exchanging information would not directly lead to pressures on the level of environmental protection in the EU through higher MEPS or standards.

2. Use of international standards

By definition, TTIP would be an international agreement, but the typical level of co-operation foreseen here is agreements on more alignment of standard setting and rule making based on the commitment to use international standards (ISO or IEC standards for example) or other international practices and the explicit consideration of the international effects when drafting domestic regulation which might affect trade (Chase, 2015). In TTIP, the EU pushes for the use of international standards as much as possible and improved co-operation as much as possible between EU and US standardisation bodies when they draw up new standards.⁴⁹³ This could potentially imply an important role for IEC standards in the field of EE.

3. Common (voluntary) energy labelling

The next possible regulatory co-operation level would be the joint use or adoption of voluntary energy labelling schemes such as the ENERGY STAR label, which is an *endorsement* label in the US for example for home appliances, lighting and office equipment. Contrary to a *comparative* label (like the EU energy label) that compares EE performance across a range of models within a product group, endorsement labels are awarded to the products that have a significantly higher EE performance than the domestic MEPS stipulates (for example in the case of ENERGY STAR, 25 percent more energy-efficient than the domestic MEPS levels).

Given that the domestic MEPS could be the reference point for the 'endorsement', co-operation on this voluntary label is not complicated by having to align EU and US EE thresholds or MEPS, which would be required in case a comparative label across the EU and US would be the ambition. In that case, also the entire procedure of conformity assessments to verify the award of a certain label to a product would have to be made coherent, which requires more international co-operation (equal to a level 6 type of co-operation at MEPS level). In the same manner, mandatory labelling requirements also require coherence or mutual recognition of measurement test procedures as well as coherence or mutual recognition of the EE metrics underlying the labels. Regulatory co-operation in the field of labelling therefore depends on the type of labelling cooperation foreseen, but for most forms of co-operation, mutual recognition of labels or joint adoption of labels would require equal far-reaching levels of co-operation as the mutual recognition of (functionally equivalent) technical standards (see next). A potential expansion of the co-operation regarding voluntary labelling in TTIP that would be based on existing co-operation, could be the expansion of the scope of co-operation in the ENERGY STAR to a larger range of products. In that case, we need to consider that many specific MEPS's or labelling requirements already exist for other products, which would make extension of the EU ENERGY STAR less effective.

4. Mutual recognition of conformity assessments procedures or measurement test results;

5. Mutual recognition equivalent technical requirements; and 6. Harmonisation of MEPS

The last three forms of regulatory co-operation require mutual recognition or acceptance of each other's processes and standards. These levels of cooperation would yield the highest efficiency gains, but are also the most difficult to achieve as the burden of proof for establishing

⁴⁹² European Commission, DG TRADE, 2015, *Factsheet on Technical Barriers to Trade (TBTs) in TTIP*, Jan 2015.

⁴⁹³ European Commission, DG TRADE, 2015, *Factsheet on Technical Barriers to Trade (TBTs) in TTIP*, Jan 2015.

equal levels of environmental protection could be high. The EU position paper on TBT states the ambitions of EU and US negotiators, namely: to work together to reduce burdensome procedures for testing products and use of international standards in conformity assessment procedures (4). However, as product assessment procedures and/or measurement of test results requirements stem from a market demand, TTIP can only deal with this through mutual recognition of limits and test methods by the other party's regulator, or by harmonizing them. TTIP does not aim to do this.

At the highest levels of regulatory co-operation are mutual recognition of each other's equivalent (but not strictly the same) technical requirements (5) or a full harmonisation of the MEPS levels (6), i.e. setting the MEPS or labelling specifications at exactly the same height. In fact, the EU has stated the ambition to work as far as possible towards a convergence of domestic EU and US standards (MEPS in this case), while guaranteeing the right for domestic legislators to maintain or establish standards and regulation independently. Industry stakeholders have also stressed the benefits of aligning EE limits and tolerances.⁴⁹⁴

Despite the high ambitions in the negotiations and by the industry it will be (very) difficult to establish whether MEPS or labelling requirements are functionally equivalent, without compromising the level of environmental protection, so that mutual recognition can be achieved. In order to achieve mutual recognition of MEPS's or labelling requirements, aligning the underlying energy efficiency metrics is crucial. This, in turn, cannot be done without aligning underlying test procedures (in order to make reaching the threshold levels defined in the metrics equally 'hard'), but also local usage characteristics need to be comparable enough for an aligned metric for energy performance of a product. This is especially difficult for heating and cooling systems, for example, as climatic conditions can differ strongly.

Largely based on the historic, independent and domestic development of the MEPS and labelling levels, at the level of existing MEPS or labelling requirements in place in the EU and US there was little to no alignment (Ecofys, 2014). Moreover, in the field of labelling, the mandatory EnergyGuide label in the US focuses strongly on energy and cost savings, whereas in the EU also other criteria and impacts are included, which makes the energy efficiency labels in the EU and the US functionally different. The development of a common energy efficiency label would require substantial changes to both labels. For MEPS, adoption of either EU or US EE threshold levels is technically an option in order to reach full harmonisation, but given the lengthy and careful preparatory phases leading up to the formulation of the EE threshold levels on both sides, it is unlikely that these will be easily mutually harmonised. CLASP (2014) finds that the EU has by far the most unique ambitious (where the EU solely has set EE requirements the highest) and also many (joint) most ambitious MEPS and energy-labelling requirements. That means that without jeopardizing environmental protection levels in TTIP, the US would have to lower the EE threshold levels for these products or prove that they are functionally the same. Conversely, the EU would have to do the same for the five most ambitious unique MEPS levels in the US.

While difficult, it is not impossible. There have been already been cases where – even without the presence of a formalised regulatory cooperation dialogue – the EU and the US have converged towards the highest EE requirements. For example, in the case of laundry dryers, the development of efficient heat pump dryers in Switzerland, Germany and Austria, had led to the concomitant lowering of EE threshold levels in Europe. Startled by the achievements, the US launched the Super-Efficient Dryer Initiative drawing technical research from the EU market and developing EU inspired new US MEPS. The other way around, the US ENERGY STAR programme started work on External Power Supply (EPS) efficiency, which was joined later by the EU that introduced the US EPS test method in 2004.

⁴⁹⁴ For example TABC (http://www.transatlanticbusiness.org/wp-content/uploads/2014/05/TABC-position-paper_Energy-Efficiency-in-TTIP_July10-2015.pdf) and CECED (<http://www.cecled.eu/dam/site-cecled/PUBLIC-WEBSITE-ASSETS/NEWS-FRONT-PAGE/2014-07/PP-14-09-CECED-TTIP-Position-Paper-on-Regulatory-Issues/PP%2014-09%20CECED%20TTIP%20Position%20Paper%20on%20Regulatory%20Issues.pdf>).

Table 5.11 Comparison of number of most ambitious MEPS and High Labels set by countries

Country	Most ambitious		Unique most ambitious	
	MEPS	High Label	MEPS	High Label
European Union	9	9	8	8
United States of America	5	1	5	-
Others (6 major economies)	7	11	4	4

Source: CLASP (2014), pp.56.

Note on creating regulatory coherence in a trade policy context

Several stakeholders (such as the Sierra Club) and previous reports in the field (e.g. Triple E, 2014) have noted the potential threat of the WTO TBT provisions that will undoubtedly form part of the TTIP agreement, to developing environmental regulation and maintaining environmental protection levels in the EU. Based on WTO principles that (i) discrimination between domestic and foreign productions is not allowed and (ii) members are not allowed to adopt rules (or standards) that are more trade-restrictive than necessary for achieving the objective of environmental protection, the TBT chapter imposes an obligation not to enact measures that are more trade restrictive than necessary. In its reports to the WTO, the US has expressed its concerns that voluntary standards could in certain conditions become *de facto* mandatory requirements for competitive market access and thus questionable under the WTO. However, neither environmental labelling schemes, nor EU-specific concerns in the field of energy efficiency have been raised as specific concerns in its latest two reports (2013, 2014). Moreover, according to Janssen (2010), the WTO obligations are likely not violated in the case of EE policy as the Eco-Design Directive or US MEPS levels do not discriminate against foreign producers and the EE regulations are primarily designed to meet energy and climate change objectives, clearly meeting the necessity (non-trade-restrictive) requirement.

Possible economic and environmental impacts from regulatory co-operation on energy efficiency in TTIP

Based on the requirements for cooperation and the nature of regulatory differences at the various regulatory levels presented above, what could be the potential impacts expected from regulatory cooperation in TTIP in the field of energy efficiency?

The answer to that question can only be given when negotiations have been concluded and it is clear at which level and in which way the EU and the US will cooperate. Based on the findings of Ecofys (2014), which conclude that there is **little to no alignment** in levels of MEPS and Energy Efficiency label standards, and **some alignment** between underlying EU and US EE test procedures, in combination with the concretely phrased negotiation ambitions in the TTIP's TBT chapter, we expect that impacts of TTIP to largely accrue from cooperation at the level of exchange of information (cooperation mode **1** in Table 5.12), more consistent use of international standards (**2**) and potential mutual recognition of conformity assessment procedures (**4**). The fact that there is little alignment between EU and US MEPS and Labelling standards could make the potential impacts of TTIP in aligning these rather significant, but given the ambitions and focus of the TTIP negotiations it is unlikely that these highest levels of cooperation will be reached in the early phases of TTIP adoption. Since TTIP will uphold environmental protection levels, cooperation at the level of MEPS and Label levels (mode **5** and **6**) will only be possible when the lower EE threshold levels are chosen, which in turn requires legislative adaptations at the level of metrics and test procedures. These underlying EE metrics and thresholds again often differ strongly due to local usage differences and historic divergence in the approach to defining threshold levels. If (potentially) successful cooperation at the level of conformity assessments (**4**) would be reached, this could pave the way for successful cooperation at the level of technically equivalent technical requirements (EE thresholds) through mutual recognition (**5**) and harmonisation of MEPS levels (**6**) in the long term.

Both the increased use of international standards and cooperation at the level of aligning energy efficiency metrics and test procedures will largely contribute to a potential lowering of total costs for conformity assessments for the producers of the products that are regulated by the Ecodesign and Energy Labelling Directive. Particularly multinationals and firms doing business (trading) on both sides of the Atlantic could benefit from lowered total conformity assessment costs. In case these gains are passed on into lower retail prices, the economic benefits will also accrue to consumers that will pay less for energy efficient products that could in addition save on energy costs. This depends on consumers' degrees of price sensitivity for the specific

products in question. In case TTIP would achieve mutual recognition of technical requirements (EE thresholds) or harmonisation of standards, the economic impacts would accrue from optimized production processes for producers that would currently manufacture slightly adapted models for the EU and US markets based on the different EE threshold levels. The extent of the potential efficiencies in production processes would depend on the degree to which manufacturers currently adjust their product designs and related production processes for both markets, based on the differing EE requirements. The precise savings or economic efficiency gains are thus hard to predict as it is unknown what level of cooperation TTIP might ultimately achieve and an average figure of conformity assessment costs for the industry is hard to obtain. Potentially, however, there are potential gains that can be reaped.

The environmental impacts from regulatory cooperation in the field of energy efficiency could however be estimated somewhat more accurately on the basis of a large-scale study into the potential effects of *global* harmonisation of MEPS levels to the globally highest MEPS standards for all product categories (Waide, 2011). Conducted for the reference year 2010, the study calculated that adoption of the most ambitious MEPS levels could yield a 3 percent reduction in EU total energy use by 2030 (see Table 5.13).

Table 5.12 Predicted energy savings by 2030 from adoption of globally most ambitious MEPS

Country	Total energy use	Domestic electricity consumption	Commercial electricity consumption	Industrial electricity consumption	Domestic oil & gas consumption	Commercial oil & gas consumption
European Union	3%	5%	6%	3%	0.4%	6%

Source: (Waide, 2011) - Report Part II and ACEEE (2012).

The environmental effect of TTIP can at most only be a fraction of this percentage for various reasons. First, TTIP focuses on harmonising MEPS levels with the US and not with other nations (though there may be significant spill-over effects). However, since the US represented a large share of non-EU unique most ambitious MEPS in 2014 (see Table 5.12, 5/9), about a half of energy savings could be assumed. It also needs to be considered that harmonisation of MEPS levels (as explained above) is an unlikely outcome of TTIP. Lastly, the EU has progressed with the adoption of additional MEPS's since 2010 and therefore the incremental impact of TTIP is likely to be lower. Therefore, TTIP will likely only deliver a fraction (max ~30%) of the gains of full harmonisation stated above (3% reduction in energy use by 2030). The potential environmental impacts from cooperation at MEPS level in the US are likely to be higher, due to the high MEPS standards that the EU maintains. The *global* effects of adoption of best practices in MEPS across the world could lead to a 12 percent reduction of electricity demand and an 11 percent reduction in CO₂ emissions by 2030. These are significant environmental effects to consider in relation to the very long term TTIP ambitions and impacts from defining 'global standards' in TTIP.

Conclusions

Achieving ever-ambitious levels of energy savings for energy-use and through energy-related products has been a key objective for both EU and US governments. Through the expressed ambitions in the TBT (reducing unnecessary and duplicative test procedures and use of international standards) and Regulatory Co-operation (reduce divergent regulatory requirements, without jeopardizing environmental protection levels) chapters, the TTIP could contribute to additional energy savings through potentially lower retail prices for energy-efficient products (because of reduced conformity-assessment costs for producers) and yield economic efficiency gains for energy-using equipment manufacturers on both sides of the Atlantic. At various levels in the energy-efficiency regulatory framework – ranging from the height of energy-efficiency threshold levels to usage specifications during test procedures, the different requirements and associated processes and procedures – differences exist between the EU and US approaches. Ecofys (2014) found that there is **little to no alignment** in EU and US levels of MEPS and Energy Efficiency Label standards and **some alignment** between underlying EU and US energy-efficiency test procedures. As a result, and due to the complexity involved in

determining whether energy efficiency MEPS are technically equivalent or adjusting domestic regulation to adopt the bilaterally most ambitious MEPS or labelling standards, the TTIP is most likely to result in impacts from exchange of information, the use of international standards in test procedures and potentially mutual recognition of conformity assessment procedures. Based on the findings in a study by Waide (2014), a rough estimate of the total energy savings that could be achieved under TTIP in the EU is 0.3 percent of total energy use by 2030.

As it is unlikely that TTIP will trigger direct domestic policy changes to adopt the highest MEPS or labelling requirements, EU and US negotiators should look for the product categories where MEPS and energy-labelling levels are jointly the most ambitious. A concrete approach to achieve higher levels of regulatory co-operation could be the establishment of a product registration database (as suggested by Ecofys, 2014 and Hartikainen *et al*, 2015), where the information on the performance of products and technical requirements would be made available by policy-makers and manufacturers, so that the first (and easiest) step in the regulatory co-operation process (exchange of information (1)) would greatly be facilitated. Based on the aggregate collection of applicable standards, EE metrics, thresholds and performance requirements, it would make identifying the differences and communalities easier. With respect to mutual recognition of measurement of test results (4) EU stakeholders⁴⁹⁵ mentioned the cost benefits of aligning tests procedures to receive labels or proofs of compliance with MEPS. At the level of conformity assessment of test results, stakeholders have suggested that joint accreditation of laboratories in the EU and the US (familiar with both regulatory processes) and the mutual recognition of their test results could also be a realistic and beneficial form of collaboration.⁴⁹⁶ Uniform accreditation of laboratories is currently being promoted by initiatives such as ILAC and IAF. TTIP could further stimulate these efforts by advancing more bilateral accreditation, so that third countries that are also members may follow suit.

⁴⁹⁵ Such as TABC and CECED.

⁴⁹⁶ TABC position paper on energy efficiency.

6. Introduction to the sectoral impacts

In this Chapter we present the outline to the in-depth analyses of the potential impacts of an EU-US TTIP on the 8 pre-selected sectors (grouped into seven chapters, because in consultation with the Steering Committee, it was decided to merge the financial and insurance sectors into one sector). The selection of the 8 sectors has been done during the inception phase of the study. The criteria used as well as the screening and scoping exercise done in order to select the sectors can be found in the Inception Report (available on our project website www.trade-sia.com/ttip/). The in depth sector analyses consist of four steps:

- Step 1: Baseline description of the sector;
- Step 2: Market access issues;
- Step 3: Sustainability impact assessment;
- Step 4: Synthesis and policy recommendations.

The Interim Technical Report will present and discuss the baseline description of the sector (section 6.1) and the market access issues in the sector between the EU and the US (section 6.2). Whereas the expected impacts of TTIP and the policy recommendations (steps 3 and 4) will be presented and discussed in the Final Report.

6.1. Step 1: Baseline description of the sector in the EU

This section provides a comprehensive baseline description of the sector in the EU. It reflects the situation in the sector before TTIP is introduced and presents the current situation in the sector from an economic, social and environmental point of view.

6.1.1. Overview of the sector

In this first section we will provide the sector definition and a short overview of what the sector encompasses. It should be noted that the sectors selected for in-depth analyses were based on the sector definition of GTAP8. The GTAP database has been used for the impact modelling and consequently their sector definition has been used as starting point. Those sector definitions have been linked to the relevant NACE and HS sector definitions for the first two steps of the sector analysis. Important to mention is that the baseline data used for modelling is the data stemming from the GTAP database, whereas the data used for presenting the baseline of the sector in this report stems from EUROSTAT. In the table below we present the sectors based on the GTAP definition and the correspondent NACE and HS codes used in the different sector studies.

Table 6.1 Sector definition and product classification

Sector study	GTAP nr.	GTAP name	NACE code	NACE name	HS 2 digit
Agri-food ⁴⁹⁷	1-14	Agriculture, forestry and fishing (including cereals and other grains, vegetables and fruits, other primary agriculture)	A1	Crop and animal production, hunting and related service activities	1-15
			A2	Forestry and logging	
	19-26	Processed foods, beverages and tobacco (including ruminant meats, other meats, vegetable oils, dairy	C10	Manufacture of food products	16-21
			C11	Manufacture of beverages	22
			C12	Manufacture of	24

⁴⁹⁷ Due to the large size of the sector, it has been decided (in consultation with the EC) that for certain parts of the agri-food sector study we will only look at a selected few subsectors. These subsectors are indicated at the beginning the agri-food sector study.

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Sector study	GTAP nr.	GTAP name	NACE code	NACE name	HS 2 digit
		products, rice, sugar, other processed foods, and beverages and tobacco)		tobacco products	
Chemicals and pharmaceuticals	33	Chemical Products (including basic chemicals, other chemical products, rubber and plastics products, pharmaceuticals)	C20	Manufacture of chemical and chemical products	28, 29, 31-38
			C21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	30
			C22	Manufacture of rubber and plastic products	39-40
Mechanical engineering	41	Other machinery (including electrical machinery and apparatus n.e.c., medical, precision and optical instruments, watches and clocks)	C28	Manufacture of machinery and equipment n.e.c.	84
Electrical and electronic goods	40	Electronic Equipment, (including: office, accounting and computing machinery, radio, television and communication equipment and apparatus)	C26	Manufacture of computer, electronic and optical products	85
			C27	Manufacture of electrical equipment	
Motor vehicles	38	Motor vehicles and parts (including cars, lorries, trailers and semi-trailers)	C29	Manufacture of motor vehicles, trailer and semi-trailers	87
Maritime and air transport	49	Maritime transport	H50	Maritime transport	n.a.
	50	Air transport	H51	Air transport	n.a.
Finance and insurance	52	Finance (including auxiliary activities but not insurance and pension funding)	J65	Financial intermediation, except insurance and pension funding	n.a.
	53	Insurance (including pension funding, except compulsory social security)	K65	Insurance, reinsurance and pension funding, except compulsory social security	n.a.

6.1.2. Economic structure of the sector

This section gives an overview of several different aspects of the sector, starting with some figures indicating the size of the sector, like turnover and number of employees. Not only will these figures be provided for the sector as a whole but also per size class. Secondly we will look at the international dimension of the market by portraying the flow of investments abroad and the importance of imports and exports, followed by a more detailed description of trade patterns in the sector. Next to the overall descriptive indicators, we also discuss the economic environment for SMEs in the sector. Here we will look at some descriptive indicators like size distribution and turnover, as well as at the share of exports, and the importance of the US. The data is sourced from the SME survey that was held together with the European Commission.

6.1.3. Global value chain analysis

For each sector analysis, we provide a global value chain (GVC) analysis for an important product or product range in the sector. The data is retrieved from the WIOD and enables us to establish the relative importance of different intermediate goods and services in the production of the final good as well as the intermediate global linkages. Figure 6.1 indicates the different kinds of intermediate goods and services needed in order to produce this final product in the EU and in the US, as well as their cost shares of production as a percentage of total output in the sector. In addition, for each intermediate product used, its country of sourcing is shown. The blue and red rectangles indicate the share of US and EU sourcing, the purple boxes indicate the share of domestic sourcing and the yellow/brown boxes indicated the share for sourcing from the Rest of the World. This provides us with a clearer picture of which products are traded more intensively between the EU and US and which products see no trade across the Atlantic, potentially due to the existence of trade barriers.

Next to the way the product is compiled, Figure 6.1 also shows total output that is generated and the amount of value that is added during the production process. The compensation for labour and capital services together make up value added, which indicates thus the value added from domestic labour and capital services to the value of the intermediate inputs (Timmer et al. 2012). A share of this total output is used again as an intermediate product in other sectors and the remainder of total output is sold as a final product to e.g. consumers. Just like the intermediate goods used as an input, the sales of final goods are not limited to the home country. Here we also indicate which share of the final goods production is sold in the EU, the US and in the Rest of the World.

6.1.4. Social perspective

In addition to economic overview of the EU sector we will also give a description of the social baseline situation. This analysis is mainly qualitative⁴⁹⁸ and deals with issues like youth employment, minimum wages, human health and safety at work, based on literature and expert interviews.

6.1.5. Environmental perspective

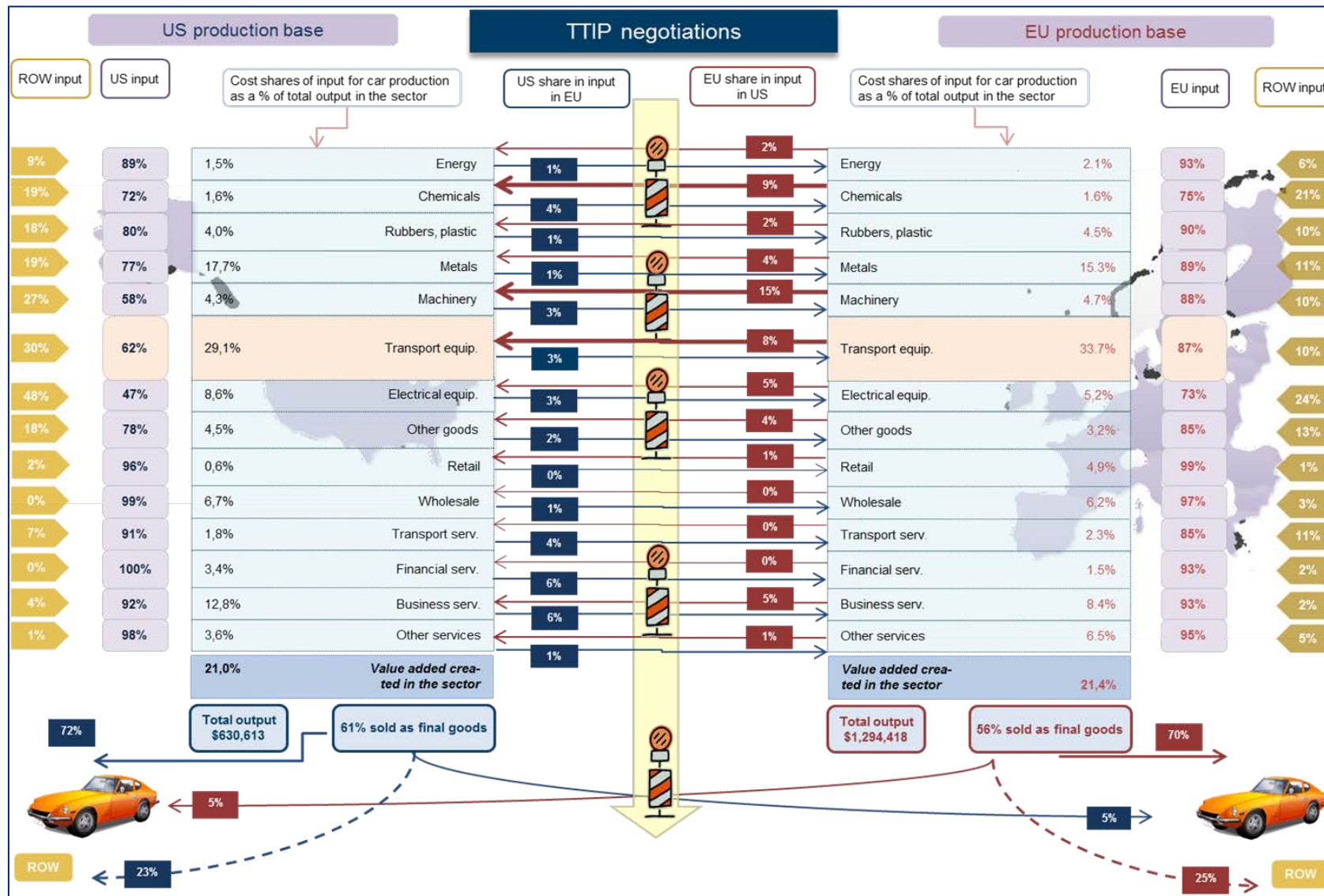
The environmental baseline description of the sector will also have a greater focus on qualitative issues like e.g. water (pollution), waste, soil pollution and biodiversity, which will be based on literature and expert interviews.

6.1.6. Competitiveness of the EU sector

In the final part of the baseline description, we will discuss the competitiveness of the EU sector by means of both a quantitative and qualitative analysis.

⁴⁹⁸ This is mainly a description of the current situation in the sector, the quantitative impact results of the sector will be discussed in the impact analysis in step 4. This is also the case for the environmental analysis.

Figure 6.1 Global Value Chain (example)



6.2. Step 2: Market access issues in the sector between the EU and the US

The second step of the in depth sector analysis discusses the trade barriers per sector. This section provides an overview of both the tariffs that are currently still in place between the EU and the US as well as the Non-Tariff Measures that one faces when exporting to the partner country.

6.2.1. Tariffs

As already mentioned in Chapter 2, the average tariff rate between the EU and the US is relatively low in many sectors (2.2 percent for the US and 3.3 percent for the EU on average), however given the substantial amount of goods and services traded, these small tariff rates might still have a significant impact. These tariffs seem to vary heavily per sector, according to the CEPR (2013) the average EU tariff rate in the machinery sector and chemicals sector is 1.3 percent and 2.3 percent respectively, compared to a tariff rate of 8.0 percent and 14.6 percent in the motor vehicles industry and processed food industry respectively. Whereas these figures are only averages, a broad range of products faces extremely high tariffs. Given the vast amount of products that still have tariffs, each sector analysis will highlight the most significant tariffs.

6.2.2. Non Tariff Measures

In addition to an overview of the existing tariff rates, we will also provide an overview of the most relevant Non Tariff Measures in the sector. Once more, there are numerous measures in place that hinder or might even prevent enterprises from trading their products with the partner country. Based on literature, interviews, the SME survey and relevance in the negotiations we will discuss the most significant measures in detail.

6.3. Steps 3 and 4: Sustainability Impact Assessment and Policy Recommendations

In step 3 of the sector studies, the expected economic, social and environmental impacts will be discussed. When relevant the expected impacts with regards to SMEs, third countries and competitiveness will be discussed as well. The basis for the impact assessment will be the impact results that stem from the CGE modelling. These results are complemented with literature review and interviews. The two different scenarios that have been modelled and will be discussed are presented below. For a more detailed explanation about the modelling and the assumptions made we refer to Chapter 1.

Box 6.1 TTIP scenarios

Less ambitious scenario:

- 98 percent of tariffs eliminated;
- 10 percent of NTBs eliminated on both goods and services (20 percent of actionable), except for processed foods, here a reduction of NTBs has not been modelled;
- 25 percent of procurement NTBs eliminated.

Ambitious scenario:

- 100 percent of tariffs eliminated;
- 25 percent of NTBs eliminated on both goods and services (50 percent of actionable), except for processed foods, here a reduction of NTBs has not been modelled;
- 50 percent of procurement NTBs eliminated.

The subsectors that are included in the processed food sector are:

- Ruminant meats;
- Other meats;
- Vegetable oils;
- Dairy products;
- Rice;
- Sugar;
- Processed foods; and
- Beverages and tobacco.

Additional to the modelling results, the impact analyses will also be based on literature review, causal chain analysis and stakeholder interviews. These interviews will not only be conducted with business organisations but also with e.g. consumer organisations, social organisations or environmental organisations.

As a final part of the sector analyses the study team will provide conclusions and recommendations for each sector separately.

7. Potential TTIP impact on the agri-food sector

7.1. Introduction

This sector analysis presents the potential impacts of TTIP on all sustainability dimensions on the agri-food sector, following the main steps of the ESSA (the methodology described in the inception report). Establishing the baseline of the sector on economic, social and environmental grounds and creating an inventory of market access issues, allows us to subsequently assess the potential impact of removing certain trade barriers in the TTIP. In the last step of the analysis, all results (economic, social, environmental) from the updated CEPR (2013) impact results at sector level will be thoroughly analysed and evaluated against the baseline in order to assess the potential impact of TTIP on the EU agri-food sector.

Box 7.1 Take away from this chapter

- In 2013 the EU food and beverages industry had a turnover of just over 1 trillion euro, which is about 15 percent of the EU's total manufacturing turnover;
- Within the food industry, the largest turnover were found for meat products, other food products and dairy products;
- The main EU export products to the US are beverages (spirits, wine and beer). They make up 45 percent of all food and beverages products exports to the US. The products that are imported most from the US are oilseed & soybeans, nuts, and spirits. They make up 37 percent of all food and beverages products imported from the US;
- The EU contains a relatively large share of the international food and beverages market, 12.4 percent when it comes to exports and 11.1 percent of imports. The corresponding shares for the US are 8.5 and 10.2 percent;
- The average ad-valorem plus specific tariffs levied by the EU in the food and beverages industry are significant, especially for beef dairy and beverages. The average tariffs levied by the US are much smaller;
- Trade in the sector is hindered by many non tariffs measures on both sides.
- Quantitative scenario results indicate relative small effects on output and trade for most agri-food products. Exceptions on the EU side are the output of other meats (pork and poultry). For these meats a relatively strong decline is estimated, whereas for Beverages and tobacco the model results indicate a relatively strong production increase. In trade, percentage changes are highest for Dairy, and for Beverages and tobacco in both exports and imports, while the effects on imports of 'Other meats' (pork and poultry) are also significant;
- Impacts on employment correspond generally with the effects on output and hence are modest as well in general terms. Environmental impacts are relatively high compared to other sectors, especially where it concerns the CO2 emissions results;
- NTM trade costs are not modelled for foods. Hence, model outcomes are a conservative (lower limit) estimation. This holds especially for animal products (meat and dairy) and for beverages, product categories for which a number of SPS and TBT related measures on both sides of the Atlantic hinder current bilateral trade flows.
-

7.2. The agri-food sector in the EU

7.2.1. Overview of the sector

The agri-food sector comprises the primary agricultural sector and the processed food sector. Primary agriculture relates to the production of (and trade in) unprocessed agricultural and fishery commodities (raw materials, NACE A1 and A3).⁴⁹⁹ The manufacture of food products (NACE C10) includes the processing of the products of agriculture, forestry and fishing into food for humans or animals, and includes the production of various intermediate products that are not directly food or feed products (e.g. hides). Manufacture of beverages (C11) includes the

⁴⁹⁹ NACE (Nomenclature statistique des activités économiques dans la Communauté européenne) is the "statistical classification of economic activities in the European Community". The NACE Rev. 2, 2007 is the most recent version.

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manufacture of beverages, such as non-alcoholic beverages and mineral water, and manufacture of alcoholic and distilled alcoholic beverages, but excludes manufacture of fruit and vegetable juices, of milk-based beverages and of coffee, tea and mate products. This sector analysis largely focuses on the food processing part, but also includes primary sector activities where relevant. Table 7.1 below indicates how industrial classifications are linked to the sector detail used in the CEPR-study (based on the GTAP-model) and the GTAP split of sectors.

Table 7.1 Sector selection and GTAP-ISIC-NACE concordance

Sector selection (CEPR, 2013)	GTAP-57	ISIC (UN)	NACE (EU)	Remarks
Agri-forestry-fishery Processed foods	1-14 19-26	1, 2, 5, 15, 16	A1 and A3 C10	Because of the broad scope of the agri-food sector, the main focus of the sector study will be on the following subsectors: Cereals; Fruit and vegetables; Beef, Pork and poultry; Dairy; Processed food (incl. sugar); and Beverages and tobacco. The corresponding GTAP codes for the selected subsectors are: 1-4, 6, 9, 11, 19, 20, 22, 23, 25, 26.

The food supply chain accounts for 5% of EU value added and 7 percent of employment, bringing together the agricultural sector, the food processing industry and the distribution sector. It is therefore a very important sector for the European economy, creating many jobs (also for low-skilled workers) (OECD, 2014: 109).

7.2.2. Key economic features of the sector

Size of the sector

Table 7.2 presents the breakdown of the turnover of the EU and the US food industry in order to show the importance of its sub-sectors in terms of turn-over. The General Industrial Classification of Economic Activities (abbreviation NACE) within the European Community defines the industries. The NACE code C10 and 11 and sub-classifications are used. For the US (and other countries) comparable classifications have been used such as the North American Industry Classification System (NAICS).

Table 7.2 Turnover of food industry groups according to the NACE classification (average 2011-2013, in billion €)

NACE	Description	EU27		USA	
		Turnover	% of total	Turnover	% of total
C101	Meat products	211.7	20.3	163.4	24.0
C102	Fish	24.0	2.3	8.8	1.3
C103	Fruit and vegetables	63.8	6.1	55.6	8.1
C104	Oils and fats	51.8	5.0	13.0	1.9
C105	Dairy products	139.5	13.4	88.7	13.0
C106	Grain mill and starches	45.5	4.4	80.6	11.8
C107	Bakery/ cereal products	113.4	10.9	51.8	7.6
C108	Other food products	167.5	16.1	103.4	15.2
C109	Prepared animal feeds	77.0	7.4	46.9	6.8
C110	Beverages	138.8	13.3	83.6	12.2
C101 - C110	Total Food & Beverages	1041.3	100.0	682.8	100.0

Sources: Eurostat, Structural Business Statistics (SBS), and US Census Bureau, Annual Survey of manufactures. Note: Tobacco is included in C12, hence not under the heading 'manufacture of food products & beverages'.

The breakdown of industries as presented in Table 7.2 shows that in terms of turnover, Meat products, Dairy products, Bakery products, other food products and Beverages are the most important food industries in the EU. In the US the Meat products, Dairy products, Grain mill and starches, other food products and Beverages each contribute more than 10 percent to the overall industry's turnover. Thus, we can conclude that the food industry is of similar importance at both sides of the Atlantic.

Table 7.3 presents the structure of EU's food and beverage (F&B) industry in terms of key indicators.⁵⁰⁰ This industry had a turnover of just over 1 trillion (1000 billion) euro in 2013, which is about 15 percent of the EU's total manufacturing turnover. With an average annual growth rate of 2.9 percent over the period 2003-2013, the F&B industry performed better than total manufacturing (1.9 percent growth p.a. over that period). Just over 3.8 million people are employed in 223,000 F&B companies, on average 17 persons per firm. One third of employment can be found in the bakery/cereal processing sector, where firms are relatively small in terms of people employed and turnover per employee. Overall employment in the F&B industry has shown a rather significant decline of 2.0 percent annually over the period 2003-2013. Given that turnover has increased and employment has decreased, labour productivity has increased.

Table 7.3 Structure of the food and beverage processing industry in EU27 (NACE C10 and C11) in 2013

	Turnover 2013 (Billion Euro)	Growth turnover 2003-2013 (%)	Number of enterprises 2013 (x1,000)	Turnover per enterprise 2013 (Million Euro)	Number of persons employed 2013 (x1,000)	Growth number employees 2003-2013 (%)
Meat products	218	3.1	33.4	6.5	787	-2.8
Fish	25	4.2	3.0	8.2	97	-2.2
Fruit and vegetables	65	2.8	8.8	7.3	226	-2.1
Oils and fats	56	6.9	4.6	12.1	56	-2.1
Dairy products	144	2.0	8.6	16.7	291	-3.3
Grain mill and starches	45	3.8	4.8	9.5	89	-3.4
Bakery/ cereal products	115	2.4	115.4	1.0	1,267	-1.7
Other food products	169	5.0	19.6	8.7	513	0.6
Prepared animal feeds	80	4.8	4.4	18.0	105	-2.2
Beverages	125	-0.1	20.5	6.1	363	-2.9
Total Food & Beverages	1051	2.9	223.2	4.7	3,809	-2.0

Source: Eurostat, Structural Business Statistics (SBS).

Performance of the EU industry compared to benchmark countries

Benchmarking the competitive position of the European food and drink industry against four important trading partners - US, Australia, Brazil and Canada - shows that the EU food and drink industry is the largest in turnover, enterprises and employment: (ECSIP, 2015). However, the average turnover per enterprise is the lowest in the EU: only 10 percent of the Brazilian enterprises and around 15 percent of the average enterprise turnover in the USA. This is closely related to the difference in average size of enterprises, which is a lot smaller in the EU compared to the USA and Brazil. In addition, the growth of turnover per enterprise has been lowest in the EU, measured over the period 2008-2012 (ECSIP, 2015:56-57).

Looking at the turnover figures of the primary agricultural sector, Table 7.4 shows that small scale farming dominates in the EU. In 2010, the EU-28 (including Croatia that joined in 2013) counted 12.2 million farm holdings, of which 45 percent had an output value of less than € 2,000 per year. Three quarter of all farms in the EU produces less than € 8,000 annually, indicating that a significant number of farms is producing for subsistence and/or are part-time activities, with off-farm earnings from non-agricultural employment as an additional source of income. These figures are affected by the situation in several countries in East-Europe that joined in 2004; in particular in Poland and Romania the number of very small farms is huge. However, also in Southern Europe (Italy, Spain, Greece) one finds significant numbers of small scale holdings contributing to the very skewed and fragmented structure of the primary agricultural sector in the EU.

⁵⁰⁰ See for more details on Member State level ECSIP (2015).

Table 7.4 Turnover of EU's primary agricultural sector (2010)

	Total	Less than €2,000	€2,000 - €7,999	€8000- €24,999	€25,000- €49,999	€50,000- €99,999	€100,000- €499,999	€500,000 or over
Number of farm holdings (x1,000)	12,248	5,461	3,468	1,584	627	467	560	81
Share of total	100	45	28	13	5	4	5	1

Source: Eurostat, Farm structure survey (FSS).

For comparison similar statistics for the size and income of farms of the US are presented in Table 7.5 below. Although the classes do not fully match, the comparison indicates that the US farm structure is of a larger scale than in the EU (note that in the US table values are in US dollars).

Table 7.5 Turnover of US' primary agricultural sector (2012)

	Total	Less than \$2,999	\$2500- \$9,999	\$10,000- \$24,999	\$25,000- \$49,999	\$50,000- \$99,999	\$100,000- \$499,999	\$500,000 or more
Number of farm holdings (x1000)	2,109	666	480	271	162	134	238	158
Share in total	100	32	23	13	8	6	11	7

Source: <http://www.agcensus.usda.gov/Publications/2012>. Based on Table 3.

EU position on the world market of agri-food products

Table 7.6 below shows EU's international position on the market for processed foods, benchmarked against the US and some other important traders in agri-food products. The overview shows that EU28 exports (to third countries, hence excluding intra-EU trade) grew at a faster rate than the export growth in all benchmark countries except the US. The EU's market share on the world market was, nevertheless, only a fraction above the level in 2007 (ECSIP, 2015). A different development can be observed for growth in EU 28 imports, with EU28 imports growing at a slower pace than imports in the benchmark countries. Overall, these two developments resulted in a more positive trade balance for Europe over time, with the trade balance improving from just under € 3 billion negative in 2003 to over € 15 billion positive in 2014. The overview indicates that the EU food industry remains the world's major exporter of processed foods, and a significant net exporter (Brazil is the number one net agri-food exporter). The US, though, is a net importer of processed food and beverages products.

Table 7.6 Trade in food and beverages (C10-C11) in 2014 and growth rate over period 2008-2014

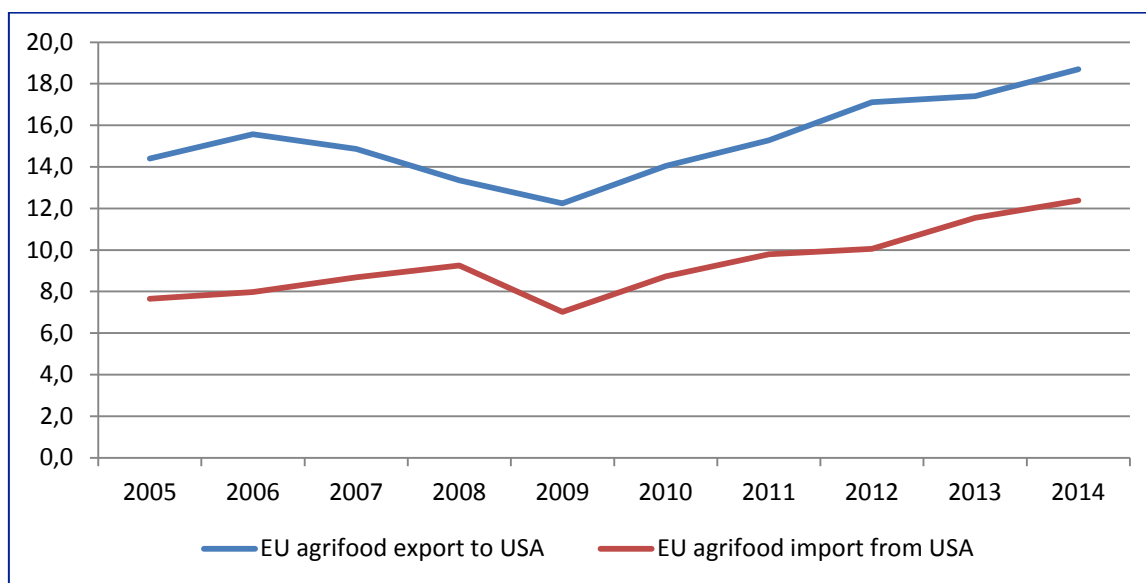
	Export			Import			Trade balance (€ billion)
	Value (€ billion)	Growth (%)	Market share (%)	Value (€ billion)	Growth (%)	Market share (%)	
EU-28	92.9	5.9	12.4	77.8	1.2	11.1	15.1
USA	63.6	7.2	8.5	71.0	4.6	10.2	-7.5
Australia	15.6	5.2	2.1	9.2	7.1	1.3	6.4
Brazil	31.7	2.8	4.2	5.7	8.6	0.8	26.1
Canada	22.0	4.9	2.9	20.5	5.7	2.9	1.5

Source: calculations by LEI Wageningen UR based on UNCOMTRADE.

Bilateral trade patterns

Figure 7.1 shows EU agri-food⁵⁰¹ export to and import from the US since 2005. Trends in these overall trade totals show that the EU had a trade surplus in agri-food products with the US over the whole period presented. EU's trade surplus declined in the years 2006-2008 but since 2009 both exports and imports show upward trends again with positive effects on EU's net trade balance of agri-food products. These observations indicate that EU's agri-food export performance in the US market was rather positive over the last decade.

Figure 7.1 EU agri-food trade with the USA, in billion euro

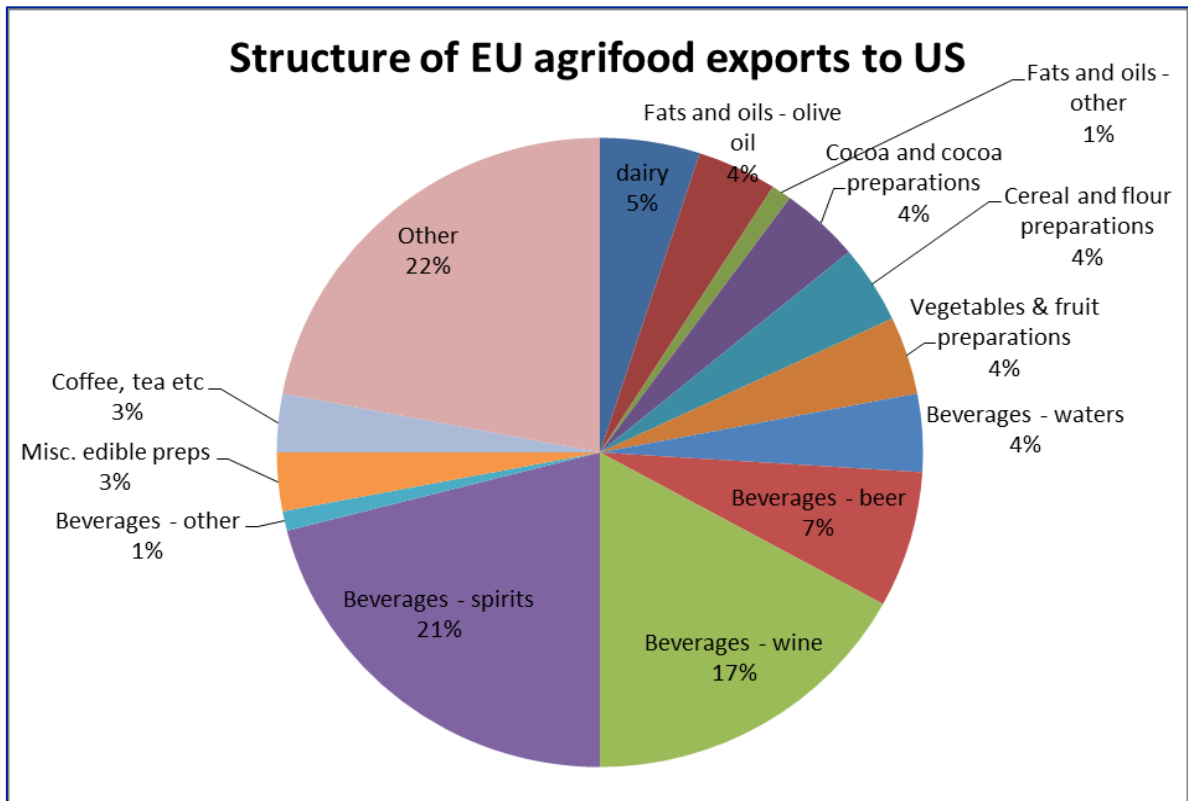


Source: Eurostat.

The structure of the EU-US bilateral trade in agri-food products is presented in the two figures below. EU exports are dominated by beverages, which accounts for almost 50 percent of total exports. In Figure 7.2 the Beverages category is further specified showing that it is mainly strong spirits used for the manufacture of beverages (un-denatured ethyl alcohol of an alcoholic strength by volume of <80 percent) (3.3 billion euro in 2014), wine (2.7 billion euro) and beer (1.2 billion euro). Dairy exports include mainly cheese and some butter, while chocolate (cocoa), bakery products (preparations of cereals) and olives (preparations of vegetables and fruits) are other major export products of the EU to the US market.

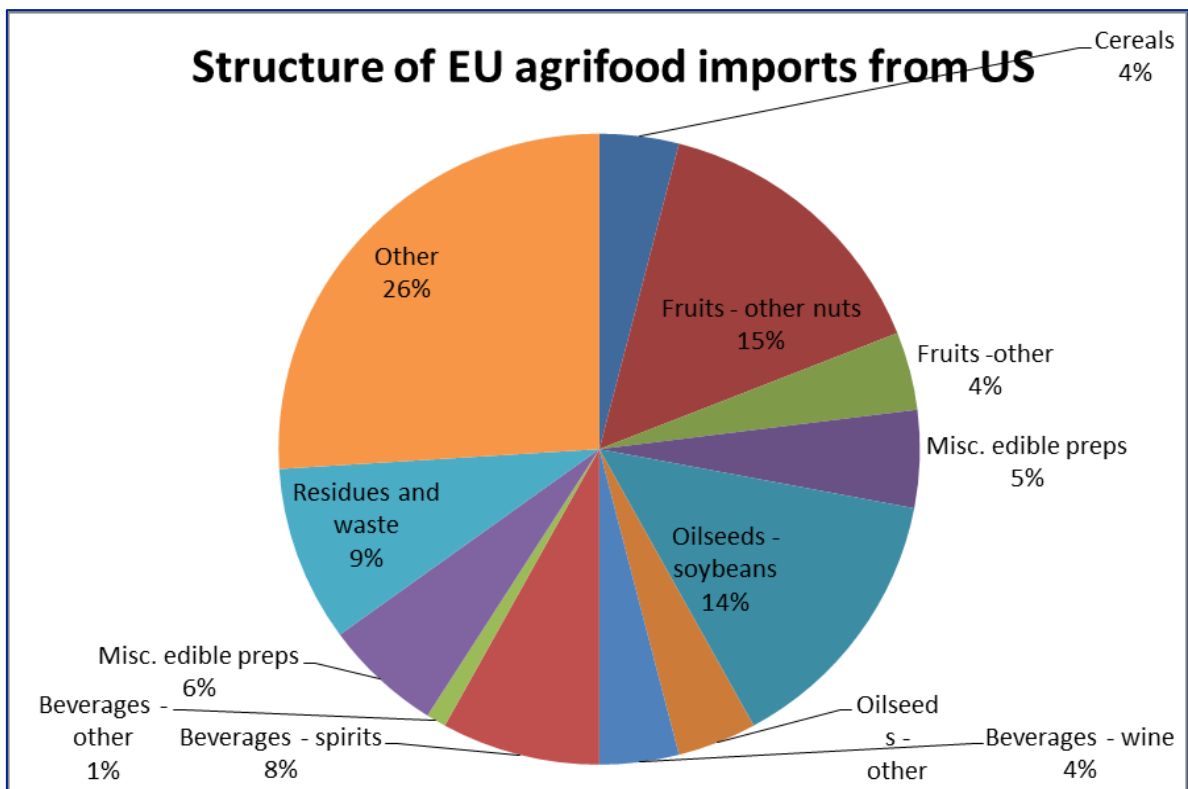
⁵⁰¹ The definition "Agricultural products" used for this analysis corresponds to the WTO definition and includes the chapters 1-24 (excluding fish and fish products), in addition to a number of headings in chapters 33, 35, 38, 41, 43 and 51-53 of the Harmonised System. The aggregate EU agricultural trade does not contain the tariff codes CN 3302.10.40 and CN 3302.10.90. These are odoriferous substances for the food industry, which are regarded as industrial products and were worth some €3.8 billion in EU exports to the world in 2014.

Figure 7.2 Structure of EU agrifood exports to the US (average 2012-2014)



Source: Eurostat.

Figure 7.3 Structure of EU agrifood imports (average 2012-2014)



Source: Eurostat.

Fruits and oilseeds are the main product categories of agri-food products the EU imports from the US, followed by beverages. Within the fruits category, the group of 'other nuts' show highest import values, with almonds, pistachios and walnuts as the most important products

imported from the US (accounting for 15 percent of total imports, see Figure 7.3). Beverages include mainly un-denatured ethyl alcohol and wine, whereas soybeans is the main product in oilseeds and wheat in the cereals category. Because of their weight, these sub-categories are specified in Figure 7.3.

7.2.3. Value chains in the food sector

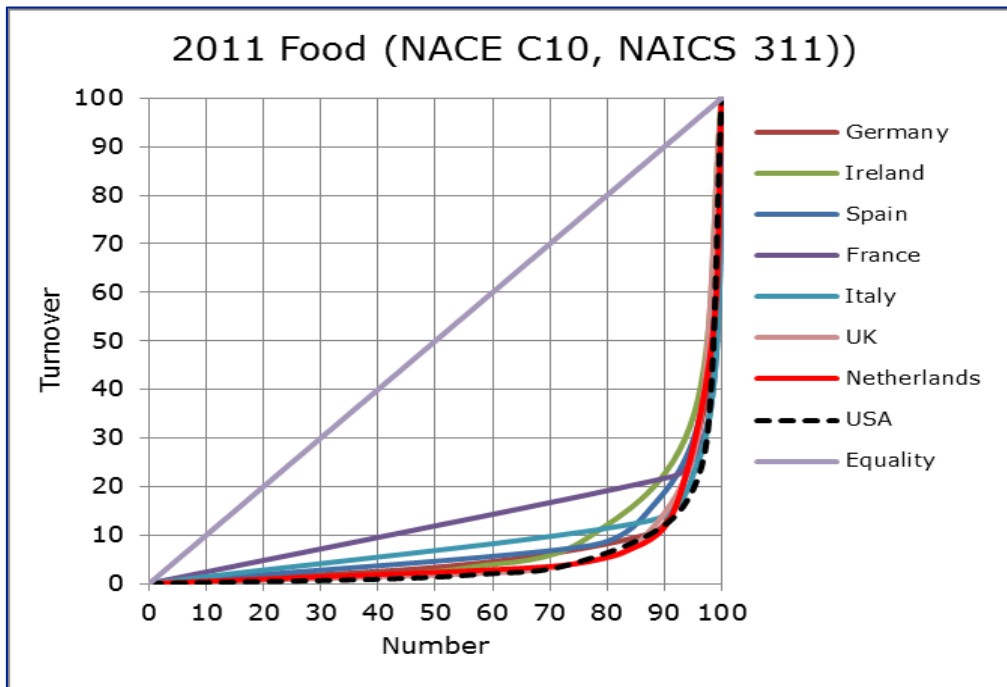
Structures

The length, the degree of complexity and the concentration rates of the food value chains vary depending on products and on Member states in the EU. For certain products, production and processing are often closely integrated (e.g. for milk or sugar) and the product can be processed and sold through a rather short supply chain. For other products, especially for fruit and vegetables, retailers often deal with a plethora of wholesalers who in turn rely on a large number of atomized suppliers, especially in South-Eastern Europe. The complexity of this type of supply chain implies a number of structural inefficiencies that are often coupled with low productivity.⁵⁰²

Primary producers are the least concentrated level in the food supply chain, whereas other levels of the chain - such as the food processing industry and the retail sector - are more concentrated. Food processors are for example quite concentrated in certain sectors and areas: the largest dairy processor represents more than 50 percent of domestic production in Denmark, Sweden, and The Netherlands and in many Member States more than 70 percent of baby food products are supplied by two manufacturers (OECD, 2014). The situation may nevertheless vary depending on the Member State concerned: for instance for chocolate products (tablets, confectionary) the UK, Irish and Polish markets are supplied essentially by two manufacturers whereas the French market is supplied by more than five manufacturers. The bakery industry is relatively fragmented in France as is the beef processing sector in Germany and Ireland, and the fruit and vegetable sector in Italy. Eurostat SBS data indicate that in South and East-European countries the smaller firms (with less than 50 employees) have a slightly higher share of the industry's turnover than this category in North-West-European countries. Typically in EU's main agri-food producing Member States roughly 10 percent of the (largest) companies account for 90 percent of the food industry's turnover (see figure 7.4). The figure below also shows that a similar distribution can be observed for the US food industry. This indicates that on both sides of the Atlantic SMEs are important in numbers but not in terms of turnover.

⁵⁰² While producers increasingly join forces in producer organizations ("POs"), wide differences remain across Europe as to the strength of such organizations. For example, in 2003, while in the Netherlands and Belgium more than 70% of all fruit and vegetable production was marketed through POs, the percentage was significantly lower in the three most important producing Member States: less than 30% for Italy, 50% for Spain and 55% for France. In Italy, for example, according to the findings of the Italian Competition Authority, up to four different intermediary operators intervene in the fruit and vegetables supply chain (OECD, 2014).

Figure 7.4 Cumulative percentage distribution (Lorentz curve) of the number of enterprises and turnover



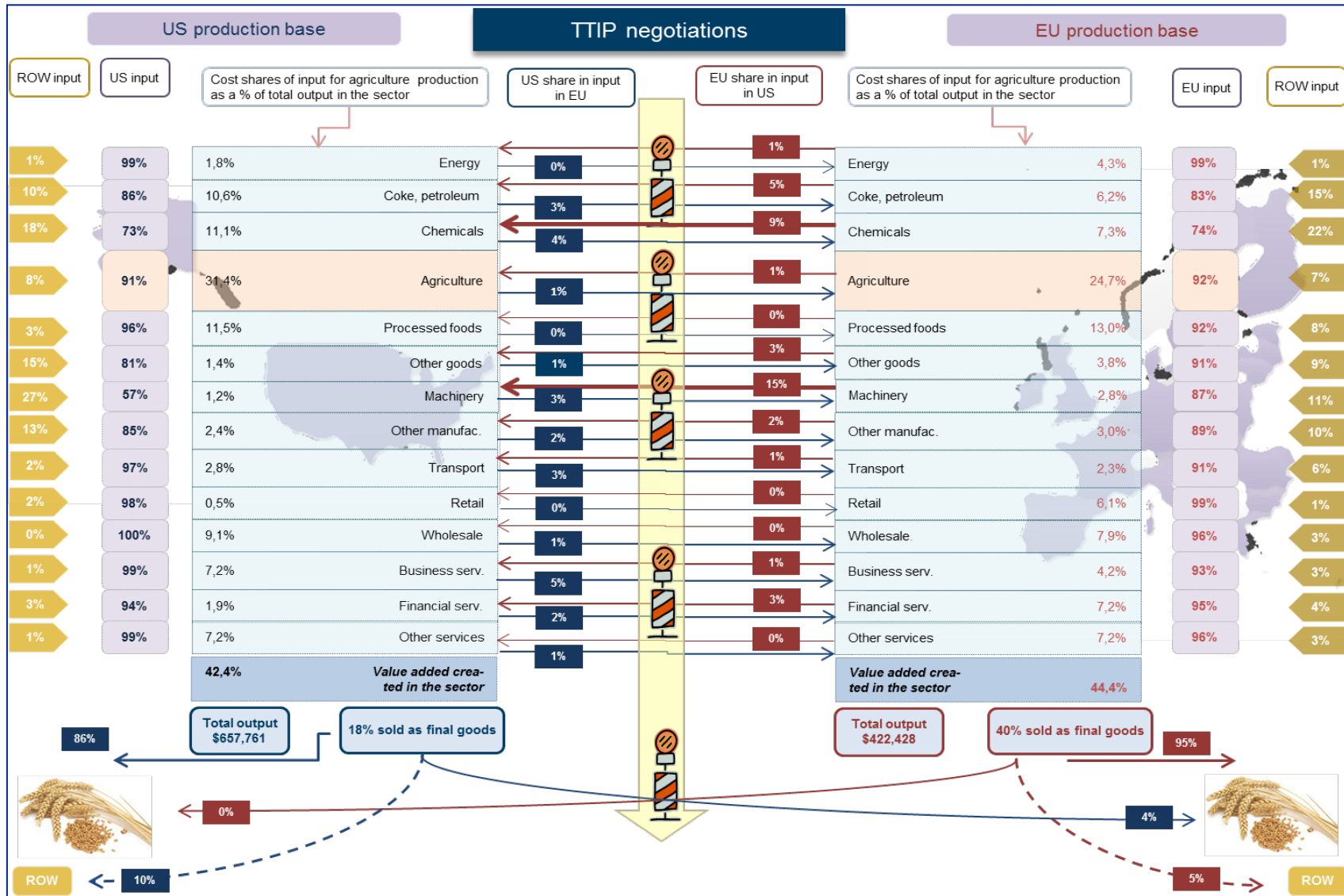
Source: Based on size distribution classified on number of employees Eurostat and US census bureau (USA payroll instead of turnover).

International links

EU food value chains are highly interconnected with activities in other countries (see also Table 7.6), and as such are heavily integrated in global value chains (see OECD, 2015). This subsection highlights the international links of production activities and sales in EU and US value chains and, in doing this, helps to identify the major trade barriers in indirectly related sectors.

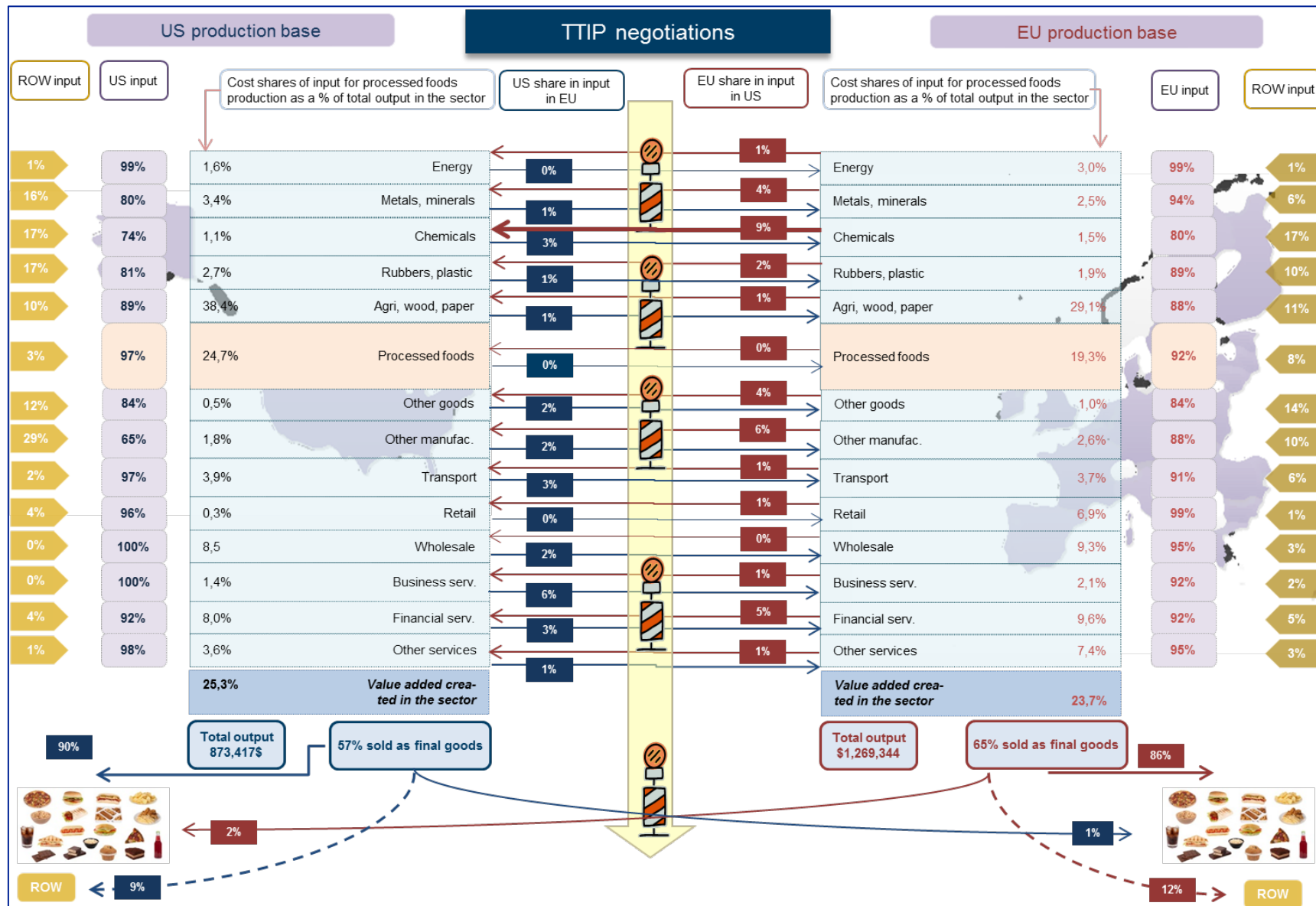
The agriculture sector in the EU has a total output of US\$ 422,428 million in 2011 of which 40 percent is sold as final goods (hence, 60 percent is an intermediate good for other sectors). The final product is sold within the EU (95 percent) and abroad to the rest of the world (5 percent to ROW – Figure 7.5). This shows that primary agricultural trade relations are largely intra-EU. The figure also shows that this sector did not sell final goods to the US. The US primary agricultural sector, though, sells 4 percent of its final goods to the EU and 10 percent to the ROW. The use of US agricultural intermediate goods in the production of an average EU agricultural product is only 1 percent, the remainder of agricultural intermediate goods are sourced from the EU (92 percent) and the RoW (7 percent). These numbers indicate that, in terms of inputs used for the production of an EU agricultural product, the EU sources little from the US. The majority of the products is sourced domestically, only chemicals (22 percent) and coke, petroleum (15 percent) are sourced intensively from the RoW. Also the US primary agricultural sector is very much domestic oriented in terms of inputs use. However, the US do source some products relatively intensively from the EU, such as machinery and chemicals (15 percent and 9 percent of these respective inputs are sourced from the EU).

Figure 7.5 GVC of the agriculture sector (2011), total output USD million



Source: WITS, author's calculations.

Figure 7.6 GVC of the processed foods sector (2011), total output USD million



Source: WITS, author's calculations.

The EU processed foods sector has a total output of US\$ 1,269,344 million in 2011 of which 65 percent is sold as final goods. These final goods are sold on the EU market (86 percent), the ROW (12 percent) and to the US (2 percent) (see Figure 7.6). The US processed foods sector sells only 1 percent of its final goods to the EU and 9 percent to ROW, the rest is sold domestically. These numbers show that for the EU food processing sector the US market for final products is of limited importance, while also for the US food industry the sales of final products on EU markets are relatively modest. International value chain relations are indicated by the way intermediate products are exchanged. Yet, figure 7.6 indicates that bilateral trade in intermediate products is also very small: the use of US intermediate goods in the EU processing foods sector is nihil, as it is the other way around. The EU food industry sources 8 percent of all intermediate goods from RoW, the rest is sourced domestically. For the US food industry these shares are 3 percent from RoW and 97 percent from the domestic market. For some intermediate goods providing industries to the US processed food sector, foreign sourcing is very important. In particular this is the case for other manufacturing input of which 29 percent is sourced from the RoW and for chemicals input of which 9 percent is sourced from the EU. For the intermediate goods (and services) providing industries to the EU food sector, chemicals, transport, business and financial services are being sourced from the US to some modest extent (3, 3, 6, and 3 percent resp.).

7.2.4. Social baseline

Effects related to employment and wages are expected to be the main drivers of overall social impact of the TTIP. As a baseline, Table 7.7 presents figures on employment and wages in the food industry for the EU. The data indicate that employment in the EU food industry (excluding the primary sector) increased over the last few years (which is different from the long-term trend of declining employment in the sector – see Table 7.3 in this sector analysis, that refers to the period 2003- 2013). Data further show that average (net) salaries in the food industry are relatively stable. The share of social security costs in total personnel costs is also relatively constant at 27 percent, a level that is indicating EU's social safety net is also appropriately applied in the food industry.

Table 7.7 Employment and wages in the food industry (NACE C10 and C11) in the EU

EU27/28 ¹	2008	2009	2010	2011	2012
Number of employees (million)	7.59	7.52	7.67	7.74	7.70
Personnel costs (billion\$)	196.4	191.5	199.2	202.6	208.0
Salaries & wages (billion\$)	154.0	149.9	155.9	158.4	162.4
Social security costs (billion\$)	42.4	41.6	43.3	44.2	45.6
Average (net) salary or wage per employee (1000\$)	20.3	19.9	20.3	20.5	21.1

Source: Eurostat Structural Business Statistics (SBS). Note: EU 27 for 2008-2010, EU28 for 2011 and 2012.

As a result of long-term process of modernisation and globalisation, the main point of employment in the European food supply chain has shifted from the field to factories and agri-food services related activities such as packaging. The number of farm holdings in the EU has been declining for many years (by approx. 3-3.5 percent annually, see Eurostat Farm Structure Survey). At the same time, those who are employed in production or processing face that business today demands round-the-clock schedules and flexibility. This flexibility is reflected in the terms of employment and working conditions in the industry, for instance in the horticultural sector where a common strategy is observed for employers to hire a small nucleus of permanent, skilled workers who are retained throughout the year, plus a larger periphery of low-skilled workers on flexible arrangements who can be pulled in and out of work as needed (ILIO, 2007). Non-permanent workers tend to have more informal relationships, often working without a contract and are often being denied access to key labour rights and benefits (Best and Mamic, 2008).

7.2.5. Environmental baseline

The EU monitors the environmental situation related to agricultural activities, measuring impacts on (the quality of the) soil, water, air and landscape, using 28 agri-environmental indicators. Most of these indicators show a significant improvement over the last two decades, but averages mask considerable variations between and also within countries (Eurostat website, Agri-environmental indicators overview). For instance, data collected from EU-15 countries

shows that between 2000 and 2012 total nitrogen and phosphorus fertiliser consumption decreased significantly although an increase could be observed in several countries that joined the EU in 2004. Nationally averaged nitrate concentrations in ground water are all well below the Nitrates Directive and Drink water Directive limits, but a high level of exceedance was observed in at least five countries. In the EU-15, a continuous trend towards extensification (decrease of utilized agricultural areas, UAA) share managed by highly intensive farms and increase of UAA share managed by low input farms) has been observed since 2004. In the 10 Member states which joined the EU in 2004, the share of UAA managed by medium and high intensity farms increases whereas the one managed by low intensity farms decreases, which indicates intensification. Hence, the trend by Member State can be significantly different from the EU-group average.

Agricultural activities in the EU-28 generated 464.3 million tonnes of CO₂ equivalent in 2011, corresponding to about 10 percent of EU28 total greenhouse gas emissions (Eurostat, 2012). EU-28 greenhouse gas emissions from agriculture declined by almost one quarter over the period between 1990 and 2011. This decline was at a slightly faster pace than the reduction recorded for all greenhouse gas emissions in the EU-28. The vast majority of the EU-28's greenhouse gas emissions from agriculture came from one of three sources: agricultural soils (accounting for about one half of agricultural emissions), enteric fermentation (about one third) and manure management (about one sixth) (Eurostat, 2012). The other sources of agricultural greenhouse gas emissions — field burning of agricultural residues and rice cultivation — were only minor contributors at the EU-28 level.

The reduction in agricultural emissions of greenhouse gases may, at least in part, be attributed to an overall reduction in livestock numbers, more efficient farming practices, the reduced application of nitrogen-based fertilizers, as well as better forms of manure management (Eurostat, 2012).

7.2.6. Competitiveness of the EU agri-food sector

Following Wijnands et al. (2007) and Van Berkum et al. (2014) we select and present several trade and economic performance indicators to quantify and illustrate the competitiveness of the EU food industry against the US and some other main competitors with regard to agri-food products. Trade indicators refer to 1) growth of export share on the world market; 2) difference (between two periods) of the Relative Trade Advantage (RTA) index (RTA as defined by Scott and Vollrath, 1992)⁵⁰³, whereas economic performance indicators include 3) the annual growth of value added; 4) annual growth of labour productivity of the specific (sub-)industry and 5) the annual growth of the value added of the food industry in the total manufacture industry (see for more explanation of this methodology Wijnands et al., 2007 or Van Berkum et al, 2014).

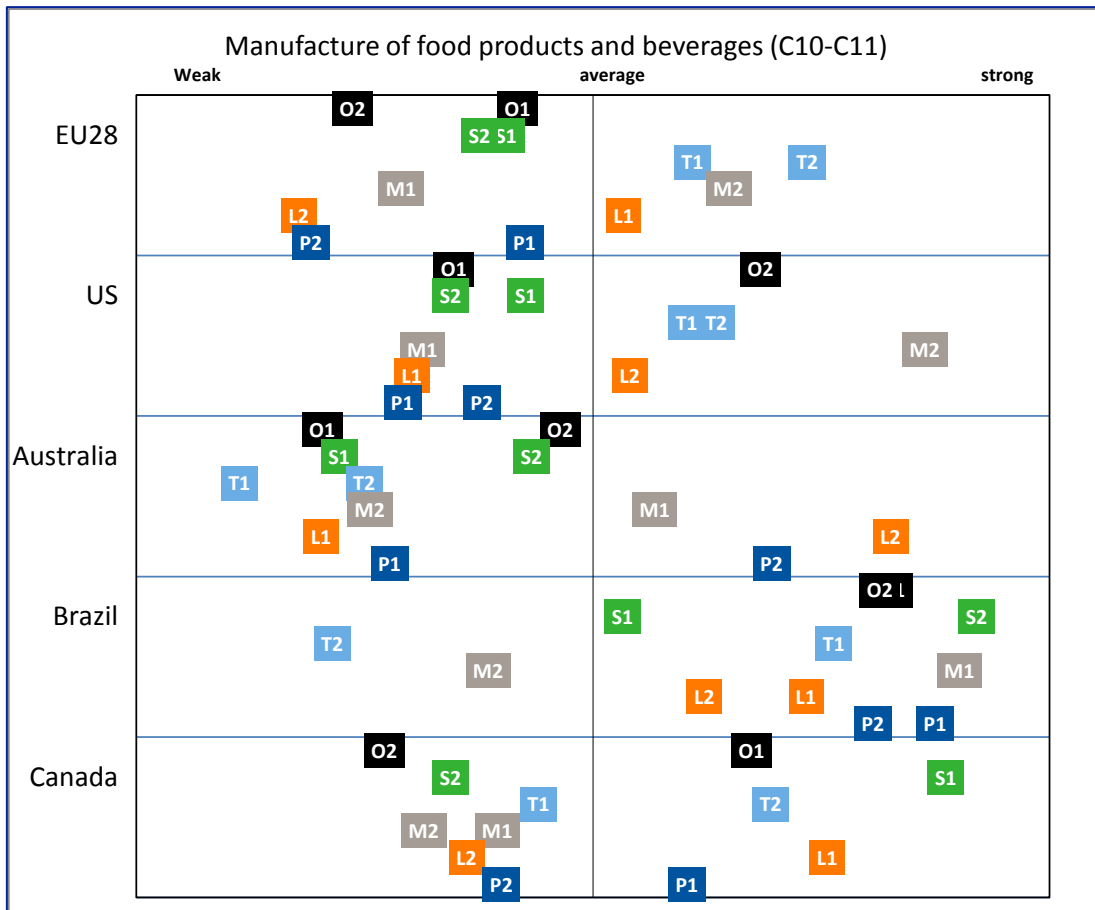
Figure 7.7 shows the results of these five indicators and an overall competitiveness indicator for the whole food and beverages industry. The figure indicates that, compared to the benchmark countries, the competitiveness performance of the EU food and drink industry improved between period 1 (2003-2007) and period 2 (2008-2012) with respect to the trade-related indicators; relative trade advantage (T) and world market share (M). This indicates that the EU agri-food sector was able to strengthen its position in global markets vis-à-vis its main trading partners. Meanwhile, the economic indicators show the EU food industry is doing less well compared to EU's total manufacturing industry as the food industry's share in the value added of the whole manufacture industry (S) is declining, its annual growth rate in labour productivity (L) and value added (P) has reduced between the two periods. The overall result is a weakening of the competitive position of the EU food industry (O in Figure 7.7).

The US improved from a weak position in 2003-2008 to a strong position in 2008-2012 among the other benchmark countries, based on a higher growth in labour productivity (L) and market share (M). Australia improved moderately, as all indicators improved, except for export share (M). Brazil remained rather strong in both periods, with most indicators being the strongest among the benchmark countries. Canada went from strong towards weak as all indicators shifted to the weak part of the spectrum except for the RTA (T).

⁵⁰³ The Relative Trade Advantage index indicates a country's comparative advantage in a product by measures its export share of a product in the total export of the world relative to its export share in the world of all products, and taking into account the extent the country is importing relatively less than the world average. The index reflects the balance of import and export specialisation level in one category of goods from one country. See Annex 1 in ECSIP (2015) for a more complete explanation.

It is noteworthy that Europe shows a positive development on the trade-related indicators (relative trade advantage and world market share) while other indicators like value added and labour productivity show a weakening of its position. Usually improved trade positions are the result of improved added value and labour productivity, while worsening labour productivity is expected to lead to a worse international trade position. While the underlying reasons for the dynamics of these indicators need much more investigation, a likely explanation may be that the global demand for food (particularly for quality/differentiated/branded products) is growing faster than in Europe and that EU exports are benefitting from this demand, while at the same time European demand slowed because of the economic crisis.

Figure 7.7 Competitiveness of EU's food & beverage processing industry (NACE C10&C11)⁵⁰⁴



⁵⁰⁴ The source of the figure is ECSIP, 2015. For presentation purposes, the indicators are standardized in Z-scores. These have the same mean (0) and the same variance (1). Z-scores can be used to compare observations from different distributions (Abdi, 2007). In addition, standardized indicators can be visually presented in one overview. Furthermore, the mean of all indicator values can be used as a measure for the overall competitiveness of a country. We assume that the weight of each indicator is equal. It should be borne in mind that the results of our analysis depict relative values. The standard scores depend on the specific countries taken into account. If the benchmark countries change, the position of a specific country will change as well.

Legend:

Category	Indicator	Period	
		2003-2007	2008-2012
Overall	Overall competitiveness (Unweighted average)	O1	O2
Economic	Annual growth share added value in manufacture industry	S1	S2
	Annual growth rate labour productivity	L1	L2
	Annual growth rate real added value	P1	P2
Trade	Difference RTA indicator	T1	T2
	Difference world market share	M1	M2

A more detailed analysis of each of the sub-categories of the Food and beverage industry indicates that compared to the US, the EU's competitiveness position is less strong for meat products (C101), sugar (C1081) and beverages (C11), and stronger for Bakery/cereals products (C107) and Cocoa products (C1082). With regard to other sub-categories (like Dairy, Grain mill and starches⁵⁰⁵, Prepared animal feed) EU's competitive position is roughly equal to the one for the US industries (ECSIP, 2015).

7.3. Market access issues in the agri-food sector

7.3.1. Tariffs

Tariff barriers affecting transatlantic trade in agricultural products have been significantly reduced over the last few decades, but are still present, especially in agriculture. According to Fontagné, Gourdon and Jean (2013), tariff duties on bilateral agricultural trade averaged 6.6 percent in the US and 12.8 percent in the EU in 2010, in *ad valorem* equivalent (AVE) terms. By comparison, for industry the average duties are 1.7 percent in the US and 2.3 percent in the EU.⁵⁰⁶

In terms of its agricultural exports to the US, almost a quarter of all EU products exported enter the US duty-free (WTO/ITC/UNCTAD, 2013). These products account for almost 50 percent of EU's total agricultural export value (in 2011) to the US. Vice-versa, US agricultural products imported duty-free by the EU are only 15 percent of all tariff lines, accounting for about 50 percent of the US export value to the Union.

Table 7.8 below summarises tariffs levels applied by the EU and the US in bilateral imports of selected agricultural and food product categories, and calculated in tariff equivalent terms (hence including *ad-valorem* rates in percent and specific duties in euro per tonne). The overview shows averages for each of the selected GTAP product categories but also indicates that there are significant differences among the tariff lines of products that are included in one category: for example, maximum tariff rates can be over 100 percent for EU imports of beef, pork, dairy and processed food, while this can be the case for US imports of dairy, processed foods and beverages too. As there are quite a number of products that can enter tariff free, the average tariff that is weighted by the trade in products that are charged by import duties is much lower in many cases. The exceptions are Dairy at EU side and Cereals and Processed foods at US side. Note that in 2013 the EU imported (yet small volumes of) beef and dairy from the US despite rather high AVEs, but which in case of beef was imported at zero tariff rate within a TRQ for high-quality beef from cattle that has not been raised with growth-promoting hormones. Note also that the product category Pork & Poultry includes a series of products like fats and other derived products (in the HS15 and HS16 category) that are imported, whereas there is practically no import of pork and poultry meat (HS 02) from the US due to SPS reasons (see also section 7.3.2).

⁵⁰⁵ The US starch industry is currently more competitive than the EU starch industry. However, by grouping the grain mill and starch industry together this observation did not come out of the analysis.

⁵⁰⁶ These figures, extracted from the MACMap database jointly developed by the CEPII and the International Trade Centre (ITC), are based on bilateral customs tariffs and include tariff preferences, tariff rate quotas (TRQs), and AVEs for all non-*ad valorem* (specific) duties.

Table 7.8 Applied tariffs in tariff equivalent terms on EU-US bilateral imports of selected agricultural and food product categories, 2013

EU imports from US						
Product cat	Simple average %	Trade-weighted average %	Min rate %	Max rate %	# of total tariff lines	Import value (1,000 USD)
Cereals	13.98	12.05	0.00	59.45	111	535,639
Fruits and vegetables	11.73	2.75	0.00	91.11	394	2,715,718
Beef	72.45	66.40	0.00	105.39	44	216,292
Pork and poultry	15.79	9.95	0.00	136.37	149	71,986
Dairy	52.47	53.36	0.00	196.95	187	34,488
Processed food (incl. sugar)	19.70	15.56	0.00	351.33	1405	2,506,441
Beverages and tobacco	14.05	3.39	0.00	74.90	395	1,631,063
Total	19.80	18.97			2,685	7,711,628
US imports from EU						
Product category	Simple average %	Trade-weighted average %	Min rate %	Max rate %	# of total lines	Import value (1,000 USD)
Cereals	1.04	1.12	0	11.2	89	103,127
Fruits and vegetables	3.53	2.43	0	29.8	579	297,992
Beef	0.30	0.03	0	6.8	117	17,060
Pork and poultry	1.64	0.79	0	8.5	184	453,650
Dairy	19.72	14.96	0	110.71	2266	1,269,228
Processed food (incl. sugar)	4.28	5.62	0	131.8	7893	5,436,883
Beverages and tobacco	9.27	0.95	0	350	1207	12,310,290
Total	4.88	4.80			12,308	19,888,234

Source World Integrated Trade Solution database (WITS.).

The overview in Table 7.8 takes into account the specific tariffs (amounts per tonne) which can be significant. This is also reported by Bureau et al (2014) in their study for the EP. Using a slightly different product categorisation than in this study, the authors conclude that the three agricultural sectors most strongly affected by US import tariffs in 2010 were tobacco (average protection of 21.8 percent), dairy products (20.2 percent) and sugar (18.7 percent). Other US agricultural sectors are much less protected, with a tariff rate below 10 percent. Bureau et al (2014) show that tariffs applied by the EU to its agricultural imports from the US are much higher than US tariffs for some products such as meat and dairy products (45.1 percent and 42.0 percent respectively), whilst protection on sugar (24.3 percent) and tobacco (22.4 percent) is slightly higher than the rate applied by the US. Food preparations are also subject to significant tariffs, as illustrated by numbers on preparations with meat (19.5 percent), preparations with vegetables (18.4 percent) and preparations with cereals (8.5 percent).

7.3.2. Non-Tariff Measures

The above presented overview of tariffs masks the complexity of access into each other's market as there are numerous non-tariff measures (NTMs) that affect trade, such as sanitary

and phytosanitary (SPS) measures and Technical Barriers to Trade (TBT) measures, next to 'non-technical' NTMs such as licenses and import quota.⁵⁰⁷ Below are some of the major trade affecting measures that are classified as SPS, TBT or non-technical measures, which are relevant to better understand the bilateral trade relations between the EU and the US.

In the SPS and TBT area, both sides complain about the numerous regulatory hurdles exporters face for their specific products when entering the partner's market.⁵⁰⁸ Here we highlight only a few examples of trade barriers perceived as important obstacles to export by both sides (without suggesting that all these should be addressed in a TTIP agreement).⁵⁰⁹ For instance, the USTR 2015 report on SPS measures points at EU policies restricting the import and use of US agricultural commodities derived from agricultural biotechnology (e.g. maize and maize by-products) and underlines that the EU does not accept US beef raised with growth-promoting hormones, and only allows (a duty free import quota of 48,200 ton and a Hilton quota of 11.500 t with a 20% in-quota rate shared with Canada) high-quality beef from cattle that has not been raised with growth-promoting hormones (USTR, 2015).

Furthermore, the EU does not approve pathogen reduction treatments used in US beef (except for lactic acid) and poultry production, and also prohibits the use of the growth promoter ractopamine in pork production. Under requirements for dairy imports, the EU limits the number of somatic cells (SCC) in raw milk, where US producers are allowed to sell milk with higher SCC levels. US exporters of apples and pears complain that EU requirements on maximum residue levels of pesticides are more strict than international standards (USTR, 2015). Besides SPS and TBT measures, exports of several products are subject to tariff rate quota, administration details, mandates related to certificate dating, and bans on the use of generic food names. In the case of wines and spirits, for instance, US exporters complain that EU labelling (particularly geographical indications (GIs)) and packaging regulations, coupled with EU derogations on US wine-making practice, restrict the free flow and trade of these products.

The EU has a similar list of measures for which the EU claims that these obstruct exports to the US.⁵¹⁰ For instance, the US imposes cross state retailing and distribution red tape restrictions on EU alcoholic beverages products. The US also imposes barriers on EU milk products that fall under the 'pasteurised milk ordinance' (PMO) for Grade A dairy products. Live ruminants, beef and derived products from the EU are banned from US import since 1998 due to the outbreak of BSE in the EU in the 1990s, which is not in line with the international standards of the World Organisation for Animal Health (OIE). US approval procedures for plants, fruit and vegetables from the EU are excessively strict and time consuming to the extent of presenting a trade barrier. Applications are pending for 10 years and longer. And last but not least, the US applies an import quota regime for EU dairy products, which is a typical 'non-technical' NTM that affects trade with the US for a product group that is of major importance to the EU agribusiness.

There are many more measures affecting trade in food and beverages between the EU and the US than mentioned above. The 2009 study by Ecorys compiled a comprehensive list of non-tariff measures that affect trade flows from both sides, and estimates that EU restrictions on cross-border trade yield a significant 56.8 percent additional cost for food and beverages trade and US restrictions add an even larger 73.3 percent. According to the study, with total bilateral trade of roughly €14.6 billion (\$19 billion) in 2007, reducing these costs would achieve potential welfare gains of €10.4 billion (\$13.5 billion) per year based on multiplying trade levels by trade costs (ECORYS, 2009: 86). CEPR (2013) concludes that compared to other sectors NTMs are highest in the food and beverages sector. Consequently, reducing the trade impediments caused by NTMs could result in significant trade and welfare gains.

Following the above reporting on tariffs and non-tariff measures, agri-food products that seem most affected by both tariffs and NTMs are animal products like dairy, beef, poultry and pork, and next to those fruit and vegetables and alcoholic beverages. The remainder of the study will

⁵⁰⁷ UNCTAD provides a comprehensive classification of NTMs that distinguishes up to 14 types, see UNCTAD 2012.

⁵⁰⁸ Bureau et al. (2014) shows that almost all products (at HS6-digit level) are affected by at least one NTM at EU and US markets, most of them being TBT measures.

⁵⁰⁹ The EU has on many occasions reiterated that EU regulatory requirements like the ban on growth promoters and hormones in the livestock sector, or the EU's approval process for GMOs, will not be a subject of negotiation in TTIP (e.g. at www.ec.europa.eu/trade/policy/in-focus/ttip/about-ttip/questions-and-answers/ on the topic 'What are the some of the concerns?').

⁵¹⁰ See EU's Market Access Database on www.madb.europa.eu and the [longlist based on stakeholders' consultations in the Annex](#).

focus on these product categories and discuss the impact of a number of (a maximum of 10) market access issues affecting trade of these products.

7.4. Expected impacts of TTIP on the agri-food sector

7.4.1. Expected economic impacts

The overall GDP impacts of a reduction of barriers on trade and investment between the EU and US under two scenarios have been described in section 3.2. Here, we take a closer look at the impacts on the agri-food sectors, focusing on the corresponding changes to output and trade for the EU and the US. First, we look at the output effects and then we move on to studying the effects on imports and exports.

The quantitative effects presented below are taken from the updated and complementary analysis conducted by CEPR (2015, see Technical note in Annex II). The estimates of the scenario outcomes are closely based on CEPR's 2013 study, yet with much more sectorial detail, with the primary agricultural sector split into 3 and the processed food sector into 8 sectors. A drawback of this disaggregation is that the updated experiments do not include NTB estimates for processed foods. The reason is that trade costs estimates for processed foods used in the CEPR 2013 study covered all foods as a single basket, and it may not be appropriate to apply these generically across food categories. Hence, trade costs for processed foods remain unchanged in the new set of results (see section 1.4 of this report for more explanation). As the eventual outcome of the negotiations are expected to include reductions of NTBs for processed foods, the figures presented in the table below are most probably underestimating the effects.

The economic modelling experiment includes two scenarios: a less ambitious agreement that includes a 10 per cent reduction in trade costs from NTBs (except for processed foods for which a reduction of NTBs has not been modelled) and a nearly full tariff removal (98 per cent) of tariffs, and an ambitious scenario that includes the elimination of 25 per cent of NTB related costs and 100 per cent of tariffs. In both scenarios more ambition is imposed on the lowering of procurement-related NTBs than for other NTBs affecting goods and services. It is assumed that NTBs linked to procurement are reduced by 25 per cent or 50 per cent, in the "less ambitious" and in the "ambitious" scenarios respectively. The impact of partial alignment of global rules and standards with a new set of EU-US standards and cross-recognition agreements is also included in the assessment.

As can be seen in Table 7.9, the corresponding estimated percentage changes in the agri-food sector specific output are relatively small, with (not surprisingly) the biggest changes reported in the ambitious experiment. Yet, even in that scenario none of the sectors will expand or contract by more than 1 per cent in the case of the EU, except for the category 'Other meats' (pork and poultry) of which the output contracts by 1.0 percent, and for Beverages and tobacco, of which the output increases by 1.1 percent compared to the baseline projection for 2030. The latter might be rather unexpected given that the sector is evaluated not competitive compared to the beverage sector in the US (Section 7.2). However, ECSIP's (2015) analysis indicates that the performance of the EU beverages sector has improved significantly over the recent years (among other resulting in an increasing world market share). These developments give great encouragement to the future competitive position of the sector. Given the current relatively high protection rates, a reduction of import tariffs may have significant positive effects on EU beverages exports to the US. In several sectors (cereals, fruits and vegetables, other primary) output will basically remain unchanged.

Output changes in the US are more significant for some food sectors, such as the Other meats (pork and poultry) that will grow by 2.2 percent against a benchmark of a 2030 baseline projection. Output of the Beverages sector, however, will decline by 2.6 percent. These effects are much smaller in the less ambitious experiment.

A study conducted for the US Department of Agriculture⁵¹¹ reports the expected output changes of TTIP (tariff and NTM reduction) at a more disaggregated level. The expected changes in EU

⁵¹¹ Beckman, Jayson, Shawn Arita, Lorraine Mitchell, and Mary Burfisher. Agriculture in the Transatlantic Trade and Investment Partnership: Tariffs, Tariff-Rate Quotas, and Non-Tariff Measures, ERR-198, U.S. Department of Agriculture, Economic Research Service, November 2015.

output range from -6.1 percent to 1.8 percent. The study – that uses the Global Trade Analysis Project's (GTAP) static computable general equilibrium (CGE) model with the GTAP vs9 2011 database - estimates largest decreases in EU output in the soybeans (6.1 percent), coarse grains (4.1 percent), processed rice (2.8 percent), and pork (2.7 percent) sectors. According to the study, the largest increase in EU output can be expected in the vegetable oil (1.8 percent), other oilseeds (1.6 percent), rapeseed (1.5 percent), and fruits (1.1 percent) sectors. The output changes in the US range from -1.3 percent in the wheat sector to 5.5 percent in the pork sector. Overall the study shows that the US has more to gain on agricultural tariffs than the EU has in TTIP, when a full elimination of tariffs and the removal of selected non-tariff measures are assumed. Although a comparison with the updated CEPR scenario estimations is skewed by the differences in product detail and scenario assumptions, both (CGE) model results indicate that EU production effects are expected to be most negative for processed rice and pork, whereas vegetable oils production will increase. The results from USDA are likely to be overestimated since the model scenario used in the study differs from the current negotiations, both on tariffs and on NTMs. The EC has indicated that they will not pursue a full tariff elimination for the most sensitive products. Market access might be granted for those products based on tariff-rate quotas. In addition, the EC has pointed out that regulatory requirements like the ban on growth promoters and hormones in the livestock sector, or the EU's approval process for GMOs are not subject of the negotiations. The scenarios of the study nonetheless fully underscore the validity of the EU approach to the agriculture negotiations, i.e. the alternative approaches to full liberalisation for EU import-sensitive products, as well as the need for both sides to distinguish between regulatory requirements that are outside the scope of the negotiations, and a balanced set of non-tariff barriers identified by both sides for discussion and negotiation.

Table 7.9 Expected Output effects of TTIP scenarios (in % change compared to a baseline, in 2030)

		Ambitious scenario		Less ambitious scenario	
		EU	US	EU	US
Primary Agricultural sectors	Cereals, other grains	0.0	0.3	0.0	0.0
	Vegetables and fruits	-0.1	0.1	-0.1	0.0
	Other primary agriculture	0.1	0.5	0.2	-0.1
Processed foods	Ruminant meats	-0.5	0.4	-0.3	0.0
	Other meats	-1.0	2.2	0.0	0.2
	Vegetable oils	0.5	0.0	0.4	-0.5
	Dairy products	0.3	0.2	0.4	-0.3
	Rice	-0.6	1.1	-0.1	0.0
	Sugar	0.4	0.2	0.4	-0.1
	Other processed foods	0.4	0.4	0.3	0.0
	Beverages, tobacco ¹⁾	1.1	-2.6	0.7	-1.4

Source: CEPR (2015). Note 1) The CGE model takes Beverages and tobacco together as one category. In EU28, the production value of tobacco is less than 10% of the production value of beverages sector. In trade, EU exports of products from this category is 99% beverages; for EU imports from the US the ratio is 80% beverages: 20% tobacco. Hence, beverages is by far the dominant product in this category. Therefore, in the main text we refer to beverages when discussing the results of this category.

Trade impacts of the two scenarios are presented in Table 7.10 for the EU and the US. Looking at the ambitious experiment, both exports and imports will increase for each of the two trading partners, hence the agreement encourages trade. Sectors most affected – on the EU side - are Dairy and Beverages, for which both double digit changes in exports and imports are projected. In percentage terms, EU imports of cereals and Other meats (pork and poultry) will also increase substantially, next to rice.

The changes in exports and imports are smaller in the modest scenario, yet the same general pattern remains across sectors with most pronounced changes for Dairy and Beverages.

Stakeholders such as the European Dairy Association confirm the outcomes of the projection, by stating that it sees opportunities for the EU dairy industry in the US. These are based on the expectation that current US TRQs on imports of EU cheese will be expanded in the framework of TTIP and there is demand for EU dairy products in the US. Representatives of several national (Danish and Dutch) food industry associations in the EU indicate that a trade deal might create the opportunity for exporting more specialised food products from the EU to the US market. COCERAL⁵¹² points at the benefits of addressing non-tariff barriers to trade and of increased regulatory cooperation in order to ensure and smooth the imports of cereals and oilseeds from the US. The European Livestock and Meat Trading Union (UECBV) underlines the strong competitiveness of the US meat industry and expects more import competition if current TRQs granted to US meat exporters are expanded and/or the EU accepts US production practices of animals raised with growth-promoting hormones and/or food additives. Though the EC has made it clear that they have no intention to change the current laws on growth hormones and/or additives via TTIP. From the US perspective, representatives of the food industry believe TTIP would benefit US exporters of processed foods (e.g. dairy, confectionery, preserve and baked goods) and beverages (based on input from stakeholder consultations).

Percentage changes as indicated in Table 7.10 should be put in context by referring to the absolute traded values. Table 7.8 in the previous section provides import values of most of the product categories listed in Table 7.10. For instance, EU dairy exports to the US (or: US imports from the EU) amounts to about US\$ 1.2 billion, whereas its imports from the US is only about US\$ 35 million. Although the percentage changes in EU imports of dairy products from the US are higher than in EU's exports (67.9 percent against 16.1 percent), the absolute increase of EU's dairy export value is exceeding EU's increase of its import value, hence providing a net positive trade balance effect for dairy. For Beverages and tobacco respective values are US\$ 1.6 billion for EU imports from the US and US\$12.3 billion for US imports from the EU. With the projected increase of imports and exports in percentage (10.6 percent and 13.2 percent, respectively), EU's positive net trade position for this product category will further increase under the ambitious TTIP scenario.

Table 7.10 Expected effects of TTIP on Extra-EU and US exports and imports (in % change compared to a baseline)

		Ambitious scenario				Less ambitious scenario			
		Exports		Imports		Exports,		Imports,	
		EU	US	EU	US	EU	US	EU	US
Primary Agricultural sectors	Cereals, other grains	0.8	0.9	4.8	1.6	-0.2	0.4	2.7	0.2
	Vegetables and fruits	0.8	1.6	1.6	1.2	-0.1	0.6	1.0	0.3
	Other primary agriculture	2.6	1.6	3.0	3.6	0.7	0.5	2.0	1.4
Processed foods	Ruminant meats	1.3	3.3	0.5	1.1	0.1	-1.2	0.4	1.3
	Other meats	2.2	27.6	9.5	3.0	0.9	3.6	1.8	2.4
	Vegetable oils	2.2	0.3	0.7	1.4	0.9	-0.7	0.5	0.7
	Dairy products	16.1	42.0	67.9	97.0	5.2	7.2	13.5	33.2
	Rice	4.1	3.4	6.2	2.7	1.2	0.3	2.0	0.9
	Sugar	1.6	6.9	0.6	1.0	0.1	1.3	0.3	0.9
	Other processed foods	2.0	4.7	2.8	1.5	0.9	1.6	1.3	1.1
	Beverages, tobacco ¹⁾	13.2	11.0	10.6	18.7	6.5	4.6	4.9	9.6

Source: CEPR (2015). Note 1): see Table 7.9

With respect to which part of the total impact is attributed to the removal of tariffs, the reduction in NTMs or spill-over effects, model simulations indicate that trade in agricultural and food products is mainly affected by the reduction of tariffs. This is no surprise as NTM reductions

⁵¹² COCERAL is the European association of cereals, rice, feedstuffs oilseeds, olive oil, oils and fats and agrosupply trade. It represents the interest of the European collectors, traders, importers, exporters and port silo storekeepers of the above mentioned agricultural products.

were not modelled in the disaggregated food sectors. Still, trade in the food sectors' products are affected by NTM reductions in other goods and services, where a decline in trade costs related to NTMs translate into lower input costs for the food sectors. In most cases, this is a mere 10-20 percent of the total impact on EU exports and imports of food products in the less ambitious scenario, with 0-20 percent for the US. In the ambitious scenario, however, NTM trade cost reductions in other sectors will affect trade in agricultural and food products to a greater extent, namely in the range of 30-60 percent of the total impact on EU exports and imports, and 10-20 percent of US exports.

The consequence of not including the reduction of NTMs trade costs for processed foods in the economic model experiment is that the above presented figures are underestimating the trade effects of a TTIP in case such NTM trade costs reductions are part of an agreement. As discussed in section 7.3.2 there are a number of SPS related measures on both sides of the Atlantic that make NTM trade costs hinder current bilateral trade flows in animal products (meat and dairy) importantly. For wine, both the EU and the US labelling and packaging regulations diverge with significant trade costs as a result. Although difficult to catch in figures, reducing the heterogeneity in SPS and TBT measures surely will encourage bilateral trade.

In a study conducted for the European Parliament, a reduction of NTMs in the different agri-food sectors has been included in the model.⁵¹³ The study applies a scenario that includes 25 percent reduction in the level of trade restrictiveness of NTMs, assumes a 100 percent reduction in tariffs, and an exemption of the 100 percent scanning requirement. They have estimated that overall EU agri-food exports to the US will increase by 56.4 percent, imports from the US would increase even more with 116.3 percent⁵¹⁴, by 2025. The larger share of these gains stems from a reduction in NTMs, tariff reduction 'only' contributes to one quarter of the total impact. When looking at EU exports to the US from the different agri-food subsectors, they expect some significant increases: for sugar (297 percent), dairy (239 percent), cereals (168 percent), and vegetables and fruits (90 percent). Red meat and white meat are not split out in our analysis, however, this study predicts an increase in exports to the US of 404 and 289 percent respectively. It is important to keep in mind that current trade values for many subsectors are low and these percentages increases can thus give a distorted view. This especially concerns the red meat and sugar sector.⁵¹⁵ In absolute terms, the increase in EU agri-food exports to the US is concentrated in a few sectors. These sectors include other processed foods (\$3.6 billion), beverages and tobacco (\$2.8 billion), and dairy products (\$2.4 billion). The largest percentage increases in imports from the US, according to the study, are expected in the dairy sector with an increase of 2,089 percent (\$5.4 billion), in the white meat sector with 1,037 percent (\$3.7 billion), and in the sugar sector with 624 percent (\$0.2 billion). Again these figures are distorted because of the current small levels of trade. In absolute terms the main imports are expected in the other processed foods (\$5.7 billion), dairy (\$5.4 billion), and vegetables and fruits sectors (\$4.8 billion). The study conducted for the US Department of Agriculture, that was previously mentioned, has also included a reduction of NTMs⁵¹⁶ in its estimates on changes in bilateral exports due to TTIP. The authors report that for almost all products the US is expected to export significantly more to the EU than the EU will to the US. The most significant differences concern the beef, pork, and poultry meat sectors. The differences in these export changes are a result of the significant differences in tariffs levied by the EU and the US. The more substantial gains for US exports stem from the fact that EU agricultural tariffs are in general significantly higher than those of the US.

Regarding SMEs, they are the backbone of EU's food and beverages industry accounting for over 99 percent of all companies in the sector. Currently, only a very small proportion of the industry's SMEs export directly to the US. The SME survey reported in chapter 3.6.3 shows that respondents from the EU food and beverages industry identified 362 trade related barriers, of which most of them concerned SPS measures related to food quality and safety, followed by labelling requirements, authorisation/certification/inspections and border procedures. Moreover, small enterprises have problems in finding the right information about all relevant regulations and procedures that are applied in both the EU Member States and US States. Studies estimate that costs of compliance with standards and regulations for SMEs could be 10 to 30 times higher

⁵¹³ Bureau et al. 2014. Risks and opportunities for the EU agri-food sector in a possible EU-US trade agreement.

⁵¹⁴ This large percentage change is likely to stem from the current relatively low levels of imports.

⁵¹⁵ Given current policies in the US sugar industry, TTIP is not likely to lead to any (major) increase in EU sugar exports to the US.

⁵¹⁶ The study includes a reduction of some trade barriers, which are not likely to be discussed in the TTIP negotiations. The mentioned trade barriers concern EU standards on GMOs and growth hormones.

than for the larger companies. Hence, a reduction of these trade barriers could boost SMEs involvement in trade, directly and indirectly as they will benefit from other companies in the value chain that will find increasing trade opportunities when TTIP will result in lower trade costs and simplified regulations and procedures. Therefore, removing non-tariff trade barriers that are prohibitive for SMEs in the food and beverages industry are crucial parts of an EU-US agreement in order to bring about improved trade (and hence employment) opportunities for the sector. FoodDrink Europe shares these views.⁵¹⁷

7.4.2. Expected social impacts

In terms of changes in employment we see very little effects on the primary sector, and these changes correspond to the changes in output. Biggest percentage changes in the EU are expected for the Beverages and tobacco (+0.8 percent) and rice sector (-0.7 percent), both for skilled and low-skilled labour in the ambitious scenario. Similar effects can be observed for the US employment in the skilled labour segment as in the EU, yet the low-skilled labour in the US 'other primary agriculture' and in the processed food, 'other meat' and rice benefit more significantly (Table 7.11). Again, this corresponds to output changes estimated. Note also the relatively strong decline in US low-skilled employment in the Beverages and tobacco product category.

Table 7.11 Employment effects of TTIP scenarios (in percentage change compared to a baseline) for the EU

		Ambitious scenario				Less ambitious scenario			
		Skilled employment		Low-skilled employment		Skilled employment		Low-skilled employment	
		EU	US	EU	US	EU	US	EU	US
Primary Agricultural sectors	Cereals, other grains	-0.1	-0.1	-0.1	0.4	0.0	0.0	0.0	-0.1
	Vegetables and fruits	-0.1	-0.1	-0.1	0.2	-0.1	-0.1	-0.1	0.0
	Other primary agriculture	0.2	0.1	0.1	0.6	0.2	0.2	0.2	-0.1
Processed foods	Ruminant meats	-0.2	-0.2	-0.2	0.3	-0.0	-0.0	-0.0	-0.1
	Other meats	-1.3	-1.3	-1.3	2.1	-0.3	-0.3	-0.3	0.2
	Vegetable oils	0.5	0.5	0.5	0.1	0.3	0.3	0.3	-0.6
	Dairy products	0.2	0.2	0.2	0.2	0.3	0.3	0.3	-0.4
	Rice	-0.7	-0.7	-0.7	1.3	-0.2	-0.2	-0.2	-0.1
	Sugar	0.3	0.3	0.3	0.2	0.2	0.2	0.2	-0.1
	Other processed foods	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.0
Beverages, tobacco ¹⁾	0.8	0.8	0.8	-2.3	0.4	0.4	0.4	-1.3	

Source: CEPR (2015). Note 1): see table 7.9

The social impacts do not solely relate to changes in employment, but also to consumer impacts. Because of current high tariffs or NTMs agri-food trade between the EU and the US is rather small in certain sub sectors. When these barriers are reduced, this will create better access for EU and US firms to each other markets. This can result in new products entering the market and increasing consumer choice. Many stakeholders, including Friends of the Earth (FOE) and the European Environmental Bureau (EEB), however, fear that this increase in the type of products from the US market could result in lower food safety standards. Certain food products in the US are treated with substances that are prohibited in the EU. Also many agri-food products in the US are genetically modified. It is feared that by granting the US more market access to the EU, and by reducing trade barriers, these products will enter the EU

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market.⁵¹⁸ The European Commission has, however, expressed that it has no intention to lower any (food) safety standards. US products will still have to comply with EU regulations before they can enter the EU food market.

7.4.3. Expected environmental impacts

Total energy demand in the agri-food sector is expected to go up by 0.3 percent in the EU as a result of TTIP. CO2 emissions are expected to go up by 0.45 percent in the EU irrespective of the scenario, as a result of TTIP. In the US on the other hand, both energy demand and CO2 emissions decline due to TTIP. The results presented in the table are a combination of three effects: the scale effect, the composition effect, and the technique effect. The scale effect reflects the increase in energy demand or CO2 because of an increase in output. The composition effect presents the change in the environmental indicators, due to a shift of production from one sector to another. This change can be either positive or negative, depending on whether the production shifts to more polluting sectors or less polluting sectors. The technique effect is generally negative and shows a reduction in the environmental indicators due to innovation and/or greener technology. Depending on which effect dominates, an increase in output can still result in a decrease in for example CO2 emission, and vice versa.

Table 7.12 Environmental effects of TTIP scenarios for the Food, drink & tobacco sectors

	Ambitious scenario EU28	Ambitious scenario US	Less Ambitious scenario EU28	Less Ambitious scenario US
Energy demand by energy user in the EU and US % difference to baseline in 2030 baseline units in mTOE	0.30	-0.12	0.31	-0.47
CO2 emissions from energy use in the EU and US % difference to baseline in 2030 baseline units in mtCO2	0.45	-0.12	0.45	-0.54

Source: E3MG projections

TTIP could also have environmental effects via changes in land use and in the use of nitrogen and phosphorus fertilizers in primary agriculture. Unfortunately, the E3MG model projections do not provide quantitative assessments of these environmental indicators. Given the modest impacts on production in primary agriculture of the TTIP scenarios analysed (see table 7.9) one may conclude that changes in the three agricultural indicators is likely to be very limited.

7.4.4. Expected global impact

Regional agreements often give rise to concerns about its potentially detrimental effects on third countries. This is especially relevant in case of the TTIP due to the size of the trading partners and the preferential relationships they currently have with many neighbouring and developing countries. With a focus on the agri-food sector, Bureau et al (2014) show that in their TTIP scenarios changes in trade flows with third countries are pretty small, suggesting that *overall* the rest of the world is not significantly affected by the agreement. Still, effects on third countries could be significant in specific sectors and for specific partners, as Bureau et al point out can be the case for Canada (other crops, cattle, vegetable oil), Mexico (cereals, vegetables and fruits, oilseeds, red meat, beverages and tobacco), Mercosur (cereals, vegetables and fruits), and Maghreb (vegetable oil, vegetables and fruits). These effects, however, are limited in size and do not produce macro-economically sizeable impacts. Gil and Lerch (2015) draw similar conclusions. Summarising the outcomes of four TTIP impact studies on the possible consequences for developing countries, the authors conclude that "Overall,..., for developing countries the direct negative impact of preference erosion is unlikely to be very significant, as their export composition (raw materials and agricultural goods) is very different to that of the

⁵¹⁸ https://www.foeeurope.org/sites/default/files/eu-us_trade_deal/2015/foe_tt看 factsheets_food_v2_web.pdf
<http://www.eeb.org/EEB/?LinkServID=4AFDDA9F-5056-B741-DB18FBAC26DE3743&showMeta=0>

EU and the USA (manufactured goods), and tariffs are already very low. The negative impact may still be significant for individual countries or sectors, however' (Gil and Lerch, 2015:8). Hence, and as also Bureau et al (2014) concludes, specific issues may thus be raised during the negotiations concerning certain third-country products: these sectoral and detailed effects deserve more detailed modelling than a global, general-purpose model can deliver.

Regarding the competitiveness position of the EU agri-food sector, the opinions differ significantly. While in sub sectors the removal of tariffs and NTMs is seen as good thing, as it reduces costs, in other sub sectors it is seen as a threat to the competitiveness of the EU industry. FoodDrink Europe for example has indicated that they are in favour of a TTIP agreement and that the agreement can "contribute to the increase of the sector's competitiveness and boost innovation".⁵¹⁹ In other sub sectors, like in the beef industry, they fear that TTIP will lead to a significant increase in competition. Because of their large size, cheaper food inputs because of GMO corn and maize, and lower production and food safety standards, US firms have a significant cost advantage over EU firms.^{520 521} Stakeholders fear that when the EU market is opened up for US firms, that they will drive the EU firms out of the market by means of lower prices. This could especially be detrimental for SMEs.⁵²² According to FOE, also the poultry, dairy and cereal producers could be negatively affected because of increased competition.⁵²³

7.5. Conclusions and recommendations

In terms of the economic and trade impacts, the CGE model predicts relative small yet positive effects on output and trade for most EU agri-food products. In the most ambitious scenario outputs of most products will increase by 0.1-1.1 percent. However, the output of (red and white) meats and rice will decline. In trade, percentage changes are highest for dairy and for beverages in both exports and imports. At the import side, effects are significant for 'other meats' (pork and poultry) too. These outcomes are in line with the overall analyses that the EU food industry is a globally competitive industry except for meat products. Next, both at the EU and US side imports tariffs in the animal product categories are highest. Consequently, reducing tariffs will have significant impacts on these sectors, with the EU benefitting from improved access to the US market for dairy products, and the US gaining from the more open EU market for dairy, red and white meat products. Impacts on employment correspond generally with the effects on output and hence are modest as well in general terms. On the other hand, growth of the sector's production and more trade across the Atlantic means a challenge for the environment. The emissions of CO₂ and other substances are expected to grow and thus the industry will have to commit to greater cooperation in the area of green technologies and use the additional resources gained thanks for the growth of the sector.

Regarding stakeholders, the industry itself (national food industry associations) expect positive effects of a trade deal, that is assumed to create the opportunity for exporting more specialised processed food products from EU countries to the US. Sector specific associations such as the European Dairy Association and the European Livestock and Meat Trading Union expect results that are in line with the CGE modelling. The latter, but also other stakeholders (e.g. COCERAL) point at the importance of addressing non-tariff measures in the negotiations. Stakeholders' interest are, however, not the same: while COCERAL points at the importance of tackling regulatory issues that have restrained imports of cereals, oilseeds and their derived products, the meat sector calls for guarantees that EU policy with respect to the use of growth-hormones and pathogen reduction treatments will remain in place in a TTIP concluded by the two Atlantic partners. EU consumer organisations point out a risk of lowering consumer protection standards due to these challenges described.

Though the potential impacts of TTIP will not solely depend on the provisions negotiated. The EU agrifood industry should seek to further strengthen its global competitive position and focus on

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http://www.fooddrinkeurope.eu/uploads/statements_documents/STATEMENT_FoodDrinkEurope_position_on_TTIP.pdf

520 <http://www.euractiv.com/section/agriculture-food/news/ttip-the-downfall-of-eu-agriculture/>

521 http://www.just-food.com/analysis/how-could-a-ttip-affect-the-food-industry_id133485.aspx

522 <http://www.effat.org/sites/default/files/news/11050/effat-final-position-ttip-adopted-15-04-14-en.pdf>

523 https://www.foeeurope.org/sites/default/files/eu-us_trade_deal/2015/foe_ttip_factsheets_food_v2_web.pdf

its assets, such as highly efficient supply chains and high quality products produced at the highest food safety standards, in order to remain the global leaders in the sector. Also SMEs could significantly benefit if they manage to innovate and take advantage of the lower costs of exports that will result from the removal of NTBs.

Based on the above analyses and outcomes the following recommendation is proposed:

1. A good dialogue with the agrifood sector is necessary in order to carefully assess the existing non-tariff measures and focus on those that can benefit the EU food industry. In the same vein, an open and transparent interchange with consumer organisations is an express condition for ensuring that consumer interests are taken into into account;

8. Potential TTIP impact on the chemicals and pharmaceutical sectors

8.1. Introduction

The chemicals sector is one of the largest and most important transatlantic sectors. It is a sector that includes petrochemicals, polymers, basic inorganic chemicals, specialty chemicals and consumer chemicals, and that is not only large in itself, but is also one of the most important enabling sectors providing ingredient materials and intermediate products for most manufacturing industries. As such, the expected gains from TTIP in the chemicals sector can also benefit other sectors. On the other hand, we also note that the regulatory differences between the EU and US when it comes to regulating the sector are substantial so that one can expect not much room for alignment of the different regulatory regimes in chemicals.

Although most pharmaceutical products are made from chemical substances, they should be treated as a separate industry and are therefore separately presented in this chapter. A word of warning should be given however, since not all data sources separate chemicals and pharmaceuticals it will not always be possible to present the sectors separately. This is inter alia the case for the CGE modelling results on the potential effects of TTIP. The model makes use of GTAP sector definitions to compute the sectoral impacts, and here the chemicals and pharmaceutical sectors are grouped together. In case it is not possible to treat the pharmaceutical industry as a separate sector it will be mentioned in the specific section.

Box 8.1 Take away from this chapter.

- The chemical sector is one of the largest EU manufacturing sectors in terms of turnover and value added;
- Tariffs in the chemical sector are relatively low, however, because of the significant value of goods traded, these tariffs still add a significant cost to trade;
- The most burdensome trade-related issues in the chemical sector are the large differences in regulation.
- The pharmaceutical industry is the sector with the highest ratio of R&D investment to net sales;
- Although the tariffs in the pharmaceutical sector are close to zero, also here there are still NTMs in place that are burdensome for trade, like e.g. differences in clinical trials and labelling requirements.
- The impact results stemming from the modelling will be presented as a range in which the potential TTIP impacts on the sectors may fall. Owing to limitations of the model, the chemical and pharmaceuticals sectors are modelled as a single sector, instead of two separate sectors. Also, regarding the chemicals sector, the modelling scenario is too ambitious and not in line with the negotiations. The results are therefore to be considered as hypothetical.
- The model outcomes predict an increase in EU output ranging from 0.1 to 0.3 percent. Trade is estimated to increase with 5.2 to 9.4 percent.
- A reduction of duplicative testing in the pharmaceutical sector could benefit patients in terms of improved access to medicines, lower prices (if companies pass the cost reduction on) and fewer clinical trials on both adults and children. This should, however, by no means come at the cost of lower safety standards.

EU ambitions for the chemical and pharmaceutical sectors in the TTIP negotiations

Based on the official EU position papers,⁵²⁴ the principles and goals for the chemicals and pharmaceutical sectors in TTIP can be identified, as well as the main reasons for wanting to include these sectors.⁵²⁵

Principles of EU position paper on the chemicals sector:

- Enable EU and US regulators to work more closely together using existing bodies;

⁵²⁴ <http://trade.ec.europa.eu/doclib/press/index.cfm?id=1230#regulatory-cooperation>.

⁵²⁵ For EU position paper chemicals in TTIP see

http://trade.ec.europa.eu/doclib/docs/2014/may/tradedoc_152468.pdf and

For EU position paper pharmaceuticals in TTIP see <http://trade.ec.europa.eu/doclib/html/152471.htm>.

- Avoid as far as possible unnecessary costs caused by different regulations in the EU and US;
- Respect the EU's strict chemicals standards that protect people and the environment (both in terms of level of protection and timing of procedures for adopting measures).

Among the reasons for negotiating chemicals within TTIP is that the EU believes there is potential to improve how EU and US regulators work together, including by:

- Exchanging relevant technical and scientific information between regulators so they are better informed when taking decisions about regulations;
- Making available the most up to date knowledge for regulating new and emerging scientific issues.

EU goals for chemicals in TTIP agreement:

- Create mechanisms for better cooperation between EU and US regulators within the context of the existing regulatory systems;
- Promote the use of relevant international standards such as the UN Globally Harmonized System (GHS) for classifying and labelling substances;
- Exchange information on new and emerging scientific issues.

Principles of EU position paper on the pharmaceutical sector:

- Enable EU and US regulators to work more closely together using existing bodies;
- Avoid as far as possible unnecessary costs caused by different regulations in the EU and US;
- Respect the EU's strict chemicals standards that protect people and the environment.

Reasons for negotiating pharmaceuticals within TTIP is that the EU believes there is potential to improve how EU and US regulators work together, in three areas specifically:

- Inspections;
- Approvals;
- Innovation.

EU goals for pharmaceuticals in TTIP agreement:

- To recognise each other's inspections of manufacturing plants, based on principles and guidelines known as 'Good Manufacturing Practice (GMP)';
- Exchange information and work more closely together in order to foster innovation and approval of medicines;
- Facilitate global development of new medicinal products, biosimilars and generics.

It should be noted that this Trade Sustainability Impact Assessment (TSIA) is conducted in parallel with the ongoing negotiations. As such the ex-ante impact analysis is based on the partial information that is currently available (position papers and other sources such as public reports of the negotiation rounds) – and not the final negotiated (draft) text of a TTIP agreement.

8.2. The chemicals and pharmaceutical sectors in the EU

In this section, we cover the basic characteristics of the EU chemicals and pharmaceutical sectors in terms of relative production (shares) over time, EU Member States contributions to production, the importance of extra-EU markets for the EU chemicals and pharmaceutical industry, value chain links for these sectors, and international trade. We start, however, with a definition of the sector.

8.2.1. Sector definition

The starting point of the sector definition is based on the GTAP 57⁵²⁶ product classifications, as these are used to model the expected impacts of TTIP at sector level (see section 8.4). The GTAP database groups chemicals, plastic, rubber, and pharmaceutical products in one group named chemicals. However, since (the manufacturing) of pharmaceuticals can be seen as a separate sector, we will mainly make use of Eurostat data on NACE code product classifications, where pharmaceuticals are separated. Chemical products, rubber and plastic products will be combined and presented as "the chemical sector". In Table 8.1 we present these (sub) sectors as well as one level of disaggregation further underneath. This way it is very clear what sector we are talking about.

Table 8.1 Sector definition

Chemicals		Pharmaceuticals
Chemicals and chemical products (NACE C20)	Rubber and plastic products (NACE C22)	Pharmaceutical products and preparations (NACE C21)
Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubbers in primary forms	Manufacture of rubber products	Manufacture of basic pharmaceutical products
Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	Manufacture of plastic products	Manufacture of pharmaceutical preparations
Manufacture of paints, varnishes and similar coatings, printing ink and mastics		
Manufacture of pesticides ⁵²⁷ and other agrochemical products		
Manufacture of other chemical products		
Manufacture of manmade fibres		

8.2.2. Economic structure of the EU chemicals and pharmaceutical sectors

Below we describe the economic structure of the EU chemicals and pharmaceutical sectors, including for the different subsectors of the chemicals sector, number of enterprises and size distribution, developments in terms of turnover, value added, employment and investment. These trends – together with the international comparison and information about the degree of market concentration and value chains - will allow us to sketch a competitiveness picture of the EU chemicals sector and of the pharmaceutical sector.

Size of the EU chemicals and pharmaceutical sectors

Table 8.2 below provides an overview of the EU chemicals sector, split in chemical products and rubber/plastics. In 2013 the chemicals sector counted 90,511 enterprises, with the majority in the rubber/plastics subsector. Also in terms of number of employees the rubber/plastics subsector is larger than the chemical products sector. The chemical products subsector saw a drop in both the number of enterprises and the number of employees in 2008, but remained relatively stable in the period afterwards (2009-2012). When looking at the amount of turnover and value added generated by the sector, positions are switched and the chemical products subsector seems to be more important. This subsector made up 62 percent of the € 773 billion of turnover generated and 58 percent of the € 190 billion of value added generated in 2012. With a turnover equal to 11 percent of total turnover generated by all manufacturing sectors, the chemical sector stands in third place. Only the processed foods and motor vehicle sector generated more output. When comparing value added with the other manufacturing sectors, the chemicals sector stands on top together with manufacturing of machinery and equipment with a share of 12 percent of total manufacturing value added.

⁵²⁶ The 2008 Global Trade Analysis Project database contains 57 different sectors.

⁵²⁷ It should be noted that pesticides are negotiated separately in TTIP. The European Commission has published a separate factsheet on pesticides.

The vast majority of chemicals production comes from Germany (24.3 percent), France (12.1 percent), Italy (10.1 percent), The Netherlands (7.0 percent), the UK (6.7 percent) Spain (5.9 percent) and Belgium (4.6 percent).

Table 8.2 EU chemical sector

	2006 528	2007	2008	2009	2010	2011	2012	2013
Number of enterprises								
Chemical products	29,069	30,000	28,580	28,263	28,611	28,208	28,320	28,329
Rubber/plastics	- ⁵²⁹	-	66,385	64,494	65,756	65,107	63,360	62,182
Turnover (billion €)								
Chemical products	499	519	-	417	490	479	483	-
Rubber/plastics	274	292	286	239	271	300	290	290
Value added (billion €)								
Chemical products	110	111	-	912	111	110	110	110
Rubber/plastics	79	83	80	71	77	82	80	82
Number of employees (x100)								
Chemical products	12,613	12,376	12,000	11,600	11,400	12,000	-	11.000
Rubber/plastics	17,692	17,753	17,161	15,810	15,644	16,111	15,810	15.863

Source: Eurostat SBS database.

Compared to the chemicals sector, the pharmaceutical sector seemed to be affected less by the global financial crisis. The number of enterprises and employees remained stable over time and the amount of value added and turnover generated even increased from 2006 till 2011. Although the pharmaceutical sector is small in number of enterprises and employees, it is large in terms of turnover and value added. The sector generated a turnover of € 229 billion in 2013 which equals 3 percent of total manufacturing turnover. Value added in the pharmaceutical sector equalled € 80 billion. "According to Eurostat data, the pharmaceutical industry is the high technology sector with the highest added-value per person employed, significantly higher than the average value for high-tech and manufacturing industries. The pharmaceutical industry is also the sector with the highest ratio of R&D investment to net sales. According to the 2012 EU Industrial R&D Investment Scoreboard the pharmaceuticals and biotechnology sector amounts to 17.7 percent of total business R&D expenditure worldwide."⁵³⁰

Table 8.3 EU pharmaceutical sector

Pharmaceuticals	2006	2007	2008	2009	2010	2011	2012	2013
Number of enterprises	4,000	- ⁵³¹	3,977	4,606	4,000	4,000	4,000	4,200
Turnover (billion €)	186	201	2010	217	231	232	228	229
Value added (billion €)	68	71	76	-	856	86	84	80
Number of employees (x100)	5,859	5,634	5,534	5,314	5,387	5,396	5,452	5,544

Source: Eurostat SBS database.

⁵²⁸ Up to 2010 the figures present data for EU27, from 2011 onwards the figures present data for EU28. This applies to all Eurostat SBS data.

⁵²⁹ Eurostat does not provide values for some of the data points.

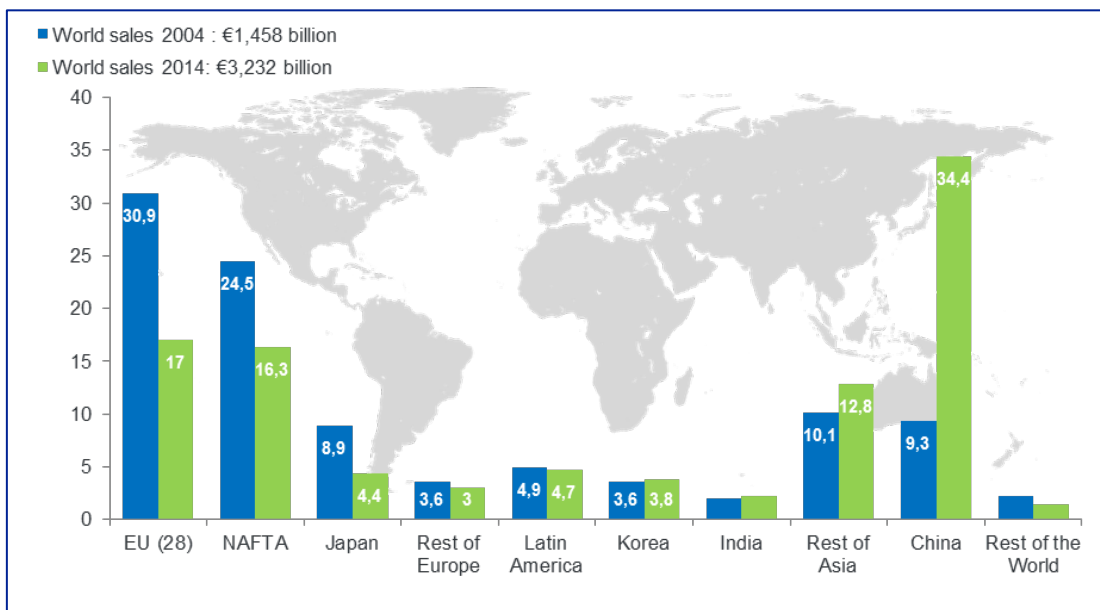
⁵³⁰ European Federation of Pharmaceutical Industries and Associations (EFPIA) (2013) "The Pharmaceutical Industry in Figures, Key data 2013.

⁵³¹ Eurostat does not provide values for some of the data points.

Global market share

The European chemicals sector accounted for 30.9 percent of global chemicals production in 2004. This share has dropped by 14 percentage points to 17.0 percent in 2014 despite the fact that in absolute terms EU chemicals production has increased. The EU's top position in 2004 has been taken over by China. Chinese chemicals production has increased almost fourfold since 2004 to 34.4 percent of total global chemicals production. The NAFTA (including the US) has seen its share in chemicals production drop from 24.5 percent in 2004 to 16.3 percent in 2014 – also a significant decline, but a smaller one than in the EU. In 2014 the combined EU and NAFTA chemicals production equalled the Chinese. Figure 8.1 shows these output shifts between 2004 and 2014.

Figure 8.1 World chemicals output – values and global shift

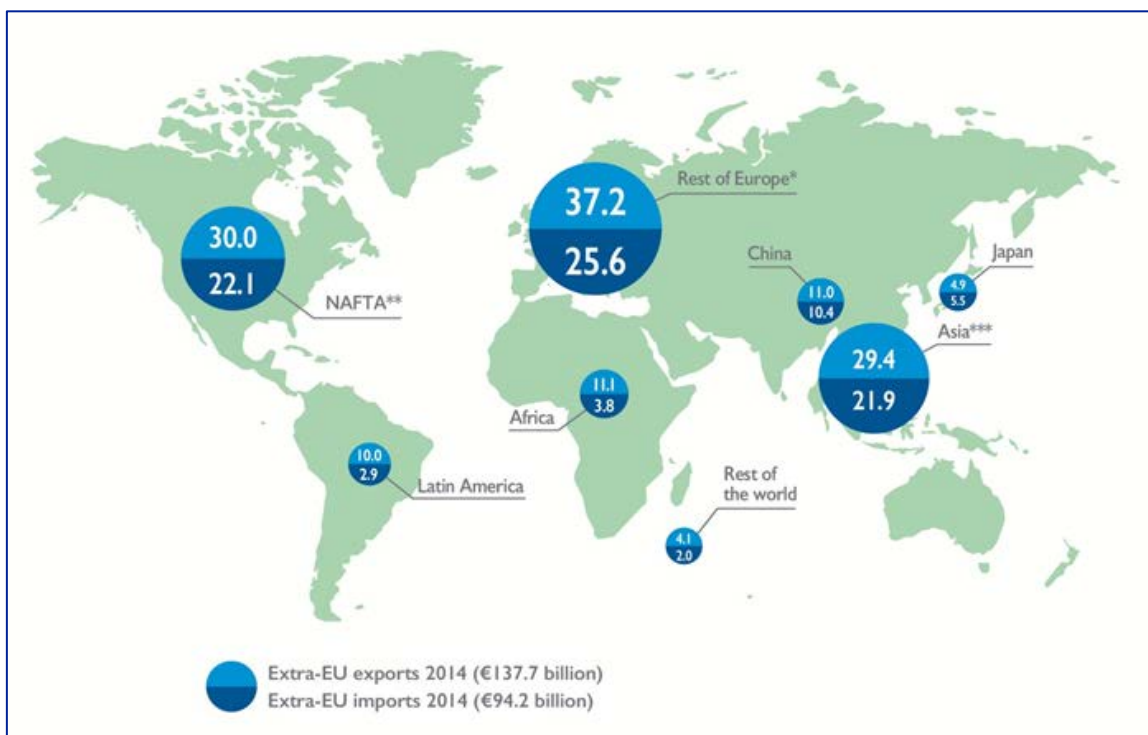


Source: CEFIC (2016).

As for the European pharmaceutical sector, it accounted for 26.8 percent of the global pharmaceutical market in 2011 and is thus still a dominant player globally. As a market, in 2014 North America accounted for 44.5 percent of world pharmaceutical sales compared with 25.3 percent for Europe. According to IMS Health data, 57 percent of sales of new medicines launched during the period 2010-2014 were on the US market, compared to 25 percent on the European market (Cefic, 2014).

The EU may not be the largest chemicals producer anymore, but in terms of exports the EU chemicals sector is still dominant, accounting for 42.5 percent of global chemicals exports in 2013. The EU runs a trade surplus with the rest of the world in chemicals (CEFIC, 2016). All other regions – as is depicted in Figure 8.2 – are net importers of EU chemicals. It is important to note that due to the high degree of production integration in the chemical sector, imports are often raw materials or intermediate chemical products that are needed for further intermediate good or final goods production.

Figure 8.2 Global chemical exports (2014 in € billion)



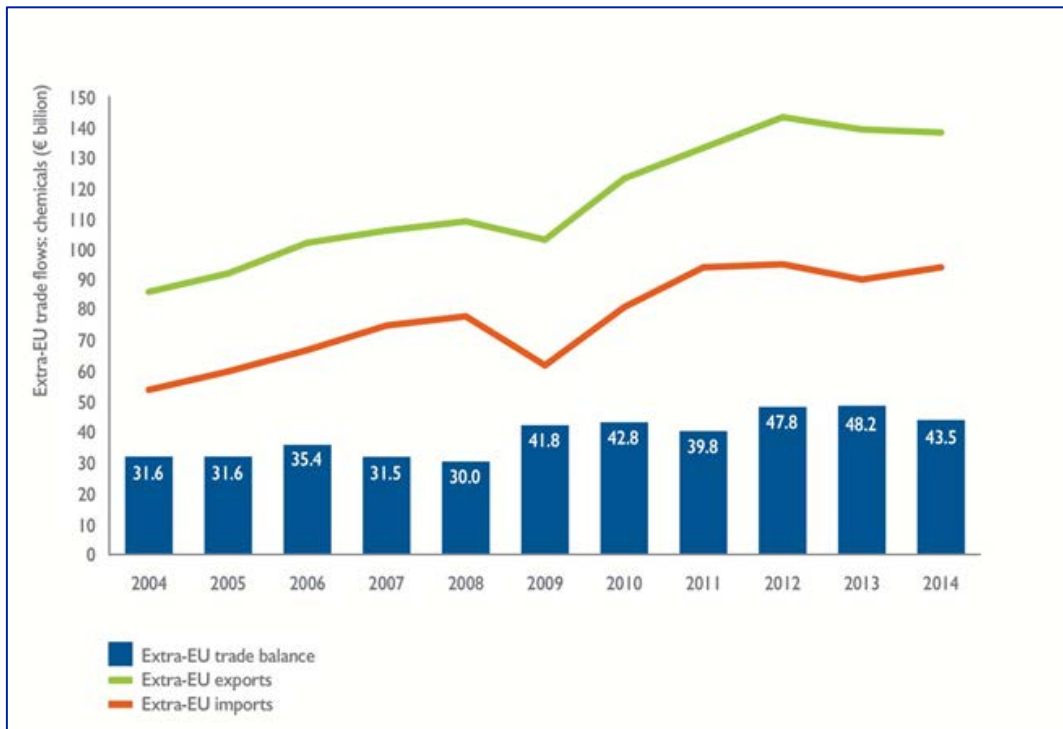
Source: Eurostat and CEFIC (2016).

It is important to note that the EU chemicals export percentage of 42.5 percent of total global chemicals exports includes intra-EU trade (CEFIC, 2014). Extra-EU exports of chemicals account for 14 percent of global exports, whereas intra-EU trade account for 29 percent of global exports in chemicals. Hence one of the drivers of growth in trade of chemicals is the EU internal market. According to CEFIC (2014), further deepening of the EU internal market between 2003 and 2013 helped the chemical industry. Especially when we consider the 500 million consumers who constitute the EU internal market. EU enlargement also gave an extra boost. In fact, growth in exports of the EU chemical sector was more driven by increases in intra-EU trade than by extra-EU trade.

In Figure 8.3 we present the extra-EU exports and extra-EU imports for the EU in chemicals based on Eurostat data. With the exception of the years 2009 and 2013, both exports and imports have increased each year. Again, because of the highly integrated global value chains both imports and exports increased. These global value chains are the reason why the chemicals industry benefits from free markets and limited regulatory differences –TTIP is expected to contribute to these. In 2013, a record trade surplus of € 48.2 billion has been reported. This level of trade surplus makes the chemicals industry one of the most important contributors to the EU's overall trade surplus. Around 75 percent of the European chemicals production is for use inside the EU, while 25 percent is for extra-EU exports. The main extra-EU export markets (in 2013) are Rest of Europe (27.2 percent of extra-EU exports)⁵³², followed by the NAFTA market (with 22.4 percent) and Asia (with 21.6 percent).

⁵³² Rest of Europe is defined here as Switzerland, Norway, Russia, Turkey and Ukraine.

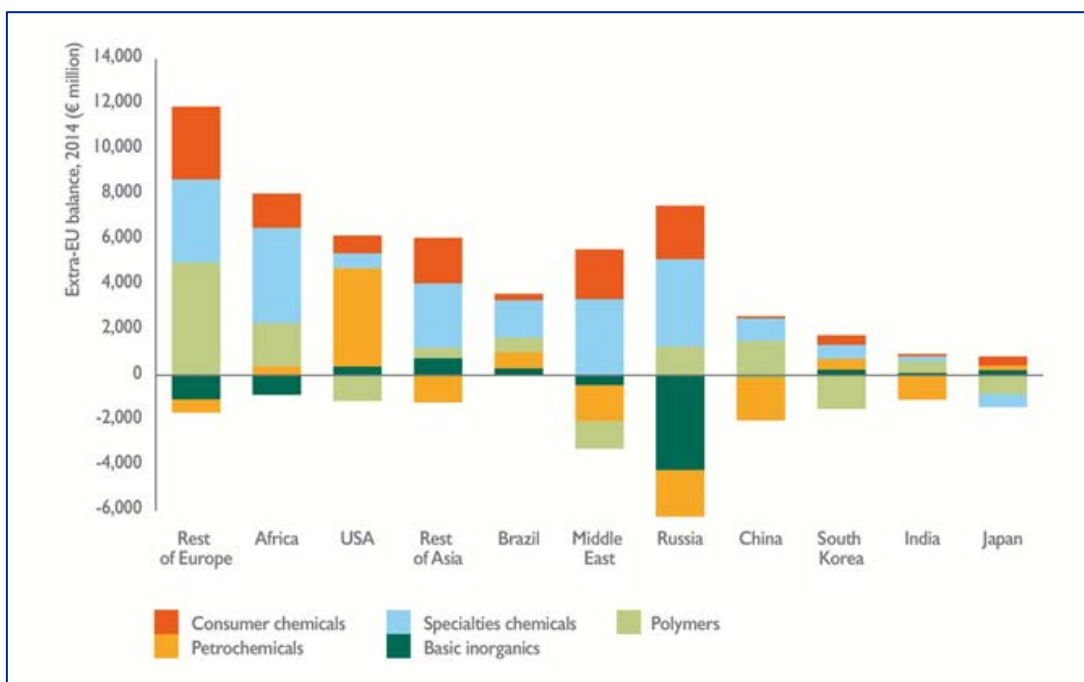
Figure 8.3 Extra-EU chemicals exports and imports (2004 - 2014)



Source: Eurostat and CEFIC (2016).

When we break down these total export and import patterns per product category and export destination, we find that the total trade surplus of € 48.2 billion in 2014 comes mainly from consumer and specialty chemicals (traded with Rest of Europe, Africa, Rest of Asia, Russia and the Middle East) and to a lesser degree from polymers and petrochemicals (with the net trade surplus in petrochemicals being mainly driven by exports to the US). In basic inorganic products, the EU runs a trade deficit. This is especially driven by trade in basic inorganics with Russia as shown in Figure 8.4.

Figure 8.4 Disaggregated trade surpluses and deficits per export destination



Source: CEFIC (2016).

For the pharmaceutical sector, extra-EU exports equalled €113.4 billion and extra-EU imports equalled €57.8 billion in 2013, which resulted in positive trade balance of €55.6 billion. Both figures have more than doubled since 2003, when the figures equalled €49.5 billion and €26.1 billion respectively⁵³³. The US and Switzerland are the two main trading partners for extra-EU trade, both for imports and exports. Of all extra-EU exports, 27 percent was destined for the US, and 11 percent was exported to Switzerland (in 2013). The two countries are equally important as a source of imports, where the US and Switzerland accounted for 37 percent and 36 percent respectively.

EU27 outward Foreign Direct Investment (FDI)

The EU and US chemicals sectors are both important players in global FDI in the chemicals sector and there is a substantial amount of EU investment in the sector going to the US and vice-versa. Eurostat FDI data for the sector are available at sub-sector level. Data for pharmaceuticals are however not available in Eurostat.

The outward FDI flows and stock are presented in Table 8.4 and 8.5 for a selected number of destinations, including all outside the EU, the United States, China and Hong Kong. The latter are included as they can be seen as increasingly important FDI destinations. For inward FDI flows and stocks (see Table 8.6 and 8.7) the latter two are not included as origins of FDI, as their role is negligible.

In 2012, EU outward FDI to the US in the sector accounted for 12 percent of all extra-EU FDI. While outward FDI flows and stock towards China/Hong Kong are still limited in comparison to the US, outward FDI destined for China/Hong Kong has increased substantially over the period 2008-2012, with EU FDI stock in the sector in China more than doubling.

Table 8.4 Outward FDI flows* of EU27 Chemicals sector & sub-sectors (million €)

Destination	2008	2009	2010	2011	2012
C20 Manufacture of chemicals and chemical products					
Extra EU-27	8,761	25,745	49,709	60,813	-27,024
United States	7,161	19,582	2,581	37,374	-4,394
China (except Hong Kong)	245	367	223	832	990
Hong Kong	-320	289	17	-214	264
C22 Manufacture of rubber and plastic products					
Extra EU-27	1,314	424	1,746	1,616	1,540
United States	503	-80	260	283	1,340
China (except Hong Kong)	171	109	228	85	-136
Hong Kong	26	-34	32	63	-94

* Financial account, Direct investment, abroad.
Source: Eurostat.

Table 8.5 Outward FDI stock* of EU27 Chemicals sector & sub-sectors (million €)

Destination	2008	2009	2010	2011	2012
C20 Manufacture of chemicals and chemical products					
Extra EU-27	95,048	94,224	124,550	219,042	214,591
United States	27,592	23,604	31,745	81,520	80,909
China (except Hong Kong)	2,850	3,122	4,367	8,518	8,757
Hong Kong	427	529	695	5,622	5,683
C22 Manufacture of rubber and plastic products					
Extra EU-27	18,377	16,822	18,475	19,620	21,319
United States	4,322	3,438	3,504	3,697	3,570

⁵³³ http://ec.europa.eu/eurostat/statistics-explained/index.php/International_trade_in_medicinal_and_pharmaceutical_products.

Trade SIA on the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the USA

Destination	2008	2009	2010	2011	2012
China (except Hong Kong)	1,888	1,822	2,471	1,686	2,216
Hong Kong	149	108	123	504	377

* Financial account, Direct investment, abroad.

Source: Eurostat.

EU27 Inward Foreign Direct Investment (FDI)

As is very clear from the tables, the EU and US chemicals sectors are strongly integrated through FDI. While both outward and inward investment flows fluctuate somewhat, outward stock has increased significantly over time. The inward stock on the other hand significantly increased in 2010 and then decreased by more than 50 percent. Inward FDI stock in the chemicals sector originating from the US was much smaller than EU stock in the US, but did account for a much higher share in total FDI stock originating from outside the EU at approximately 47 percent in 2012. The EU is thus a net investor in the chemicals sector in the US. Unfortunately no readily available data were found on the relative importance (i.e. vis-à-vis other countries/regions) of the EU as a source and recipient of FDI in the US chemicals sector. However, it is likely to be of similar importance.

Table 8.6 Inward FDI flows* into EU27 Chemicals sector & sub-sectors (million €)

Origin	2008	2009	2010	2011	2012
C20 Manufacture of chemicals and chemical products					
Extra-EU27	6,695	20,837	34,259	8,878	-6,319
United States	1,026	7,530	16,281	8	-1,814
C22 Manufacture of rubber and plastic products					
Extra EU-27	-888	301	41	791	902
United States	111	-153	-25	445	-364

* Financial account, Direct investment, In the reporting economy; Source: Eurostat.

Table 8.7 Inward FDI stock* into EU27 Chemicals sector & sub-sectors (million €)

Origin	2008	2009	2010	2011	2012
C20 Manufacture of chemicals and chemical products					
Extra EU-27	149,557	136,272	207,617	85,986	70,897
United States	79,263	58,022	85,656	34,751	28,344
C22 Manufacture of rubber and plastic products					
Extra EU-27	16,198	17,898	22,061	10,057	13,741
United States	4,634	6,100	9,181	4,958	4,943

* Financial account, Direct investment, In the reporting economy.

Source: Eurostat.

8.2.3. EU market structure: MNEs versus SMEs

Often it is thought that the chemicals sector is one of scale economies with large firms dominating the market. That is only partially true. The share of SMEs in the chemical industry's turnover varies widely, depending on the subsector.

Number of enterprises and size distribution

In 2012 an estimated 91.680 enterprises were active in the chemicals sector in the EU28, representing a significant share of all manufacturing enterprises. The vast majority of these enterprises (approximately 69.1 percent) were active in the manufacture of rubber and plastic products. Table 8.8 below presents the number of enterprises for each sub-sector.

The number of enterprises in the pharmaceutical sector is much lower and equalled only 4.000 in 2012.

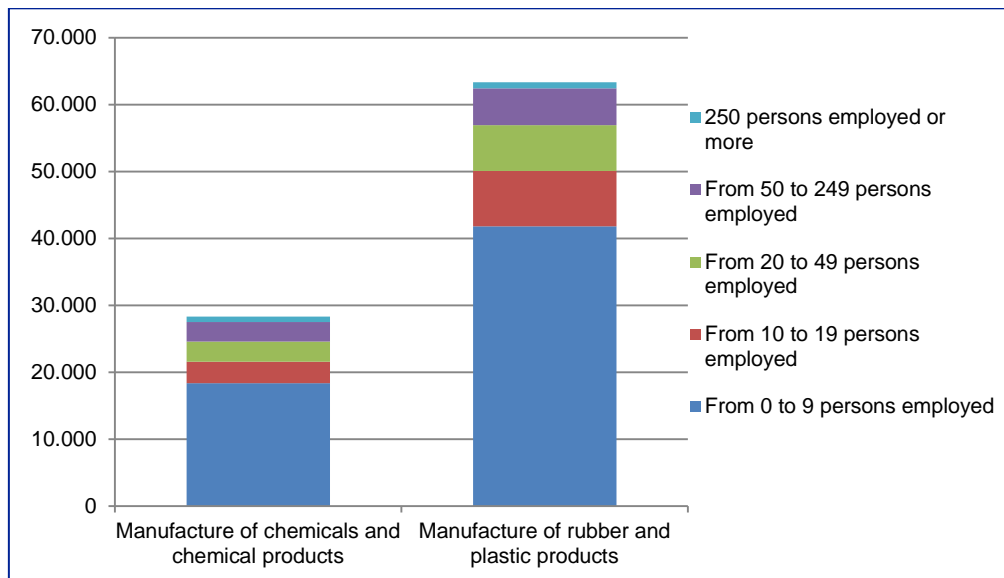
Table 8.8 Number of enterprises by sub-sector (EU27, 2008-2011; EU28, 2012)

Subsector	2008	2009	2010	2011	2012
C20 - Manufacture of chemicals and chemical products	28,579	28,263	28,611	27,881	28,320
C22 - Manufacture of rubber and plastic products	66,384	64,494	65,756	63,837	63,360

Source: Eurostat, SBS database

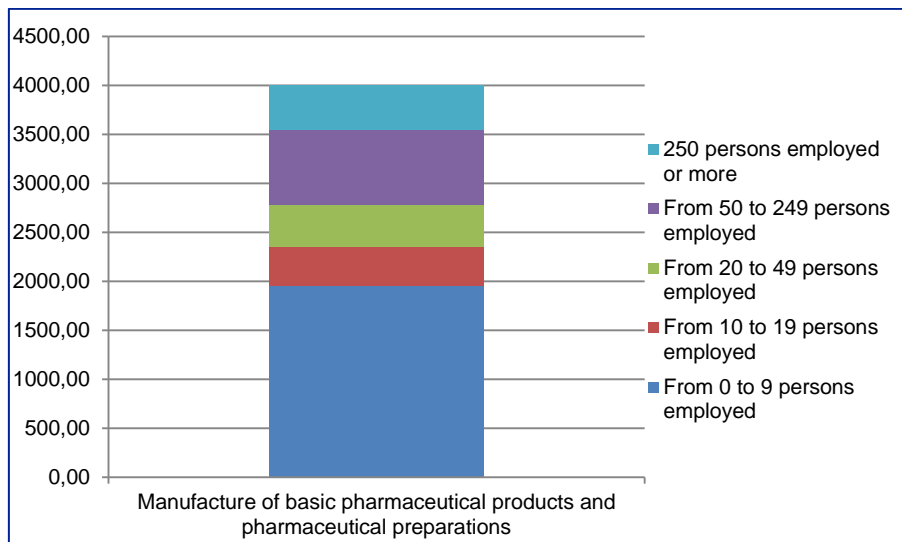
The size distribution of firms in the chemicals and pharmaceutical sectors is illustrated in the figures below. Clearly in the chemicals sector the vast majority of companies (98 percent) falls into the SME category (less than 250 employees). The size distribution is relatively equal between the two subsectors in the chemicals sector. Although the majority of companies in the pharmaceutical sector falls in the SME category as well, their share is much lower than in the chemicals sector. Large firms (more than 250 employees) make up 11 percent of all firms in the pharmaceutical sector.

Figure 8.5 Total number of firms per chemicals sub-sector (by firm size, 2012)



Source: Eurostat SBS database.

Figure 8.6 Total number of firms in the pharmaceutical sector (by firm size, 2012)



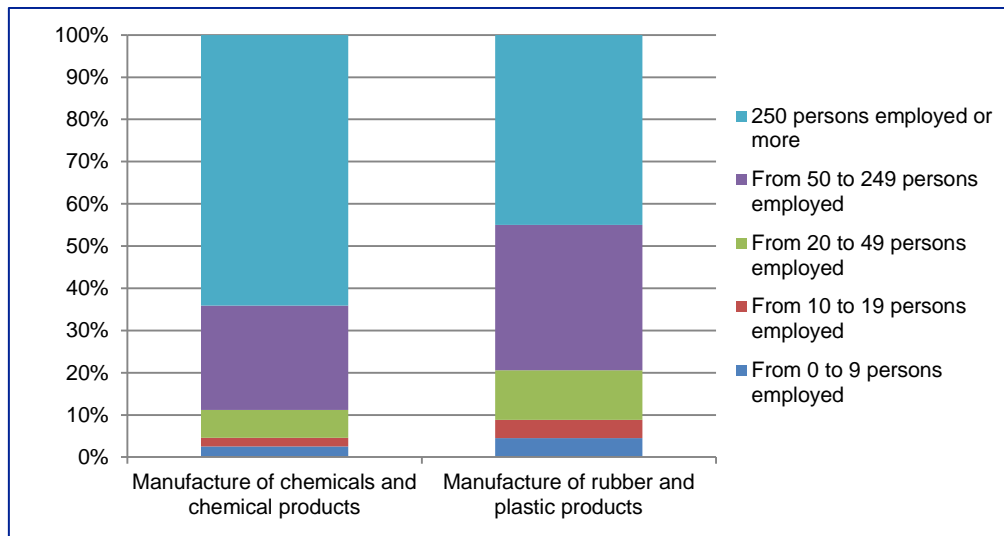
Source: Eurostat SBS database.

Share of SMEs in the sector's turnover

In the chemicals sector about two-fifth (42 percent) of the turnover is generated by SMEs. The share of turnover for the two subsectors is presented in Figure 8.7 below. The share of turnover generated by SMEs in the chemical subsector is slightly lower (36 percent) than in the manufacturing of rubbers and plastic (55 percent). In the pharmaceutical sector the share of turnover generated by SMEs is only 16 percent, which is much lower than in the chemicals sector. However, given the larger share of large firms active in the pharmaceutical sector it is not surprising that 84 percent of turnover is generated by large firms.

There is no figure available for the pharmaceutical sector due to missing data points.

Figure 8.7 Share of SMEs in the EU Chemical industry's total turnover (%)



Source: Eurostat SBS database.

Finally, in Table 8.9 below, from the SME survey Ecorys conducted together with the European Commission as part of this TSIA, we get information on total sales outside Europe, grouped by firm size. Following the EU definition of an SME (less than 250 employees), we observe the following:

- For all SMEs on average, 34 percent do not export or export less than 10 percent of chemicals production outside Europe, 31 percent export between 11 and 20 percent, and 20 percent of all SMEs export between 41 and 70 percent of chemicals production;
- For the three smallest firm categories (less than 50 employees), the majority does not sell outside Europe or less than 10 percent;
- For the larger SMEs (from 50 to 250 employees), the majority indicates that 11 to 20 percent of chemical sales occur outside Europe.

Table 8.9 SME chemical sales outside Europe (2013)

	more than									All SMEs
	1-9;	10-25;	25-50;	50-100;	100-150;	150-200;	200-250;	250-500;	500;	
0-10%	43%	75%	25%	25%	0%	33%	0%	33%	10%	34%
11-20%	43%	0%	0%	38%	100%	33%	50%	17%	20%	31%
21-30%	0%	25%	0%	13%	0%	0%	0%	0%	10%	7%
31-40%	0%	0%	0%	0%	0%	0%	0%	17%	30%	0%
41-50%	0%	0%	0%	13%	0%	33%	50%	0%	10%	10%
51-60%	0%	0%	25%	13%	0%	0%	0%	0%	10%	7%
61-70%	0%	0%	25%	0%	0%	0%	0%	17%	0%	3%
71-80%	0%	0%	0%	0%	0%	0%	0%	17%	0%	0%
81-90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
91-100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Blanks	14%	0%	25%	0%	0%	0%	0%	0%	10%	7%

Source: SME survey.

As highlighted in the table above the smaller SMEs are skewed towards low degrees of exports, while middle-sized companies increasingly export themselves. This indicates that micro SMEs are exporting less and link into the chemicals value chain through supplying to middle-sized SMEs and larger firms who – in turn – are more internationally connected.

Table 8.10, presents the information on total sales outside the EU for the pharmaceutical sector. We can observe the following⁵³⁴:

- For all SMEs on average, 40 percent do not export or export less than 10 percent of pharmaceutical production outside Europe;
- The largest share of sales outside Europe is for firms with 1-9 employees, namely 61 to 70 percent.

Table 8.10 SME pharmaceutical sales outside Europe (2013)⁵³⁵

	more than									All SMEs
	1-9;	10-25;	25-50;	50-100;	100-150;	150-200;	200-250;	250-500;	500;	
0-10%	0%	100%	100%	0%	0%	0%	0%	0%	33%	40%
11-20%	0%	0%	0%	100%	0%	0%	0%	0%	0%	20%
21-30%	50%	0%	0%	0%	0%	0%	0%	0%	0%	20%
31-40%	0%	0%	0%	0%	0%	0%	0%	0%	67%	0%
41-50%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
51-60%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
61-70%	50%	0%	0%	0%	0%	0%	0%	0%	0%	20%
71-80%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
81-90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
91-100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Blanks	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Source: SME survey.

In the SME survey both the chemical sector and the pharmaceutical sector indicated that there are several trade irritants that cause companies to export less to the US or not at all. Examples from the chemicals sector are the tariffs that are still in place. One company indicated that they

⁵³⁴ Given the small number of respondents in the pharmaceutical sector, these numbers should not be taken as representative for the whole sector, but are merely illustrative.

⁵³⁵ The percentages for firms with a number of employees between 100 and 500 are zero because no pharmaceutical firms with this number of employees filled in the survey.

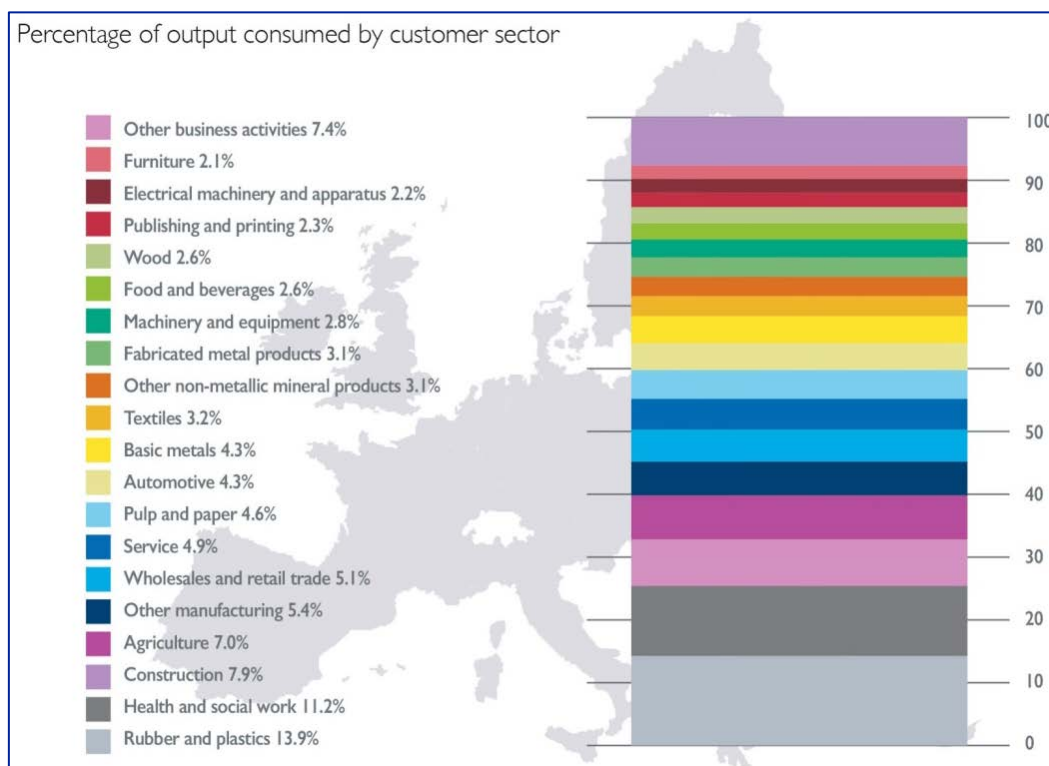
do not export because they anticipated that the regulatory costs would exceed 20 percent of their sales value. Although tariffs in the pharmaceutical sector are close to zero the regulatory differences are still a burden to trade. In the SME survey the pharmaceutical sector mentioned inter alia duplicative testing, studies and clinical trials. From this section, we conclude that if TTIP affects the chemicals (and pharmaceutical) sector at large many SMEs are potentially better off and several more may – for the first time – see opportunities to export.

8.2.4. Value chains and fragmentation of the supply chain in the chemical sector

The chemicals sector is in many ways a typical intermediate sector, supplying most of its outputs to other industries. The pharmaceutical sector produces relatively more for final consumption.

According to CEFIC, approximately two thirds of the chemical sector’s outputs are sold to other industries as intermediate goods. Figure 8.8 below illustrates how this is distributed over the various other industries.

Figure 8.8 Chemical sector output sales



Source: CEFIC Chemdata International 2014.

Based on WIOD (2011), we have constructed the EU chemical sector⁵³⁶ value chain, which is illustrated in Figure 8.9 below. In the Figure, the EU sector (on the right) is compared to the US sector (on the left) for comparison and to illustrate the importance of these two regions for one another in terms of inputs for and outputs from their respective chemicals sectors. The chemical value chain includes information on inputs and their origin, intermediate outputs and final outputs and their destinations. The light blue boxes show the goods and services used to produce an average product in the chemical industry for both the US and EU. The percentages indicate the cost shares of this input as a percentage of total output. A high cost share can be explained by either intensive use of this input product, high prices for the input or a combination of both.

⁵³⁶ In the WIOD database the chemical sector does include pharmaceutical products as well, but does not include plastics and rubbers.

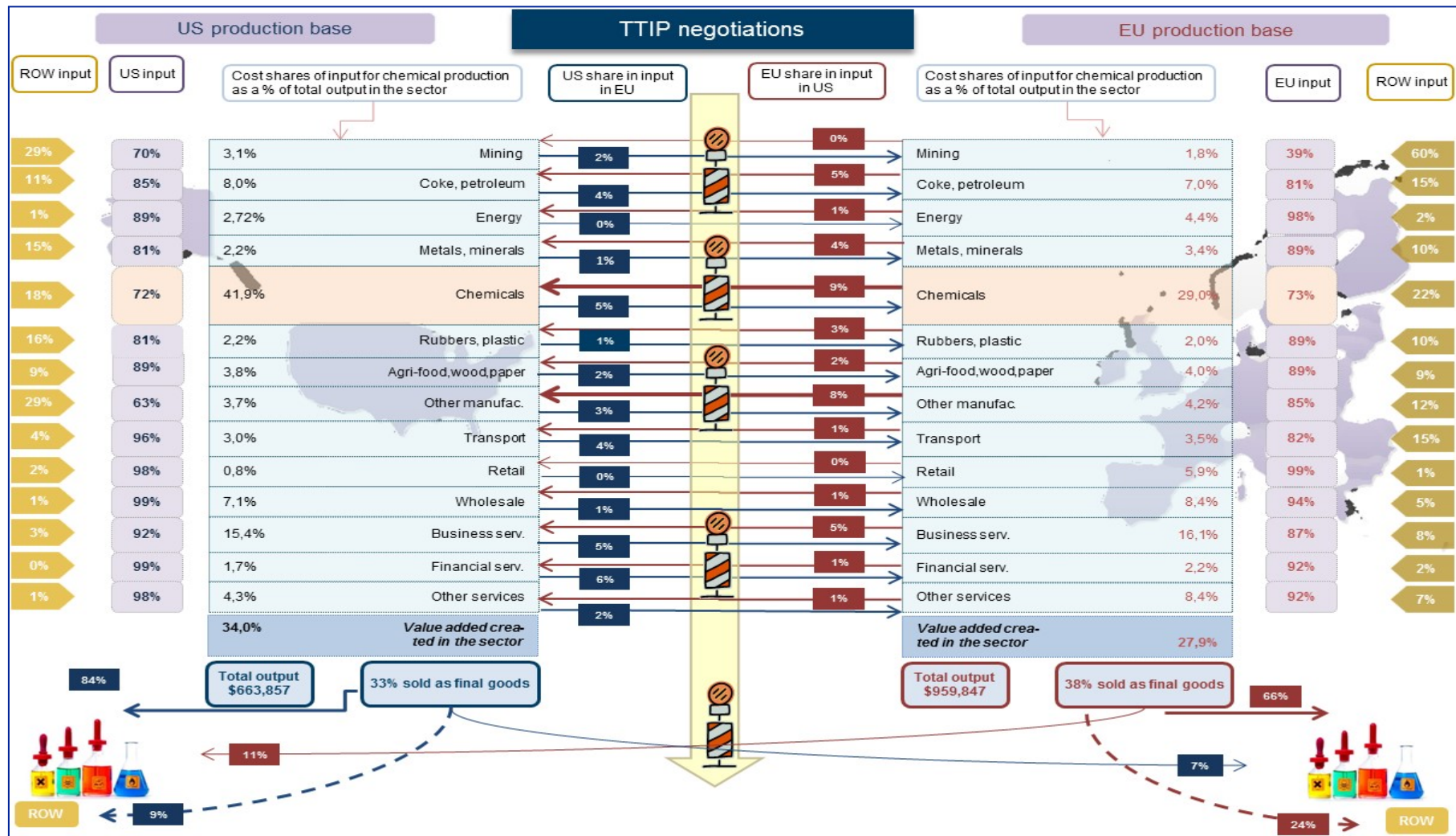
As for the main input products used in chemicals production, these come mostly from other chemicals producers and from the business services sector (29 percent and 16 percent of share in output cost), followed at a distance by wholesale, other services and coke and petroleum products (respectively 8.4, 8.4 and 7 percent). The vast majority of all inputs are sourced from within the EU - for most products EU input shares range between 81 and 99 percent. The only exceptions are mining products and chemical products. More than 60 percent of mining inputs is sourced from outside the EU, which is due to the fact that the EU's own manufacturing base is simply too small. Next to these products, chemical (intermediary) products are the only inputs for which the EU chemicals industry depends to a larger extent on outside EU producers: 22 percent of these inputs come from the rest of the world and 5 percent from the US. The role of the US as an input supplier to the sector is generally modest, with shares ranging from 0 to 6 percent – the highest shares coming from services inputs. Rest of World is more interesting, which could be due to cheaper products or lower trade barriers.

When comparing the EU and US value chains, a few things are worth noting:

1. US value added is slightly higher (34 percent) than EU value added (28 percent), while total EU output is substantially higher (USD 959,847 million) than US total output (USD 663,857);
2. EU and US cost structures in the industry appear to differ. For instance the costs of almost all services inputs make up a larger share of costs in the EU than they do in the US and EU inputs costs of energy as a share of output costs are also higher. However, the cost share of chemicals inputs in the EU chemicals sector are much lower than in the US, which could indicate a different (more advanced) role in the value chain of EU chemicals producers or a focus on a narrower set of products;
3. As regards the origin of its inputs, the US chemicals sector is less domestically oriented than the EU: US input shares range between 63 percent and 99 percent. As regards outputs it is much more dependent on the domestic market than the EU: 84 percent of US final outputs are sold in domestic markets compared to 66 percent in the EU;
4. The EU is slightly more important for the US as an inputs supplier than vice-versa. The EU provides a relatively substantial share of chemicals (9 percent) and other manufacturing products (8 percent) as inputs to the US chemicals sector. US shares of inputs into the EU chemicals sector are negligible except for some services inputs;
5. The US is more important for the EU as a market for final outputs than vice-versa: 11 percent of final EU chemical sector outputs were sold in the US market, versus 7 percent of US final outputs in the EU market.

Overall the picture that emerges is that the chemicals value chains are moderately globally integrated, that the EU and US domestic markets matter greatly (e.g. the EU is seemingly very much focused on the intra-EU (internal) market for its inputs). However, it should be noted that the Figure does not capture FDI, so investments of e.g. EU producers in emerging economies and sales through e.g. affiliates are not reflected. Another observation is that the input factors for the EU and US chemicals value chains differ significantly – especially services inputs and energy inputs matter.

Figure 8.9 GVC in the chemicals sector



8.2.5. Social perspective

Employment and wage indicators

According to CEFIC employment in the EU chemicals sector was about 1.2 million in 2012, while indirect employment was a factor three higher than direct employment.⁵³⁷ The majority work in the rubber and plastics, and the chemicals and chemical products sub-sectors. The labour intensity of the sector is generally low, but varies somewhat per sub-sector: The manufacture of rubber and plastics products sub-sector is labour intensive, with personnel cost amounting to approximately 20 percent of total production costs. The pharmaceutical sector employed directly 690.000 people in 2013⁵³⁸, like in the chemicals sector the indirect employment is much larger, namely three to four times the amount of direct employment.

Wages and salaries in the chemicals sector are slightly higher than the manufacturing average, with particularly the chemicals sub-sectors paying relatively higher wages. This most likely relates to the higher value added and skill levels in these sub-sectors. Social security payments added another 23 percent to the wage bill for the chemical products sub-sector and 21 percent for the rubber and plastics sub-sector.

Given the potential health and safety risks related to both production processes in the chemicals sector and the products produced – implying potential risks in handling, transport, storage and use of these products – health and safety issues are paramount in the industry. Accordingly, the sector is subject to many and strict regulations in this area, both related to risks at work and those for the general public. For example, the REACH Regulation sets out a very stringent set of rules requiring the registration of all chemicals manufactured and used through which the industry has to demonstrate safety of intended uses – all relevant information has to be transmitted through the supply chain, in particular via so-called safety data sheets⁵³⁹. The CLP Regulation requires classification and labelling of all chemical substances and mixtures, providing hazard and precautionary advice to all users of chemicals⁵⁴⁰. In addition, safety of workers is regulated by a comprehensive set of legislation on occupational health and safety⁵⁴¹.

The sector itself is acutely aware of these issues and the need to actively engage in worker protection and workplace safety, as well as comply with strict regulations. In addition, voluntary industry initiatives such as 'Responsible Care' promote chemicals safety⁵⁴². Earlier than other industries perhaps, the sector has worked on improving work place health and safety and according to CEFIC, historical Eurostat data until 2007 show that working in the chemicals sector is more than twice as safe as the manufacturing average.

As the Figure below demonstrates, the lost time injury rate⁵⁴³ for the sector fell by half between 2000 and 2012, achieved mainly, according to CEFIC, through improving safety instructions, training and systemic risk assessments.

⁵³⁷ CEFIC (2014).

⁵³⁸ EPFIA (2014) The pharmaceutical industry in figures.

⁵³⁹ For further information: http://ec.europa.eu/growth/sectors/chemicals/reach/index_en.htm.

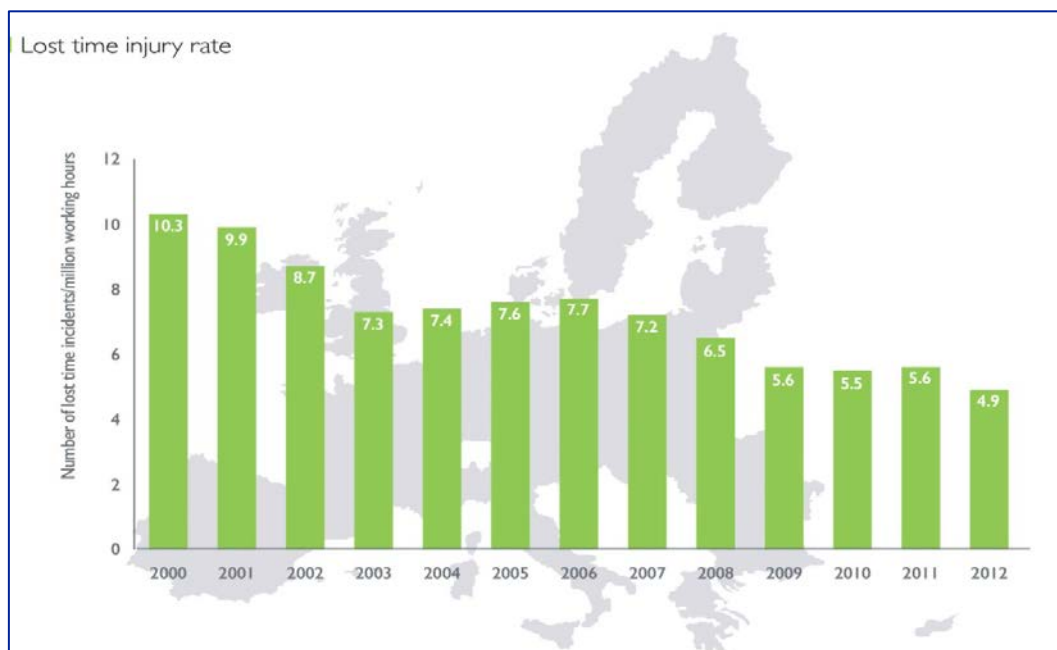
⁵⁴⁰ For further information: http://ec.europa.eu/growth/sectors/chemicals/classification-labelling/index_en.htm.

⁵⁴¹ <https://osha.europa.eu/en/legislation/directives/the-osh-framework-directive/the-osh-framework-directive-introduction>.

⁵⁴² <http://www.icca-chem.org/en/Home/Responsible-care/>.

⁵⁴³ Lost time injury rate is expressed as the number of lost time incidents per million hours resulting in at least one day out of work.

Figure 8.10 Chemicals sector lost time injury rate 2002-2012



Source: Cefic, 2014.

Specific social issues related to EU-US trade in the Chemicals sector

In the context of EU-US trade in the chemicals industry, some specific social issues should be highlighted. These relate mostly to diverging standards and regulations in the chemicals sector regarding human health and risks to public safety and health. It is in this area that most stakeholder concerns have been raised. Potential risks include amongst others safety issues in the transport, storage and use of hazardous chemicals.

As another example, the table below⁵⁴⁴ outlines some of the differences in EU and US policy in relation to hazardous chemicals, as summarised by the Centre for International Environmental Law (CIEL), which is sceptical about the motivations of the chemicals sectors own proposals for the TTIP agreement. In the area of hazardous chemicals EU regulation is generally stricter and regulatory approaches and outcomes vary between the EU and US. When it comes to regulation and safety in the chemicals sector the EU is more precautionary than the US is. In the EU manufacturers or importers of chemicals need to submit information that demonstrates that the intended uses are safe before they can be placed on the market in quantities above 1 ton per year per company, whereas in the US chemicals that have been on the market for considerable time can remain on the market and are only withdrawn if proven unsafe.⁵⁴⁵ The concern raised by some stakeholders (as written in their position papers and expressed during the TTIP stakeholder events)⁵⁴⁶ is that TTIP could lead to a regulatory freeze or even a lowering of EU standards of protection as regards hazardous chemicals – with risks to EU health and safety.

⁵⁴⁴ Although the US does have regulation in place for some of the below areas, because they are not as comprehensive as the EU regulation or lacking behind they are not considered as equal to the EU regulation.

⁵⁴⁵ This is only the case for existing chemicals, for new chemicals importers and manufactures have to submit pre-marketing notifications which will be evaluated by the Environmental Protection Agency.

⁵⁴⁶ http://trade.ec.europa.eu/doclib/docs/2014/december/tradoc_152971.pdf.

Table 8.11 Elements of EU laws and policies for toxic chemicals vs. the US policy for hazardous chemicals

Element	EU	US
Chemical manufacturers must prove the safety of existing industrial chemicals on the market*	Yes	No
Laws clearly identify classes of chemicals that are not socially acceptable, and enable their systematic substitution**	Yes	No
Government authorisation required for specific uses of industrial chemicals that are CMRs, PBTs, vPvB, EDCs or of equivalent concern***	Yes	Yes
Complete internalisation by industry of the costs of chemical pollution	No	No
Requires communication of safety measures related to uses of industrial chemicals down the value chain****	Yes	No
Minimum level of health and safety data required for industrial chemicals?	Yes*****	No

* US manufacturers do have to file a pre-manufacture notification for new chemicals. This pre-manufacture notification should include data on e.g. chemical identity, byproducts, environmental release or test data if available.

** There are some states (like California) who do have a list of chemicals that cause cancer or birth effects, there is however no substitution program.⁵⁴⁷

*** CMRs are chemicals that are carcinogens, mutagens or toxic to reproduction; PBTs are persistent, bio-accumulative and toxic chemicals; vPvB are those that are very persistent and very bio-accumulative; and EDCs are endocrine (hormone) disrupting chemicals.

**** According to CEFIC a safety data sheet is obligatory in both the EU and the US.

***** Data requirements are tiered based on tonnage.

Source: CIEL, 2014.

While CIEL accepts the potentially positive effect of regulatory cooperation, it has expressed fears that if not properly incorporated in the agreement (i.e. in its view if leaning too much toward the industry) the differences between the EU and US regulatory systems for chemicals would not be adequately remedied *“in the name of more effective, more protective regulation.”*. In their paper *“lowest common denominator”*⁵⁴⁸ they look deeper into the industries’ position paper and conclude that the industries’ recommendation to the negotiators would lower environmental and health regulation. CIEL and ClientEarth argue that the joint EU and US sectors’ own proposals are likely to:

- *“Freeze progress in regulating hazardous chemicals;*
- *Create an industry bypass around democracy;*
- *Give commercial interests and trade precedence over the protection of human health and the environment;*
- *Stifle innovation in safer chemicals; and*
- *Impede global action on hazardous chemicals”.*⁵⁴⁹

In addition, Corporate Europe Observatory (CEO) fears that the industries will use TTIP as just another means to slow down current and new regulation on endocrine disrupting chemicals (EDC).⁵⁵⁰

The European Chemical Industry Council (CEFIC) however argues differently: *“Proposals we have laid out together with our US counterpart – the American Chemistry Council – can boost regulatory cooperation, maintaining high standards while achieving regulatory efficiencies. Our proposals also respect the different regulatory systems that our societies have chosen.”*⁵⁵¹ Also, they argue that the regulatory cooperation should *“aim for better coordination of practices and demonstrate no reduction in environment and health protection.”*⁵⁵² In their proposal they indicate that they do ask EU policy makers to maintain the highest standards of chemical safety in the EU and that the areas where they seek cooperation should not lead to e.g. a freeze in the

⁵⁴⁷ <http://oehha.ca.gov/proposition-65/law/proposition-65-law-and-regulations>

⁵⁴⁸ <http://www.clientearth.org/reports/10714-response-to-eu-position-paper.pdf>.

⁵⁴⁹ <http://www.clientearth.org/reports/10714-response-to-eu-position-paper.pdf>.

⁵⁵⁰ http://corporateeurope.org/sites/default/files/toxic_lobby_edc.pdf.

⁵⁵¹ <http://www.cefic.org/newsroom/News-in-2014/Op-Ed-TTIP-is-a-remarkable-opportunity/>.

⁵⁵² http://www.cefic.org/Documents/PolicyCentre/TTIP/TTIP-Cefic-intervention-at-TTIP-Stakeholders-event-15July2015_Veronique-Garny.pdf.

progress of regulating hazardous chemicals. Examples of where they would like to see increased cooperation is in the prioritising of chemicals for assessment, or alignment of classification and labelling of chemicals and the use of international standards.⁵⁵³ The American Chemistry Council indicates as well that it does not seek to lower the levels of human health and environmental protection.⁵⁵⁴

Although it is a cross-cutting issue, the precautionary principle has often been cited as an issue of concern in the chemicals sector. Social and environmental non-governmental organisations often mention that the EU is more precautionary than the US when it comes of safety. As indicated above the EU only allows chemicals onto the market if they have been proven safe, whereas the US allows an existing chemical to be on the market until it has been proven unsafe. A study by Wiener et al. (2014) however notes that:

*“although the US does not formally endorse the precautionary principle, it has fully adopted precautionary approaches since the inception of the concept. Conversely, the EU does not always adopt a precautionary approach although it has adopted the principle in its treaty.”*⁵⁵⁵

In their study they have analysed one hundred different risks and how they are addressed in EU and US regulation. They found that for thirty six risks the US approach was more precautionary whereas for thirty one risks the EU approach was more precautionary. In twenty one cases the two approaches were perceived equally precautionary. The study concludes that in general the EU is not more precautionary than the US. There are of course differences when looking at specific examples, the US is more precautionary when it concerns emissions of particulates, BSE (mad cow disease), terrorism and smoking tobacco, and the EU is more precautionary concerning GMOs, hormone treated beef, climate change, and toxic chemicals.

8.2.6. It is however not likely that the current chemical regulations in the EU and the US will be harmonised because the these regulations differ too much, and because the US is not likely to adapt its system to the EU's precautionary approach. Environmental baseline

Greenhouse gas emissions

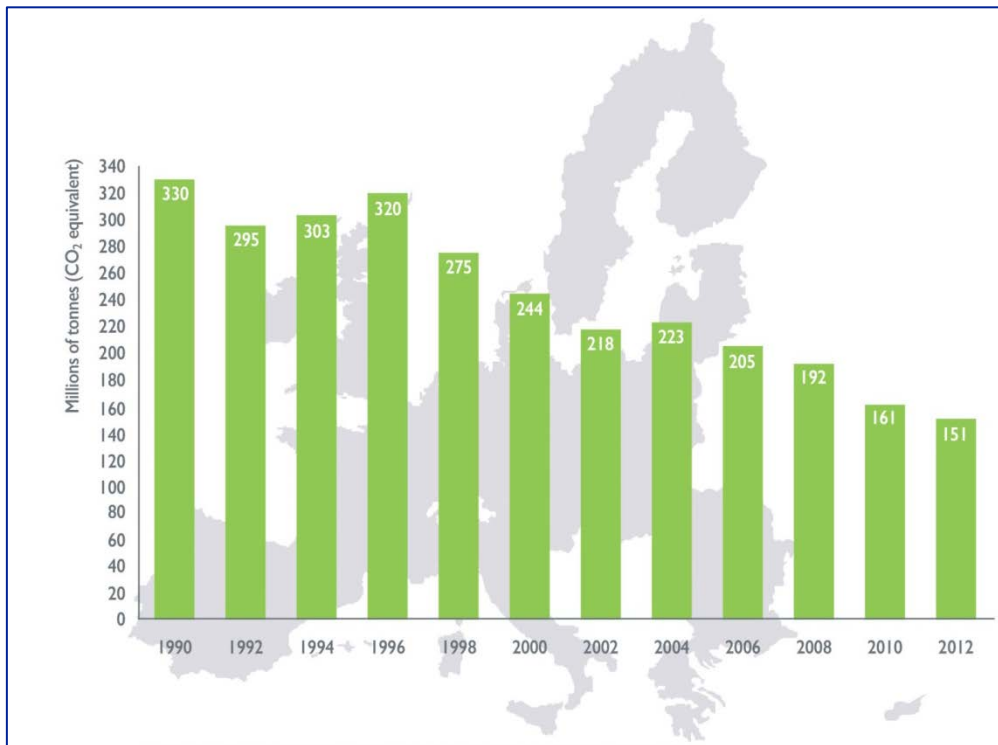
The chemicals sector includes heavy manufacturing, which is typically a big emitter of greenhouse gasses (GHG). In 2012 total GHG emissions in the EU chemicals sector stood at 150.5 million tonnes of CO₂ equivalent. Despite production increases, the sector has managed to reduce GHG emissions by 54 percent, from 330 million tonnes CO₂ equivalent in 1990. According to CEFIC (2014), these reductions were achieved mainly through a shift to less carbon intensive fuels, while over the past 20 years the abatement of nitrous oxide (N₂O), emitted by some chemical processes, has been very successful.

⁵⁵³ <http://www.cefic.org/Documents/PolicyCentre/PositionPapers/Regulatory-co-operation-and-chemicals-in-TTIP-Cefic-position-September2015.pdf>

⁵⁵⁴ <https://www.americanchemistry.com/Policy/Chemical-Safety/Endocrine-Disruption/ACC-Comments-on-Trans-Atlantic-Trade-and-Investment-Partnership.pdf>.

⁵⁵⁵ Wiener et al., 2014. The reality of precaution, comparing risk regulation in the US and Europe.

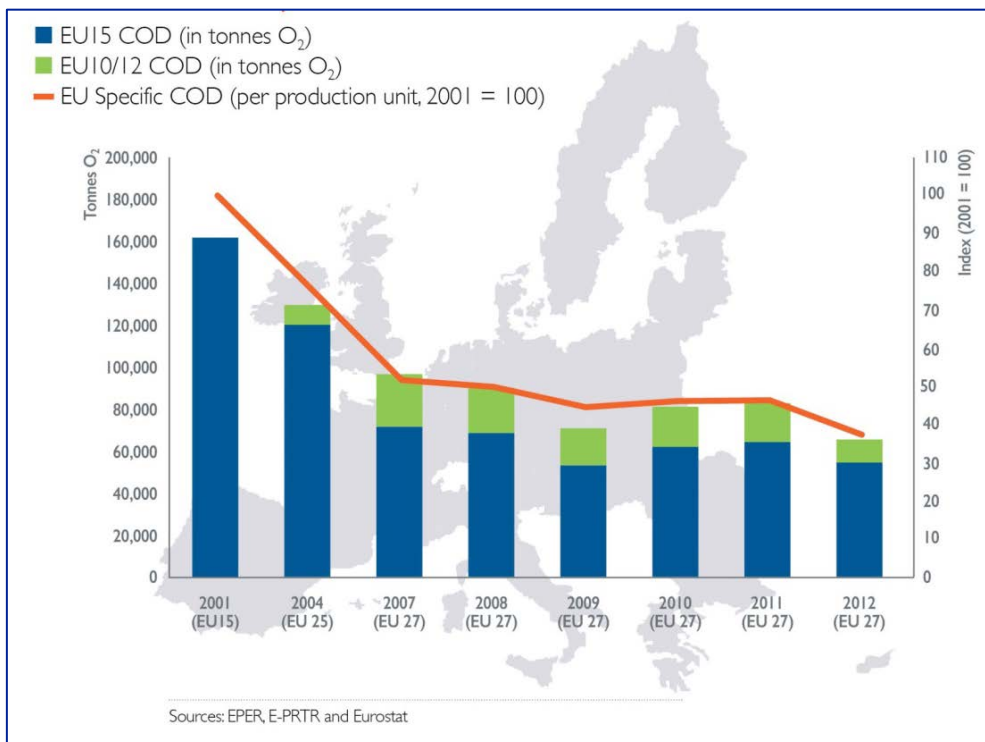
Figure 8.11 Total greenhouse gas emissions in the EU chemical industry



Source: Cefic Chemdata International 2014 & European Environmental Agency (EEA).

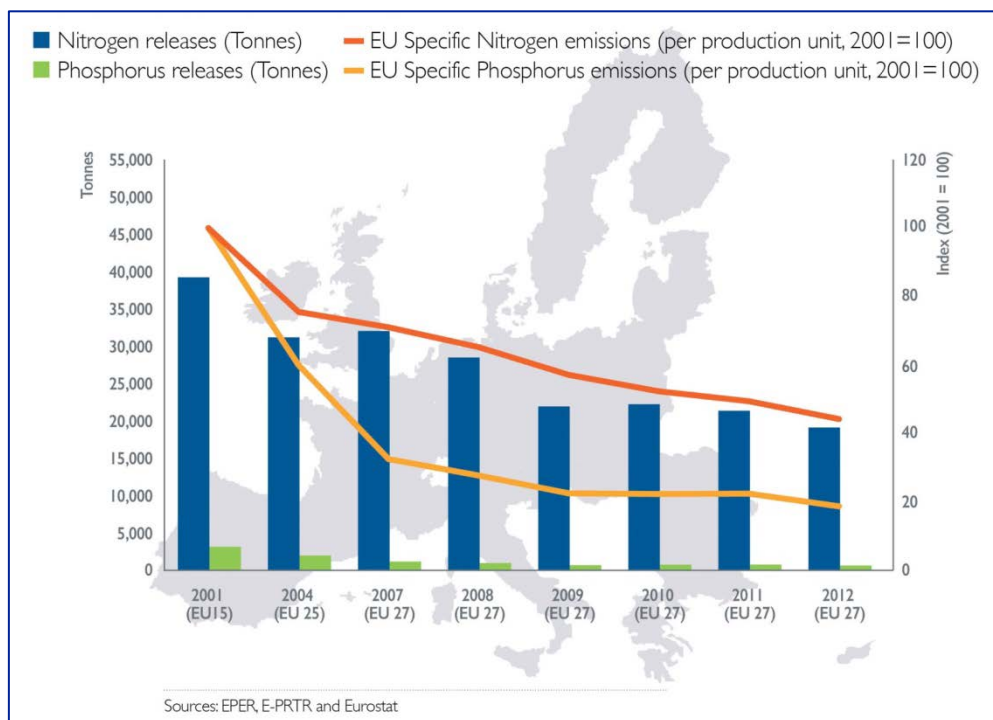
Other pollution issues related to the sector involve notably the quality of industrial wastewater, as reflected in the chemical oxygen demand (COD) contamination loads and emissions to water in the forms of nitrogen (N) and phosphorus (P). The figures below illustrate the sector's performance on these two indicators.

Figure 8.12 Chemicals sector emissions to water by chemical sector



* Source: Cefic, 2014.

Figure 8.13 Water quality: nitrogen and phosphorous emissions by chemicals sector



Source: Cefic, 2014.

The above graphs show that the chemical sector has managed to keep the emission of greenhouse gases and contamination load to water under control despite an increase of economic activity.

Specific environmental issues related to EU-US trade in the chemicals sector

Environmental issues in the context of EU-US trade in the chemicals industry – and thus highly relevant for the TTIP negotiations, are of a similar relevance as the social issues as outlined above. The environmental issues relate mostly to diverging regulations and policies between the EU and the US. As is the case with the social issues the EU and US negotiators have indicated that environmental and health standards will not be lowered. Especially regulation and policies that differ too much to allow for a more complementary approach will not be addressed.

8.2.7. Competitiveness of the EU chemical and pharmaceutical sectors

The EU accounts for over 40 percent of global exports of chemicals and is the leading exporting region in the world. However, despite a strong upward trend in the value of EU exports of chemicals and an increasing positive trade balance (see Figure 8.3) - temporarily interrupted by the economic crisis that hit the value of trade flows in 2009 - the EU share of the global chemicals market has been in decline. This decline in market share reflects the rapid growth in global demand that has outstripped EU export performance, particularly since the global economic crisis. While there has been a general rise across emerging markets, China has rapidly moved into a dominant position and now accounts for over a third of global output, compared to less than 10 percent a decade ago (see Figure 8.1).

Recent analysis⁵⁵⁶ has shown that much of the EU's loss of global market share is attributable to petrochemicals and, to a lesser extent, polymers. In these segments, EU production is faced by increasing pressure from the US, which has profited from the shale gas boom and consequently lower energy and raw material prices⁵⁵⁷. This has stimulated huge investments in the US petrochemicals sector, which are expected to seal-up the US domestic market and push US

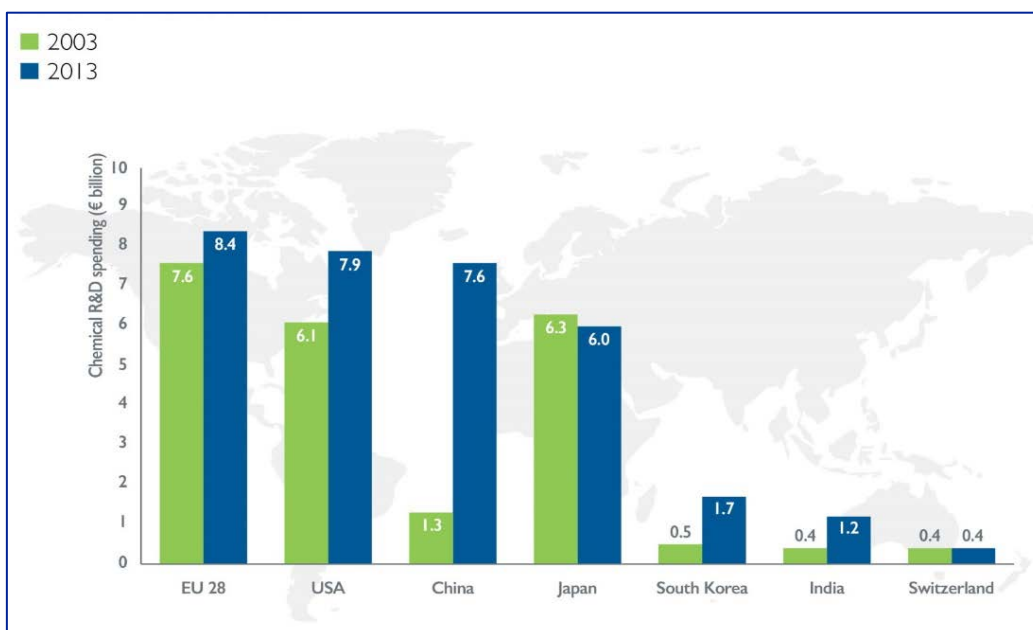
⁵⁵⁶ Oxford Economics (2014) "Evolution of competitiveness in the European chemical industry: historical trends and future prospects", available at: <http://www.cefic.org/Documents/PolicyCentre/Competitiveness/Oxford-Study-2014.pdf>.

⁵⁵⁷ Please note that oil and gas are important material feedstocks for the chemical industry and not just energy providers.

exports into Asia. Faced by cheap US exports and developing Chinese production capacities, there is a risk of a knock-on effect on Middle East production that might be (re-)directed towards the European market.

Taking a broader perspective, the EU chemicals sector faces a number of challenges that threaten its competitive position. These include cost-related factors such as high energy prices and labour costs, together with the burden of European regulatory systems and taxation. Indeed from our global value chain analysis it has also become clear that the share of energy in chemicals production is much higher for the EU than for the US (and this is the combination of a price and quantity effect). To offset these cost disadvantages, emphasis has been placed on the critical role of research and innovation – both for products and production processes – to enhance competitiveness and increase value-added. This was one of the key conclusions of the High Level Group on the Competitiveness of the European chemicals industry, which reported in 2009⁵⁵⁸, and that has subsequently been reiterated by the industry association, CEFIC⁵⁵⁹.

Figure 8.14 Expenditures per region on chemicals R&D



Source: CEFIC Chemdata International (2014).

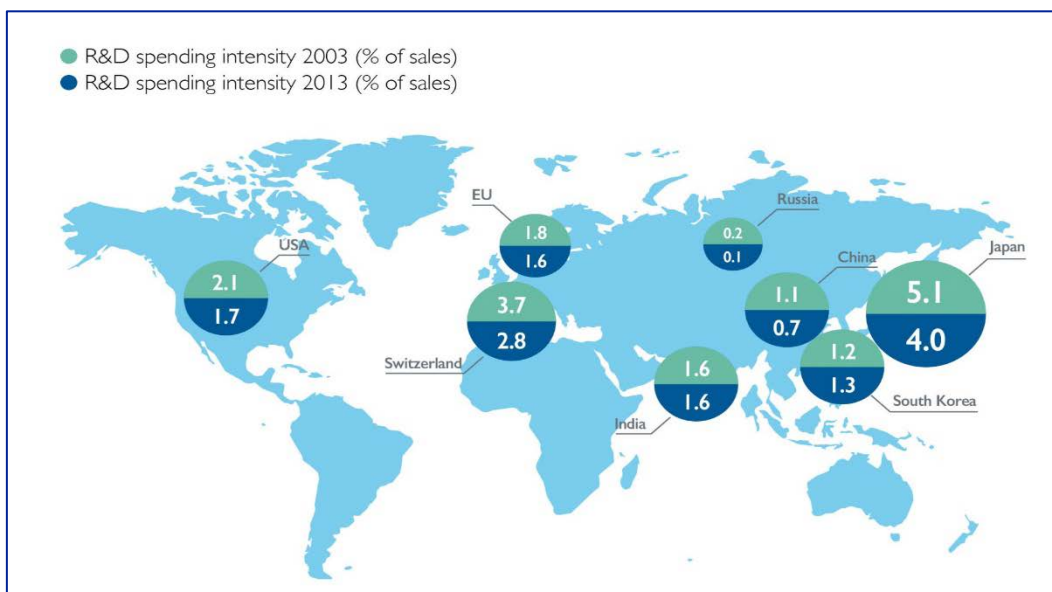
While the EU outspends the US and Japan, as is shown in Figure 8.14, all these developed regions are faced with a shifting balance of R&D spending towards emerging regions. The rapid growth of chemical markets in emerging regions is being accompanied by an increase in R&D efforts. Whereas a decade ago, Chinese chemicals R&D spending was less than one-fifth of that in the EU, it has now risen to 90 percent. And, although EU R&D intensity⁵⁶⁰ is still ahead of that of China, it is behind the US and only slightly above a third of that of Japan (see Figure 8.14). In such circumstances, significant efforts are required to maintain a globally competitive EU chemicals industry.

⁵⁵⁸ http://ec.europa.eu/enterprise/sectors/chemicals/files/final_report/hlg_final_report_july09.pdf.

⁵⁵⁹ <http://www.cefic.org/Documents/PolicyCentre/Competitiveness/Competitiveness-of-the-European-chemical-industry-2014.pdf>.

⁵⁶⁰ Measured by the ratio of spending on R&D to the value of sales.

Figure 8.15 R&D intensity in chemicals in the world (R&D spending as % of sales)



Source: CEFIC Chemdata International (2014).

In 2013 the world market for pharmaceuticals was dominated by North America, with a market share of 41.0 percent. The EU is the second largest player with a share of 27.4 percent, followed by Japan with 9.7 percent.⁵⁶¹ The EU expenditure on R&D in pharmaceuticals equalled € 30.6 billion in 2013, compared to € 17.8 billion in 2000, and is much larger than in the chemicals sector. Also the R&D intensity is much higher in the pharmaceuticals sector, 14.4 percent of sales (in 2012). This is not surprising since the pharmaceutical sector is a high technology sector.

8.3. Market access issues in the chemicals and pharmaceutical sectors

This section provides an overview of both the tariffs that are currently still in place between the EU and the US as well as the Non-Tariff Measures the chemicals sector – and its sub-sectors – and the pharmaceutical sector face.

8.3.1. Tariffs

Tariff rates between the EU and US are already very low. On average EU tariffs are 3.3 percent, while US tariffs are around 2.2 percent. When we look in more detail at the chemicals sector, we find that for some sub-sectors, tariff lines are lower than this overall average, but we also find sub-sectors where the tariff rate is higher.

Especially for the chemicals sector, it is important to note that production chains are highly integrated, final products are comprised of different intermediate products and those intermediate products again of different intermediate products and/or raw materials. In fact, the final chemical products are again intermediate products for other sectors like the automotive sector, maritime sector, electrical machinery sector, etc. As such, it happens frequently that a raw material or intermediate product crosses the Atlantic (if traded between the EU and US) multiple times: first as the raw material or intermediate product, then as a new intermediate product, another one, and finally as part of the final product. Of course the value share of this raw material or intermediate product declines as the product is near completion, but in this way a tariff of 3 percent, could easily result in a *de facto* 10 percent tariff. This implies that – though tariff rates are not too high for the chemicals sector on average – tariffs still matter.

⁵⁶¹ EFPIA (2014) The pharmaceutical industry in figures.

In Table 8.12 we present the MFN tariff lines in the chemicals sector for the EU and US for the year 2014. We see that on average EU tariffs are higher than US ones. For both EU and US, tariffs are relatively highest for organic chemicals, dyeing/tanning/colour materials, manufactured fertilizers, and plastics in primary and non-primary forms. These tariffs lead to higher input prices for these products in manufacturing in downstream industries. Tariff liberalization will lead to lower prices of – especially – products like organic chemicals, dyeing/tanning/colour materials and plastics, which in turn will lead to cheaper downstream products and more competitive downstream sectors – especially because the real tariff burdens (as explained in the previous paragraph) may be higher than the MFN tariffs suggest.

Table 8.12 MFN tariffs for EU and US (2014)

Product name	Sector name	EU import tariffs (%)	US import tariffs (%)
Organic chemicals	Chemicals	5.34	2.79
Inorganic chemicals	Chemicals	3.15	1.12
Dyeing/tanning/colour materials	Chemicals	5.88	3.98
Manufactured fertilizers	Chemicals	5.20	0.00
Plastics in primary form	Chemicals	6.10	4.04
Plastics in non-primary form	Chemicals	6.03	4.06

Source: WITS (2014).

The tariffs that are still in place in the pharmaceutical sector are rather low, namely 0.02 percent on the EU side and 0.00 percent on the US side.

ECIPE (2010) finds that eliminating tariffs would boost EU exports by 7 percent and US exports by 8 percent. CEPR (2013) finds that removal of tariffs would boost EU chemicals exports by 5.4 percent and US exports by 12.4 percent. These effects are significant. Indeed E.I. du Pont de Nemours and Company (2013) state that “Elimination of the remaining import duties on chemicals, currently averaging between 3 – 6 percent, would result in considerable savings to our company and remove many economic barriers to shipping technical and chemical intermediates”.⁵⁶²

8.3.2. Non-tariff Measures (NTMs)

The chemicals sector has been touted as one of the sectors where the largest potential impact of TTIP is possible. It is a sector – as seen above – that is sizeable in its own right, but in addition, it serves as an enabling sector for almost the entire downstream manufacturing sector. However, both the EU and the US have made it clear that the fundamental differences in regulatory systems will not be aligned by TTIP, while both sides are ready to explore possibilities for cooperation within the existing systems.

The Congressional Research Service (CRS) in 2008, for US Congress, stated clearly why regulatory cooperation is important: “Since the mid-1990s, both US and EU multinational companies have viewed divergent ways of regulating markets for both goods and services as the most serious barriers to transatlantic commerce. The primary reason why these companies seek to achieve greater harmonization in standards and regulatory procedures is to reduce costs imposed by complying with two different sets of regulations and standards. Redundant standards, testing, and certification procedures are seen by companies as far more costly and harmful than any trade barriers imposed at the border, such as tariffs or quotas and in no area has regulatory divergence been a greater problem than in chemicals” (CRS, 2008).⁵⁶³

⁵⁶² Du Pont de Nemours, E.I. and Company (2013), “Comments”, Docket number: USTR-2013-0019 - Request for Comments Concerning Proposed Transatlantic Trade and Investment Agreement (TTIP), May 10, 2013.

⁵⁶³ Raymond J. Ahearn, “Transatlantic Regulatory Cooperation and Analysis: Background and Analysis”, Congressional Research Service Report for Congress, 22 October 2008. (<http://fpc.state.gov/documents/organization/112019.pdf>).

The International Federation of Inspection Agencies has added to the inputs regarding regulatory cooperation in chemicals: “This sector provides input to almost every industrial process and thereby it is an enabling industry on a large scale. Further harmonisation in this sector would have a beneficial and leveraged economic benefit across a wide range of activities. In addition, this sector operates in substantially globalised markets so that improved harmonisation would reap benefits beyond the US and EU [positively affecting third countries]. Improved and harmonised controls in relation to the extraction of commodities and their processing would have clear beneficial environmental impacts.”

Berden and Francois (2015) in the CEPS-CTR project ‘TTIP in the Balance’ have made a comparison of the most important NTMs quantification efforts, compared methodologies and reported a meta-overview of values for NTMs reported at more aggregated and at sector levels.⁵⁶⁴ Their NTMs summary for the chemicals and pharmaceutical sectors is presented below in Table 8.13.

Table 8.13 Summary results of studies quantifying NTMs in the chemicals sector

Sector	NTMs estimates by Berden et al. (2009)		TCE ⁵⁶⁵ by Fontagné et al. (2013) ⁵⁶⁶		NTMs estimates by Egger et al. (2015) ⁵⁶⁷	
	EU-US	US-EU	EU	US	EU	US
<i>Manufacturing</i>			42.8	32.3		
- Chemicals	21.0	23.9			29.1	29.1
- Pharmaceuticals	9.5	15.3			29.1	29.1

Source: Berden and Francois (2015).

From this Table, we can indeed conclude that NTMs do matter in the chemicals sector because NTMs in the transatlantic trade in chemicals increase the costs of trade by 21 percent for the EU-US trade and by 23.9 percent for the US-EU trade. In the pharmaceutical sector, the trade cost equivalent of NTMs is equally high in the Egger et. al. study, but much lower in the Berden et al. study. Still differences exist between EU-US trade (9.5 percent) and US-EU trade (15.3 percent). The cost equivalent of NTMs for total manufacturing is 42.8 percent for the EU and 32.3 percent for the US. Overall we conclude that regulatory cooperation in TTIP in the chemicals sector is important however lower than for total manufacturing.

Regulatory cooperation between the EU and US is not new. Regarding the chemicals sector, the EU and US industries have been cooperating for over 20 years already, through industry cooperation in the Transatlantic Business Dialogue (TABD) – now the Transatlantic Business Council (TABC) – and at the regulatory level between the EU and US EPA as Quick (2008) already pointed out.⁵⁶⁸ Through the TABD various proposals have been tabled over the past 20 years. In addition to industry cooperation, the EU and the US also cooperate at a more official level, including at the OECD level, like with the Cooperative Chemicals Assessment Programme (CoCAP). Following up on successes achieved at the OECD – the OECD’s Good Laboratory Practices and the Mutual Acceptance of Data (MAD) agreement (see Box 8.1) – proposals were discussed to continue to negotiate on Conditional Equivalence Agreements in risk assessment, notification of new chemicals, application and use, and classification and labelling of

⁵⁶⁴ Berden, K. and J. Francois (2015) ‘Quantifying Non-tariff measures for TTIP’ Paper No. 12 in the CEPS-CTR project ‘TTIP in the balance’, and CEPS special report no. 116 / July 2015. The values of NTMs are expressed in Trade Cost Equivalents (in percent).

⁵⁶⁵ Trade Cost Equivalent. The Berden et al. (2009) numbers have been calculated based on the outcomes of a business survey on the perceived level of NTMs. The numbers are transformed into a NTM index. Finally with the use of a gravity model the sector specific TCEs have been calculated. More details about the method can be found in Chapter 1.

⁵⁶⁶ The Fontagné et al. (2013) paper estimated the ad valorem equivalent protection following from NTMs. The data sources used are the UCNTAD-TRAINS database, WTOs Trade Policy Reviews, and EU Standard Database.

⁵⁶⁷ Egger et al. (2015) estimate the changes in ad valorem trade cost by using a gravity equation. Their input stems from the DESTA database.

⁵⁶⁸ Quick, R. (2008) ‘Regulatory cooperation – a subject of bilateral negotiations or even for the WTO’, Journal of World Trade, Vol. 42, pp. 391-406.

chemicals.⁵⁶⁹ Also, in the development of the UN Globally Harmonised System of Classification and Labelling of Chemicals (GHS), the EU and US cooperate. However, according to Elliott and Pelkmans (2015) results of 20 years of regulatory cooperation have been very limited, and they also find the current proposals on chemical sector regulatory cooperation more limited than those discussed in the 1990s.⁵⁷⁰ And TTIP now comes on the heels of those two decades of attempts to reduce the costs of market access in chemicals and regulatory cooperation between the EU and the US EPA.

Box 8.2 OECD's Mutual Acceptance of Data and Good Laboratory Practices

It is expensive to test chemicals and do so in a way that other countries trust the test results. Often the same chemicals are being tested in different countries. Therefore, in 1981, the OECD Council adopted a Council Decision on Mutual Acceptance of Data (MAD) – stating that “test data generated in any member country in accordance with OECD Test Guidelines and Principles of Good Laboratory Practices (GLP) shall be accepted in other member countries for assessment purposes and other uses relating to the protection of human health and the environment”.

In 1997, a Council Decision on the Adherence of Non-Member countries to the Council Acts related to MAD in the Assessment of Chemicals, set out a step-wise approach to allow non-OECD countries to take part as full members in this system. Since 1997, apart from the OECD countries, also Argentina, Brazil, India, Malaysia, South Africa and Singapore are members of MAD. Thailand is currently a provisional adherent to the MAD system and China is currently negotiating to join.

According to the OECD, this collaboration saves governments and chemical producers around € 150 million annually.

Source: OECD.

In the following sections we will cover some of the most important regulatory divergences in the chemicals and pharmaceutical sectors that we have come across.

The degree of regulatory divergence is significant in the chemicals sector. There have been major regulatory differences over the past 20 years, but – despite many efforts – if at all, these differences have become more pronounced. A relevant issue in the chemicals sector relates to the many differences between the basic legislative frameworks in the EU and the US, namely the Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) versus the US federal Toxic Substances Control Act (TSCA). The differences between REACH and TSCA have been cited widely over the past two years, to argue against any chemicals chapter in TTIP for fear of lowering either EU or US standards. For example, CIEL (2014) in their submission ‘Toxic Partnership – a critique of the ACC-CEFIC proposal for transatlantic cooperation on chemicals’ highlights several differences between REACH and TSCA in terms of the levels of protection. They are concerned that because of increased regulatory cooperation the implementation of REACH could be hampered. Dalton (2014) in the Wall Street Journal wrote ‘TTIP could weaken chemical rules, environmental groups say’.⁵⁷¹ And in July 2014, 111 NGOs wrote to the chief negotiators highlighting seven types of concerns against negotiating about chemicals in TTIP.^{572 573} Indeed, when comparing REACH and the US federal level law, TSCA, many differences can be found, regarding:

- Differences in requirements that have to be complied with before a chemical can be placed on the market;
- Restrictions on the use of chemicals;
- REACH shifted the burden of proof as regards chemical safety from regulators to industry, which is not the case in the US where the regulators have the burden of proof;
- Evaluation and notification of new chemicals under TSCA compared to general registration requirements for all chemicals under REACH.

⁵⁶⁹ Elliot, E.D. and J. Pelkmans (2015) ‘Greater TTIP ambition in chemicals: why and how?’, Paper No. 10 in the CEPS-CTR project ‘TTIP in the balance’ and CEPS special report no. 114 / July 2015.

⁵⁷⁰ Ibid.

⁵⁷¹ Matthew Dalton, “TTIP Could Weaken Chemical Rules, Environmental Groups Say”, Wall Street Journal Real Time Brussels Blog, 7 October 2014 <http://blogs.wsj.com/brussels/2014/10/07/ttipcould-weaken-chemical-rules-environmental-groups-say/>).

⁵⁷² http://www.clientearth.org/reports/20140711_Letter_from_111_NGOs_TTIP_Chem_10Jul2014.pdf.

⁵⁷³ http://trade.ec.europa.eu/doclib/docs/2014/october/tradoc_152820.PDF.

Having summed up some of the main and significant differences between REACH and TSCA, it is important to add – as was also done by Elliott and Pelkmans (2015) and CIEL (2015) – that comparing REACH to TSCA only is not the full picture. The almost 40 year old TSCA has recently been updated and revitalised by a reform bill adopted in the US Congress. The reformed TSCA gives the Environmental Protection Agency (EPA) enhanced powers to regulate both chemicals and the products using chemicals as inputs.⁵⁷⁴ In the US the overall legislative system that is used to regulate chemicals goes, however, far beyond just US federal TSCA as other federal legislation applies to chemicals and also state legislators are active on chemicals. The same is true in the EU, where REACH is complemented by a broad range of horizontal or sector-specific legislation that often includes specific provisions on chemicals, among others: the Occupational Safety and Health legislation, Food Contact Materials legislation, the RoHS Directive, the Persistent Organic Pollutants Regulation, the Toy Safety Directive, etc. In addition, emissions of chemicals to environmental media are regulated through the Industrial Emissions Directive and the Water Framework Directive.

Other regulatory divergences in the chemicals sector relate to Restriction on the use of certain Hazardous Substances in electrical and electronic equipment (RoHS) (2011/65/EU) in the EU. The list of restricted substances includes four heavy metals (lead, mercury, cadmium, and hexavalent chromium) and two brominated flame retardants (polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE)), and various phthalates. RoHS requires that each product must have a declaration of conformity as well as the CE mark. In the US at Federal level this is in most cases not comparable while the state of California actually has taken over the EU RoHS Directive.

In the US many additional state level regulations are possible and in fact in place for chemicals. These number of additional state level regulations can differ significantly between states. For example, Minnesota enacted a ban on the use of the anti-microbial triclosan in 2014 and California has adopted its Green Chemistry Initiative with respect to some chemicals and products.⁵⁷⁵ Actually there exist hundreds of measures and some states are much more active than others.

In 2008 the EU legislators (European Parliament and Council) adopted Regulation (EC) 1272/2008 on Classification, Labelling and Packaging (CLP) aligning EU legislation on classifying, labelling and packaging of substances and mixtures to the UN Globally Harmonised System (GHS). In the US, only OSHA has done so for chemicals used in the work place via the 2012 Hazard Communication Standard, but only for human health effects as OSHA has no legal powers related to environmental hazards. Furthermore, the US EPA has not done so for pesticides, nor for environmental effects in general. Likewise, the CPSC has not implemented the GHS for consumer chemicals. This partial implementation of the UN GHS is a major concern for the EU and one of the potential key deliverables in the field of chemicals.

Regarding the pharmaceutical sector, the industry has identified several areas for regulatory cooperation that would promote innovation and patient access in the US and the EU. The mutual recognition of Good Manufacturing Practice (GMP) inspections is a common request that has been put forward by both the innovative and the biosimilar and generic industry. According to EFPIA this could lead to a reduction of 40 percent in duplicative inspection of manufacturing sites.⁵⁷⁶ Further harmonisation of requirements for the development of medicinal products including non-clinical and clinical testing is another common request from the industry although the priority areas for this harmonisation depend on the type of products that are developed. More aligned processes can improve patients' access to medicines.⁵⁷⁷ Over the past years the EU has already made improvements when it comes to the publication of clinical trial data. The Clinical Trial Regulation (NO 536/2014) ensures that the rules for clinical trials are identical in the EU Member States. Additionally pharmaceutical companies are required to make clinical trial data supporting the approval of their medicines freely available to the public.⁵⁷⁸

⁵⁷⁴ Frank R. Lautenberg Chemical Safety for the 21st Century Act

⁵⁷⁵ See for numerous chemicals legislations at State level a searchable database on <http://www.theic2.org/>.

⁵⁷⁶ EFPIA position paper TTIP and healthcare, June 2015.

⁵⁷⁷ Joint EFPIA/PhRMA and EGA/GPhA submissions for TTIP.

⁵⁷⁸ http://ec.europa.eu/health/human-use/clinical-trials/regulation/index_en.htm.

The European Public Health Alliance (EPHA) considers it vital to look at the potential of the Intellectual Property Chapter, price of medicines and competition of generics medicines in this TSIA.⁵⁷⁹ The reason to look at this is that several civil society organisations fear that there will be more restrictive IP systems following TTIP. Since the higher the lifetime of the patents, the longer it takes before cheaper generic medicines are on the market and before the medicines are more accessible to the public. The pharmaceutical industry on the other hand indicates that a strong protection of IPRs triggers innovation, and that the IPR systems should remain open to further adaptation in order to incentivise research.⁵⁸⁰ However when we compare the EU and US patent systems, we find that the US has a regime of 12 years for biologics, but 5 + 3 years for new chemical entities (e.g. small molecules), while the EU has 8 + 2 + 1 years for both biologics, and new chemical entities – so there is not much difference between the EU and US in terms of the time periods for regulatory data protection. Moreover the EU has indicated several times that they are not seeking to change either the EU or the US IP regime for pharmaceuticals. It is therefore not likely that TTIP will lead to a more restrictive IP system in the EU.

In addition, some specific cosmetics and herbal pharmaceutical products face lengthy approval procedures in the US – as laboratory tests must be performed. These are especially burdensome for products that are classified as over-the-counter (OTC) drugs in the US, but not in the EU. According to the FDA OTC drugs can be defined as: *“drugs that are safe and effective for use by the general public without seeking treatment by a health professional.”*⁵⁸¹ Many of these products are not seen as drugs in the EU, like e.g. sunscreen, toothpaste or some types of deodorant.⁵⁸² When exported to the US these products need to go through additional testing which would be similar to the testing needed for a drug. However not all OTC drugs need a preliminary approval by the FDA, some can be imported in the US as long as they respect the US labelling requirements.⁵⁸³ Still the imported products come from countries with equally sophisticated regulatory systems. Regulatory divergences of a cross-cutting nature also affect pharmaceutical trade: differences in testing requirements, safety pre-shipment inspections, regulations regarding terms of payment for imports, and transfer delays and slow customs procedures. In the US additional state level regulations are possible and in fact in place for pharmaceuticals.

8.4. Expected impacts of TTIP on the EU chemicals and pharmaceutical sectors

In this section we present and discuss the potential impact of the TTIP agreement on the chemicals and pharmaceutical sectors. For the economic, social and environmental impact we make use of the modelling that has been performed as well as of literature and stakeholder interviews.⁵⁸⁴

Before we present the expected impacts there are two important notes to make:

- The modelling has been based on the GTAP 57 sector classification.⁵⁸⁵ In the classification, the “chemical sector” includes chemicals, chemical products, plastic and rubber products AND pharmaceuticals. At this point in time the results cannot be split out for pharmaceuticals. As we have done with the baseline, we will, when possible, try to discuss the results separately by means of literature review and stakeholder interviews;
- The scenarios for the modelling have been made before the start of the negotiations based on assumptions about the future agreement. However, in the light of the actual proposals tabled for the negotiations, it is clear that these assumptions are no longer realistic as regards the chemicals sector. For example, a 25 percent reduction of all

⁵⁷⁹ http://trade.ec.europa.eu/doclib/docs/2015/may/tradoc_153466.pdf.

⁵⁸⁰ EFPIA TTIP towards better health outcomes for patients and economic growth.

⁵⁸¹ <http://www.fda.gov/drugs/developmentapprovalprocess/>

⁵⁸² <http://www.fda.gov/drugs/developmentapprovalprocess/over-the-counterdrugs/default.htm>.

⁵⁸³ <http://www.drugs.com/otc/>.

⁵⁸⁴ Ecorys, 2009. Non tariff measures in EU-US Trade and Investment, - An economic analysis.

⁵⁸⁵ The different modelling scenarios and details are presented in Chapter 1 and 6.

Global Trade Analysis Project.

<https://www.gtap.agecon.purdue.edu/databases/contribute/detailedsector.asp>.

NTMs is assumed in the ambitious scenario, however, during the negotiations it has become clear that the EU and US regulation on chemicals differs too much and that a 25 percent reduction in NTMs is not within reach. Consequently the modelling results presented below are hypothetical and should be treated with caution;

Because of the above two limitations, we will not present the results as the outcome of certain scenario, but rather present them as a range in which the potential impact of TTIP may fall.

8.4.1. Potential economic impacts

In Table 8.14 we present the range of the expected impacts of the TTIP agreement on the sector's output, exports and imports. In the EU, the gain in output ranges from 0.1 to 0.3 percent. The estimate changes in trade are more significant. Exports are estimated to increase with 5.2 to 9.4 percent and imports with 5.7 to 9.2 percent. In the US, the estimated output changes lay between -0.4 and 0.2 percent. The trade impacts are estimated to be slightly larger than in the EU. The US is expected to export between 7.6 to 11.5 percent more than before TTIP. Also imports are expected to increase between 6.1 and 11.4 percent. Note again that these results are for the chemicals and pharmaceutical sector combined, this does not imply that both sectors will be impacted similarly.

In a preliminary economic analysis, the American Chemical Council estimated that enhanced chemical regulatory cooperation could increase US chemical output between \$1.9 and \$2.5 billion. This would create 6,400 to 8,200 additional American jobs and increase exports by \$633 to \$812 million.⁵⁸⁶ Although there are no numbers available (yet), the EU chemical industry (CEFIC) expects the EU industry to also benefit from TTIP. A reduction of both tariffs and regulatory issues is important.

Copenhagen Economics (2016)⁵⁸⁷ has conducted a study where they estimate the expected impacts of TTIP on the pharmaceutical industry. Their study is based on the assumption that NTMs in the sector will be reduced by 25 percent on both sides, and that there will be basically no impact from tariff reduction as there are no tariffs in the sector. They estimate that TTIP would result in additional extra EU exports worth €9.2 billion, of which €7.8 billion would go to the US. Extra EU imports are estimated to increase by €4 billion, of which €3.7 billion would be sourced from the US.

Table 8.14 Range of expected economic impacts, 2030

	EU	US
Output	0.1 - 0.3%	-0.4 - 0.2%
Export	5.2 - 9.4%	7.6 - 11.5%
Import	5.7 - 9.2%	6.1 - 11.4%

Source: Update CEPR results.

When looking at the different components of the impact, we see that the largest effects come from the reduction of NTMs on goods (positive) and from direct spill-overs (negative). The direct spill-overs indicate the increased trade of third countries with the EU and the US, due to more aligned EU and US regulations. The negative bar in the figure below presents the impact on the EU of these direct spill-overs. When EU and US regulations differ in the chemicals industry, countries that export to both the EU and the US need to adapt their production process in order to meet the EU or the US regulation before their products can enter the EU or US market. If some of the EU and US regulations are aligned, third countries would only need to adapt their production process once to the new aligned EU/US regulation when exporting to either market. This benefits third countries in two ways:

- Third countries that already exported to both markets can save costs as they now need to adapt their production process to one set of regulations instead of two when exporting to both the EU and US market;

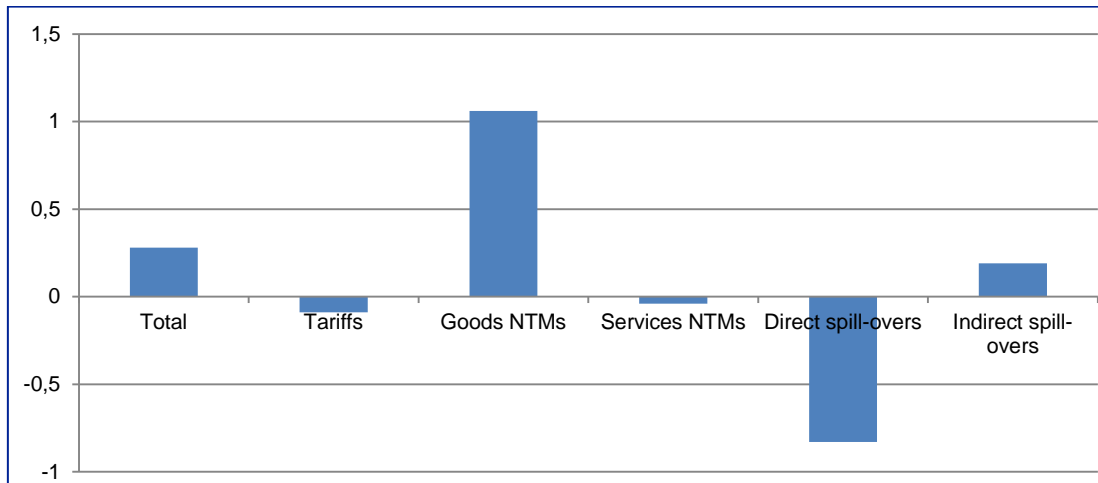
⁵⁸⁶ American Chemistry Council, 2013. Transatlantic Trade and investment Partnership letter to USTR.

⁵⁸⁷ Copenhagen Economics, 2016. How a strong pharma chapter in TTIP will benefit the EU. <https://www.copenhageneconomics.com/dyn/resources/Publication/publicationPDF/2/352/1464073117/how-a-strong-pharma-chapter-in-ttip-will-benefit-the-eu.pdf>.

- Third countries that currently only exported to one market (either EU or US), because it was too costly to adapt the production process twice, now also have access to the other market by adapting the production process only once to newly aligned regulation.

This increased trade between third countries and the TTIP countries could be negative for the EU in the sense that they can take up some of the trade that was previously done by the EU. Still the overall impact on the EU sector's output is positive.

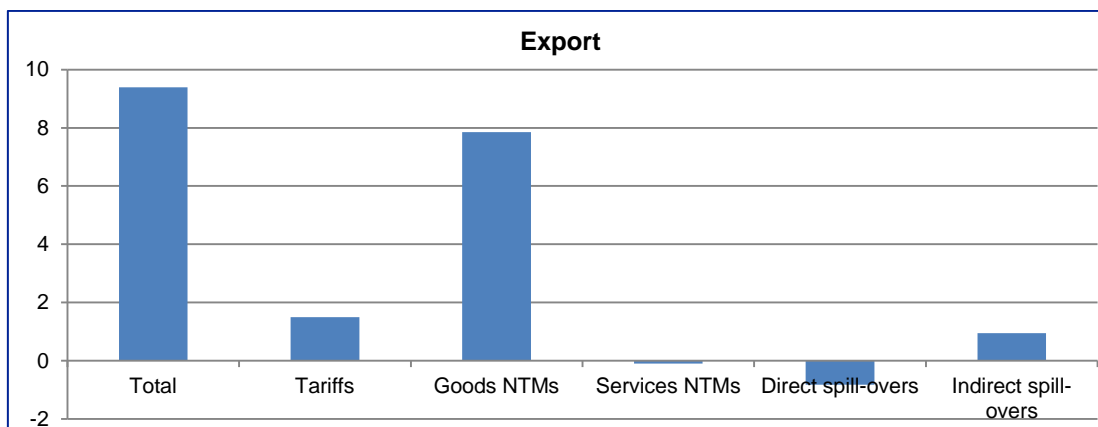
Figure 8.16 Decomposition of the EU output results, ambitious scenario

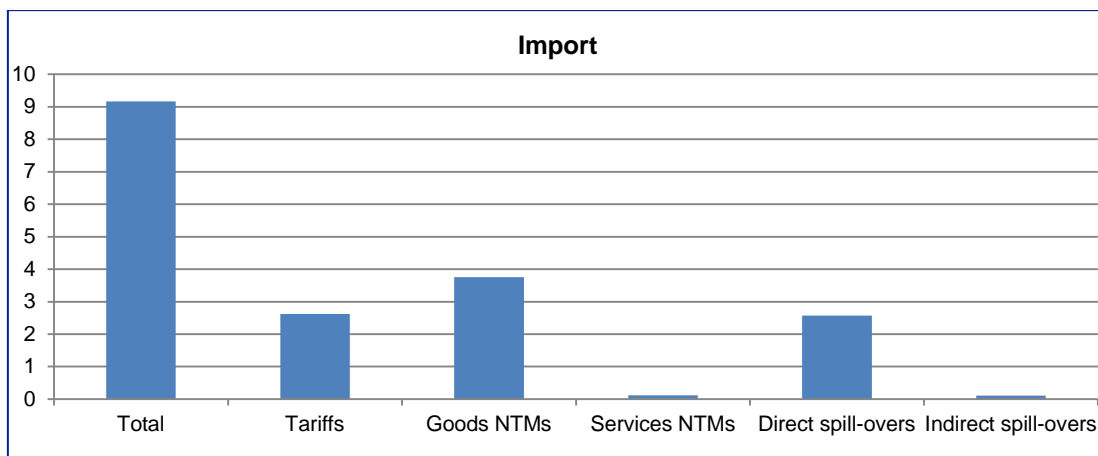


Source: Update CEPR results.

Also for the impacts on the EU sector's exports and imports, the results have been split out. For exports the majority of the gains comes from the reduction of NTMs on goods, almost 70 percent of the total impact. The reduction of NTMs on services and the spill-overs on the other hand, only have a very small share in the total impact. For imports, the reduction of NTMs on goods is again the main source of an increase (41 percent), however the difference with the other components is not as large as it is for output and exports. Contrary to output and exports, the effect of direct spill-overs on EU's imports is positive. This is however not surprising, if third countries benefit from more aligned EU and US regulation and consequently trade more with the EU, it is highly likely that a share of the EU's increased imports comes from third countries (and not only from the US).

Figure 8.17 Decomposition of the EU export and import results, ambitious scenario





Source: Updated CEPR results.

Both CEFIC and the European Federation of Pharmaceutical Industries and Associations (EFPIA) have indicated that the TTIP agreement could especially be beneficial for SMEs in their sector. SMEs represent 98 percent of all enterprises in the chemical sector and 89 percent of all enterprises in the pharmaceutical sector. Within the chemical sector these firms lose valuable time because of relabelling and repacking products before they can be exported to the US, but also duplicative testing takes up time and recourses of SMEs.⁵⁸⁸ Whereas large firms have the resources to comply with these different regulations, SMEs often do not. If these regulatory burdens are taken away, SMEs will benefit proportionally more than large firms. Of course large firms will see their costs decrease as well, however they often already do export to the US, whereas for many SMEs a new market could now be opened up. A reduction in regulatory costs could for some make the difference between not exporting and exporting. Also SMEs that will not export to the US (perhaps for other reasons) can still benefit from the reduction in NTMs. Many SMEs supply to other firms who do export, if their exports increase additional inputs are required, which can be sourced again from SMEs. The latter of course also applies to the pharmaceutical sector, where SMEs can greatly benefit from the reduction in NTMs. According to EFPIA, many new medicines are developed through research collaborations with SMEs and academic institutions. Reducing for example the duplicative site inspections could positively benefit the SME production process. Also in the SME survey, SMEs in both the chemicals sector and the pharmaceutical sector indicated that there are several trade irritants that cause companies to export less to the US or not at all. For example, one of the issues mentioned by SMEs in the chemicals sector concerns the tariffs that are still in place. Another company indicated that they do not export because they anticipated that the regulatory costs would exceed 20 percent of their sales value. Although tariffs in the pharmaceutical sector are close to zero the regulatory differences are still a burden to trade. In the SME survey the pharmaceutical sector mentioned inter alia duplicative testing, studies and clinical trials. From this we can conclude that if TTIP affects the chemicals (and pharmaceutical) sector at large many SMEs are potentially better off and several more may – for the first time – see opportunities to export.

8.4.2. Potential social impacts

The estimated range of changes in employment for both low skilled and high skilled are presented in Table 8.15. Low skilled and high skilled employment are estimated to be equally impacted in both the EU and the US. In the EU, employment is expected to change with -0.1 to 0.0 percent. The US is estimated to see a change in its employment between -0.5 and 0.1 percent.

IndustriALL has indicated that they do not expect any significant impacts in the chemical sector with regard to employment. They do think, however, that a reduction in double testing could have a negative impact on employment. If certain tests do longer need to be performed twice, fewer people are needed in testing facilities to perform these tests.

Copenhagen Economics (2016) has estimated that based on the current average production per employee, TTIP would result in 19,000 additional export related jobs in the pharmaceutical

⁵⁸⁸ CEFIC, 2016. A framework for better regulatory cooperation. Cefic Mythbuster. http://www.cefic.org/Documents/Infographics/TTIP_chemicals-in-TTIP-Cefic-Mythbuster.pdf.

sector.⁵⁸⁹ This would result in another 60,000 in-direct jobs, i.e. an increase in jobs in related industries. Because of the increase in production in the pharmaceutical sector, additional inputs from other industries are needed, creating also more output in these industries. These additional jobs will mainly be found in wholesale trade services, and chemicals and chemical products industries.

Table 8.15 Range of expected employment impacts, 2030

	EU	US
Low skilled employment	-0.1 - 0.0%	-0.5 - 0.1%
High skilled employment	-0.1 - 0.0%	-0.5 - 0.1%

Source: Update CEPR results.

Regarding other (indirect) social aspects of the chemical sector, many social and consumer organisations fear that consumer protection and/or safety will be downgraded due to TTIP. Although the European Commission has repeatedly communicated that standards will not be lowered, not everyone seems convinced. The industry itself has indicated that they are also not aiming to lower standards. The proposed regulatory cooperation in the chemicals sector concerns practical collaboration to reduce costs and increase efficiency. So it is about simplifying and improving procedures, so that the regulatory process can be done more quickly.⁵⁹⁰ Improved regulatory cooperation could also benefit consumers. For example the EU and US have different standards for labelling of chemicals, which could lead to confusion. When these standards are aligned and labels on EU products and US products are similar, the risk of confusion could be reduced, as there is just one description of the product, its contents and its risks.

Both IndustriALL and CIEL are, based on the documents currently publicly available, also concerned that TTIP could lead to a lowering of standards and an erosion of the precautionary principle. Although the TTIP negotiations do not cover REACH nor the precautionary principle, they fear that in the long run the implementation and enforcement of REACH could be endangered. The right to regulate and the precautionary principle are ensured in the preamble, however IndustriALL and CIEL feel that this is in contradiction with the aim of regulatory cooperation. Regulatory cooperation and the provision on early consultation on chemicals regulation could make it more difficult to adopt new legislation related to REACH. At this stage, it would, according to CIEL, be better for human health if chemicals were excluded from TTIP.

In the pharmaceutical sector a clear benefit can be seen from increased data and information sharing, and possible recognition of each other's clinical trials. It not only reduces costs and duplicative testing for firms but also benefits consumers in several ways. If products do not need to be tested twice, medicines can be sold to market and brought to the consumer faster. If firms decide to pass on the cost reduction, consumers can benefit from lower prices as well. More importantly, if duplicative clinical trials can be reduced fewer persons are needed to perform the tests on. This is especially beneficial for medicines that need to be tested on children.⁵⁹¹

The European Public Health Alliance (EPHA) however warned that “duplicative” or additional testing on both sides of the Atlantic should only be reduced when these test are of similar high quality. Reducing the number of tests in order to reduce the waiting time for consumers before a medicine enters the market is good, but it should never come at the expense of lower safety levels.

Also mutual recognition of Good Manufacturing Practices (GMP) could benefit the pharmaceutical sector. According to EFPIA mutual recognition of GMPs could reduce duplicative inspections by

⁵⁸⁹ Copenhagen Economics, 2016. How a strong pharma chapter in TTIP will benefit the EU. <https://www.copenhageneconomics.com/dyn/resources/Publication/PublicationPDF/2/352/1464073117/how-a-strong-pharma-chapter-in-ttip-will-benefit-the-eu.pdf>.

⁵⁹⁰ Interview with CEFIC.
 CEFIC, 2016. A framework for better regulatory cooperation. Cefic Mythbuster. http://www.cefic.org/Documents/Infographics/TTIP_chemicals-in-TTIP-Cefic-Mythbuster.pdf.

⁵⁹¹ BEUC, position TTIP & health. http://www.beuc.eu/publications/beuc-x-2015-064_ipa_ttip_health_beuc_position.pdf.

40 percent.⁵⁹² The savings, both in time and resources, from a reduction in duplicative testing and inspections could instead be used more efficiently for other purposes.

8.4.3. Potential environmental impacts

Table 8.16 below presents the range of impacts on air pollutants in the sector. It is important to note that these results do not come from the CGE modelling. The study team has used the CGE output impacts in order to calculate the change in air pollutants. The baseline air pollutants are taken from WIOD. These results do thus not stem from complex modelling, but are solely a reflection of the increase in output on the baseline emissions, and thus present only the scale effect. The scale effect indicates the change in the emission of air pollution due to the change in output. So if output is estimated to increase, the emission of air pollutants is estimated to increase as well. Consequently, the emissions are expected to increase in the EU and could either increase or decrease in the US. In the EU the largest impact in absolute terms is in the emission of Non Methane Volatile Organic Compounds, Nitrogen Oxide, Carbon Monoxide and CO₂. In the US the absolute changes are largest for Carbon Monoxide, Non Methane Volatile Organic Compounds, Sulphur Oxide and Nitrogen Oxide.

These results show only partially the potential impact on the environment. The overall environmental impact, however, depends on the scale, composition and technique effect. The composition effect presents the change in the emission of air pollutants due to a shift of production from one sector to another. This change can be either positive or negative depending on whether the production shifts to more polluting sectors or less polluting sectors. The technique effect is generally negative and shows a reduction in the emission of air pollutants due to innovation and/or greener technology. Only these three effects together can give an overview of the overall impact on the environment. The changes in the sector's output – on which the emission impacts are based – are rather small. They can easily be offset by improved production technologies. As presented in Section 8.2.6 the emission of air pollutants has constantly been decreasing in the chemicals sector, despite the increase in production.

Table 8.16 Range of expected impact on air pollutants, 2030

	EU baseline	EU	US baseline	US
CO ₂	158,910	127 - 445	138,507	-512 - 227
CH ₄	208,075	166 - 583	53,492	-198 - 107
N ₂ O	120,357	96 - 337	60,939	-225 - 122
NO _X	304,456	244 - 852	343,198	-1,270 - 686
SO _X	238,592	191 - 668	675,263	-2,498 - 1,351
CO	339,489	272 - 951	2,429,642	-8,990 - 4,859
NM _{VOC}	944,508	756 - 2,645	869,667	-3,218 - 1,739
NH ₃	41,671	33 - 117	6,591	-24 - 13

Note: CO₂ emissions are reported in thousand tons, all other emissions in tons.

Additional to economic benefits, increased regulatory cooperation could also benefit the environment. As indicated above the time and resources that were otherwise used for e.g. duplicative testing or clinical trials in the pharmaceutical sector, or for duplicative procedures in the chemicals industry could be used in a more efficient way. One possible option (in the chemicals industry) could be to use the additional time and resources on better implementation or control of environmental protection. Moreover improved production processes and increased efficiency could result in smaller levels of waste or pollution in general.

Although animal testing is forbidden for some products in the EU (e.g. cosmetics), for certain chemicals it is still allowed to test on animals as a last resort.⁵⁹³ Also in the US, animal tests are still allowed. If the EU and the US would share their testing data, fewer tests would be needed. In case the US would rely more on EU testing data, this could reduce the number of animals used for testing purposes and improve animal welfare.

⁵⁹² EFPIA, TTIP and health care. <http://www.efpia.eu/documents/147/151/EFPIA-Position-TTIP-and-healthcare>.

⁵⁹³ <https://echa.europa.eu/chemicals-in-our-life/animal-testing-under-reach>

8.4.4. Potential global impact

Similar to the social and environmental impacts, the reduction of NTMs within both the chemicals and pharmaceutical sector could also be of benefit to the competitiveness situation of the EU sector. Of course depending on the priorities of each firm, the additional time and resources available could be used to stimulate R&D and innovation, which could lead again to improved production efficiency. Especially with regards to the US and energy use the EU sector should make use of this opportunity. The US currently benefits of cheaper gas and oil because of the shale gas revolution, whereas the EU cannot. Both the chemicals and pharmaceutical industries have indicated that the cost reduction due to TTIP and the related production efficiency could indeed improve the EU's competitiveness position.

8.5. Conclusions and recommendations

This sector study has focussed on both the chemicals and pharmaceutical sectors in the EU, and how they may be impacted by TTIP. The chemicals sector is one of the largest and most involved sectors in transatlantic trade and FDI. The pharmaceutical sector relies significantly on the chemical sector for inputs. The chemical sector is one of the largest EU manufacturing sectors in terms of turnover and value added, whereas the pharmaceutical industry is the sector with the highest ratio of R&D investment to net sales. In both industries many SMEs are present. The US is one the main trading partners for both the chemicals and pharmaceutical sectors. However, transatlantic trade is not free of barriers. Although tariffs are small for chemicals (and almost zero for pharmaceuticals), because of the large trading volumes these tariffs still have a significant impact on the chemicals industry. Also NTMs form a significant barrier for both industries and in certain previous studies, have been estimated to be equivalent to a 21 and a 10 percent tariff, for respectively, the EU chemicals and the EU pharmaceutical sector. The modelling exercise conducted in this study, estimates that TTIP could hypothetically lead to an output gain ranging from 0.1 to 0.3 percent in the EU. Both exports and imports are also expected to increase with around 5.2 to 9.4 percent. The largest gains would come from the reduction of NTMs. However, it is important to keep in mind that the model exercise has combined the chemicals and pharmaceutical sectors into one industry. The outcomes do not imply that the two sectors will be impacted in the same way, but they show merely a range in which the impact might fall. Moreover, the scenario modelled, is more ambitious and not at all in line with the negotiations on chemicals, therefore these results are over estimated. Stakeholder input and literature have been used to complement the results and to gain a better overview of the likely impacts. Copenhagen Economics (2016) for example has estimated that EU exports of pharmaceuticals could increase by €9.2 billion, and imports by €4 billion because of TTIP. Both the chemicals and pharmaceutical industries have indicated that they expect their industry to gain from TTIP. With regard to employment, the model has estimated a small hypothetical change ranging from -0.1 to 0.0 percent. The Copenhagen Economics (2016) study has estimated that TTIP could lead to 19,000 additional jobs in the pharmaceutical sector. Regarding the chemical sector, IndustriALL has indicated they do not expect any significant impacts in the chemical sector with regard to employment. However, a reduction in double testing could have a negative impact on employment as fewer people would be needed in testing facilities. For pharmaceuticals, additional to direct benefits for the industry, the reduction of duplicative testing and duplicative clinical trials⁵⁹⁴ could also benefit patients in terms of improved access to medicines, lower prices (if companies pass the cost reduction on) and fewer clinical trials on both adults and children. In both industries, time and resources that no longer need to be spent on e.g. duplicative procedures could now be used in other areas, such as safety or research and development, which could ultimately benefit the consumer, the environment, or the competitiveness position of the industry. Based on the above analyses and outcomes the following recommendations are provided:

1. Given the large differences in the EU and US chemical regulations we suggest the European Commission to solely focus on the areas where gains can be achieved without altering the European chemical regulations (such as REACH). These areas include for example tariff reduction, or the commitment to use the UN GHS system for classification and labelling. Although average tariffs and the differences in e.g. labelling are relatively small, due to the intensive trade between the EU and the US in the chemical sector, the costs to trade are still significant.

⁵⁹⁴ This should only concern test and trials that provide the same level of safety.

2. As there are no tariffs for EU firms to export pharmaceutical products to the US market, the focus in the pharmaceutical sector currently lies on the reduction of NTMs. As significant cost savings can be achieved by reducing duplicative testing, sharing (test) data, and recognising each other's Good Manufacturing Practices, we suggest the European Commission to continue focussing on these issues in the negotiations.
3. While the reduction of duplicative testing and procedures in the pharmaceutical sector could also benefit patients in terms of better and faster access to medicines, and fewer clinical trials on children or adults, it should by no means lead to a lowering of safety standards. We propose the European Commission to consult with both the pharmaceutical industry and health organisations on which duplicative test and procedures could be reduced, without lowering the current EU levels of safety.
4. In addition to being costly to exporting firms, duplicative testing in the chemicals sector is also harmful for animals. Although animal testing is forbidden for some products in the EU (e.g cosmetics), for certain chemicals it is still allowed to test on animals as a last resort. Also in the US, animal tests are still allowed. Animal welfare could be improved if EU and US testing agencies would share their testing results and/or their research. In this way tests on animals could be reduced or even avoided. It is therefore recommended to share, to the maximum extent possible, chemical testing results that could involve animals.
5. Although it is indicated in the EU position papers that governments retain the right to regulate in the public's interest, and that the precautionary principle will be safeguarded, it is feared that future regulatory cooperation in the chemical sector could erode the precautionary principle and lower standards. Due to the differences in EU and US regulations, stakeholders fear that regulatory cooperation would imply that Parties will have to make some concessions. We suggest including clear provisions in the agreement to uphold EU standards also in light of future cooperation.
6. During the course of the negotiations, the European Commission has published many documents regarding the position of the EU in the TTIP negotiations. These documents have provided more insight in the negotiations and the position of the EU. Although more information is available, it is often full of trade or legal jargon and not understandable for a non technical reader. We suggest the European Commission to better explain in a more common language what the documents entail. This could especially be helpful regarding the chemicals sector. There are currently many fears that safety standards will be lowered. The European Commission has indicated that they have no intention whatsoever to lower standards, and that the documents publicly available also explain why. However, since these documents are difficult to understand for many people, their concerns, from a stakeholder point of view, seem unaddressed. An additional document explaining the chemicals annex in a more common language, but at the same time being more substantiated than solely "standards will not be lowered" could potentially resolve this issue.

9. Potential TTIP impact on the mechanical engineering sector

9.1. Introduction

In this chapter the potential impacts of the TTIP on the mechanical engineering sector will be considered in more detail. The chapter starts with an overview of the current state of play in the EU mechanical engineering sector in terms of economic structure, trade, global value chain (GVC), social and environmental issues, and competitiveness, both in qualitative and quantitative terms. Subsequently an assessment is made of how the current situation could change if TTIP is concluded in the coming years. The EU's ambitions within TTIP are to eliminate tariffs in the sector and improve regulatory coherence. The barriers arising from regulatory divergences are deemed to have a more significant impact on trade than tariffs.

Regulatory systems for mechanical engineering products diverge in the US and the EU, notably with regards to technical regulations affecting their marketing and use, as well as conformity assessments. Given these regulatory differences, the engineering industries on both sides of the Atlantic could benefit from increased cooperation between regulators in the EU and the US, in particular for emerging technologies but also in other areas where the legislation would be revised and where it has been observed that differences in regulatory requirements create significant trade barriers.

Box 9.1 Take away of this chapter

- The EU has a positive trade balance with the US in the sector and the US is the most important export destination of the sector, pointing towards a strong international competitiveness position of the sector;
- In terms of FDI, the EU invests more in the US than the US in the EU;
- Tariffs in the mechanical engineering sector are relatively low;
- The potential impact of TTIP is expected from more regulatory cooperation between the EU and the US, notably in the areas of Technical Barriers to trade and government procurement;
- The CGE model predicts a significant positive impact of TTIP on the mechanical engineering sector. This positive impact includes gains in both output and jobs (high skilled and low-skilled);
- The industry is likely to benefit from removal of tariffs and also from the creation of more aligned EU-US regulations. Thanks to its strong global competitive position, the competitive pressures from third countries will remain low;
- The results will nevertheless depend on the final text of TTIP, and on the NTMs that will be removed. Equal market access conditions including to the public procurement market, are crucial in order to achieve the optimal benefits.

9.2. The mechanical engineering sector in the EU

9.2.1. Overview of the sector

The mechanical engineering sector is captured in one NACE rev. 2 category:

Manufacture of machinery and equipment (NACE C28)

The correspondence of this NACE code with other types of trade and business classification is illustrated in the table below.

Table 9.1 Sector definition for EU machinery and equipment sector

Sector selection (CEPR, 2013)	GTAP-57	ISIC rev. 4	NACE rev. 2	NACE rev. 1.1.	HS 2002
Machinery and equipment	41	29, 31, 33	28	DK, 29	84

Note that for different parts of the analysis in the sector study, different statistical nomenclatures are used that refer to largely overlapping but slightly different definitions of the mechanical engineering sector. This limitation shall be taken into account in this sector study. The classifications used for the different sections are outlined below:

For the baseline sector data, that describe characteristics of the mechanical engineering sector and its development in the last years, NACE rev. 2 classification is used and its category 28 (Manufacture of machinery and equipment). This category contains:

- Manufacture of general-purpose machinery; manufacture of other general-purpose machinery; manufacture of agricultural and forestry machinery; manufacture of metal forming machinery and machine tools; manufacture of other special-purpose machinery.

For trade data that describe the trade patterns of the sector in the last ten years HS classification category 84 is used (Machinery and appliances). This category contains for example:

- Nuclear reactors; turbojets, turbopropellers & other gas turbines; refrigerators, freezers etc., heat pumps; lifting, handling, loading & unload machine; agriculture and harvesting machines; printing machinery, machines ancil to printing; boilers, machinery & mechanical appliances; washing machines, household- or laundry-type; sewing machines.

For the CGE modelling, the GTAP database has been selected and its data till 2011 have been projected till now. Data are taken from category 41 (Other Machinery & Equipment). This category represents:

- Other Machinery & Equipment: electrical machinery and apparatus n. e. c., medical, precision and optical instruments, watches and clocks; motors and engines (except electric motors), turbines, pumps; ovens, burners, lifting and handling equipment, cooling and ventilation equipment; agricultural machinery, machine tools, machinery for other specific industrial purposes; weapons; manufacture of manual or electric typewriters; manufacture of word-processing machines; manufacture of calculating machines, cash registers; manufacture of automatic data processing machines, including microcomputers; input devices; computer storage devices; scientific and technical instruments (e.g. electro-diagnostic apparatus, avionic equipment, etc.) but also photographic and cinematographic equipment.

9.2.2. Economic structure of the sector

The mechanical engineering⁵⁹⁵ sector is one of the key European sectors. It employs over 2.8 million people in over 91 thousand companies. This constitutes 2.1 percent of total employment in the non-financial business economy. In 2013 the sector created over € 576 billion worth of production value. Its turnover, as high as € 621 billion in 2013 has experienced a relative drop in value following the 2008 financial crisis however a slow recuperation has taken place since then. Also, it can be observed that after the crisis, the number of employees in the sector decreases and the productivity drops, as illustrated in Table 9.2. This is attributed to the fact that demand for machinery dropped following the crisis period causing a lower turnover. However, enterprises were not able to react immediately by decreasing the number of employees what negatively impacted productivity expressed in turnover per person. Interestingly, as can be observed in Figure 9.3, the extra-EU exports decreased only slightly in 2009, and has been growing steadily since 2010. This means that the industry managed to substitute low domestic (EU) demand by exporting to other countries.

⁵⁹⁵ Defined using GTAP code 41 that have been used in the CGE modelling. The codes were then converted to closest equivalents in NACE and ISIC codes.

Table 9.2 Development of key indicators for the EU machinery and equipment sector

NACE rev. 2 - 28	2008	2009	2010	2011	2012	2013
Number of enterprises	103,368	97,445	98,230	96,621	92,951	91,871
Turnover or gross premiums written (thousands EUR)	627,199	509,011	545,881	618,901	631,858	621,600
Production value (thousands EUR)	592,658	461,618	506,636	580,793	587,987	579,272
Number of employees	3,068,213	2,846,397	2,764,271	2,829,046	2,851,560	2,843,181
Turnover per person employed (thousands EUR)	139	128	143	158	166	160

Source: Eurostat SBS.

The sector is concentrated in a limited number of countries with Germany dominating the sector (over 40 percent of all value added in the sector comes from Germany). Second most important country is Italy (16 percent of value added), followed by the UK, France and Poland.

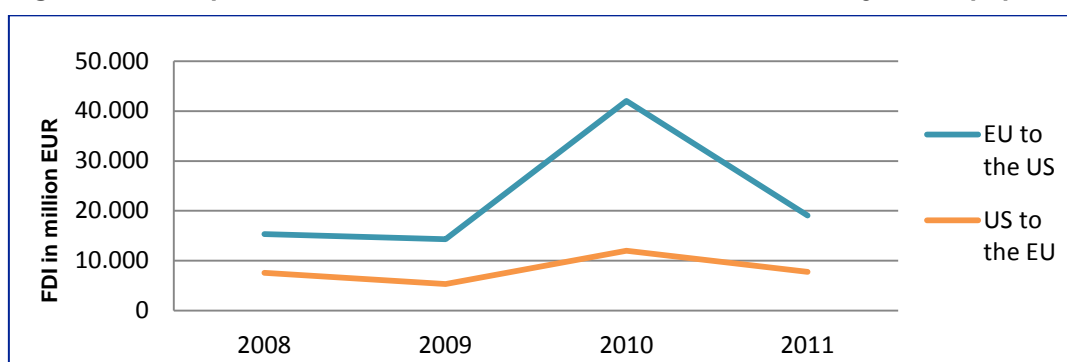
Table 9.3 Geographical breakdown of employment and value added – top 7 EU countries

Employment	Number of persons employed (% of sector total)	Value added (% of sector total)
Germany	36%	41%
Italy	16%	16%
United Kingdom	7%	8%
France	6%	7%
Poland	5%	2%

Source: Eurostat SBS.

As regards **Foreign Direct Investment (FDI)**, the US has traditionally been a significant investor in the EU in the sector and its position has remained relatively stable between 2008 and 2011. EU FDI in the US is significantly higher, and peaking in 2010.

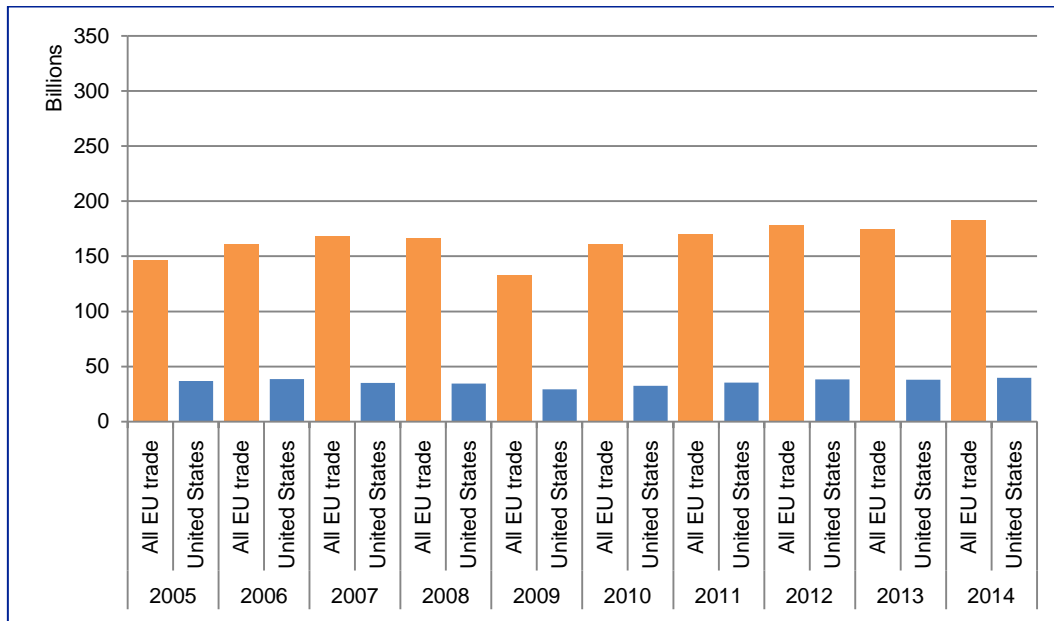
Figure 9.1 FDI position between the EU and US in the machinery and equipment sector



Source: Eurostat.

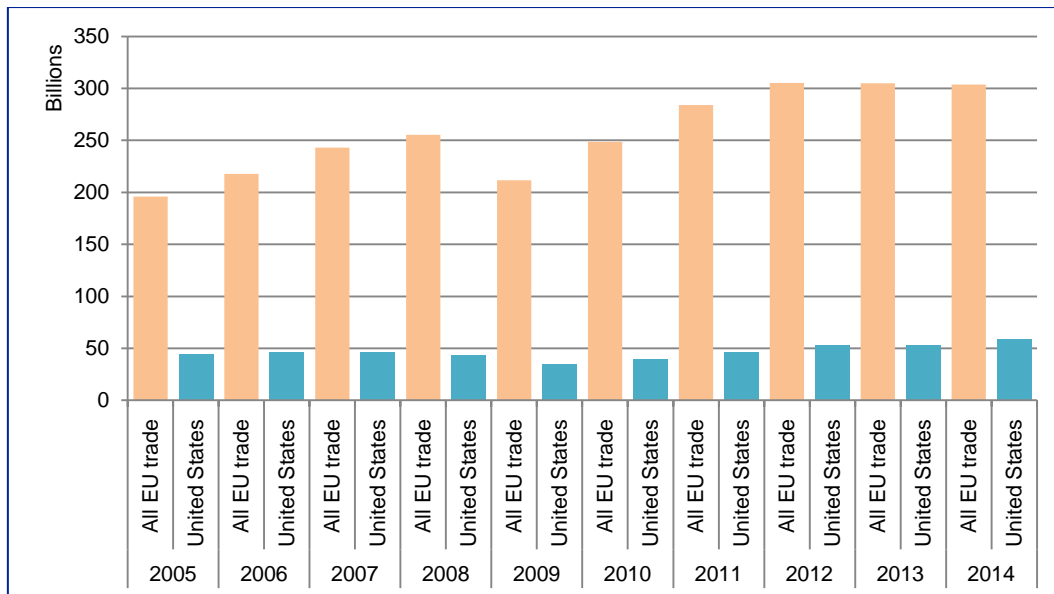
In order to analyse the trade flows, data at HS2 level were extracted from the COMEXT database. Both EU imports and exports, respectively, in Figures 9.2 and 9.3 experienced a drop in 2009, which can be clearly related to the economic and financial crisis. Though these indicators have been growing between 2010 and 2014. Overall EU exports of machinery products (including exports to the US) reached 304 billion EUR in 2013 and 303 billion EUR in 2014, and were twice as large as imports (174 billion EUR in 2013 and 182 billion EUR in 2014), pointing towards the strong exports and international competitiveness position of the EU sector. The figures also demonstrate that the US is an important trade partner with a stable amount of both export (58 billion EUR in 2014) and imports (39 billion EUR in 2014).

Figure 9.2 Import of the machinery and equipment sector – EU, US & all world (2005-2014) in billion EUR



Source: Eurostat.

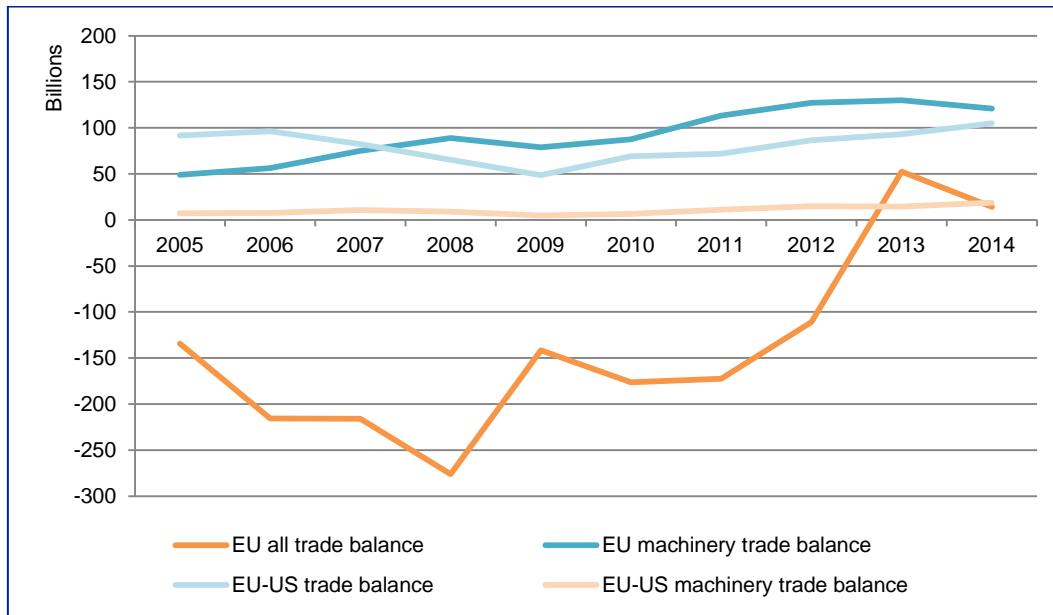
Figure 9.3 Export of the machinery and equipment sector – EU, US & all world (2005-2014)



Source: Eurostat.

Figure 9.4 shows in more detail how important the US is as a trade partner for the EU and how important the machinery and equipment sector is for EU trade in general. Between 2005 and 2014, EU trade balance has been overly negative, which changed in 2013 and 2014. However, at the same time the EU experienced a generally positive balance in the machinery and equipment sector and its surplus reached the peak of 130 billion EUR in 2013. This shows that mechanical engineering is an internationally competitive sector with importance of export and demand at non-EU markets. The EU-US trade balance has been positive in the analysed period, both in total and for machinery markets only. Following a drop in trade balance in 2009, the positive balance has been growing for the EU reaching a surplus of 14 billion EUR in 2014. The US has been a stable trade partner and a positive demand market for the EU producers of machinery.

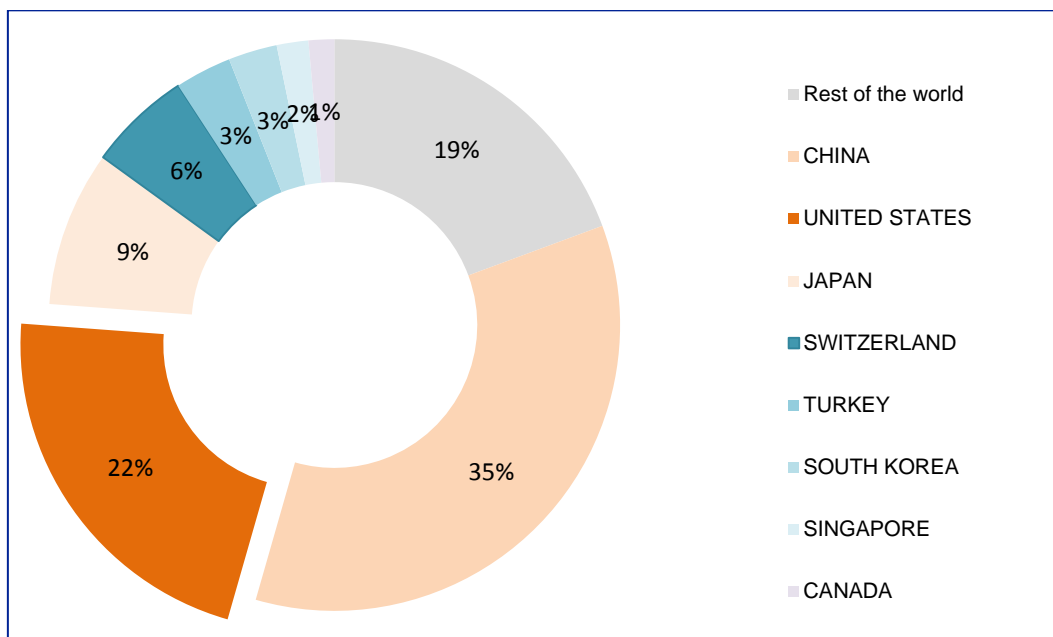
Figure 9.4 Trade balance of the machinery and equipment sector – EU, US & all world (2005-2014) in billion EUR



Source: Eurostat.

In order to assess the relative importance of trade with the US compared to other trade partners of the EU, data has been extracted from Eurostat database at HS2 level. For imports, in 2014 the most important trading partner for the EU27 is China with 35 percent of all EU28 imports originating from this country. US imports in this sector reach a share of 22 percent followed by Japan and Switzerland, as illustrated in Figure 9.5. In absolute numbers, 64 billion EUR worth of machinery products were imported from China in 2014, compared to 39 billion coming from the US as shown in Table 9.4.

Figure 9.5 Geographical breakdown of EU28 imports in machinery and equipment sector (2014)



Source: Eurostat.

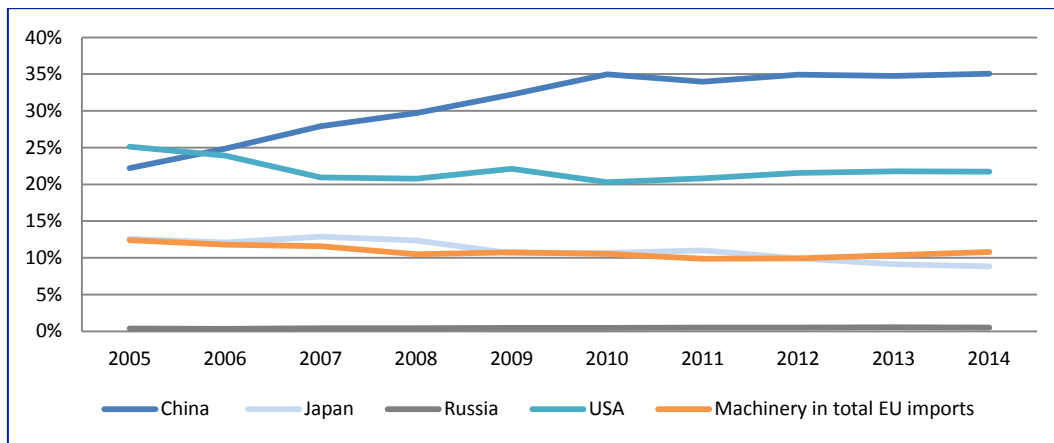
Table 9.4 Most important partners for EU28 imports in machinery and equipment sector (2014) in billion EUR

	MACHINERY - import
All extra EU	182 billion EUR
CHINA	64 billion EUR
UNITED STATES	39 billion EUR
JAPAN	16 billion EUR

Source: Eurostat.

Figure 9.6 analyses in more detail the importance of different trade partners in time compared to the relative importance of mechanical engineering for EU import. It can be observed that machinery has had a stable proportion in EU imports – around 10-15 percent of the value of all EU imports has been attributed to machinery. The figure also demonstrates importance of trade with the US and shows that the proportion of machinery imports from the US has been developing similarly as the global one. However, the figure below shows the growing importance of China and a decreasing importance of machinery products from Japan.

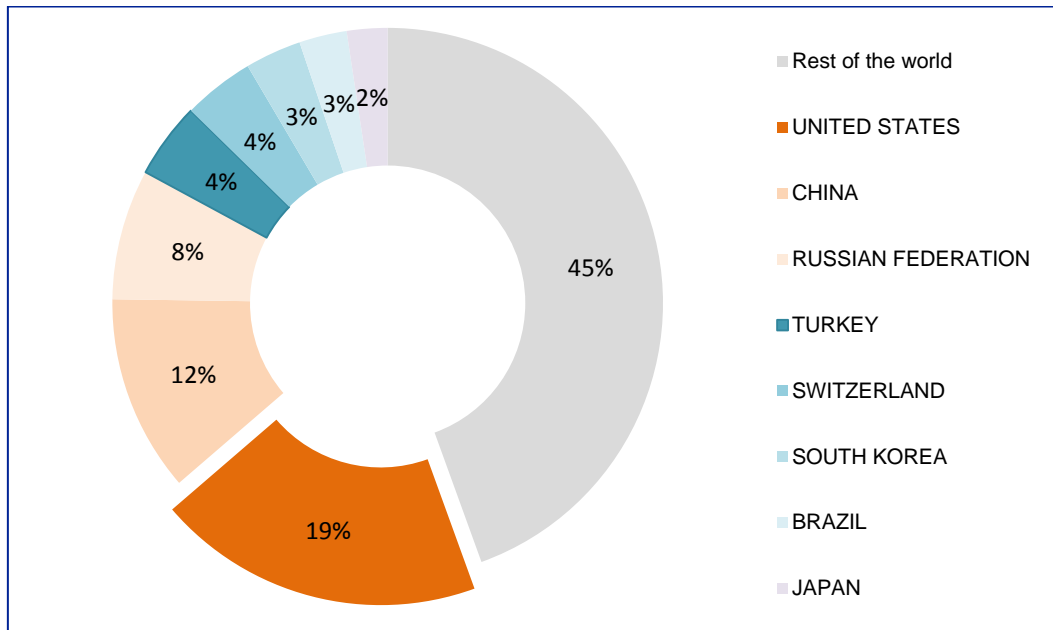
Figure 9.6 Trend of EU28 imports in machinery and equipment sector – most important import partners



Source: Eurostat.

For exports, the US is the most important market for the EU's machinery and equipment sector with 19 percent of the production of this sector destined for the US. Two other important export markets are China (12 percent) and Russia (8 percent). The exports to the US reached EUR 58 billion in 2014 and to China EUR 35 billion in the same year.

Figure 9.7 Geographical breakdown of EU28 exports in machinery and equipment sector (2014) in billion EUR



Source: Eurostat.

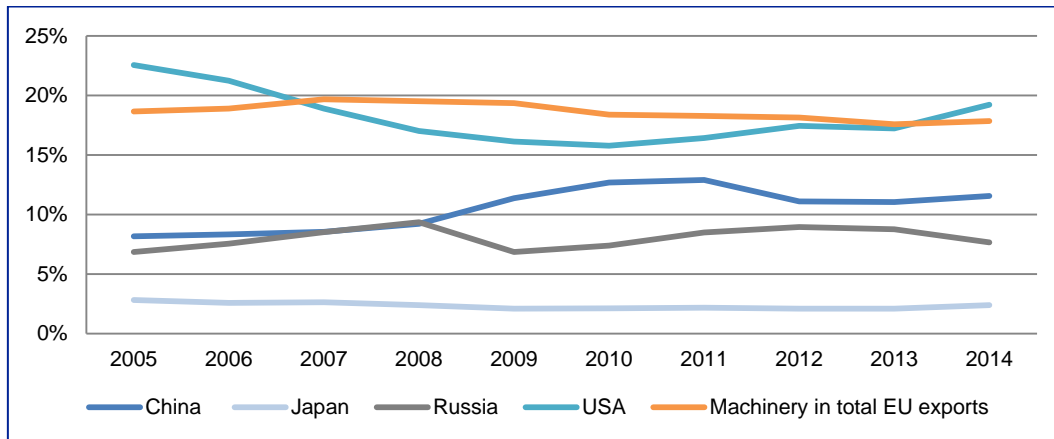
Table 9.5 Most important partners for EU28 exports in machinery and equipment sector (2014)

	MACHINERY - export
All extra EU	303 billion EUR
UNITED STATES	58 billion EUR
CHINA	35 billion EUR
RUSSIAN FEDERATION	23 billion EUR

Source: Eurostat.

Figure 9.8, similarly to 9.6 analyses the trends at the most important exports markets as well as the situation of the sector as a whole. It can be observed that machinery is one of the EU's most important export goods, being around 20 percent of total export in the period of 2005 till 2014, with a slight decrease of significance in terms of the overall EU's exports after 2009. The EU has been exporting between 15 and 21 percent of all its machinery product to the US – the proportion also dropped after 2009, however has been growing steadily since then and the sector is recovering. The figure below shows decreased significance of Russia and increasing exports to the Chinese market.

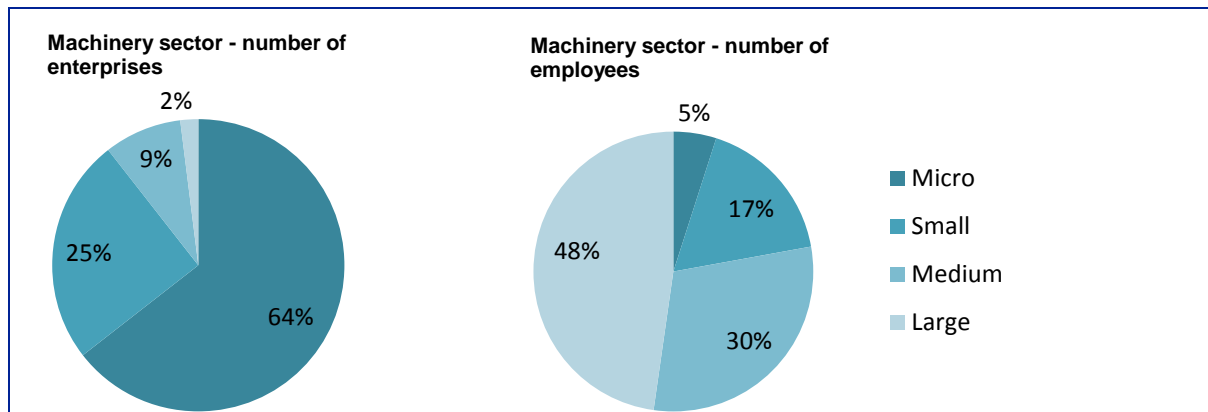
Figure 9.8 Trend of EU28 exports in machinery and equipment sector – most important export partners



Source: Eurostat.

The important role of SMEs in the machinery and equipment sector is illustrated by the fact that micro, small and medium enterprises (MSMEs) account for about 98 percent of companies. Taken together, they employ more than half of all employees (52 percent) in the sector.⁵⁹⁶

Figure 9.9 Key SME data for the sector (2012)



Source: Eurostat.

The productivity of employees of MSMEs in the sector is significantly lower than that of large enterprises; the average productivity for MSME is about 40 percent lower than that for large enterprises. SMEs are taking a significant part of trade: 21-33 percent of turnover for micro and small companies and 46 percent for medium-sized companies. Large companies in the sector have a strong international dimension with around 52 percent of turnover derived from trade. The propensity of smaller firms to trade outside the EU is clearly lower than that of larger firms: micro enterprises derive on average 10 percent of turnover from cross-EU-border trade, compared to 27 percent from large ones.

⁵⁹⁶ The SME data are overall statistics from the EU, with the exception of number of employees where some minor data gaps for small EU Member States occur (the total number is a sum of number for individual EU MS where available).

Table 9.6 Size distribution and key data for different sized companies in the sector (2012)

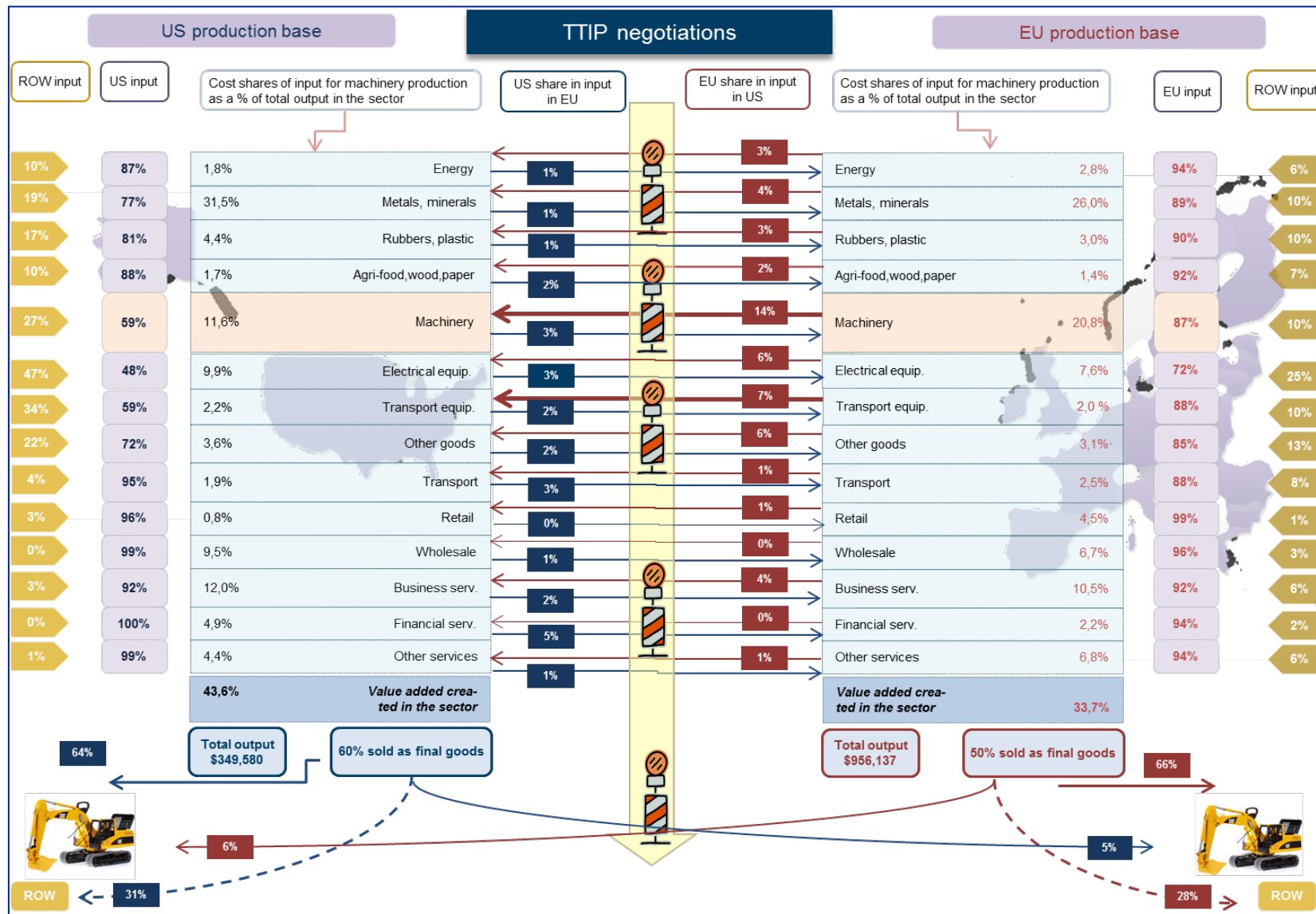
	Micro	Small	Medium	Large
Number of enterprises	59,900	23,208	7,970	1,850
Number of employees	139,518	484,005	847,995	1,345,098
Turnover (in thousands EUR)	23,452,000	77,897,000	158,872,000	371,666,000
Turnover per employee (in thousands EUR)	168	161	187	276
Total trade (in thousands EUR)	4,845,913	25,544,958	73,531,786	194,439,542
Extra-EU trade (in thousands EUR)	2,280,120	13,089,313	39,031,692	100,327,497
Turnover from trade	21%	33%	46%	52%
Turnover from out-EU trade	10%	17%	25%	27%

Source: Eurostat.

9.2.3. Value chain analysis

An analysis of the mechanical engineering value chain points to complex intra-industry as well as inter-industry trade flows (Figure 9.5). While we will only discuss the outcomes of this figure, a more general explanation of this figure and how to interpret it can be found in Chapter 6. Taken together, the EU exports 14 percent of value to the US whilst 87 percent of its own inputs come from internal sources. This is in stark contrast to the US, which exports only 3 percent to the EU and sources only 59 percent of the inputs internally.

Figure 9.10 GVC of the machinery and equipment sector (2011), total output USD million



Source: WITS, author's calculations

The EU has a rather localised supply chain with around 90 percent of inputs coming from EU sources. This is in stark difference to the US sector, which imports a significant share of all mechanical engineering inputs (for comparison, this is 50 percent in case of electrical equipment) in the first half of the production process. However, in the latter parts over 90 percent of mechanical engineering inputs come from domestic sources. This could be attributed to the fact that the US imports simpler inputs whilst it sources the more complex/higher value added ones domestically.

This focus on latter stages of production is demonstrated by the fact that 60 percent of the sector's output in the US involves final goods, while in the EU this is 50 percent. This 10 percent difference is also present in the value added that is created in the sector, where the US value added equals 44 percent of total output, while the EU sector's value added equals 34 percent of the sector's output. Despite this, the total output of the EU sector is significantly higher (\$956 million) compared to the US sector (\$350 million). In terms of the sale of mechanical engineering products both the EU and US have a very similar distribution of exporting: 5-6 percent of the final goods are exported to each other and 28-31 percent is exported to the rest of the world. This leaves the majority (between 64-66 percent) for domestic consumption.

Some numbers which are remarkably compared to the general findings:

EU industry

- 14 percent of machinery input for the US industry comes from EU;

US industry

- 47 percent of electrical equipment input for the mechanical engineering sector is sourced from the rest of the world;
- 34 percent of transport equipment input for the mechanical engineering sector is sourced from the rest of the world;
- 27 percent of machinery input for the mechanical engineering sector is sourced from the rest of the world.

9.2.4. Social perspective

For the social statistics the newest aggregated data available are used. With the most recent numbers being from 2012, development between 2008 and 2012 is analysed in this sub-chapter. The number of employees in the sector of mechanical engineering has been relatively stable between 2008 and 2012 for the EU, with a slight decrease from 3 million to 2.85 million. The number of hours worked per year has however increased over the course of the period observed (1908 hours in 2008 compared to 1947 hours in 2012). In the EU, approximately 21 to 22 percent of annual personnel costs are invested into social security. The annual wage increased from about EUR 33,000 a year in 2008 (17.60 EUR/hour) to EUR 36,800 a year in 2012 (19.5 EUR/hour) – part of which has been compensating inflation.

Table 9.7 Selected social indicators for the EU machinery and equipment sector (2008-2012)

	2008	2009	2010	2011	2012
Number of employees (in million)	3.05	2.85	2.77	2.83	2.85
Number of hours worked * (in million)	5.83	5.25	5.39	5.55	5.55
Personnel costs (in million EUR)	130,119	118,286	121,011	128,548	133,000
Wages and salaries (in million EUR)	102,652	92,950	95,222	101,579	105,000
Social security costs (in million EUR)	27,467	25,336	25,789	26,970	27,800

Source: Eurostat.

9.2.5. Environmental baseline

The following subsectors can be distinguished within the mechanical engineering sector: engines and turbines, pumps and compressors, taps and valves, bearings, gears and drives, lifting, handling and storage equipment, non-domestic cooling and ventilation equipment, agricultural and forestry machinery, machinery for mining, quarrying and construction, machine tools for metal working and machinery for textile, apparel and leather production. It becomes clear from this list that sector is characterised by a relatively high manufacturing intensity. This in turn implies high energy consumption and need for other resources and materials, especially steel and other ferrous and non-ferrous metals.

Energy regulation related to the mechanical engineering sector includes notably the Energy-Related Products Directive (ErP, 2009/125/EC) on energy using products. The implementation of the ErP, with its specific provisions on pumps, has been perceived as a successful solution by companies and lays down requirements on the energy-related design of the machinery products. Other requirements on how the EU-single market complying machinery shall be designed and produced are outlined in the Machinery directive. Under this directive, all machinery products have to undergo conformity assessments and be CE marked and accompanied by a Declaration of Conformity.

Similar, as in other sectors where high EU standards on the production process and the final product apply, there is a general concern of stakeholders, such as that expressed by the European Environmental Bureau. Their fear related to TTIP is that the regulatory cooperation, and in particular the activities of the Regulatory Cooperation Council, could lead to a regulatory “race to the bottom” and thus dilution of the environmental protection maintained by high EU product standards.

With regard to the use of raw materials, especially in the production phase, any further development of the mechanical engineering sector in the EU could increase the necessity to import scarce raw material. Special attention on upgradability, re-usability and recyclability should thus be paid and this issue is already high on the EU agenda for sustainable development and growth (e.g. the circular economy).

As is the case with all manufacturing industries, environmental management in production is a priority area when looking at sustainability in the machinery sector because of environmental impacts related to production (energy and raw material use, waste, wastewater, emissions, etc.).

9.2.6. Competitiveness of the mechanical engineering sector

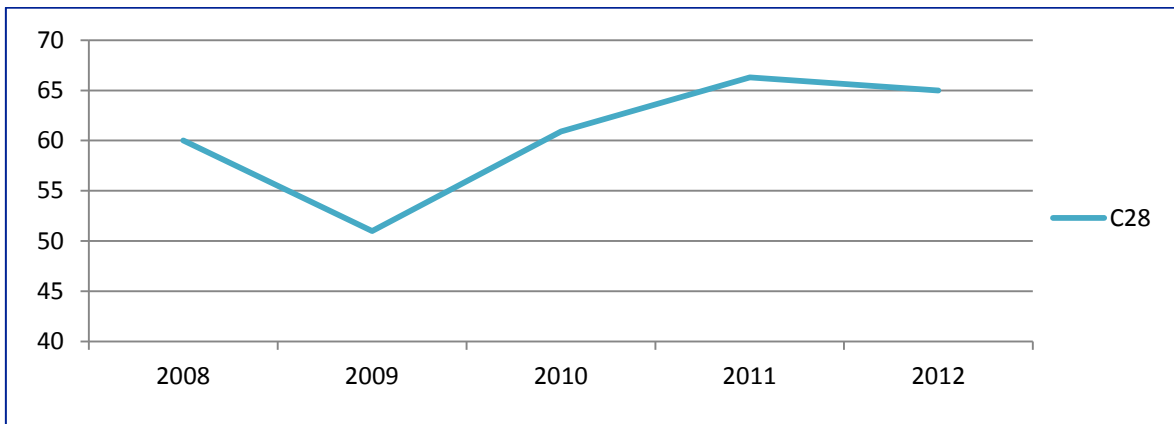
Mechanical engineering is an industry of medium-sized companies - however, the average company's size hides a large variation. The key performance figures – differentiated by group sizes – disclose a typical pattern. Smaller firms pay lower wages than larger companies and labour productivity is lower. This contrasts the Gross-Operating Rate (GOR) that is higher for smaller firms. The GOR denotes the share of output that is dedicated for capital services, taxes and entrepreneurs' income.

The apparent labour productivity in the mechanical engineering sector, defined as value added at factor costs divided by the number of persons employed, has been stable in a last few years with a recent growth up to EUR 65,000 per year (see Figure 9.11). Following the 2008 financial crisis, a decrease in labour productivity could be observed. This can be explained by introduction of policies to promote employment-intensive growth. Measures designed to get especially low-skilled workers back to jobs after the crisis-related layoffs, may have acted as a drag on mechanical engineering's productivity in the EU. With the sector's recovery, the numbers prove a return to growth of labour productivity since 2010. However, compared to the US and Japan, with similar wage levels, apparent labour productivity is relatively low: labour productivity in the sector was EUR 91 000 in the US and EUR 97 000 in Japan. Thus the productivity of the sector as a whole in the EU seems to lag behind these two competitors. However, these figures must be considered in relation to the EU manufacturing industry.

The lower labour productivity of the EU in comparison with the US and Japan is not an exception, since the EU countries are characterized by stricter rules on social security, higher taxation and existence of minimal wage. This brings numerous welfare benefits, but also puts the industry into fierce price competition. However, even if the economic performance has been influenced by the cost pressure and the situation has become even tighter during the financial

crisis and beyond, a slight improvement in the recent years is clearly visible in the curve of the graph below.⁵⁹⁷

Figure 9.11 Development of apparent labour productivity in the EU28



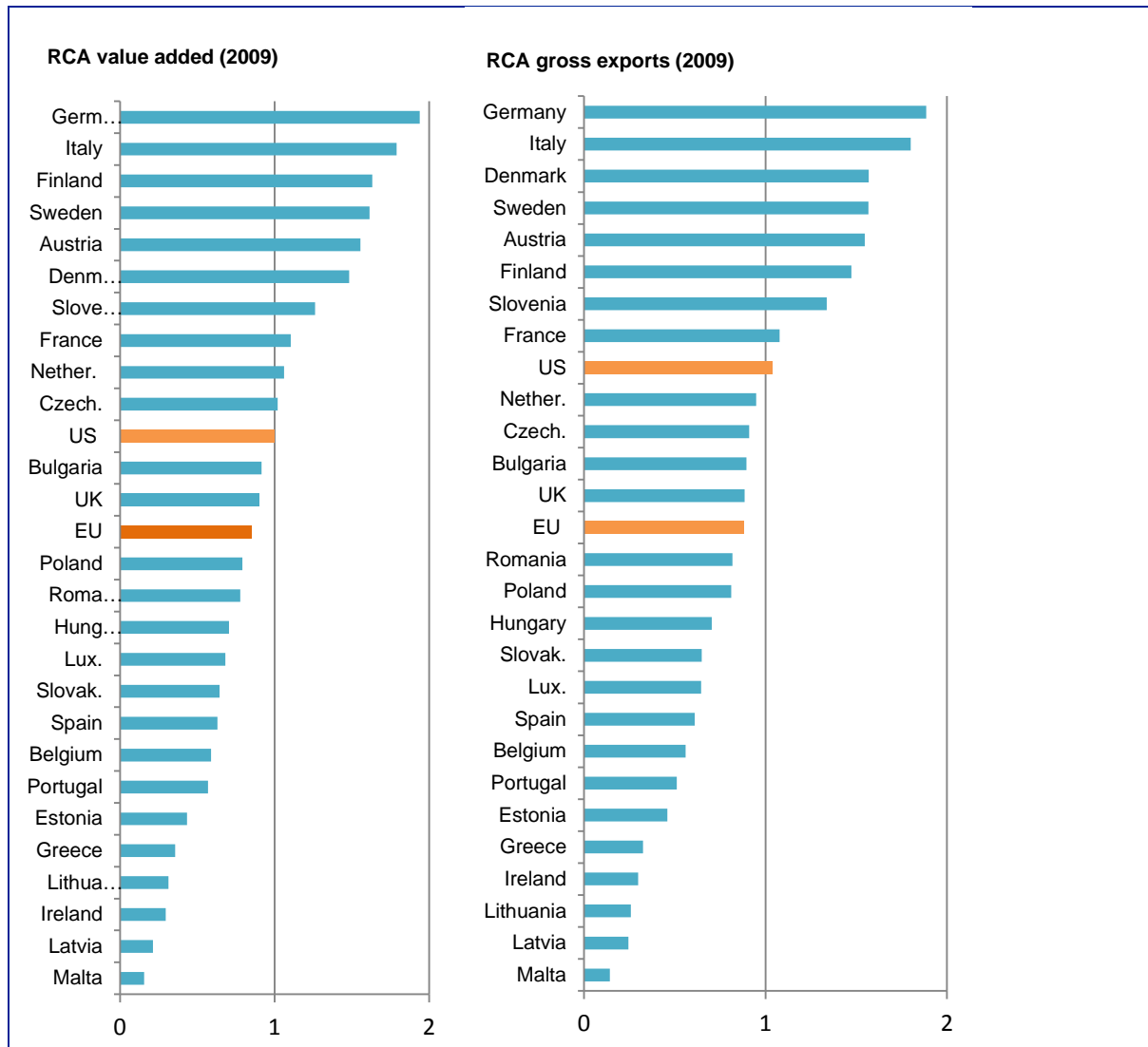
Source: Eurostat.

Looking at the so-called revealed comparative advantage (RCA) and the newest available data from 2009, reveals more about the trade competitiveness in the sector (see Figure 9.12 below). A first conclusion is that the majority of EU countries have a RCA in mechanical engineering lower than the US, both in terms of gross exports and value added of trade. However, some EU countries, namely Germany, Italy, Finland and Denmark, report a comparative advantage significantly higher than the world average and the EU's overall RCA, showing a global comparative advantage in the mechanical engineering, what can be indeed seen in the high exports of EU's machinery demonstrated in section 9.2.2. Secondly, the EU RCA average in both categories is slightly lower than that of the US. The spread of numbers can mean both different level of specialization in terms of mechanical engineering as well as different level of productivity in various EU member states.

Taking a closer look at the "best performers" identified in Figure 9.12 indeed suggests a relation between productivity and RCA. Germany, where mechanical engineering accounts for a significant part of its manufacturing output (stable around 13 percent in most recent years) has had a higher productivity and faster growth between 1995 and 2009. Also, Germany was much less impacted by the 2008 economic crisis, compared to the rest of the EU - its drop in growth of productivity caused was only half compared to the EU27's average drop. Also Italy reports higher productivity than the EU average, however its growth has not been as positive as in Germany and it has been negatively influenced by the 2008 financial crisis, causing a 10 percent decrease in growth.

⁵⁹⁷ To see more on competitiveness of the EU mechanical engineering industry consult: http://ec.europa.eu/growth/sectors/mechanical-engineering/index_en.htm.

Figure 9.12 RCA of gross exports and value added in EU28 (2009)



Source: OECD-WTO.

In general, the mechanical engineering sector in the EU is characterized by an intra-industrial and inter-industrial division of labour. It builds upon a traditionally good and strong industrial base in Europe. The existing good infrastructure ensures upstream linkages to other metal industries, electrical engineering, and the electronics industry and thus serves as an important prerequisite for a competitive EU mechanical engineering sector. Compared to other manufacturing sectors reveals, wages and productivity of mechanical engineering are higher than for the average of all of manufacturing. This can be attributed to the need for a highly qualified labour force. For example, engineers are needed for the design of complex products. However in terms of the manufacturing processes that, mostly due to the predominance of single and small batch production, qualified machine operators and workers are also needed, to maintain the quality of the whole design-manufacturing process.

Over the past few years, the industry has been engaged in creating global networks, building upon comparative advantages in different regions around the EU, and improving access to remote markets. Downstream linkages with client industries contribute to the EU mechanical engineering sector as a global leader in manufacturing technologies. The Single Market has promoted intra-EU trade, thereby raising competitive pressures on smaller Mechanical Engineering firms, even those specialised in niche product segments. In particular, larger companies have been able to exploit the potential of a more open EU market and to increase their share of the market.

9.3. Market access issues in the mechanical engineering sector

9.3.1. Tariffs

In order to analyse the different tariffs that exist, we have created the following product categorisation that logically group existing tariffs for different types of:

- **Motors:** generators, turbines, motors;
- **Working the earth machinery:** cranes, cultivating machinery, food preparation, agricultural machinery;
- **Textile machinery:** Printing, weaving, sewing machines;
- **Metal machinery:** Grinding, metal rolling, metallurgy machines;
- **Domestic and office machinery:** heating, air-conditioning, stoves, office equipment;
- **Optical and measuring machinery:** lenses, projectors, gas/liquid meters, watches, measuring/controlling instruments;
- **Medical machinery and devices:** x-ray machines, breathing devices, orthopaedic apparatus, and surgery equipment;
- **Weapons and military machinery:** firearms, military technology, explosives;
- **Other machinery:** all else.

The table below demonstrates the tariffs for EU products going to the US for each of these nine categories mentioned above. With the exception of Optical and measuring machinery the average tariffs for EU exports is rather low. In terms of maximum tariff rate Domestic and Office machinery and Other Machinery are significantly higher.

Table 9. 8 Average tariffs for different types of products of mechanical engineering sector

Product category	Simple average	Weighted average	Min rate	Max rate
Motors	2.31	2.26	0	6.2
Working of the earth and cultivation/agriculture	1.02	1.02	0	4.5
Textile machinery	1.95	1.86	0	9.7
Metal machinery/equipment	2.14	2.15	0	4.5
Domestic and office machinery	2.33	2.29	0	12.0
Optical and measuring machinery	3.34	3.37	0	6.7
Medical machinery and devices	0.96	0.97	0	2.9
Weapons and military	2.22	2.02	0	3.2
Other machinery	2.87	2.38	0	22.0

Source: World Bank.

Looking closer at the different tariffs applied by the EU at HS4 code level, the highest (weighted) average tariffs are those on ball or roller bearings (11.13 percent), ball or roller bearings (7.99 percent) and watch straps, watch bands and watch bracelets (5.95 percent). While blankets and watch straps have not been significant in terms of import value, the import of bearings in 2013 was as high as 398 million EUR, resulting in tariffs of 43 million EUR. Interestingly, imports of Instruments and apparatus for physical or chemical use worth 2.3 billion EUR of imports have brought only 19 million EUR in tariff impact, thanks to the low tariff (0.8 percent). In the USA, the highest tariff is applied on ball or roller bearings (up to 9.9 percent), marking-out or mathematical calculating instruments (4.57 percent) and balances of a sensitivity of 5 cm or better (3.37 percent). 787 billion worth bearings were exported to the US from the EU, resulting in 24 million EUR of tariff. The most imported from the EU were taps, cocks, valves and similar appliances worth 3.38 billion EUR with a moderate tariff (1.58 percent) resulting in 57 million of tariff revenue.

9.3.2. Non-tariff Measures

Non-tariff measures (NTM) refer to any measure that restricts trade without imposing tariffs such as import limits, administrative entry procedures, Technical Barriers to trade (TBTs) such as differences in standards or government procurement policies. Government procurement policies, as well as TBTs, resulting from different regulatory approaches in the EU and US are significant in the mechanical engineering sector.

Public procurement policies

US State's Government procurement policies have an important impact on the mechanical engineering sector. Different US States and their local authorities in their tenders can and often do refer to different standards and technical specification, as well as to different versions for the National Electrical Code (NEC) standards. The situation in the US impacts especially SMEs, who find it difficult to participate in the tenders due to the additional costs related to the necessary adoption of the product to the technical requirements at the local level. In addition, a lot of EU producers, similarly to other sectors are excluded from the tenders because of the Buy American Act, or because of the military exemptions even if the product is a non-military product but used in a military base.

Regulatory environment in the sector

In the EU, the central piece of regulation of the mechanical engineering sector is the Machinery Directive 2006/42/EC, last amended in 2009 by Directive 2009/127/EC. The purpose of the Machinery directive is to ensure free movement of machinery within the EU's Single Market and to guarantee a high level of protection for EU workers and citizens. It combines mandatory health and safety requirements with voluntary harmonised standards. Its management structure thus includes also the European Standardisation Organisations CEN and CENELEC that set EU-wide standards. This Directive sets up a list of Essential Health and Safety Requirements (referred to as EHSRs) to which machinery must comply where relevant. All machinery products placed at the EU market for the first time must comply with this Directive, what includes those manufactured in the EU and also those imported. Another important piece of EU legislation is The Use of Work Equipment by Workers at Work Directive 2009/104/EC. Suppliers and users of machinery are not allowed to supply or operate machinery in the EU unless they conform to these directives. Other EU directives exist that are relevant to machinery, however these are fairly specialized. Examples are: The EMC Directive 2004/108/EC and the ATEX Directive 94/9/EC.

The important part of the EU regulatory framework is the Conformity Assessment. The designer of the machinery product or other responsible body must be able to show evidence that proves conformity with the EHSRs. A harmonized European (EN) Standard that is listed in the Official Journal of the European Union (OJ) under the Machinery Directive confers a presumption of conformity with certain of the EHSR's. The character of the standard is voluntary – the producer may or may not follow them, however if followed they become a prerequisite for the circulation at the EU internal market and thus those aiming at multiple EU Member States might find beneficial to follow the standards to avoid further costs for approval in other Member States. Also, a thorough documented risk assessment must be conducted to ensure that all potential machine hazards are addressed. At the end of the conformity assessment procedure the manufacturer has to sign the EC Declaration of Conformity and affix the CE Marking. The CE Mark indicates that the machine conforms to all applicable European Directives and that the appropriate conformity assessment procedures have been completed.

In the US, there is no single centralised organisation that promotes industrial safety. One of the main drivers is the Occupational Safety and Health Administration (OSHA). However, also corporations themselves, besides established requirements, establish their own internal requirements. Other players include industrial organizations like the National Fire Protection Association (NFPA) or the Robotics Industries Association (RIA), The OSHA has been set by a special Act in 1970, and Article 5 of this Act sets the basic requirements and places the responsibility on both the employer and the employee. This is quite divergent from the Machinery Directive, which requires suppliers to place machines on the market that are free from hazards. In the U.S., a supplier can sell a machine without any safeguarding. The user must add the safeguarding to make the machine safe. Even if the trend is for suppliers to provide machines with the safeguarding, as designing safety into a machine is far more cost effective, there is no regulation that would make the safeguarding mandatory. OSHA supports the safety by publishing regulations and standards. Standards pertaining to industrial machinery

are published by OSHA in Part 1910 of 29 CFR and unlike most standards, which are like in the EU voluntary, the OSHA standards are laws.

The significant differences in the regulatory traditions and environments in the EU and US described above mean that machinery products manufactured at one side of the ocean hardly comply with the system at the other side. Both the US and EU aim at a high level of safety of mechanical engineering products, however each area follows different logics while trying to ensure the safety for both the workers and citizens. Various existing regulations and local requirements in both the EU and US are important causes of some of the current NTMs.

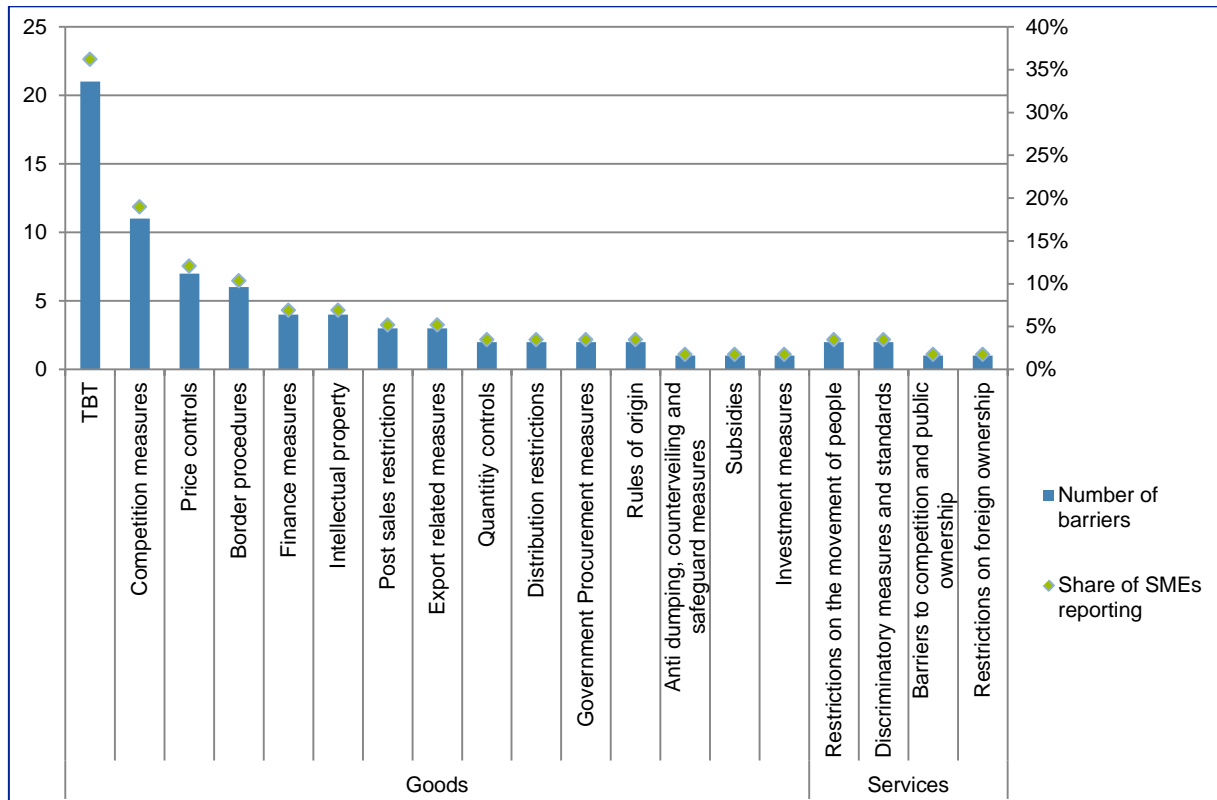
Non-tariff measures

Different NTMs identified in previous studies⁵⁹⁸ are in general caused by differences in EU and US standards, certifications procedures and testing. They include at both the EU and US side the third party testing for machinery with a high risk potential. Also, US regulations on type of approval of imported engines differ from EU regulations. The US Non Road Mobile Machinery (NRMM) Global Technical Regulation and Clean Air Act (CAA) also create an additional barrier for import of mechanical engineering products from the EU. With regard to off-road machinery, the regulation of its approval may differ per EU Member State. The Market Access Database of the EC mentions two specific examples. The IPR Infringement Cases are related to Section 337 of the Tariff Act of 1930. This Act provides remedies for holders of US intellectual property rights by keeping the imported goods which are infringing such rights out of the US ("exclusion order") or to have them removed from the US market once they have come into the country ("cease and desist order"). These procedures are carried out by the US International Trade Commission (ITC) and are not available against domestic products infringing US patents. According to the Medical Device User Fee and Modernization Act, US SMEs can receive reductions and reimbursements on the fees charged to get pre-market approval, whereas foreign companies cannot.

Note that NTMs disproportionately affect SMEs, because these can hardly recuperate increased costs due to NTMs via high volumes of machinery sold, and also their access to costly legal assistance is limited. Figure 9-8 below shows which NTBs are perceived as the most severe by the companies from the mechanical engineering sector.

⁵⁹⁸ Ecorys (2009): Non-Tariff Measures in EU-US Trade and Investment – An Economic Analysis.

Figure 9.13 Number of barriers perceived by SMEs



Source: SME Survey.

The industry has underlined that greater cooperation in terms of standardization would tackle many of the TBTs. Currently, the different standards and their system in the US makes an important barrier in the trade in mechanical engineering goods. Also, harmonising of pollution demands and emission limits can support the mutual trade. The machinery sector is being specified as fairly unique and a great opportunity for export at both the EU and US side exists.

9.4. Expected impacts of the TTIP on the mechanical engineering sector

This section presents the results of the CGE modelling and their possible implications for the development of the mechanical engineering sector.⁵⁹⁹ The results will be interpreted taking into consideration the definition of the sector via GTAP, as described in section 9.2.1, that besides machinery, such as engines, motors or agriculture machinery, the sector includes also medical, precision and optical instruments and watches and clocks. Another consideration is that the design and predicted impacts of the CGE model depend on the current condition of the industry. As a result, the indications of predicted drops/increases in production or exports/imports point out the potentially strong sectors and those where the EU can potentially face issues after the TTIP. Important to keep in mind is that the scenarios for the modelling have been made before the start of the negotiations based on assumptions about the future agreement. However, as the negotiations progressed some assumptions made might not reflect the real ambition as accurate as before.

⁵⁹⁹ The different modelling scenarios and details are presented in Chapter 1 and 6.

9.4.1. Expected economic Impacts

Table 9.9 Potential economic impacts of the TTIP on mechanical engineering sector in % change, 2030

		Total	Tariffs	Total NTMs	Total NTMs	Direct spill-overs	Indirect spill-overs
Output				goods	services		
EU28	Modest scenario	0.48	0.42	-0.41	-0.04	0.67	-0.16
EU28	Ambitious scenario	0.42	0.45	-0.98	-0.08	1.38	-0.35
US	Modest scenario	0.52	-0.51	-0.27	0.07	1.3	-0.06
US	Ambitious scenario	1.53	-0.57	-0.52	0.13	2.63	-0.14

Source: Ecorys 2016

The main conclusions from the predictions of the CGE model suggest that:

- Both the EU and US benefit from growth in output – more in the case of the less ambitious scenario;
- In the case of the ambitious scenario both the EU and US lose on the indirect spill-overs – third countries benefit from more transparent regulatory environment and trade more amongst themselves;
- Both the EU and the US will benefit from direct spill-overs in the case of the ambitious scenario and are thus likely to trade more also with third countries;
- The US is likely to lose slightly due to the elimination of tariffs, and the EU due to the elimination of NTMs, however this loss would be in both cases balanced thanks to the significant gains in direct spill-overs;
- A positive impact on the overall development of the EU machinery industry is likely to be expected.

It can be concluded that the mechanical engineering sector is likely to benefit and grow both in the EU and the US. Potential cooperation in the area of standards, synergies in terms of security testing, and removal of remaining tariffs, will help the industry to lower the costs and increase their global competitiveness, and thus grow. The challenge is to align this growth with an increasing level of security and sustainability of mechanical engineering products and assure that the EU/US trade zone will become a leader in this respect. Another challenge lays in establishing efficient cooperation for standards and regulations of new products, which will prevent creation of new barriers and thus extra costs for trade, and would allow further long-term growth of the mechanical engineering sector.

Regarding the stakeholders, the industry itself (e.g. Orgalime and ZVEi) expects positive impacts of TTIP which is in line with results of the CGE modelling. However, both the EU industry and US standards setters (American Society of Mechanical Engineers, ASME and American Society for Testing and Materials, ASTM) point out the challenges in terms of reaching higher regulatory convergence. Since in the US the machine safety is not per se regulated by law at the federal level, and the standardisation system works on a very open and competitive basis, while in the EU the safety features are laid down in directives that refer to ENs, there is a long way to go and many talks between regulators will be needed to allow for efficient removal of NTMs.

Looking at the economic impact on SMEs, this depends very much on their ability to benefit from the new trade situation. Elimination of NTMs is in general beneficial for SMEs, for whom it is more costly to overcome regulatory diversity and additional costs caused for example by double-testing. In the case of the mechanical engineering sector, the CGE model predicts positive change regarding the total output of the industry. SMEs can highly benefit if they take advantage of the lower costs of exports and use these saved costs to innovate. Following the route of technology specialisation can help them create globally competitive products, and the EU SMEs could become global players. The challenge lies for the SMEs to not be complacent and use the additional resources from saved costs to innovate and explore new markets.

Table 9.10 Potential trade impacts of the TTIP on mechanical engineering sector in % change, 2030

		Total	Tariffs	Total NTMs goods	Total NTMs services	Direct spill-overs	Indirect spill-overs
EU exports							
	Modest scenario	1.84	1.91	-0.97	-0.09	1.34	-0.36
	Ambitious scenario	1.5	1.96	-2.3	-0.17	2.74	-0.73
EU imports							
	Modest scenario	0.81	0.78	1.26	0.11	-1.68	0.34
	Ambitious scenario	1.21	0.76	2.94	0.22	-3.41	0.71
US exports							
	Modest scenario	3.34	1.51	-0.36	0.08	2.17	-0.06
	Ambitious scenario	5.08	1.38	-0.72	0.15	4.38	-0.12
US imports							
	Modest scenario	0.52	1.6	0.44	0.01	-1.63	0.1
	Ambitious scenario	-0.35	1.7	0.97	0.02	-3.23	0.2

Source: Ecorys 2016

The main conclusions from the predictions of the CGE model are:

- Both the EU and the US benefit from growth in exports in the case of both scenarios
- The US records greater exports in case of the ambitious scenario, especially due to the direct spill-overs and exports to third countries; The EU also benefits but less;
- In case of the ambitious scenario, the EU overly benefits, however records a loss due to the ambitious elimination of NTMs on goods;
- In both scenarios, for both the EU and the US, growth in exports is greater than growth in imports, which results in a positive impact on the trade balance;
- **Total positive impact on extra-EU trade** is expected in case of both scenarios.

It can be concluded that both EU's and US' exports will grow significantly, mostly because of the removal of tariffs. This result suggest that the existence of remaining tariff restrictions across the Atlantic has been an obstacle for growth of its businesses. Imports are also likely to grow in most scenarios considered. The growth of output of the industry means also increased demand for the mechanical engineering products in both the EU and US. The countries will benefit greatly from increased regulatory convergence and increase their exports to third countries, while imports from third countries are likely to drop. This suggest an improved international competitiveness position of the EU-US trade zone for mechanical engineering products vis-à-vis the rest of the world.

9.4.2. Expected social impacts

Table 9.11: Potential social impacts of the TTIP on mechanical engineering sector in % change

		Total	Tariffs	Total NTMs - goods	Total NTMs - services	Direct spill-overs	Indirect spill-overs
High skilled employment							
EU 28	Modest scenario	0.37	0.37	-0.43	-0.05	0.64	-0.16
EU 28	Ambitious scenario	0.24	0.39	-1.01	-0.09	1.3	-0.34
US	Modest scenario	0.47	-0.51	-0.28	0.07	1.25	-0.06
US	Ambitious scenario	1.39	-0.56	-0.56	0.13	2.52	-0.13
Low skilled employment							
EU 28	Modest scenario	0.36	0.36	-0.44	-0.04	0.65	-0.16
EU 28	Ambitious scenario	0.23	0.38	-1.05	-0.09	1.33	-0.34
US	Modest scenario	0.44	-0.53	-0.28	0.05	1.26	-0.06
US	Ambitious scenario	1.37	-0.58	-0.55	0.1	2.54	-0.13

Source: Ecorys 2016

The main conclusions from the predictions of the CGE model are:

- Both low skilled and high skilled employment is likely to grow in both the EU and the US;
- Both scenarios have a positive impact on employment and growth in low skilled and high skilled employment is comparable;
- Most growth in employment is related to direct spill-overs and trade of the EU and the US with third countries;
- On the other hand, removal of NTMs on goods is likely to bring slightly negative effects and a drop in employment for both categories of workers;
- In total, the machinery sector is likely to **employ more workers** thanks to the TTIP.

In line with growing output and export, the demand for both low-skilled and high-skilled workers will grow. The strong international competitiveness position and the fact that both the EU and the US are able to compete on quality and innovative goods in mechanical engineering will employ manufacturing workers who are usually more vulnerable to competition from developing countries where wages are significantly lower than in the EU and US. The EU is particularly endangered in most cases since its labour protection standards are of the highest in the world. Also, consumer organisations fear that consumer protection standards could be lowered. Nevertheless, the CGE model results indicate that the output growth of the sector will benefit employment in the EU and the US and that less of the production is likely to be outsourced to developing countries.

9.4.3. Expected environmental impacts

Table 9.12: Potential environmental impacts of the TTIP on mechanical engineering sector

		1000 tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
		CO2	CH4	N2O	NOX	SOX	CO	NMVOC	NH3
EU28	Current state of play	14,542	2,881	447	38,236	6,703	53,110	46,200	230
EU 28	Modest scenario	69.7	13.8	2.2	183.5	32.2	254.9	221.8	1.1
EU 28	Ambitious scenario	61.1	12.1	1.9	160.6	28.2	223.1	194.0	1.0
US	Current state of play	16,357	1,858	592	56,119	11,965	150,440	67,545	552
US	Modest scenario	85.1	9.7	3.1	291.8	62.2	782.3	351.2	2.9
US	Ambitious scenario	250.3	28.4	9.1	858.6	183.1	2,301.7	1,033.4	8.5

Source: Ecorys 2016

The main conclusions with regards to environmental changes as estimated from the output drop counted by the CGE model:

- Due to increased trade and inputs, all types of emissions are likely to grow;
- In the case of the ambitious scenario, emissions from the US machinery sector will increase significantly.

The output growth of the sector goes in line with growth in emissions from production and from transport used to export and import (higher activity of ports, airports, and truck transport towards the ports). However, note that the EU has set emission limits and the Emissions Trading System (ETS), and thus the growing industry will need to find a way on how to make its production more environmental friendly or substitute the growth in emissions by investing into ETS allowance units. In this context, the possible negative environmental impact of the activity of the EU mechanical engineering industry has to be reduced.

The higher economic output means a probability of related higher emissions. However, this may not be entirely true with regard to current EU rules on emissions and emission trading system. If companies producer more emissions, they need to purchase emission allowances and this would mean additional costs. As a result, the more likely scenario is that companies take advantage of lowered costs of exports thanks to the new EU-US market place, and will innovate their production processes to make them more sustainable and ecologic. The challenge may be that the companies will seek savings by using less sustainable materials.

Environmental NGOs assume that increased transatlantic transport will have a negative impact on the environment and also point out a danger of decreased standards for protection of the environment. The current progress of negotiations suggest that these risks are rather low, however, it will be considered as potential negative impacts, caused by the mechanical engineering sector impacted by the TTIP.

9.5. Conclusions and recommendations

In terms of the economic and trade impacts, the CGE model predicts positive impacts of TTIP. In the EU, the **total output will grow for about 0.5 percent** thanks to TTIP in the case of both the ambitious and less ambitious scenario. **Exports of the industry are expected to grow with 1.5 to 1.8 percent respectively.** The positive outcomes are in line with the overall analysis of the industry that suggests that the EU mechanical engineering sector is a strong and globally competitive industry; with many EU countries reporting above average (and above the USA) revealed competitive advantage and trade surpluses. In line with the growth in output and trade, the mechanical engineering sector will also **likely create more jobs** in the EU, equally for the high-skilled and low-skilled workforce that will **grow about 0.2 to 0.3 percent** depending on the scenario. On the other hand, growth of the sector's production and more trade across the Atlantic means a challenge for the environment. The emissions of CO2 and other substances are expected to grow and thus the industry will have to commit to greater

cooperation in the area of green technologies and use the additional resources gained thanks for the growth of the sector.

Since in the US, both output, exports and employment are likely to grow and, in some cases on a larger scale than in the EU, the CGE modelling suggests that **mechanical engineering is one of the winning sectors of the TTIP**, where creation of a free-trade bloc between the EU and US means a birth of a market place with global impact. Looking closer at the factors contributing to the growth, it can be observed that most of the positive impact is attributed to the removal of tariffs and direct spill-overs. This means that besides tariff-free trade between themselves, **the EU and the US will benefit from easier access to the markets of third countries** thanks to the global spill-over effect of the greater regulatory coherence in the mechanical engineering sector. The EU and the US are likely to strengthen their position of global standard setters in the sector.

Note that the predicted **growth** of the mechanical engineering sector **is partially attributed to the sector of electric and electronic engineering goods**, due to the different definitions of the sector for different parts of the analysis in this sector study. While the analysis of the competitiveness of the mechanical engineering sector and its trade patterns relies mostly on classifications that limit this industry to heavy machinery and mechanical appliances, the CGE model analysis uses the detailed GTAP data that include for example also medical precision and optical instruments, electric and word-processing machines, automatic data processing machines, computer storage devices and scientific and technical instruments. For these sub-sectors that are considered as part of the electronic engineering industry by the major relevant EU trade associations, growth is also expected in the EU.

Regarding the **stakeholders**, the industry itself (e.g. Orgalime and ZVEi) expect positive impacts of TTIP which is in line with results of the CGE modelling. However, both the EU industry and US standards setters (American Society of Mechanical Engineers, ASME and American Society for Testing and Materials, ASTM) point out **the challenges in terms of reaching higher regulatory convergence**. Since in the US the machine safety is not per se regulated by law at the federal level, and the standardisation system works on a very open and competitive basis, while in the EU the safety features are laid down in directives that refer to ENs, there is a long way to go and many talks between regulators will be needed to allow for efficient removal of NTMs. EU consumer organisations point out a **risk of lowering consumer protection standards** due to these challenges described. Environmental NGOs assume that increased transatlantic transport will have a negative impact on the environment. The current progress of negotiations suggest that **these risks are rather low**.

Another important point to consider while looking at the possible impacts of TTIP, especially in terms of its regulatory impacts and benefits of the NTMs removal, is the types of NTMs that are likely to be tackled. While the **CGE model does not specifically distinguish which NTMs are likely to be removed**, the EU industry underlined that the possible benefits of TTIP depend directly on the final outcome of the treaty. **TTIP is likely to bring benefits for the EU mechanical engineering industry if the USA agrees to approximate their standard-making to the international standards**, for example those produced by the UN. Currently, thanks to the CE marking, US companies have much easier access to the EU market than vice-versa, because of the diverse technical standards in different US states that are often not in line with international standardisation. Also, improved **access to the US procurement markets** seems to be crucial for the EU stakeholders.

Though the potential impacts of TTIP will not solely depend on the provisions negotiated. The EU mechanical engineering industry should seek to further strengthen its global competitive position and focus on its assets, for example those related to research and development, in order to remain the global leaders in the sector. Also SMEs could significantly benefit if they manage to innovate and take advantage of the lower costs of export that will result from removal of NTBs.

To sum up, this sector study predicts possible positive impacts from TTIP for the mechanical engineering industry, as well as for some subsectors of the electronic engineering industry in the EU. According to the CGE model, the implementation of the TTIP will result in growth in output, exports and jobs. However, the positive impacts greatly depend on the final result of the TTIP agreement, and especially on the types of the NTMs that are likely to be removed, as well as on the achievement of equal market access for companies in the mechanical engineering industry in the EU and US. Growth of the industry means additional challenges for the

environment that will have to motivate the industry to high commitments in terms of green technologies and sustainable manufacturing and transport.

Based on the above analyses and outcomes the following recommendations are proposed:

1. A good dialogue with the mechanical industry is necessary in order to carefully assess the existing non-tariff measures and focus on those that can benefit the EU industry ;
2. Any removal of NTMs must be reciprocal and improved access to public procurement markets is of crucial importance ;

10. Potential TTIP impact on the electrical and electronic goods sector

10.1. Introduction

In this chapter the potential impacts of TTIP on the electrical and electronic goods sector⁶⁰⁰ will be discussed in more detail. The chapter starts with an overview of the current state of play in the EU electrical and electronic goods sector in terms of economic structure, trade, global value chain (GVC), social and environmental issues, and competitiveness, both in qualitative and quantitative terms. Subsequently, an assessment is made of how the current situation could change if TTIP is concluded in the upcoming years.

The EU's ambitions with regard to TTIP is to eliminate any unnecessary tariffs in the sector and to improve regulatory coherence. The barriers arising from regulatory divergences are deemed to have a more significant impact on trade than tariffs.

Regulatory systems for electrical products and electronics diverge in the US and the EU, notably with regards to technical regulations affecting their marketing and use, as well as conformity assessments. Even though some sub-sectors of the electrical and electric goods sector, such as personal computers or communication devices, use international ICT standards. Various regulatory differences in the engineering industries on both sides of the Atlantic could benefit from increased cooperation between regulators in the EU and the US. This can apply for example, to emerging technologies, where aligned regulation, thanks to early dialogue, may be created. Also in other areas where it has been observed that differences in regulatory requirements create significant trade barriers, legislation could be revised.

Box 10.1 Take away of this chapter

- Electrical and electronic goods manufacturing is an important sector within the EU manufacturing industry. In 2013 the sector generated a turnover of 559 million euro and employed around 2.5 million persons;
- The EU sector has a trade deficit in terms of world trade, but a slightly positive trade balance with the US;
- The US is the second most important partner for imports, after China, and the most import partner for exports;
- The average tariff in the sector ranges from 1 to 4.7 percent depending on the type of products (e.g. office equipment, telephones & radio equipment, or cameras). However within these product groups, tariffs could still equal 14 percent for certain products;
- Divergence of US standards from international standards is a barrier often faced in the sector;
- The CGE model's results predict a rather negative impact stemming from TTIP, however this prediction can change significantly depending on the NTMs that will be tackled in the agreement;
- After the implementation of TTIP, the industry may face increased price competition from third countries, especially from Asia, who can benefit from aligned EU-US regulation;
- SMEs can benefit as well if they manage to innovate and take over new and niche sectors with global potential and take advantage of lower exporting costs.

10.2. The electrical and electronic goods sector in the EU

10.2.1. Overview of the sector

According to the NACE classification the sector is made up of two key sub-sectors:

⁶⁰⁰ This sector study looks into the sector of Electric and electronic goods as a whole. However, especially in regard to the section dealing with the analysis of EU's trade in this sector, it shall be noted that the electrical subsector and electronics subsector have somewhat different competitive characteristics. In particular, the EU currently reports a trade surplus in electrical subsector and a trade deficit in the electronic subsector. This notion is important to understand possible impact of the TTIP on the sector.

Manufacture of computer, electronic and optical products (NACE C26);

Manufacture of electrical equipment (NACE C27).

The correspondence of these NACE codes with other types of trade and business classifications is illustrated in the table below:

Table 10.1 Sector definitions for EU electrical equipment and electronic goods sector

Sector selection (CEPR, 2013)	GTAP- 57	ISIC rev. 4	NACE rev. 2	NACE rev. 1.1.	HS 2002
Electrical machinery	40	30; 32	26; 27	DL, 30; 31; 32	85

Note that for different parts of the analysis in this sector study, different statistical nomenclatures are used that largely overlap but have slightly different definitions of the electric and electronic engineering sector. Also, the sectors of electric and electronic engineering are largely overlapping; however some competitiveness characteristics might differ.

The EU electric sector (mainly NACE 26), which is especially strong in Germany, is more competitive than the EU electronic sector (mainly NACE 27). The electronic sector runs a trade deficit whereas, the electric sector currently runs a trade surplus. The two nomenclatures are outlined below:

For the baseline sector data, NACE rev. 2 classification 26 (Manufacture of computer, electronic and optical products) and 27 (Manufacture of electrical equipment) have been used:

- Electronic and computer products (NACE 26): Manufacture of electronic components and boards; computers and peripheral equipment; communication equipment; consumer electronics; Manufacture of instruments and appliances for measuring, testing and navigation; watches and clocks; irradiation, electro medical and electrotherapeutic equipment; optical instruments and photographic equipment; magnetic and optical media;
- Electrical equipment (NACE 27): Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus; batteries and accumulators; wiring and wiring devices; electric lighting equipment; domestic appliances; and other electrical equipment.

For trade data category 85 of the HS classification has been used (Electrical machinery). This category contains for example:

- Electrical machinery and equipment and components; telecommunication equipment; computing; electric motors and generators; electromagnets, permanent magnets; electromechanical domestic appliances; electric shavers; portable electric lamps; microphones, loudspeakers; video recording or reproducing apparatus; television receivers; records, tapes & other recorded sound media; electronic integrated circuits; carbon electrodes & brushes, lamp carbons.

For the CGE modelling, the GTAP database has been used. Section 40 (Electronic equipment) has been selected and contains the following:

- Electronic equipment for broadcasting and transmission, data communications equipment, receivers, recorders and reproduction equipment; installation and repair of professional equipment; manufacture of office machinery (e.g. photocopiers, cash registers, etc.) and computer equipment (e.g. computers, word processors and peripherals) electronic valves and tubes; manufacture of television and radio transmitters and apparatus for line telephony and line telegraph; television and radio receivers, sound or video recording or reproducing apparatus, and associated goods.

10.2.2. Economic structure of the sector

Electrical and electronic goods manufacturing is an important sector within the EU manufacturing industry. In 2013 the sector (including both NACE 26 and 27) employed approximately 2.5 million persons in over 90 thousand companies. The sector generated a turnover of 559 million EUR and a production value of 497 million EUR. The sector as a whole experienced a significant drop in production value and turnover after 2008 and has been slowly recovering since then. However they have not yet reached the pre-crisis levels. Electrical equipment (NACE 26) has been recovering faster than computers and electronic and optical products (NACE 27). Both sub-sectors were able to keep its level of productivity following the crisis. Also employment in the two sub-sectors did not drop significantly. Computers and electronic and optical products (NACE 27) report in general a higher level of productivity, which can be attributed to the high-skilled nature of the workers in this sub-sector. Looking at the exports, after the 2008 crisis, exports started to grow again in 2010, which can be explained by the sector exploiting its international competitiveness.

Table 10.2 Development of key indicators for EU electrical equipment and electronic goods sector (2008-2013)

Combined	2008	2009	2010	2011	2012	2013
Number of enterprises	97,563	95,686	96,759	93,947	91,729	90,300
Turnover or gross premiums written (in thousand EUR)	638,449	524,711	573,307	586,394	572,559	559,784
Production value (in thousand EUR)	565,922	460,059	511,766	523,658	510,010	497,612
Number of employees	2,784,572	2,543,480	2,535,554	2,543,944	2,528,173	2,493,700
Turnover per person employed (in thousand EUR)	192	182	189	192	197	191
NACE rev. 2 - 26	2008	2009	2010	2011	2012	2013
Number of enterprises	46,454	45,050	44,388	42,635	41,455	41,767
Turnover or gross premiums written (in thousand EUR)	335,840	268,873	292,743	282,686	278,384	270,700
Production value (in thousand EUR)	291,151	233,204	255,106	246,856	240,829	234,992
Number of employees	1,246,994	1,123,228	1,110,703	1,094,197	1,105,704	1,081,930
Turnover per person employed (in thousand EUR)	245	231	231	226	233	225
NACE rev. - 27	2008	2009	2010	2011	2012	2013
Number of enterprises	51,110	50,636	52,371	51,312	50,274	48,533
Turnover or gross premiums written (in thousand EUR)	302,609	255,838	280,564	303,708	294,176	289,084
Production value (in thousand EUR)	274,771	226,855	256,660	276,802	269,181	262,620
Number of employees	1,537,578	1,420,252	1,424,851	1,449,747	1,422,469	1,411,771
Turnover per person employed (in thousand EUR)	139	133	148	157	161	157

Source: Eurostat SBS.

Germany is by far the most important EU country in terms of employment (30 percent of EU total) and especially value added (37 percent of EU total). The sector is also strong in Italy, France, and the UK, all contributing approximately 10 percent to the EU total employment and value added. Other significant EU countries in the production of electrical equipment and electronic goods are Poland, the Czech Republic and Spain.

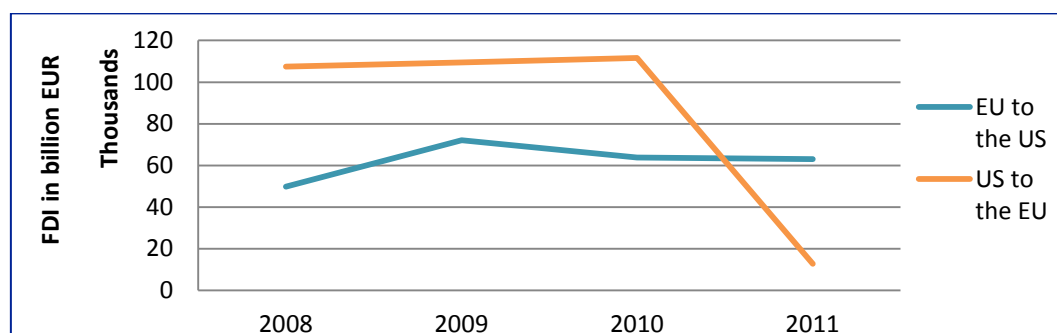
Table 10.3 Geographical breakdown of employment and value added – top 7 EU countries

Employment	Number of persons employed (% of sector total)	Value added (% of sector total)
Germany	30%	37%
Italy	11%	11%
France	10%	11%
United Kingdom	9%	10%
Poland	6%	4%
Czech Republic	5%	4%
Spain	4%	4%

Source: Eurostat.

As regards **Foreign Direct Investment (FDI)**, the US has traditionally been a significant investor in the EU sector, and its position has remained relatively stable between 2008 and 2010. However, there was a significant drop in 2011, which was the first year when EU investments in the US were larger than US investments in the EU. The EU's investments in the US have been stable between 2008 and 2011, despite the economic and financial crisis which unrolled during this period.

Figure 10.1 FDI position between the EU and US in the electronic goods sector (NACE 26 only⁶⁰¹) in billion EUR



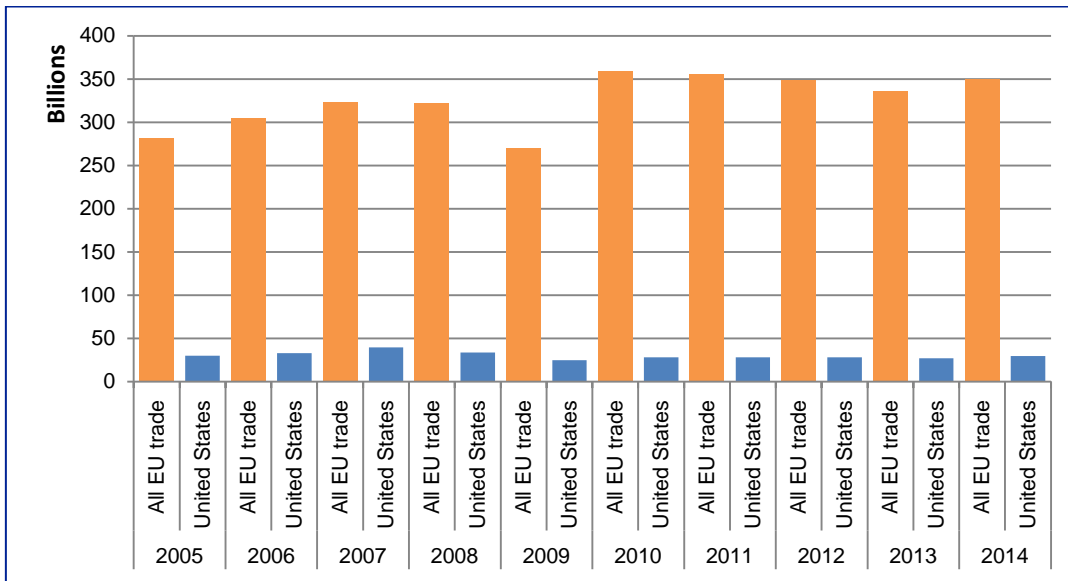
Source: Eurostat.

In order to analyse **trade flows** for the sector, detailed data at HS2 level were extracted from the COMEXT database, corresponding to the NACE 26 and 27 categories. Figure 10.2 and 10.3 illustrate the development of trade with the US and globally (including the US). Over the period analysed, total imports into the EU from the whole world have seen a steep drop from 322 billion EUR in 2008 to 280 billion EUR in 2009. However increased again to 355 billion EUR in 2010 and has been rather stable since then, being 349 billion EUR in 2014.

A very similar development has taken place with regard to the US, when the EU has imported around 29 billion EUR in 2014. During the same period, exports from the EU have followed a similar path – a drop in 2009, followed by a slow recovery and stabilization - and equalled 280 billion EUR in 2014. This development is pointing towards a relatively strong ability of EU-based producers to recover after shocks. This can be considered remarkable not only in light of the economic and financial crisis but also in light of the emerging strong competition from other areas in the world, especially from Asia.

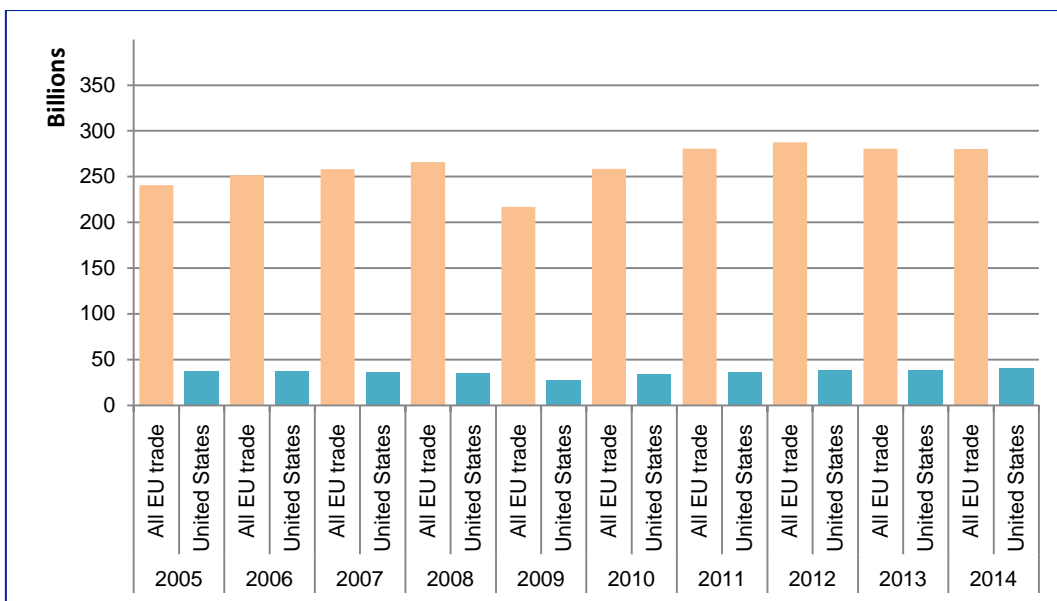
⁶⁰¹ Eurostat does not provide data for NACE 27.

Figure 10.2 Import of the electrical equipment and electronic goods – EU, US & all world (2005-2014) in billion EUR



Source: Eurostat.

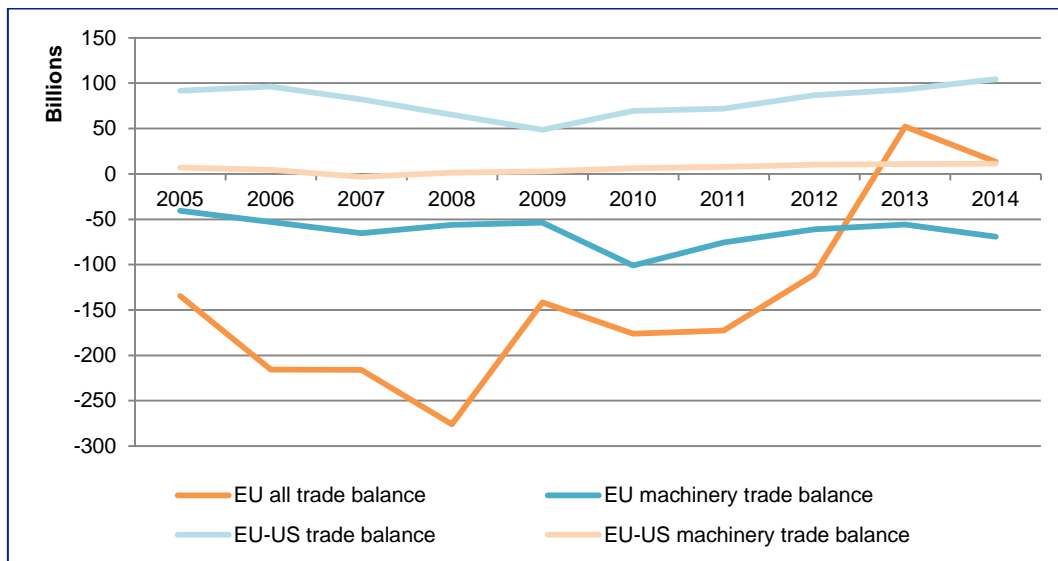
Figure 10.3 Export of the electrical equipment and electronic goods – EU, US & all world (2005-2014) in billion EUR



Source: Eurostat.

Seeing Figure 10.3, it can be observed that the overall trade balance is clearly negative for the EU in this sector. While EU's trade balance in total became positive in 2013, the trade gap for electrical and electronic goods remains.

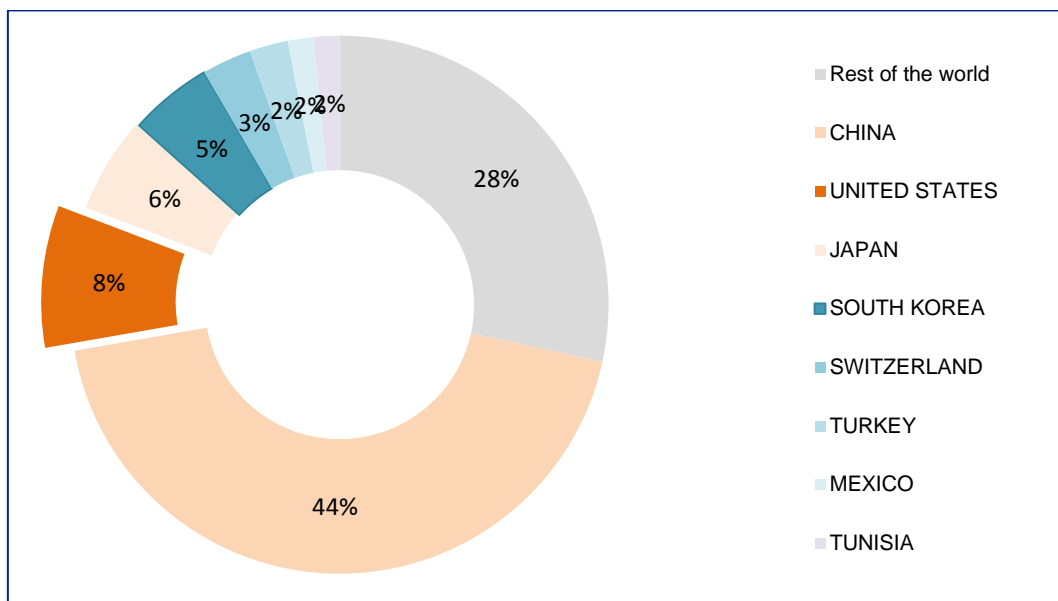
Figure 10.4 Trade balance of electrical equipment, electronic goods – EU, US & all world (2005-2014) in billion EUR



Source: Eurostat.

The development illustrated in Figure 10.4 raises new questions about the trade partners of the EU (especially in terms of the export). These are presented in Figures 10.5 till 10.8.

Figure 10.5 Geographical breakdown of EU27 electronic and electrical goods imports (2014)



Source: Eurostat.

For imports, the most important partner for the EU is China, taking up 44 percent of all EU electronic and electrical goods imports, followed by the US (8 percent) and Japan (6 percent). Total imports from China were as high as 153 billion EUR in 2014 and 29 billion was imported from the US.

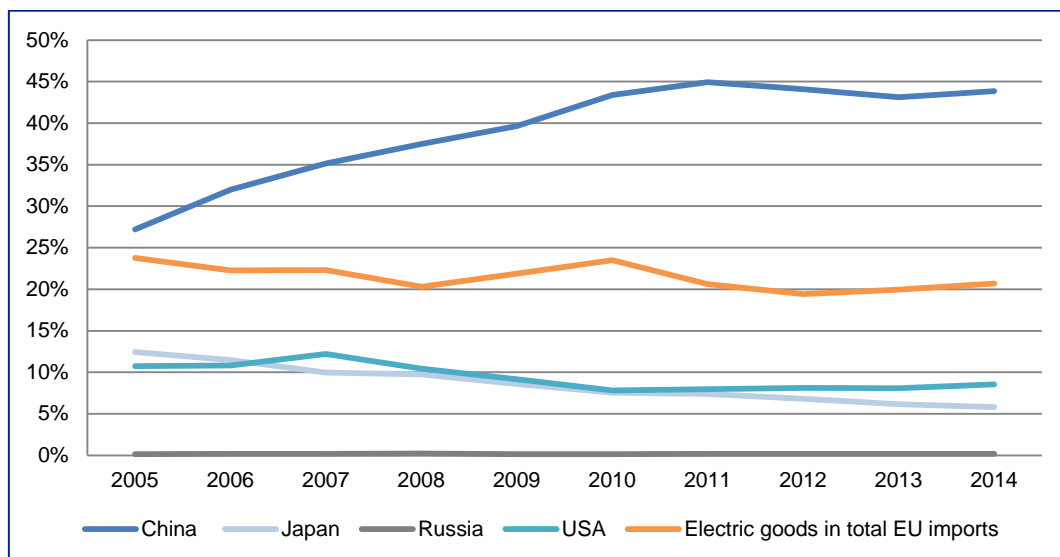
Table 10.4 Most important partners for EU28 imports in electronic and electrical goods imports (2014) in billion EUR

	ELECTRICAL - import
All extra EU	349 billion EUR
CHINA	153 billion EUR
UNITED STATES	29 billion EUR
JAPAN	20 billion EUR

Source: Eurostat.

Figure 10.6 provides a closer analysis of the development of imports from other countries, as well as the relative importance of electronic and electrical goods imports in total EU imports. The figure shows that 20 to 25 percent of the value of all imports to the EU is attributed to electronic and electrical goods. EU imports from both the USA and Japan have been stable over time, with the only drop in 2008 and 2009. The US exports to the EU dropped during the 2008 crisis, however, the US managed to recover and its EU-targeted exports are going slowly back to the pre-crisis levels. The figure also shows a dramatic increase of imports from China in 2009 and 2010, which can be explained by cost-lowering strategies of EU firms, attempting to take advantage of cheaper Chinese products, as well as consumers hit by the crisis, demanding cheaper consumer electronics. China has kept its high exports since then.

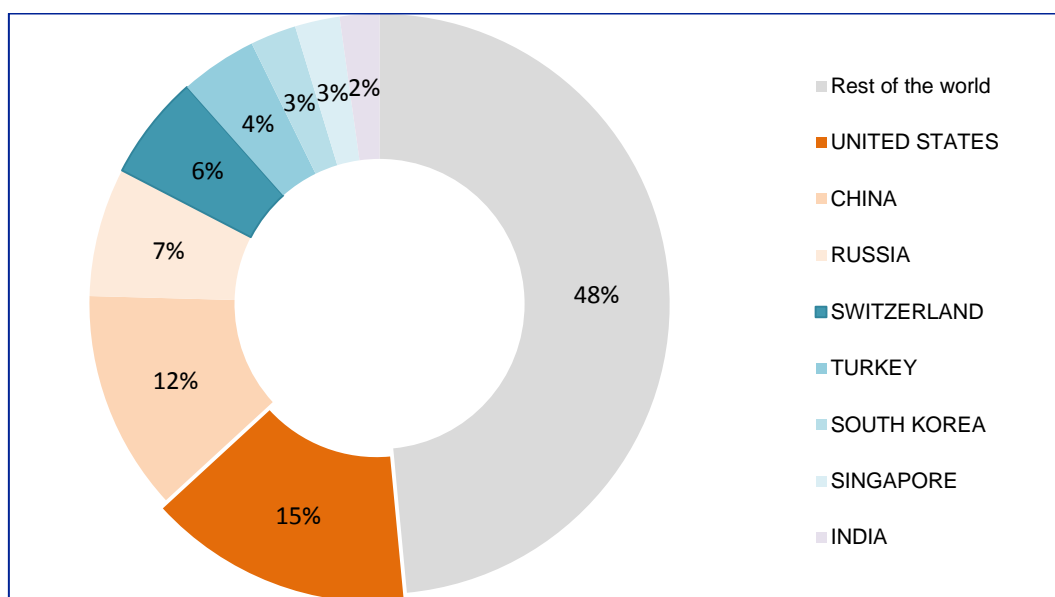
Figure 10.6 Trend of EU28 imports in electronic and electrical goods imports – import partners



Source: Eurostat.

The US is the EU's most important export market with 15 percent of all electronic and electrical good production destined for this country. China follows closely and accounts for 12 percent of total exports of the sector. The third place belong to Russia with 7 percent, as showed in Figure 10.7. Total exports to the US were 41 billion in 2014 and 34 billion to China.

Figure 10.7 Geographical breakdown of EU27 electronic and electrical goods exports (2014)



Source: Eurostat.

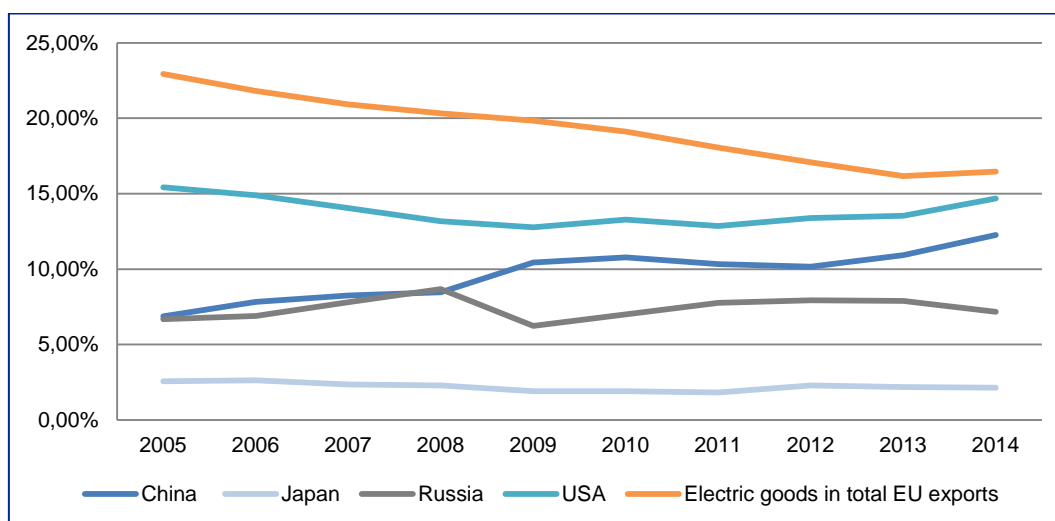
Table 10.5 Most important partners for EU exports in electronic and electrical goods exports (2014) in billion EUR

	ELECTRICAL - export
All extra EU	280 billion EUR
UNITED STATES	41 billion EUR
CHINA	34 billion EUR
RUSSIA	20 billion EUR

Source: Eurostat.

Figure 10.8 suggests that the relative importance of electronic and electrical goods in total EU exports follows a decreasing trend. Since the export of electronic and electrical goods in general has been rather stable in absolute numbers, this decrease in relative importance can be explained by increased EU exports in other sectors. Exports to the US are rather stable, equalling 13 to 15 percent of EU exports of electronic and electrical goods. The decrease after the 2008 crisis has been slowly diminishing. For Russia, the numbers were rather stable as well with a small drop in 2009. However, as the graph shows, exports to China have been steadily increasing since 2008. It can be assumed that the EU electronic and electrical goods producers search for new, "non-western" markets following the crisis, in order to recuperate lower EU and US demand. In this respect, China and its new middle class proved to work well.

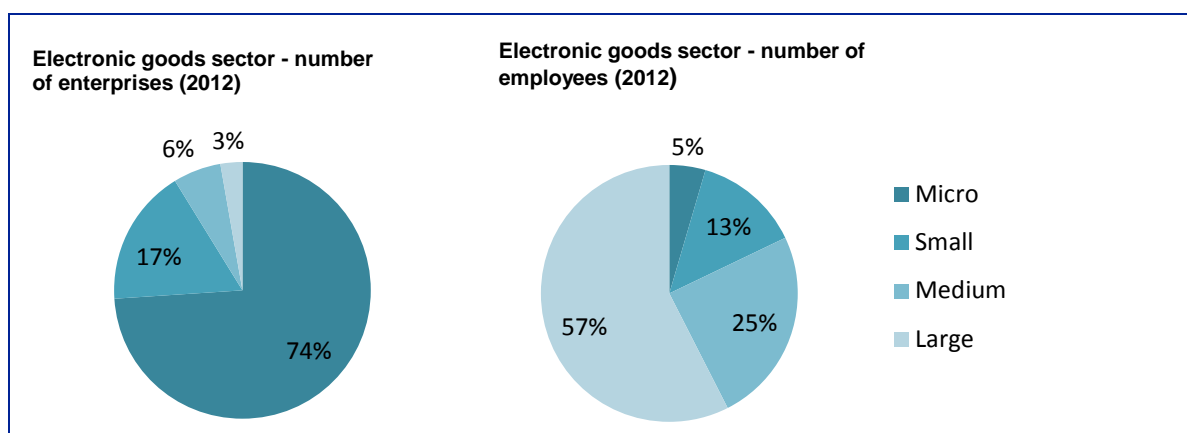
Figure 10.8 Trend of EU28 exports in electronic and electrical goods export – export partners



Source: Eurostat.

The important role of SMEs in the electrical and electronic goods sector is illustrated by the fact that micro, small and medium enterprises (MSMEs) account for about 97 percent of all companies. They employ 43 percent of all employees in the sector. The SME data are overall statistics from the EU; with the exception of the number of employees where some minor data gaps for small EU member states occur (the total number is the sum of the number for individual EU MS where available).

Figure 10.9 Key SME data for the sector (2012)



Source: Eurostat.

The productivity of employees of MSMEs, however, is significantly lower than that of large enterprises in the sector. The average productivity of employees of MSMEs is 44 percent lower than that of an average large enterprise. SMEs are very likely to trade, and indeed a significant share of their turnover is derived from trade (33-38 percent). However, the smaller the enterprise, the lower the probability that this enterprise will trade outside the EU – micro enterprises derive on average only 8 percent of turnover from cross-EU-border trade, compared to 20 percent for the large ones.

Table 10.6 Size distribution and key data for different sized companies in the sector (2012)

	Micro	Small	Medium	Large
Number of enterprises	68,600	15,997	5,600	2,560
Number of employees	110,840	326,944	602,094	1,407,490

Trade SIA on the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the USA

	Micro	Small	Medium	Large
Turnover (in thousands EUR)	17,245,000	43,806,000	111,808,000	404,000,000
Turnover per employee (in thousands EUR)	156	134	186	287
Total trade (in thousands EUR)	5,729,017	14,248,101	42,177,546	166,388,436
Outside-EU trade (in thousands EUR)	1,421,193	6,469,139	18,252,306	80,481,669
Turnover from trade	33%	33%	38%	41%
Turnover from outside-EU trade	8%	15%	16%	20%

Source: Eurostat.

10.2.3. Value chain analysis

The electrical and electronic goods sector is clearly a global sector with extensive global value chains. To facilitate the description of the sector we have constructed a detailed value chain of a typical product in the electrical and electronic goods sector (see Figure 10.10 overleaf). While we will only discuss the outcomes of this figure, a more general explanation of this figure and how to interpret it can be found in Chapter 6. From this figure, it can be deduced that the EU and the US value chains for the sector are rather similar, and that the two sectors consistently engage in cross-border trade. The flow of the two countries' electrical and electronic goods sectors inputs into the partner country's various sectors is more or less similar at 1-5 percent. The only exception is the EU's sector exports used as inputs in the US chemicals and machinery sectors, which are slightly higher at 9 and 8 percent respectively.

When looking at the input into the supply chain from the rest of the world (ROW), both the EU and US are significant importers in the early stages of the supply chain. The US imports share is significantly larger in the early phases of the process.

The US industry creates twice as much value added in the sector than its EU counterpart in percentages terms (63 percent vs 30 percent), in absolute numbers the US adds around 355,000 million EUR and the EU around 279,000 million EUR. This is further highlighted by the fact that 48 percent of the output of the US sector is sold as final goods, while the EU sold only 40 percent as final goods. Despite this, the total output of the EU sector is significantly higher (\$ 917 million) compared to the US sector (\$ 561 million). In terms of the sale of products, both the EU and US have a very similar distribution of exporting: 7-8 percent of the final goods are exported to each other, and 26-27 percent to the rest of the world. This leaves the majority (between 65-67 percent) for domestic consumption.

Some numbers which are remarkable when compared to the general findings:

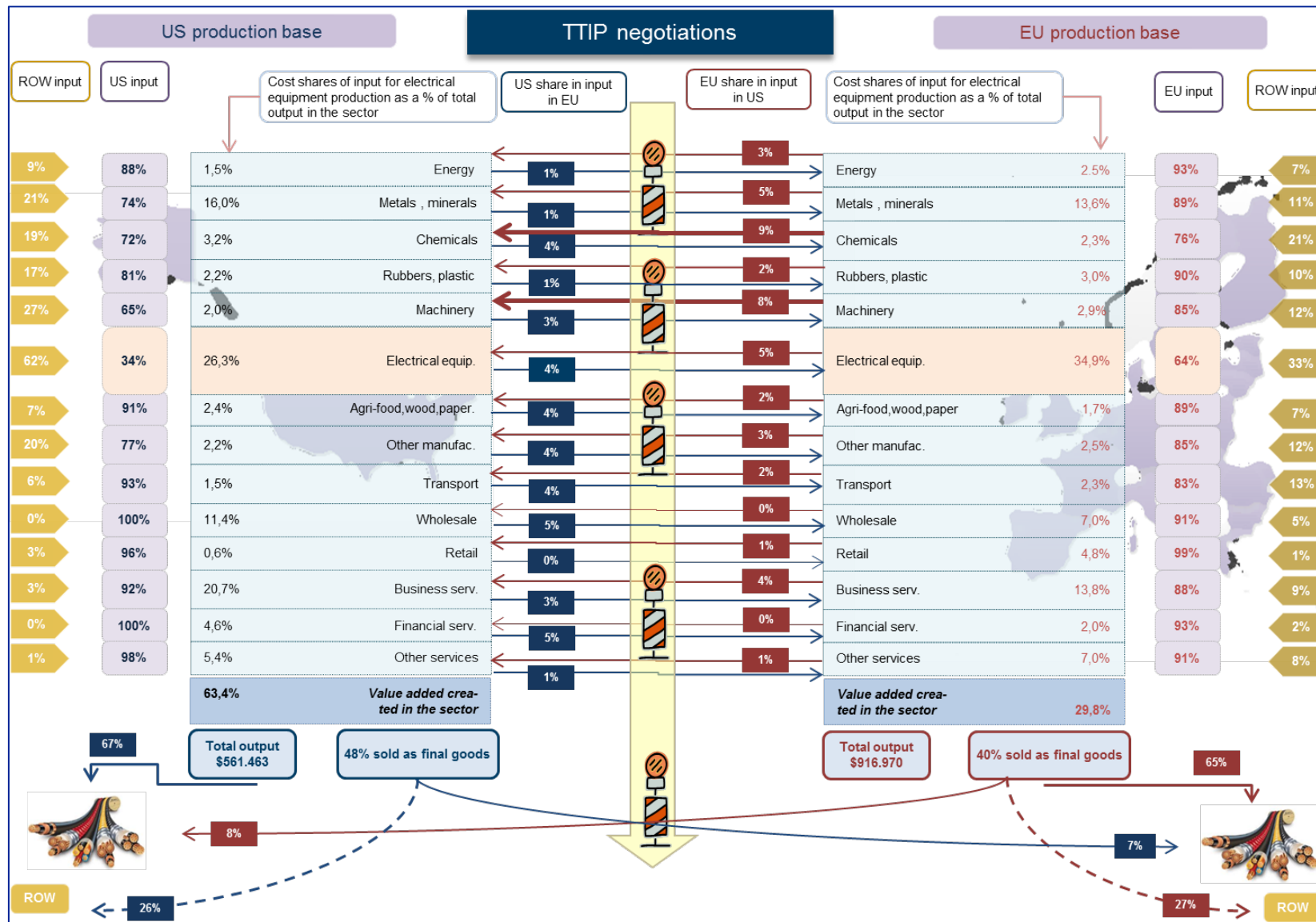
EU industry

- 33 percent of electrical equipment input from this sector is sourced from the rest of the world;

US industry

- 62 percent of electrical equipment input for this sector is sourced from the rest of the world;
- 27 percent of machinery input from this sector is sourced from the rest of the world;
- 9 percent of chemicals input from this sector is sourced from the EU.

Figure 10.10 GVC of the electronic and electric goods sector (2011), total output in USD million



Source: WITS, author's calculations

10.2.4. *Social perspective*

The number of employees in the EU electric and electronic goods sector has been relatively stable between 2008 and 2012 with a slight decrease from 2.8 million to 2.5 million. The number of hours work per year per person has been stable and did not change much over this period (1,828 hours in 2008 vs. 1,823 hours in 2012). In the EU, approximately 21 to 22 percent of personnel costs every year are invested into social security of the employees. The annual wage increased from about EUR 33 thousand a year in 2008 (18.80 EUR/hour) to 35.7 thousand EUR a year in 2012 (19.60 EUR/hour).

Table 10.7 Selected social indicators for the EU electrical and electronic goods sector (2008-2012)

	2008	2009	2010	2011	2012
Number of employees (in million)	2.8	2.6	2.5	2.6	2.5
Number of hours worked * (in million)	5.1	4.5	4.7	4.7	4.6
Personnel costs (in million EUR)	118,006	106,095	109,483	110,228	114,622
Wages and salaries (in million EUR)	92,353	82,977	86,173	87,661	90,205
Social security costs (in million EUR)	25,654	23,149	23,309	23,524	24,418

Source: Eurostat.

10.2.5. *Environmental baseline*

The environmental impact of the electrical and electronic sector is currently regulated via a set of strict regulations regarding waste (e.g. Waste Electrical and Electronic Equipment Directive, WEEE) and manufacturing (e.g. existence of the National Emission Ceilings), and is influenced by product standards and recommendations (e.g. voluntary European standards of CEN/CENELEC or Eco-design Directives). In this respect, a general concern of stakeholders, such as that expressed by the European Environmental Bureau, is that especially the Regulatory Cooperation or Coherence chapter of TTIP could negatively influence the existing regulatory setting due to the “regulatory run to the bottom”. There is a fear that the Regulatory Cooperation Council (RCC) – to be established in the framework of TTIP – could be influenced by both the EU and US industries that would prefer more loose environmental protection laws. The industry has strongly pushed for the RCC and risks combining an EU approach to regulatory cooperation with a US approach of businesses being a co-writer of legislation.

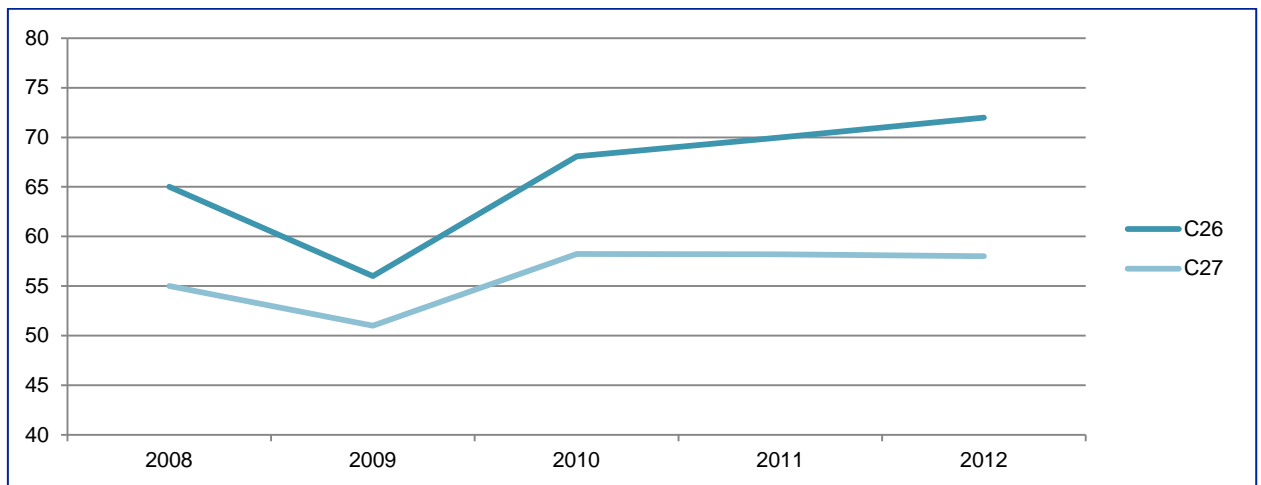
At a more general level, electrical equipment and electronic goods could be divided into several categories that report different levels of impact on the environment during their production and lifespan. The main categories include electronics (electrical circuit boards and information processing and/or display are the primary functions of these products; e.g. computer), pumps and motors (products that contain a pump or motor as its primary operational purpose; e.g. lawn mower), heating and cooling appliances (white goods and climate control equipment that is used to change temperatures, e.g. fridge), lighting (all lighting technologies, e.g. LED bulb) and renewable energy products (e.g. household solar PV and wind turbines).

When it comes to GHG emissions during the whole product lifecycle (including raw materials used during the production), the most emission intensive category of products is lighting, and in particular commercial lighting. Also in terms of energy consumption, lighting and commercial lighting are the most energy consuming product groups. With regard to material use, heating and cooling products are responsible for the largest proportion: electric cookers and refrigerated display cabinets account for approximately 40 percent of the materials used by the sector. Use of materials is closely related to water use as some materials are dependent on water for their extraction. In this respect, aluminium (frames & casing, heat exchanges) and plastics (dependent on crude oil, structural use and cases), are high contributors to water consumption in material origins. For energy needs for material extraction and refinement, extraction of gallium ranks high (used in integrated circuits, mobile phones), followed by extraction of gold (gold plating of connectors, switches, and other components) and tin (solder and printed circuit boards). Indium (fused in flat-panel displays, phones, TVs) rank high both in terms of energy needed for extraction and related water needs.

10.2.6. Competitiveness of the EU electrical and electronic sector

The apparent labour productivity of the NACE-rev. 2 product groups covering electrical and electronic goods has been stable in last few years with a recent growth up to EUR 72,000 per year for 'Manufacture of computer, electronic and optical products' (C26) and EUR 58,000 for 'Manufacture of electrical equipment' (C27). After a decrease in labour productivity following the 2008 crisis, the sector's recovery is reflected in an increase of labour productivity since 2010. Similarly, as in other manufacturing sectors, public policies focused on promotion of employment-intensive growth that are tackling an increase in unemployment of low-skilled workers in the crisis period, can negatively impact productivity. Together with economic recovery, the productivity tends to get grow again which is indeed reflected in Figure 10.11 for both NACE categories.

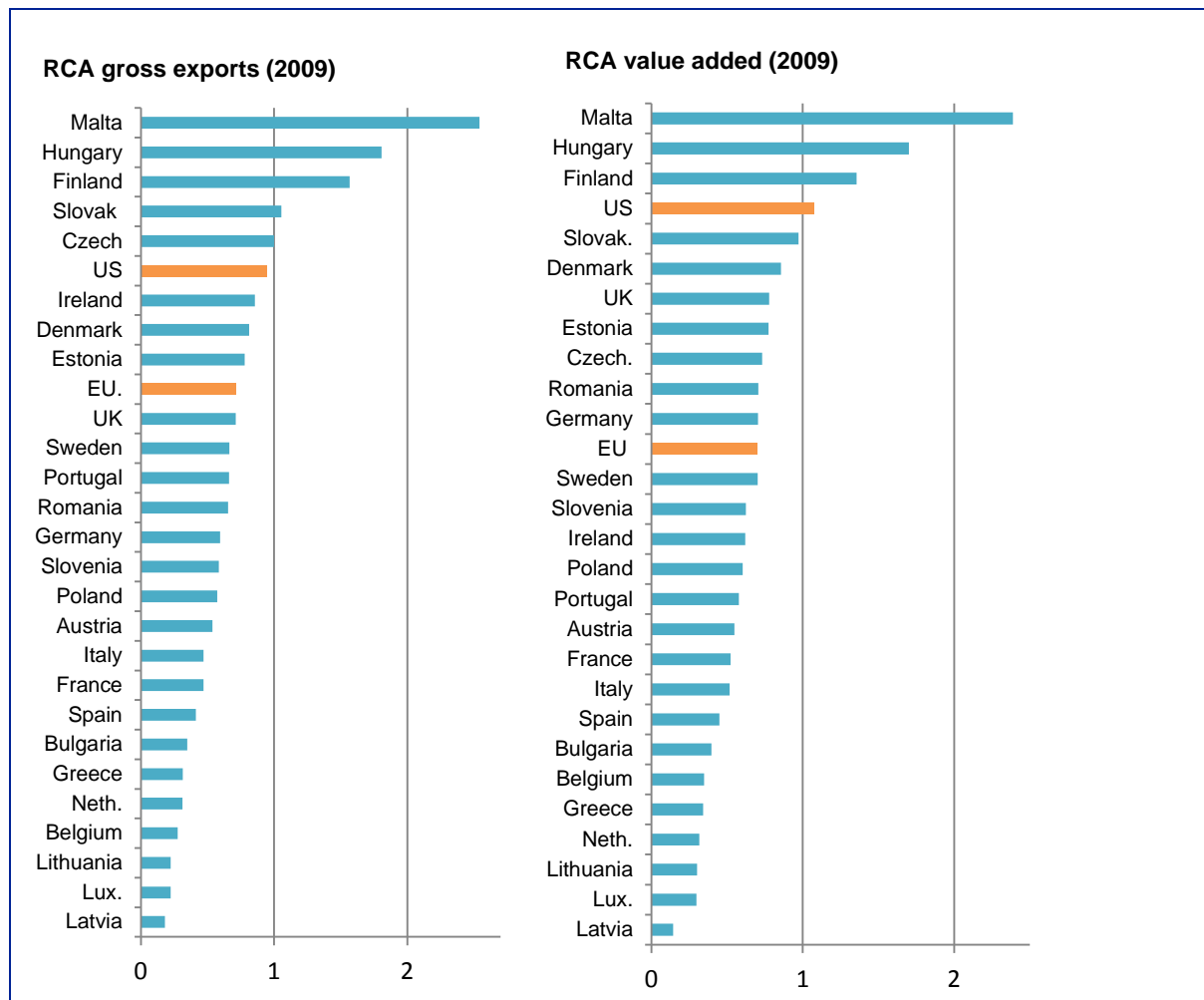
Figure 10.11 EU27 electrical and electronic goods sector apparent labour productivity (2008-2012)



Source: Eurostat.

Looking at the so-called revealed comparative advantage (RCA) of the sector provides more information about the trade competitiveness in the sector (see Figure 10.12 below). A first conclusion is that only a few EU countries have a RCA higher than one, both in terms of gross exports and value added. Only these countries report to some extent a comparative advantage towards the overall world trade. Secondly, while the EU average RCA in both categories is slightly lower than that of the US. Some countries, such as Malta, Hungary and Finland, where electrical and electronic goods manufacturing is an important sector in terms of industrial structure, show high RCAs in both gross exports and in value added. When it comes to the RCA on value added, the EU average lags behind the US more significantly than in the case of the RCA of gross exports. The spread of numbers can mean both, different levels of specialization in terms of electrical and electronic goods, as well as different levels of productivity in various EU Member States.

Figure 10.12 EU27 electrical and electronic goods sector RCA (2009)



Source: OECD-WTO.

The EU electrical and electronic goods sector is a strong global player, notably when it comes to the manufacture of electrical home appliances such as dishwashers, and washing machines. It should be noted that there is a big difference between the ‘consumer’ and ‘professional’ market segments and between ‘electrical’ and ‘electronics’ segments. The EU is not involved in (mass) consumer electronics products but still has a presence in some consumer electrical segments such as dishwashers, or washing machines, as mentioned earlier. However, these products tend to be characterised by regional rather than global production. As in many other sectors, the supply and value chain has been globalised during the last few decades.

The EU companies in the sector face strong competition from the US and Japan. As in other sectors, especially those highly regulated in the EU, the American producers of electrical and electronic goods sector have a price (and sometimes technology) advantage in the European markets. The price advantage over the EU arises in general from the EU’s high labour and social standards that bring benefits in terms of employees’ welfare, however include extra costs for employers. When it comes to the EU’s structural weakness in production of high-volume / consumer products, this could be explained by a combination of high labour costs and a lack of investment in production (Asia is a more interesting FDI destination in this respect since the costs are lower and markets are growing faster). However, in this respect the US is in a similar position.

The new Member States, who joined the EU during and after 2004, managed to improve their position in the electrical and electronic goods market, but the total EU value added has been decreasing following the financial crisis. This can be explained due to the trend of relocating production from West to East Europe (i.e. from old MS to new MS and beyond) motivated by cheaper labour. This sheds light on the strengthening of new MS’s position, while at the same time the EU’s overall position is declining.

10.3. Market access issues in the electronic and electrical goods sector

10.3.1. Tariffs

In order to analyse the different tariffs within the sector, we have created the following product categorisation:

- **Office equipment:** type writers, calculating/data processing/ office/ drawing machines and accessories;
- **Sound and visual equipment:** microphone, loudspeaker, sound/video recording, disc/tapes and accessories;
- **Telephones and radio equipment:** Radio equipment and telephone sets;
- **TV and monitors:** TV, monitors, projectors, signalling, sound;
- **Electronic parts and other goods:** capacitors, resistors, cathode, diode, hydrometers, control instruments, panels/boards;
- **Cameras:** photography, camera, surveillance;

The table below shows the tariff fees for EU products exported to the US in each of these seven categories. What can be deducted by the low levels of the simple average is that the tariffs tend to be very low already between the two economies.

Table 10.8 Tariffs for EU electrical and electronic goods products entering the US

Product category	Simple average	Weighted average	Min rate	Max rate
Office equipment	1.02	1	0	2.70
Sound and visual equipment	3.91	4.69	0	14
Telephones and radio equipment	3.63	3.79	0	14
TV and monitors	3.01	3.63	0	14
Electronic parts and other goods	1.33	1.23	0	14
Cameras	3.32	3.27	2.7	4.2

Source: World Bank.

Looking closer at the different tariffs applied by the EU at HS4 code level, the highest (weighted) average tariffs are for example those on video recording or reproducing apparatus (13,9 percent), pocket-size radio cassette-players (12 percent) and reception apparatus for radio-broadcasting (9.36 percent). However, none of these product groups have been very significant in terms of trade, ranging from 32 to 39 million EUR in 2013, while each of them has brought around 4.6 million EUR in tariff impact. In terms of the import value, the highest were automatic data processing machines with 3.4 billion EUR, that applies zero tariffs, and telephone sets, including telephones for cellular use with 3.3 billion EUR, bringing due to the low tariff (0.27 percent) 9 million EUR in tariff revenue. In the USA, the highest (weighted) average tariff is applied on parts and accessories for photographic cameras (5.8 percent), parts and accessories for other instruments (5.3 percent) and micrometres, callipers and gauges (4.85 percent). 23 billion worth of parts and accessories for photographic cameras were imported by the US from the EU (other amounts for other mentioned high tariff goods were not significant) resulting in 1.3 million EUR of tariff revenue. The highest absolute tariffs (maximum rate) applied by the US are those on microphones and loudspeaker reaching up to 8.5 percent and photographic cameras with 6.8 percent. The products mainly imported from the EU are telephone sets, including telephones for cellular worth of 2.6 billion EUR with a zero tariff, and electrical apparatus for switching or protecting electronic installations, worth of 1.7 billion EUR with a moderate tariff (1.07 percent) resulting in 18.2 million of tariff revenue.

10.3.2. Non-tariff Measures

Non-tariff measures (NTM) refer to any measures that restricts trade without imposing tariffs such as import limits, administrative entry procedures, and Technical Barriers to trade (TBT) such as differences in standards or government procurement policies. Government procurement policies impact electrical and electronic goods sector significantly, as well as TBTs, resulting from different regulatory approaches in the EU and the US.

Public procurement policies

The US States' Government procurement policies have an important impact on the electrical and electronic goods sector. For products of ICT, that are usually following international standards, barriers of entry to the public sector markets are in general lower. However, regarding other goods from the electrical and electronic goods sector, different US States and their local authorities can and often do refer to different standards and technical specification as well as different versions for the National Electrical Code (NEC) standards in their tenders. The situation in the US impacts especially SMEs, who find it difficult to participate in the tenders at State level, due to the additional costs related to the necessary adoption of the product to the technical requirements at the local level. In addition, many EU producers, are excluded from the tenders because of the Buy American Act.

Regulatory environment

With regards to the electrical and electronic engineering industries, there are three key legal instruments that may be applicable to products that are placed on the EU/EEA market. These are the Low Voltage Directive 2006/95/EC, the Electromagnetic Compatibility Directive 2004/108/EC and the Radio and Telecommunications Terminal Equipment Directive 1999/5/EC. The Low Voltage Directive is applicable to electrical equipment designed for use with a voltage rating of between 50 and 1 000 V for alternating current, and between 75 and 1 500 V for direct current, and establishes certain safety objectives that products within its scope must comply with. The Electromagnetic Compatibility Directive regulates the electromagnetic compatibility of equipment. The Radio and Telecommunications Terminal Equipment Directive establishes a regulatory framework for the placing on the market, free movement, and putting into service of radio equipment and telecommunications terminal equipment.

The EU in general pays close attention to the environmental dimension of its industrial production. Various pieces of legislation impact manufacturing of electrical and electronic goods in the EU. Of great importance are, for example, the Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC restricting the use of hazardous substances in electrical and electronic equipment and The Waste Electrical and Electronic Equipment (WEEE) Directive. These two directives create together the EU framework on the recycling of waste from electric and electronic goods, and influence the way how the products placed at the EU market are manufactured, as to their components used and mixture of materials that is allowed. On the US side, concerns about electronic waste also exist. Federal law includes several provisions such as producers selling at the US market must comply with the National Computer Recycling Act, laws concerning battery disposal, Regulation on hazardous waste in lighting or the more general Resource Conservation Act. Another relevant legislation in the EU is the Directive on electrical equipment designed for use within certain voltage limits 2014/35/EU. This Directive ensures that electrical equipment with certain voltage limits meets specific safety standards and that these standards are common across Member States. All electrical equipment products circulating in the Single Market have to comply with this Directive, which includes also those imported from third countries. The CE Mark indicates that the electronic goods product complies with all applicable European Directives and that the appropriate conformity assessment procedures have been completed.

Note that in the EU Single Market electrical and electronic goods are closely related to the existence of voluntary harmonised European standards. The Low Voltage Directive 2006/95/EC, Electromagnetic Compatibility Directive 2004/108/EC and the Radio and Telecommunications Terminal Equipment Directive 1999/5/EC are directly linked to the voluntary standards for electric and electronic goods sector. The European Committee for Electro-technical Standardization (CENELEC) produces standards for the electric and electronic engineering sector based upon consensus of its members, while most of the standards are initiated by the EU industry and its companies. These directives are part of the EU legislation harmonising requirements for products to be placed on the European market, and they harmonise at EU level essential requirements addressing objectives of public interest, such as the safety of users, the co-existence of electromagnetic emissions and the efficient use of radio spectrum, in order to

ensure the free circulation of products on the internal market. The directives are 'New Approach' directives, which means that the harmonised requirements in the directives are limited to essential requirements. More detailed technical specifications for products meeting the essential requirements set out in the directives are laid down in harmonised standards. Harmonised standards give presumption of conformity for products. This means that products manufactured in compliance with the technical specifications in harmonised standards are presumed to comply with the corresponding essential requirements of the applicable directive. The application of harmonised standards is, however, voluntary and a manufacturer can always apply other technical specifications to meet the essential requirements in the directives, but will then carry the burden of demonstrating that these technical specifications meet the requirements of the directive.

Another important tool, that helps to sustain the high level of environmental protection in the EU, is for example the Eco-labelling that applies to office equipment, consumer electronics and residential appliances. It identifies products and services that have a reduced environmental impact throughout their life cycle. The EU Ecolabel is a voluntary label, however impacts the market dynamic of the electrical and electronic engineering goods sector. At the US side, the US Environmental Protection Agency (EPA) runs a similar program called Energy Star. The voluntary scheme aims especially at energy efficiency.

In the US, contrary to the EU voluntary harmonized standards, the system is decentralized and naturally partitioned into industrial sectors and supported by independent, private sector standards developing organizations (SDOs) and conformity assessment bodies. It is a voluntary system in which both standards development and compliance are driven by stakeholder needs. The American National Standards Institute (ANSI) has the responsibility of bringing together and coordinating the standardization efforts of diverse interests and standards development organizations. The notion of "voluntary" standards is different than in the EU: it refers only to the manner in which the document defining a standard was developed and does not necessarily refer to whether compliance to the standard is optional or whether a government entity or market sector has endorsed the document for mandatory use. Different traditions in standard-setting create important market barriers in trade in electrical and electronic goods between the EU and USA.

Non-tariff measures

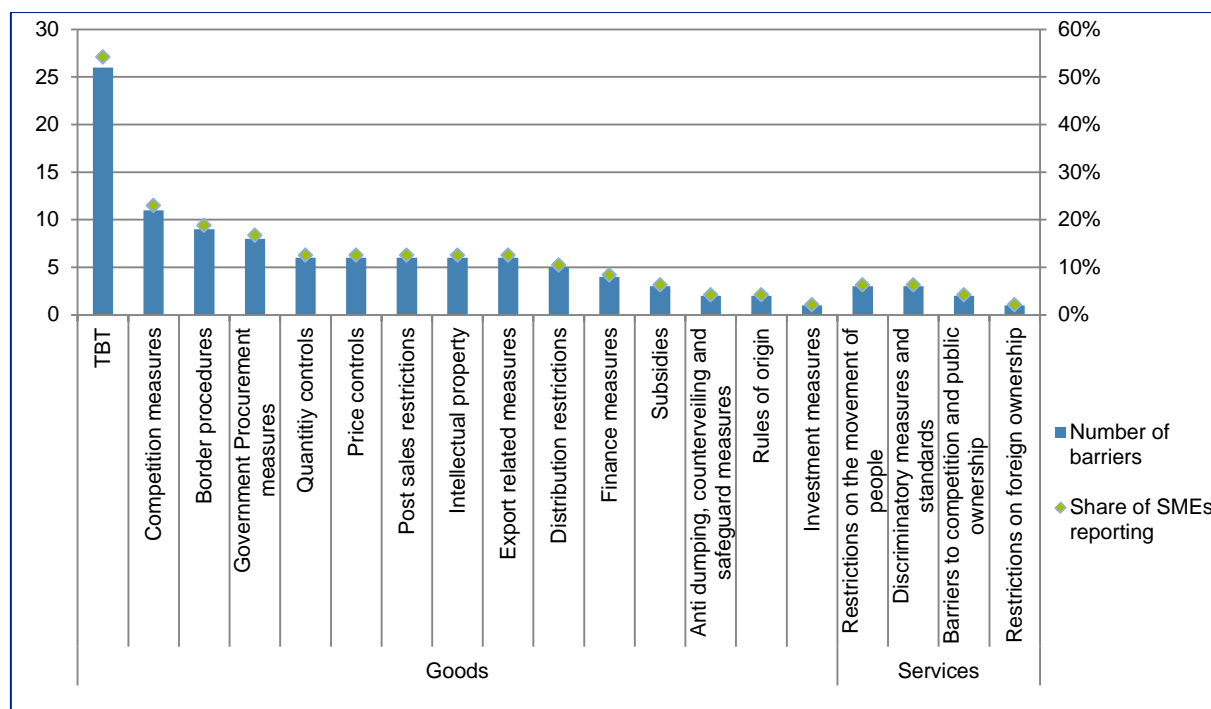
NTMs identified in previous studies⁶⁰² are at the US side caused mostly by divergence of US standards from international product standards, necessity of 3rd party testing on import products, and existence of the Energy Conservation Program for Commercial and Industrial Equipment (EPCA). Problematic is also the existence of US state-level safety certifications and the Encryption Control Protocol that is not in line with the international arrangements. At the EU side, additional trade barriers are caused by different certification procedures, and again by European standards in the field of information technology and telecommunications. The Market Access Database of the EC mentions electrical and electronic equipment-specific barriers. These are caused by regulations from The US Occupational Safety & Health Administration (OSHA) that requires electrical products to be tested in Nationally Recognised Testing laboratories (NRTLs), which have to meet OSHA requirements for testing safety and certification of electrical and other products used in the workplace. Other issues are the IRP Infringement Cases. Section 337 of the Tariff Act of 1930 providing remedies for holders of US intellectual property rights by keeping the imported goods which are infringing such rights out of the US ("exclusion order") or to have them removed from the US market once they have come into the country ("cease and desist order"). These procedures are carried out by the US International Trade Commission (ITC) and are not available against domestic products infringing US patents.

It should be underlined that electric and electronic industry faces a double hurdle while trying to access the markets overseas. This means that exporting companies must handle diverse standards as well as mandatory third party certification "by private providers, causing additional costs and delays. At the US side „Underwriters Laboratory“(UL) plays the crucial role in the mandatory third party certification and some exporters reported its inclination to prefer its own certificates only. This "monopoly" creates an additional barrier at the US side. The industry underlined that a balanced removal of NTMs in the EU and US should be the goal of TTIP, since only then a mutually beneficial trade partnership can be created.

⁶⁰² Ecorys (2009): Non-Tariff Measures in EU-US Trade and Investment – An Economic Analysis.

Similarly to other sectors, all NTMs disproportionately affect SMEs, because these can hardly recuperate increased costs due to NTMs via high volumes of machinery sold. Also their access to costly legal assistance is limited. Figure 10.13 below shows which NTBs are perceived as the most severe by the companies from electrical and electronic goods sector.

Figure 10.13 Number of barriers perceived by SMEs



Source: SME survey

This industry has also mentioned that during the import phase, at the US side, products that are certified by FAA (Federal Aviation Administration) are often inspected twice every year by a FAA nominated inspector visiting the production facilities to ensure compliance. Because of the Buy American Act the EU products are not marketed as being made in the US. The sub-sectors of lightening and fire alarms have been reported as having the highest barriers in terms of different standards in the US that are hard to be met by the EU producers. For the sector of electric goods there seem to be often the case of double-certification which are in place to ensure the safety of the same feature of the product, which creates unnecessary extra costs for exporting firms in both the EU and US.

10.4. Expected impacts of the TTIP on the electric and electronic goods sector

This section presents the results of the CGE modelling and the possible implications for the development of the electric and electronic goods sector.⁶⁰³ The results will be interpreted taking into consideration the definition of the sector via GTAP as described in section 10.2.1. Another consideration is that the modelling takes into consideration the current conditions of the industry and models its future development if these conditions remain. Thus the indications of the CGE model related to predicted drops/increases in production or exports/imports point out on one hand the potentially globally competitive EU sectors, and on the other hand also those where EU can face issues in the future due to strong competition from other parts of the worlds if the current conditions do not change.

⁶⁰³ The different modelling scenarios and details are presented in Chapter 1 and 6.

10.4.1. Expected economic Impacts

Table 10.9 Potential economic impacts of the TTIP on electric and electronic goods sector in % change, 2030

		Total	Tariffs	Total NTMs	Total NTMs	Direct spill-overs	Indirect spill-overs
Output				goods	services		
EU28	Modest scenario	-4.00	-0.31	-0.29	-0.03	-3.27	-0.16
EU28	Ambitious scenario	-7.88	-0.21	-0.95	0.05	-6.31	-0.45
US	Modest scenario	-2.51	-1.60	4.00	0.63	-4.70	-0.84
US	Ambitious scenario	-2.44	-1.85	9.23	1.30	-9.29	-1.82

Source: Ecorys 2016

The main conclusions from the CGE model outcomes are:

- For both the EU and the US, the CGE model estimates a decrease in total output that is greater in the case of the ambitious scenario;
- The US is more likely to benefit from the removal of NTMs, however also would suffer more from direct spill-overs (increased competition coming from 3rd countries thanks to greater regulatory homogeneity between the EU and US);
- Direct and also indirect spill-overs are the main cause of the decrease in output in both the EU and US;
- A rather negative impact is expected on the overall development of the EU electric and electronic goods industry.

The analysis included in the bullets above shows that the electric and electronic goods sector is one of those sectors that is likely to see its output decrease, both in the EU and US. Potential cooperation in the area of standards, and removal of remaining tariffs will create significant direct spill-overs, and the industry would have to adjust to increased competition pressure from third countries, who will be able to export more easily to the EU-US trade bloc and thus achieve cost efficiency. The challenge is to face the price and technology competition from the third countries and ensure that the EU/US trade bloc strengthen their competitiveness on the global market. One way to do this is to work towards establishing efficient cooperation in setting standards and regulations for new products.

The industry stakeholders' representatives (e.g. Orgalime and ZVEi) expects positive impacts from TTIP, in contrast with the results from the CGE modelling. They believe that the industry's strong competitive position will allow it to benefit from TTIP. According to them, it is crucial to know which specific NTMs will be tackled via the TTIP, as this will affect the ultimate positive or negative outcome of the TTIP. They also pointed out the importance of ensuring that any removal of NTMs is reciprocal and of improving access to US public procurement markets.

Looking at economic impact on SMEs, this depends very much on their ability to adjust to the new trade situation. Elimination of NTMs is in general beneficial for SMEs, for whom it is more costly to overcome regulatory diversity and additional costs caused for example by double-testing. In this respect, despite the CGE model's negative prediction regarding the change of total output of the electric and electronic engineering sector, SMEs can benefit if they manage to innovate and follow the "niche specialisation" strategy that can help them create globally competitive products, also at a global scale. If SMEs fail to innovate, they can strongly feel the competitive pressure from third countries, this is in the impact table expressed by the indirect spill-overs.

Table 10.10 Potential trade impacts of the TTIP on electric and electronic goods sector in % change, 2030

		Total	Tariffs	Total NTMs goods	Total NTMs services	Direct spill-overs	Indirect spill-overs
EU exports							
	Modest scenario	-0.63	0.02	1.10	-0.01	-1.99	0.26
	Ambitious scenario	-1.48	0.16	1.90	-0.03	-3.86	0.35
EU imports							
	Modest scenario	3.41	0.44	0.68	-0.01	2.08	0.23
	Ambitious scenario	6.52	0.41	1.61	-0.01	4.01	0.51
US exports							
	Modest scenario	2.65	-1.37	7.30	0.78	-3.60	-0.46
	Ambitious scenario	8.19	-1.70	16.70	1.62	-7.30	-1.13
US imports							
	Modest scenario	0.52	1.6	0.44	0.01	-1.63	0.1
	Ambitious scenario	-0.35	1.7	0.97	0.02	-3.23	0.2

Source: Ecorys 2016

The main conclusions from the CGE model outcomes are:

- According to the CGE results, the EU would record a slight drop in exports and the US an increase in exports;
- US exports are likely to benefit from the removal of NTMs on goods. Both EU and US exports are likely to decrease due to the competition from third countries;
- EU imports will increase in both the ambitious and less ambitious scenarios; the same applies to the US;
- Exports of EU electric and electronic products are likely to face more competition from third countries.

With regard to the above points, it can be concluded that EU's exports are likely to shrink while imports are due to expand. The US exports will grow slightly. Most of the negative trade impact is due to direct spill-overs, which means that the EU's export will be substituted by third countries' exports. This result suggests that the existence of regulatory divergence across the Atlantic has been an obstacle for third countries' firms to access both the EU and US markets and upscale their production. Imports are also likely to grow in in the majority of the scenarios. The electric and electronic goods industry's trade is likely to have to adjust considerably in case of scenarios of increased regulatory convergence. It could expect to see its exports to third countries decrease. The industry will face the challenge of strengthening its global competitive position and promotion of its products in some less strong subsectors.

10.4.2. Expected social impacts

Table 10.11 Potential social impacts of the TTIP on electric and electronic goods sector in % change, 2030

		Total	Tariffs	Total NTMs - goods	Total NTMs - services	Direct spill-overs	Indirect spill-overs
Skilled employment							
EU 28	Modest scenario	-3.83	-0.34	-0.32	0.01	-3.03	-0.16
EU 28	Ambitious scenario	-7.53	-0.25	-1.00	0.02	-5.87	-0.44
US	Modest scenario	-3.84	-0.35	-0.34	0.02	-3.02	-0.16
US	Ambitious scenario	-7.54	-0.26	-1.03	0.03	-5.84	-0.43
Low skilled employment							
EU 28	Modest scenario	-2.42	-1.54	3.76	0.60	-4.44	-0.80
EU 28	Ambitious scenario	-2.41	-1.77	8.65	1.23	-8.79	-1.73
US	Modest scenario	-2.44	-1.56	3.77	0.58	-4.44	-0.80
US	Ambitious scenario	-2.43	-1.79	8.67	1.19	-8.78	-1.73

Source: Ecorys 2016

The main conclusions from the CGE model outcomes are:

- Both low skilled and skilled employment is likely to slightly decrease in both the EU and the US under both scenarios;
- The skilled workforce would face more pressure than the low-skilled one. This effect is even more remarkable in the case of the ambitious scenario;
- Similarly as for output and trade, the pressure on employment is related to direct spill-overs and increased import of the EU and US with third countries;
- Overall, the electric and electronic goods sector is likely to employ less workers according to the CGE model after the TTIP is fully implemented. Both scenarios show some negative impact on employment and growth in low skilled and skilled employment.

In line with the slight decrease in output and export, the demand for both low-skilled and high-skilled workers is likely to decrease. This can point towards a less strong international competitiveness position in the electric and electronic engineering sector and the fact that neither the EU nor the US can compete on price with workers in developing countries, for example with Asia. Thus according to the CGE model, the electric and electronic engineering sector is likely to employ less manufacturing workers, who are usually more vulnerable to competition from developing countries where the price of workforce is significantly lower. Lower demand for high-skilled workers is likely to occur too. The EU's industry is particularly under pressure since its labour costs are high relatively to the costs of its competitors, but as long as its productivity remains also high it may remain cost-competitive vis-à-vis others.

10.4.3. Expected environmental impacts

Table 10.12 Potential environmental impacts of the TTIP on electric and electronic goods sector, 2030

		1000 tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes	tonnes
		CO2	CH4	N2O	NOX	SOX	CO	NMVOG	NH3
EU28	Current state of play	11,650	2,347	391	42,949	50,528	100,093	56,770	144
EU 28	Modest scenario	-466	-94	-16	-1,718	-2,021	-4,004	-2,271	-6
EU 28	Ambitious scenario	-918	-185	-31	-3,384	-3,982	-7,887	-4,474	-11
US	Current state of play	10,761	1,451	729	36,788	7,843	98,619	44,278	409
US	Modest scenario	-270	-36	-18	-923	-197	-2,475	-1,111	-10
US	Ambitious scenario	-263	-35	-18	-898	-191	-2,406	-1,080	-10

Source: Ecorys 2016

The main conclusions with regards to environmental changes as estimated from the output drop counted by the CGE model:

- Due to decreased trade and production, all types of emissions are likely to decrease;
- In the case of the ambitious scenario, emissions from the EU electric and electronic goods decrease significantly.

The decrease of output of the sector goes in line with decrease in emissions from production. The emissions from transport used to export and import (higher activity of ports and airport, truck transport towards the ports) are however likely to stay high because imports to the EU will increase.

Challenge of the lower economic output and related lower emissions, lies in the fact, that companies may attempt to decrease their costs and thus become more price competitive, by decreasing the environmental standards of their production. This scenario is less likely, also due to the current EU rules, such as those on emissions and emission trading system. However, the industry shall find other means of costs savings, for example more efficient processes, instead of using cheaper materials and opting for less sustainable solutions.

10.5. Conclusions and recommendations

The electric and electronic goods as presented in this chapter consists of two subsectors: electric goods, and electronic engineering. In the CGE modelling the impact results for the electric goods subsector are reflected in "other machinery and equipment" (GTAP 41), the impacts results for the electronic engineering subsector are reflected in "electrical machinery" (GTAP40).

In terms of the economic and trade impacts, the **CGE model predicts positive impacts of TTIP for some sub-sectors** that are a part of the electric and electronic goods industry according to the relevant EU stakeholders, as well as the statistical classification. These sub-sectors correspond roughly to **the category of electric goods** and include for example medical precision and optical instruments, electric and word-processing machines, automatic data processing machines, computer storage devices and scientific and technical instruments. The model predicts a growth in **total output about 0.4 percent for the electric goods sector. Exports of this subsector are expected to grow with 1.5 to 1.8 percent respectively**⁶⁰⁴.

On the other hand, **for other subsectors that roughly correspond to the electronic engineering sector** and that include for example electronic equipment for broadcasting and transmission, manufacture of office machinery, manufacture of television and radio transmitters or sound or video recording, the **CGE model estimates negative impacts**. That is **4.0 to 7.9 percent decrease in output** in the less ambitious and more ambitious scenario respectively.

⁶⁰⁴ Please see Tables 9.9 and 9.10 for the CGE modelling results for the mechanical engineering sector.

and a **0.6 to 1.5 percent decrease in exports in the two scenarios respectively**. This drop is mostly accounted to direct spill-over effects after TTIP – in other words, greater regulatory convergence between the EU and the US will make it easier for producers from third countries to export to both these markets. However, it shall be noted that the industry representatives are not convinced of such a strong effect of competition from third countries after TTIP and point out that the global value chain of the electric and electronic engineering sector is currently so globalised, that TTIP's effect will be relatively low.

In line with the growth in output and trade, the electric engineering subsector are also **likely to create more jobs** in the EU. High-skilled and low-skilled employment is expected to **grow with 0.2 to 0.3 percent** depending on the scenario.⁶⁰⁵ For the subsectors that are likely to be more vulnerable due to TTIP and that roughly correspond to the electronic engineering sector, the number of jobs will decrease. While the number of **low-skilled jobs is likely to decrease with 2.4 percent only**, high skilled jobs are likely to record a steeper decrease between 3.8 and 7.5 percent.

Looking closer at the sub-sectors that are, according to the CGE model, likely to shrink after the implementation of TTIP, it can be observed that in the US, both output, exports and employment are likely to drop as well, though at a smaller scale than in the EU. This suggests that **some sub-sectors of the electric and electronic engineering sector, both in the EU and the US may currently have structural issues** that may be revealed after TTIP and that may worsen their international competitive position. Looking closer at the factors contributing to the decrease, it can be observed that **most of the negative impact is attributed to direct spill-overs**. This means that **the EU and US products can face more competition from third countries** due to the global spill-over effect of greater regulatory coherence in the electric and electronic goods sector. The EU and US are likely to strengthen their position as global standard setters in the sector, however third countries are likely to benefit from the new transatlantic market place as well.

The increased production growth in the sector means a challenge for the environment – the emissions of CO2 and other substances will grow and thus the industry will have to commit to **greater cooperation in the area of green technologies**. On the other hand, the areas for which the CGE model predicts a decrease in production may take this momentum as an opportunity to cooperate across the Atlantic to develop and manufacture competitive and environmentally friendly products.

Regarding stakeholders' views, the EU consumer organisations point out a **risk of lowering consumer protection standards** due to the challenge of bringing product standards for consumer protection closer across the Atlantic. Environmental NGOs assume that increased transport due to import from third countries will have a negative impact on the environment and they also point out the danger of decreased standards for protection of consumers and the environment. The current progress of negotiations suggest that **these risks are rather low..** **The industry itself (e.g. Orgalime and ZVEi) expects positive impacts from TTIP**, which is not in line with the results from the CGE modelling. This possible **discrepancy between expectations of the industry and results of the CGE is discussed below**.

The results of the CGE modelling can be in general a useful indicator to show potential weaknesses and point out to the industries what the impact of TTIP can be as well as opportunities for innovation. However the **CGE modelling outcomes cannot be taken imperatively since the real effects largely depend on the final provisions of the treaty**. Especially in terms of regulatory impacts and benefits from the removal of NTMs, it is important to see which types of NTMs will be tackled. While the CGE model does not specifically distinguish which NTMs are likely to be removed the EU industry underlined that the possible benefits of TTIP depend directly on the final look of the treaty. When looking solely at the EU electric and electronic goods industry, **TTIP is likely to bring more benefits for sector if the USA agrees to approximate their standard-making to the international standards**, e.g. those produced by the UN. Currently, because of the CE marking, US companies have better access to the EU market than vice-versa, due to the diverse technical standards in different US states that often do not go in line with international standardisation. However, looking at the more broader picture, this specific trade improvement is likely to overall have a negative impact on the EU industry. Since third countries can also benefit from improvement access to the EU/US markets when EU/US standards are aligned, the EU industry is likely to face more

⁶⁰⁵ Please see Tables 9.9 and 9.10 for the CGE modelling results for the mechanical engineering sector.

competition from these countries. Regarding other benefits to the EU sector, the **access to the US procurement markets** seems to be of significant importance for the EU stakeholders. Another benefit of TTIP for the electric and electronic engineering sector would be tackling the “double-testing” requirement that makes export more expensive.

Another consideration is important while looking at possible impacts of TTIP on the electric and electronic goods sector, which is that the two groups mentioned have different competitive characteristics. While in the area of **electric goods a higher global competitive advantage** and a trade surplus is reported, for electronic goods a trade deficit is reported and this subsector is likely to be more vulnerable to the competition on price, especially from Asian countries. Thus, **the negative impacts are likely to be reported by the electronic goods sector** – although they can be taken as an opportunity for the industry to establish greater cooperation with its American counterparts. A final important point for understanding the dynamics of the electric and electronic goods sector is the **global nature of its value chains and the high level of the internationalisation of the industry**. Because of these characteristics, it is believed by the industry that competitive pressure from third countries (expressed as direct spill-overs) will not be as high as predicted by the CGE model, and thus that both the electric and electronic industry will benefit from the treaty. Though the potential impacts of TTIP will not solely depend on the provisions negotiated. SMEs may benefit more if they manage to innovate and take advantage of the lower costs of exportings that will result from removal of NTMs. Also, the EU electric and electronic industry might need to consider its global competitive position and focus on its assets, for example those related to research and development, in order to remain competitive despite relatively high costs of labour.

To sum up, this sector study predicts both possible positive and negative impacts stemming from TTIP for the electric and electronic goods industry. Positive impacts translate into growth in outputs, exports and jobs. Negative impacts may point to the sub-sectors that can be sensitive price competition from third countries after the implementation of TTIP. However, the positive or negative impacts greatly depend on the final look of the TTIP agreement, and especially the types of the NTMs that are likely to be removed. Also the achievement of symmetrical market access for companies in the electric and electronic goods industry in the EU and the US is a crucial factor. The negative impacts predicted in some sub-sectors by the CGE model can become a great opportunity for industries to cooperate across the Atlantic to innovate and develop even better and produce highly globally competitive products.

Based on the above analyses and outcomes the following recommendations are proposed:

1. Good dialogue with the electric and electronic industry is necessary in order to carefully assess the existing non-tariff measures and focus on those in the negotiations that can benefit the EU industry;
2. Any removal of NTMs must be reciprocal and market access, including access to each other's public procurement markets, is of crucial importance ;

11. Potential TTIP impact on the motor vehicle sector

11.1. Introduction

This sector study will assess how the trade and trade related provisions in TTIP could affect the motor vehicle sector. We will look at the current state of the sector, its challenges, and identify the potential for future development and the likely impact of TTIP. The study will include both a quantitative analysis based on the CEPR modelling as well as a qualitative assessment of the impacts of potential outcomes in the sector. First, we will briefly describe the baseline situation in the motor vehicle sector in the EU on economic, social and environmental aspects. Secondly, we will identify and assess thoroughly the trade barriers, in particular non-tariff measures in the motor vehicle sector in trade and investment between the EU and the US. Finally, we will assess the impact of the TTIP on the sector.

Box 11.1 Take away from this chapter

- The most important export destination for the EU automotive sector is the US. In 2014 €46,429 million was exported to the US. Other important destinations are China (€36,958 million) and Russia (€12,757 million) and Turkey (€12,108 million);
- The EU share of world production of motor vehicles has decreased over time from 34 percent in 2000 to 23 percent in 2014. China has taken over the EU's place as leading producer of motor vehicles;
- The weighted average tariffs for motor vehicles levied by the EU are higher than levied by the US. EU tariffs ranges from 0 percent to 12.74 percent, whereas the US tariffs ranges from 0 percent to 1.61 percent;
- Non Tariff Measures in the sector add a 27 percent additional cost to trade and investment with the US. A pressing issue is the difference in the EU UNECE regulation and US FMVSS regulation regarding the many parts of a car. These differences are likely to be addressed in TTIP.
- An ambitious TTIP scenario could lead to a 1.5 percent increase in EU sector output. Exports and imports are expected to increase by 40.9 and 42.1 percent respectively.
- High skilled and low skilled employment is expected increase by 1.3 and 1.2 percent respectively in the EU. Also consumers are expected to gain from the agreement in terms of lower prices and broader product choice.

11.2. The motor vehicle sector in the EU

11.2.1. Overview of the sector

The motor vehicle sector, as selected in the inception phase of this study, comprises motor vehicles as well as parts and components. Looking at the various different classifications⁶⁰⁶, there are multiple definitions used, all of which have a different scope and a more or less detailed description of sub-sectors. Table 11.1 provides an overview of the various codes and descriptions used for the motor vehicle sector.

Table 11.1 Sector definition

Sector selection (CEPR, 2013)	GTAP-57	ISIC	NACE
Motor vehicles sector including parts and components	No. 38: Motor vehicles and parts: cars, lorries, trailers and semi-trailers	ISIC 34, Motor vehicles, trailers and semi-trailers	C 29, Manufacture of motor vehicles, and semi-trailers

We will focus on the NACE code classification for the general overview. In order to provide a more detailed overview of the sector, some sections will make use of HS (4-digit) code sector

⁶⁰⁶ GTAP, ISIC, NACE, SITC, etc.

definitions instead of the NACE definition; the table with the relevant HS codes and description for the motor vehicle sector can be found in Annex V.

11.2.2. *Economic structure of the sector*

Looking at the historical development of the sector and more specifically the size of the motor vehicle sector in the EU we will first consider historical turnover data (2008-2013) and the value added data (2008-2012) using Eurostat Structural Business Data (SBS). In order to stay close to the definitions otherwise provided for the motor vehicle sector, two digit NACE code is used.

The figures in Table 11.2 clearly indicate a recovery after the economic downturn of the financial crisis' aftermath for the EU as a whole. In 2011 the EU already exceeded the pre-crisis level of turnover. The sector reached almost €1 trillion in turnover in 2013. The table also indicates the EU countries with the largest turnover in the sector. Not surprisingly, Germany ranks highest with 40 percent of total EU turnover, followed by France, UK, Italy and Sweden. However, compared to the EU as a whole these countries did not recover that quickly from the crisis (except for Germany and the UK). The French and Italian sector for example saw their turnover slowly rise again until 2011 and then decrease to a level lower than before the crisis.

Table 11.2 Turnover (million €)

Turnover	2008	2009	2010	2011	2012	2013
EU ⁶⁰⁷	800,000	624,944	740,587	840,133	846,839	958,910
Germany	343,394	272,009	325,874	375,149	385,095	388,513
France	111,867	88,799	99,082	104,387	102,076	99,357
UK	63,818	43,284	53,998	62,565	68,618	72,845
Italy	63,880	49,156	53,393	57,836	53,333	48,042
Sweden	28,656	16,321	21,955	27,852	32,710	33,348

Source: Eurostat SBS database.

As indicated in Table 11.3 the amount of value added in the sector has been increasing since 2009, but saw a slight drop in 2012, when the total amount of value added was €150 billion. This trend is seen in most manufacturing sectors⁶⁰⁸. To put this in perspective, an amount of value added equal to €1,620 billion was created in total by all manufacturing sectors⁶⁰⁹ in 2012. The motor vehicle sector thus has a share of 9 percent of value added of all manufacturing. Only manufacturing of machinery, food products and metal products added more value (12, 10, and 10 percent respectively). In terms of turnover, the EU sector generated a share of 12 percent of total turnover generated by all manufacturing sectors. Only manufacturing of food products generated more turnover, namely 13 percent of total manufacturing turnover.

Table 11.3 Value added at factor cost (million €)

	2008	2009	2010	2011	2012	2013
Value added	-	99,036	141,063	154,343	150,213	-

Source: Eurostat SBS data.

Just like the other indicators, the number of employees in the automotive sector (Figure 11.1) contracted after 2008, but steadily increased again to a level of 2 million employees in 2013. The 2.2 million persons employed in the automotive sector are direct jobs. Indirectly the sector employs another 9.8 million persons. These indirect jobs come from inter alia indirect manufacturing like tyres or electrical motors, from the retail and repair of automobile, (land) transport, and construction of roads, tunnels and bridges.⁶¹⁰

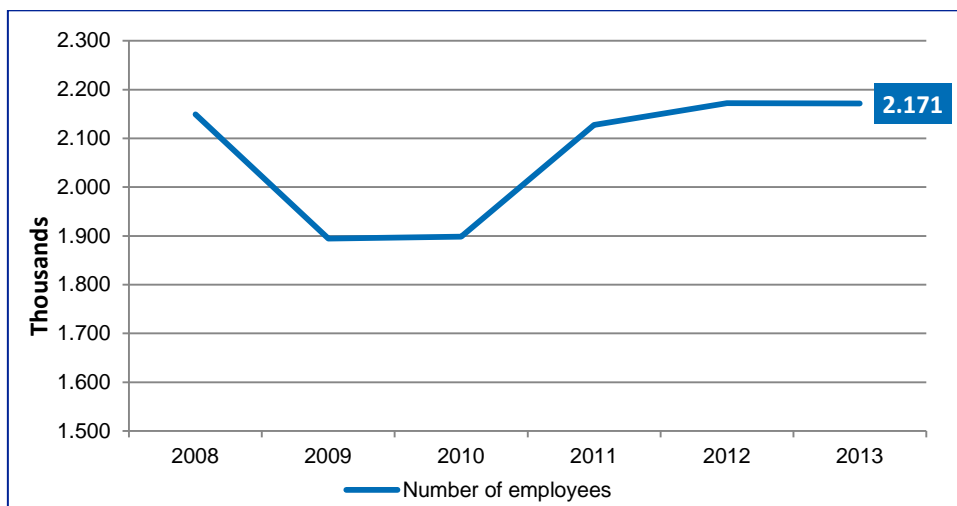
⁶⁰⁷ Until 2010 the data covers EU27, from 2011 onwards the data covers EU28. Applies to all Eurostat SBS data.

⁶⁰⁸ Eurostat SBS database.

⁶⁰⁹ This includes amongst others manufacturing of: chemicals, food products, machinery, electronics, textiles, wood products, etc.

⁶¹⁰ ACEA pocket guide 2015/2016.

Figure 11.1 Total number of employees (FTE)⁶¹¹



Source: Eurostat SBS data.

Table 11.4 presents the structure of the motor vehicle sector in the EU in 2011. The majority of the enterprises, over 50 percent, are small scale enterprises with a maximum of 9 employees. Only a small share of the industry consists of medium and large enterprises. However, the lion's share of turnover is generated by the larger enterprises. These numbers can be explained by the pyramid structure that exists in the sector, there is a relatively small number of car manufactures, a larger number of suppliers to them and an even larger share of SMEs involved in sales and supplies to car manufactures (Needham, 2013).

Table 11.4 EU28 2011 size class data

	Total	0-9 employees	10-19 employees	20-49 employees	50-249 employees	250 or more employees
Turnover (million €)	840,133	4,464	4,244	11,978	53,597	765,874
Number of enterprises	20,000	12,500	2,217	2,011	2,200	1,210

Source: Eurostat SBS Data.

International dimension of the market

In 2011 the EU sector made investments in the US worth €11.5 billion. In that same year inwards investments in the sector stemming from the US amounted to €15.9 billion.

Table 11.5 FDI position EU investments in the US and visa versa (million €)

Investment	2010	2011
EU27 investments in the US		5,944
US investments in the EU27	8,373	15,862

Source: Eurostat.

When looking at the value of export and import compared to the value of turnover, we see that both have been fluctuating over time. Whereas in 2013 the value of motor vehicles and parts exported outside the EU equals 40 percent of the turnover value of the EU automotive sector, the value of motor vehicles and parts imported equals 80 percent of the turnover value of the EU automotive sector. From Table 11.6 one can see that the share of imports, is almost twice as large as the share of exports. This can either be explained by relative high prices in other countries or by a larger volume of imports.

⁶¹¹ The numbers present the sum of all EU countries, as there was no aggregate data available.

Table 11.6 Extra EU export/import share as percentage of turnover

Export/import share	2008	2009	2010	2011	2012	2013
Exports as % share of turnover	33%	29%	37%	39%	45%	40%
Imports as % share of turnover	64%	57%	73%	78%	88%	80%

Source: Author's calculations based on Eurostat data.

In 2014 the EU has exported motor vehicles and parts worth €390 billion to countries outside the EU. As can be seen in Table 11.7, this number has been ever growing, except for a drop in 2009. This number explains, however, only a share of total exports, almost half of all exports occur within the EU. The picture for imports is, however, different. Although the amount of motor vehicles and parts imported increased over time, only about one third is imported from other EU countries, the larger share is imported from outside the EU.

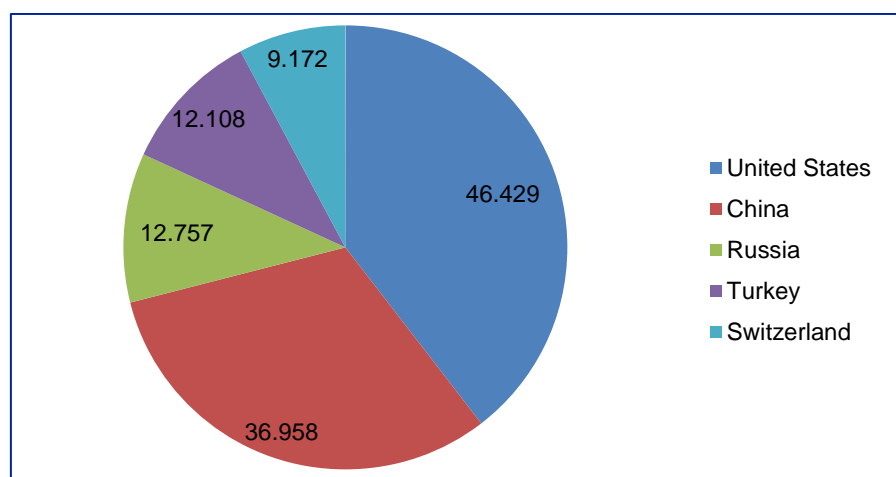
Table 11.7 Extra EU28 import and export (million €)

EU28	2008	2009	2010	2011	2012	2013	2014
Export	260,336	180,474	272,323	331,283	378,990	386,083	389,647
Import	512,650	357,043	539,214	654,752	749,130	763,671	770,646

Source: Eurostat COMEXT.

When looking at the COMEXT data from 2008 till 2014, we see that the US has been the top export destination outside the EU for motor vehicle products for each year, followed by China, Russia, Turkey and Switzerland. These top 5 countries make up one third of total extra EU trade. When taking a closer look at the different products within the motor vehicle sector, motor cars and other motor vehicles are mostly exported, followed by parts and accessories for the latter, and engines.⁶¹² Also at a disaggregated level the US is the number one export destination. In terms of imports the EU is much more dependent on intra EU trade. The largest amount of imports originates from Turkey, €12.1 billion, followed by Japan with €9.8 billion. The US comes in third with a value of €9.8 billion, the fourth and fifth place are taken by Korea and China with €6.8 billion and €4.2 billion, respectively.

Figure 11.2 Top 5 EU28 export destinations outside the EU, 2014 (million €)



Source: Eurostat COMEXT.

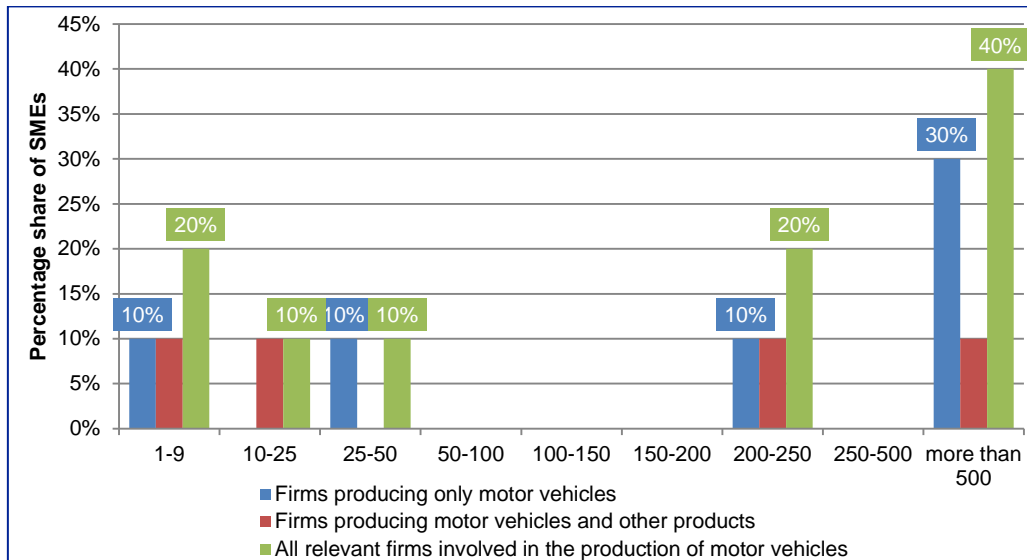
Small and Medium Sized Enterprises

The results from the SME survey conducted by Ecorys in 2014 will be used to supplement the Eurostat statistics on SMEs. It should however be noted that within the automotive sector only a few companies responded to the SME survey. As a consequence these results do not – and cannot – describe the automotive sector. The results below merely show the situation for the few respondents. The SME survey consisted of various questions concerning issues related to

⁶¹² HS codes 8703, 8708, 8408 respectively.

the size and turnover of the company, issues related to its export behaviour, and trade barriers these companies might face when exporting to the US. Figure 11.3 indicates the size distribution of enterprises, based on the number of employees in the sector. Contrary to the Eurostat SBS data, the SME survey reveals that the larger share of the enterprises in the sector are large enterprises. This difference can be explained by the low response rate from the motor vehicle sector to the survey⁶¹³.

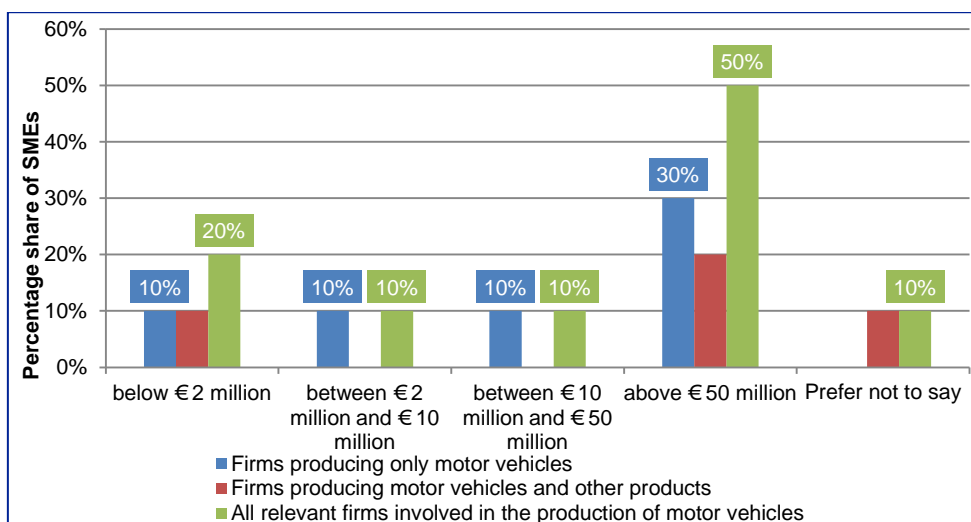
Figure 11.3 Size distribution of SMEs in survey in 2013, n=10



Source: European Commission and Ecorys SME survey, 2014.

Half of the respondents indicated that they have generated a revenue of over €50 million in 2013. These are all firms with 200 or more employees, the firms who replied that they generated a turnover of 2 million have only 1 to 9 employees employed. However, according to the Eurostat SBS data, one third of all relevant firms involved in the productions of motor vehicles has a turnover below €10 million. This thus indicates that the small number of respondents in the survey is not representative for the sector, since the Eurostat SBS database has data on large base of SMEs.

Figure 11.4 Turnover of SMEs in survey in 2013, n=10

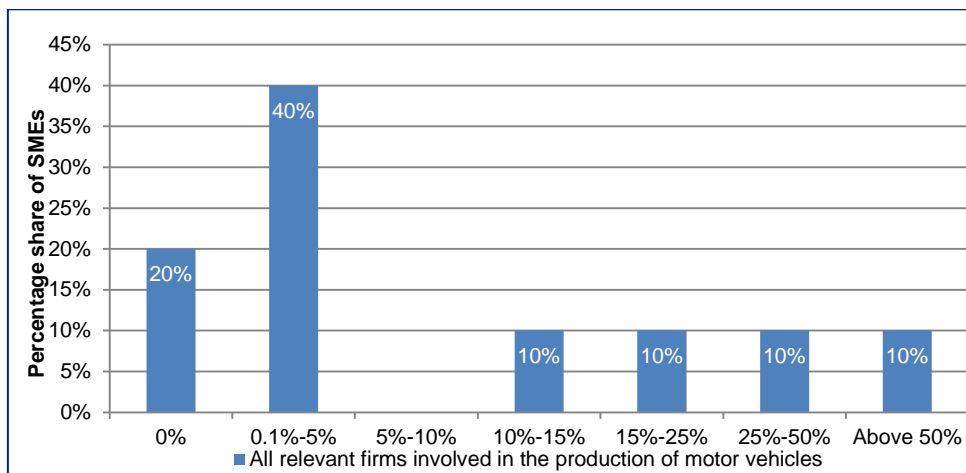


Source: European Commission and Ecorys SME survey, 2014.

⁶¹³ The SME survey had a total response rate of 869 enterprises, however only 10 respondents were active in the motor vehicle sector. In addition, 4 out of the 10 respondents were also active in other industries.

Although 90 percent of all respondents do export their products to a country outside the EU (60 percent directly and 30 percent via a subsidiary), the share of exports outside the EU is for most respondents only a small percentage, namely between 0-10 percent of their total sales. The small scale firms (1-25 employees) export 11-30 percent of total sales outside the EU, and only a smaller share of the large firms (more than 500 employees) does export intensively, namely 71-80 percent of their total sales outside the EU. In order to focus on the EU-US trade flows, respondents were asked to indicate how much of their sales are done in the US. The below figure indicates a very diffuse pattern and we may conclude that for these respondents only a small share of the sales is done in the US. The enterprises that do export relatively intensively to the US, can be found on both ends of the spectrum, namely the enterprises with either 1-9 employees or with more than 500 employees.

Figure 11.5 Share of outside EU sales of SMEs in survey to the US, 2013. n=10

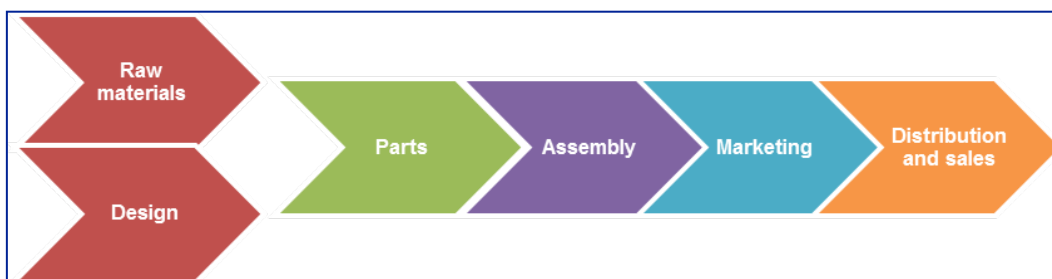


Source: European Commission and Ecorys SME survey, 2014.

11.2.3. Value chains and fragmentation of the supply chain

The supply chain in the automotive sector has a similar structure to most manufacturing sectors, as can be seen in the figure below. In this simplistic figure, the production process starts with the design of the model for the motor vehicle. This phase contains a high level of value added and is followed by the collection of raw materials which are then transformed into auto parts (e.g. tires, vehicle body parts, chairs, engines, etc.). These two activities add generally less value. All the parts are then sent to the assembly centre where the final vehicle is produced, and thus relatively more value is added. The last phase of the supply chain consists of marketing and distribution and sales, and contains much value added (Gray, 2007).

Figure 11.6 Simplistic view of the automotive supply chain



Source: <https://web.duke.edu/soc142/team1/valuechain.html>.

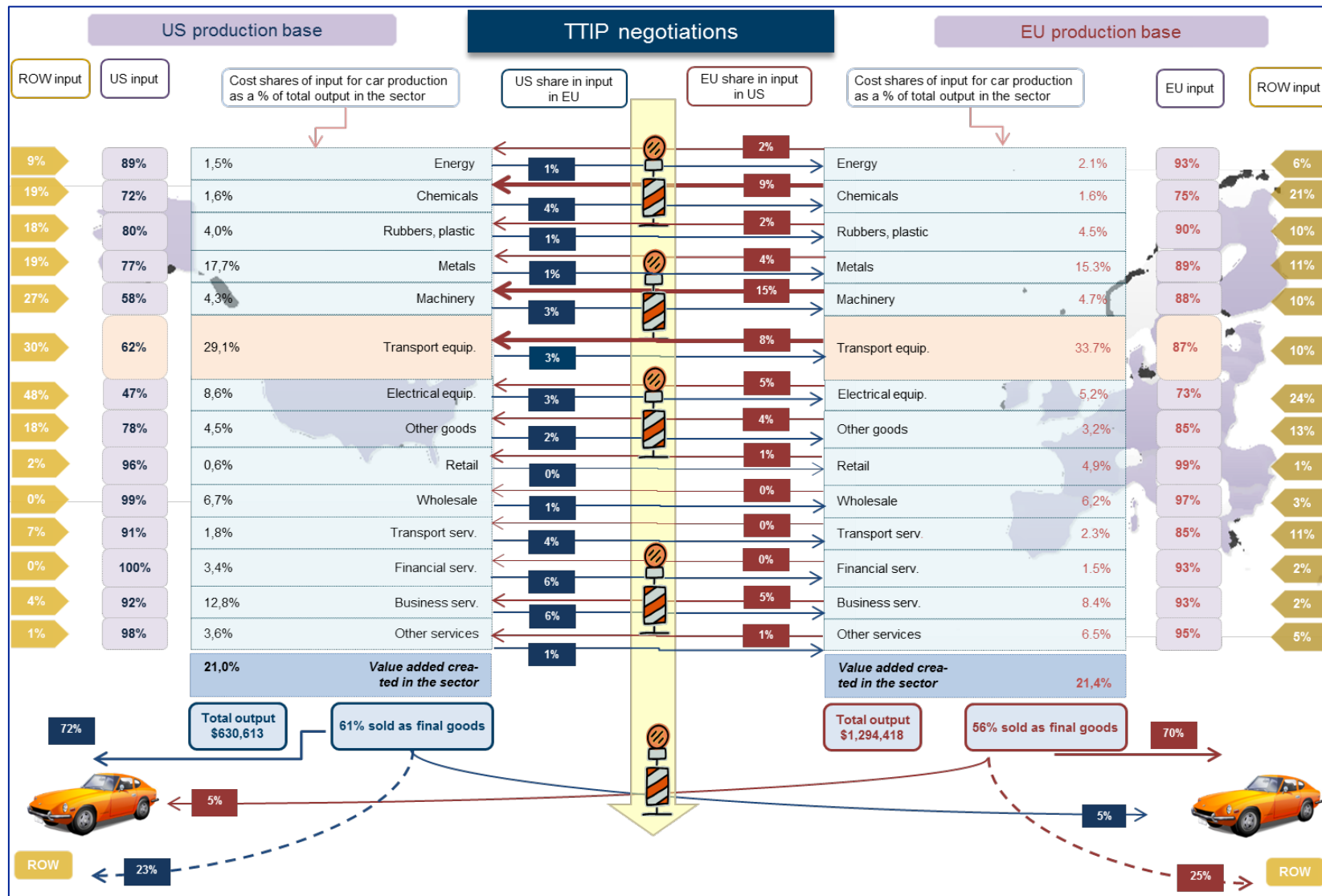
As indicated above this is just a simplistic view of the supply chain. Both raw materials and parts are not per se sourced from one firm, or one country. It also occurs that the assembler or car manufacturer receives the largest parts and components from the tier 1 suppliers who in turn are supplied by tier 2 suppliers with smaller components. The tier 3 suppliers often supply the raw materials to the tier 2 suppliers. Since the tier 1 suppliers are most important to the manufacturer they will have a plant close to the car manufacturer, whereas the tier 2 and 3 suppliers can be based much further away (limited, 2015).

When we look at WIOD (2011) we see that the EU automotive industry buys most goods and services from the following industries: automotive industry, metal industry, business services, wholesale services, machinery industry, retail services, electrical equipment industry, and the rubber and plastic industry. One can clearly see from the database that the majority of these goods and services are sourced within the EU, only a small part is sourced from the RoW, and even less from the US. The largest share of European inputs is bought from German (34 percent), French (12 percent) and Italian (8 percent) industries. The European automotive industry supplies its intermediate⁶¹⁴ products mainly to 'itself', while a smaller share is supplied to wholesale and retail companies, the machinery sector, public defence sector, and inland transport. Also the supply of intermediate products is mainly to European industries (Germany (29 percent), RoW (11 percent), France (9 percent), Great Britain (6 percent)), with only 4 percent of intermediate outputs supplied to US industries.

Figure 11.7 provides an overview of the global value chain in the motor vehicle sector and indicates the relative importance of different intermediate goods and services in the production of the final good as well as the intermediate global linkages. A general explanation of this figure can be found in Chapter 6 of the report. At first sight the EU and the US seem to reveal a similar picture when we look at the distribution of the cost shares of the intermediate goods and services used to produce a standard average good in the automotive industry. Transport equipment, metals, and other business services have the highest cost shares, whereas chemicals, energy, transport services, and financial services show the lowest cost shares. However, when looking closer at the cost shares, we see that they differ substantially between the EU and the US. This can either be explained by the difference in intensity of which the inputs are used, or by the price of the specific good or service. In comparison with the EU the US has lower cost shares for e.g. energy (1.5 percent vs. 2.1 percent) and retail (0.6 percent vs. 4.9 percent). In contrast, the US has higher cost shares for e.g. electrical equipment (8.6 percent vs. 5.2 percent), financial services (3.4 percent vs. 1.5 percent) and other business services (12.8 percent vs. 8.4 percent).

⁶¹⁴ WIOD does not indicate the supplies of final goods to other sectors.

Figure 11.7 Global value chain for the automotive sector (2011), total output in USD million



Source: WIOD (2011), author's calculation

The amount of value that is added in this industry is similar for both the EU and the US, namely 21 percent of total output, this equals USD 267,732 million and USD 132,049 million for the EU and the US respectively. The share of value added is low when we compare with other industries in general, but also when we compare with other manufacturing industries like the machinery industry, electrical equipment industry, textile industry, rubbers and plastic industry or chemical industry, which all have a share of value added between 28 percent and 34 percent of total output for the EU and 34 percent to 63 percent of total output for the US (WIOD, 2011). The output that is generated however differs substantially, the US (USD 630,613 million) produces only half of what the EU produces (USD 1,294,418 million), indicating that the EU automotive industry is much larger than the US automotive industry.

Not all intermediate goods and services used in the sector in the EU are domestically sourced – a certain share is sourced from either the US or the Rest of the World. When looking at the EU industry we see that a significant share of electrical equipment (24 percent) and chemicals (21 percent) are sourced from the Rest of the World. Overall we can see that the EU sources more inputs from the Rest of the World than it sources from the US. The share of sourcing intermediate goods and services from the US ranges from 0 percent to only 6 percent. This could potentially be explained at least in part by tariffs and other trade barriers that are still in place for these products and/or services.

In contrast, the US automotive sector sources intermediate inputs from the domestic market to a lesser extent and sources a larger share from the Rest of the World. Almost half of all electrical equipment inputs are sourced from the rest of the world, also transport equipment (30 percent) and machinery (27 percent) have large sourcing shares from the Rest of the World. When looking at the inputs sourced from the European market we see that the US mainly imports intermediate goods and not so much services. Machinery (15 percent), chemicals (9 percent) and transport equipment (8 percent) are most intensively sourced from the EU. When comparing the inputs sourced from the trans-Atlantic market we see that the US sources relatively more from the EU than the EU sources from the US.

The lower part of the image indicates to what extent final goods are sold domestically or abroad. Both the EU and the US sell the largest share of final goods on the domestic market; for both areas, only approximately 24 percent of final goods is exported to the Rest of the World and only 5 percent is exported to either the US or the EU respectively. The latter could at least in part be due to the (relatively) high tariffs and/or other trade barriers that are still in place. A reduction in tariffs and other trade barriers can directly impact the automotive sector when reduced in the same sector and indirectly impact the automotive sector when reduced in other sectors where they source their intermediate inputs from, e.g. in the machinery and transport equipment sector.

11.2.4. *Qualitative social perspective*

In this section we will provide an overview of the current situation in the sector with respect to the social indicators, both for the EU and for the US. First, we give a short overview of the personnel costs in the EU.

Table 11.8 Personnel costs in the EU's motor vehicle sector (million €).

	2008	2009	2010	2011	2012
Total personnel cost	102,603	91,763	95,269	102,356	108,637
Costs of salaries	79,399	69,959	74,704	80,110	85,031
Social security costs	23,205	21,804	20,566	22,246	23,607

Source: Eurostat.

As depicted earlier, the number of employees in the motor vehicle sector in the EU totals approximately 2 million FTE. In the US this figure is approximately 1 million employees in 2015, which is a recovery from the drop in 2009 to 600,000 employees.⁶¹⁵

⁶¹⁵ US Bureau of Labor Statistics: <http://www.bls.gov/iag/tgs/iagauto.htm>.

Qualitative issues such as youth employment, minimum wage, human health and safety at work are being addressed by various institutions and multiple European and US based car producers such as Volvo, Citroen, Daimler and Ford have committed themselves to the Automotive Industry Guiding Principles to Enhance Sustainability Performance in the Supply Chain. The focus of the guiding principles are working conditions and human rights.⁶¹⁶ After the crisis hit the car industry many workers, part-time but also full time employees had to be laid off. Currently the US car industry, with a typical strong mobilisation of workforce in trade unions, is recovering and the numbers of employees is rising. Hiring new employees has proven to be a window of opportunity to lower labour cost e.g. lower salaries, in order to increase profits and remain competitive vis-à-vis Asian car producers.

11.2.5. Qualitative environmental baseline

Any overview of the current situation in the sector with respect to the environmental indicators must focus on a crucial issue; the relatively long life span of the industry's products. About 80 percent of environmental impacts, such as air pollution, stem from the usage phase of the vehicle.⁶¹⁷ This means that especially in the design phase (using lightweight materials, improving fuel efficiency, inventing new energy sources) improvement of environmental impact can be achieved: such as reducing harmful emissions. NB. cars are responsible for around 12 percent of total EU emissions of carbon dioxide (CO₂), in the EU.⁶¹⁸ Due to the mass use of cars and other vehicles and their shortening life cycle, the recycling end-of-life vehicles is also perceived as an important issue. Car manufacturers are already engaging in CSR activities concerning end-of-life-vehicles and producers' extended responsibility for their products, green supply chain management and environmental management schemes. EU regulations and trends are increasingly towards the circular economy and with respect to the car industry this also translates e.g. in smarter designs and use of materials to make reuse, recycling and recovery easier. Most car companies follow three main tracks for reducing the environmental impact of their vehicles—fuel efficiency (stop/start), renewable fuels (bio-fuels), and electrification (plug-in hybrids, serial hybrids, battery electric vehicles).⁶¹⁹ The latter means that the environmental impact of emissions are substantially reduced.

In the US similar trends are visible. In 2013, greenhouse gas emissions from transportation accounted for about 27 percent of total U.S. greenhouse gas emissions, making it the second largest contributor of U.S. greenhouse gas emissions after the electricity sector.⁶²⁰ The manufacturing process is becoming more "green" with the increased use of renewable resources. US manufacturers such as GM include higher portions of recycled materials in the various automotive components, while reducing heavy metals and cabin volatile organic compound (VOC) emissions. These initiatives, while not always as concrete, also include reducing waste and water consumption and increasing the amount of recycling.⁶²¹

In terms of emission standards there are differences between the EU and the US. In the EU the emission standards are set by the EC and in the US they are set by the Environmental Protection Agency, based on the Clean Air Act.⁶²² In order to sell motor vehicles on the US market, manufactures must show that they comply with the Clean Air Act and the EPA regulations. Although the EU and the US have emission standards for similar pollutants, which country is stricter on the allowable level differs per air pollutant.

The US has also fuel efficiency standards in place, these standards set a maximum of GHG emissions per mile for light trucks and passenger cars. Although the EU does not have specific fuel efficiency standards, the standards set on the grams of CO₂ emitted per kilometre do set some sort of efficiency standard.⁶²³

⁶¹⁶ <http://www.csreurope.org/sites/default/files/Guiding%20Principles.pdf>.

⁶¹⁷ André Martinuzzi, et al. (2011) *Activities and Impacts of the Automotive Sector*. Vienna University of Economics.

⁶¹⁸ http://ec.europa.eu/clima/policies/transport/vehicles/cars/index_en.htm.

⁶¹⁹ KPMG International (2010) *The Transformation of the Automotive Industry: The Environmental Regulation Effect*.

⁶²⁰ <http://www3.epa.gov/climatechange/ghgemissions/sources/transportation.html>.

⁶²¹ Idem.

⁶²² <https://www.hsdl.org/?view&did=751039>

⁶²³ Idem.

11.2.6. Competitiveness of the EU motor vehicle sector

In this section we will assess the sector's competitiveness both from a quantitative and a qualitative perspective. We first of all use data from Eurostat. The table below provides an overview of the apparent labour productivity in the EU sector. After a large increase in 2010, the labour productivity remained relatively the same in the EU automotive industry.

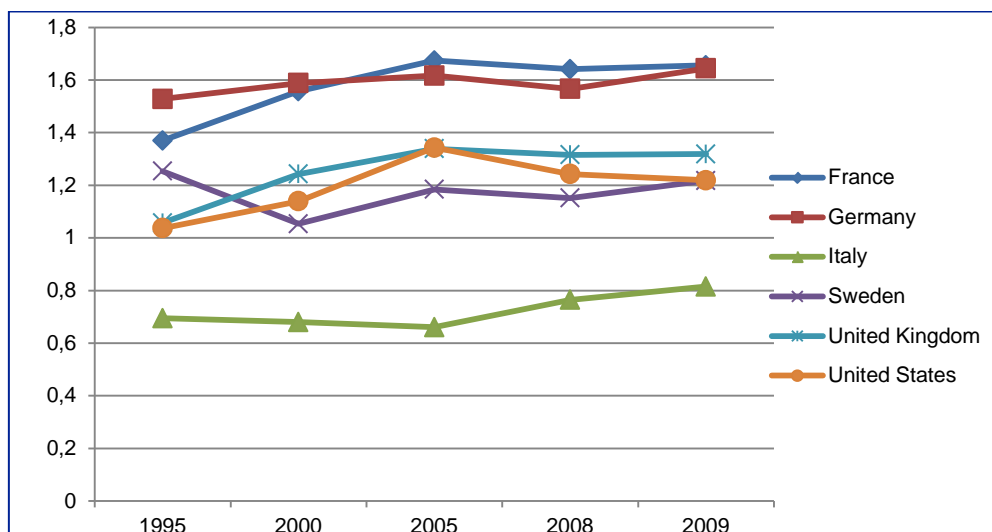
Table 11.9 Apparent labour productivity (gross value added per employee employed) in the EU

	2009	2010	2011	2012
Apparent labour productivity (€)	45,000	64,950	69,000	66,000

Source: Eurostat SBS data.

Figure 11.8 shows the revealed comparative advantage (RCA) of the motor vehicle sector in the US and the largest EU countries in terms of manufacturing of motor vehicles and parts, based on gross exports. The RCA indicates a country's comparative advantage compared to the RoW of a certain sector. A country has a comparative advantage when the RCA is above 1 and a comparative disadvantage when the RCA is below 1. The graph indicates that Germany and France have the highest revealed comparative advantage from these six countries, with an RCA of around 1.5. Sweden, the UK and the US are competitive as well, but to a lesser extent than Germany and France. Whereas in the late nineties the US lagged a bit behind Sweden and the UK, it has now become more equally competitive to the UK. Italy however, seems to have a revealed comparative disadvantage in the motor vehicle industry. Although France and Germany are large motor vehicle manufacturing countries, they do not have the highest RCA within Europe, Czech Republic and Spain are the two countries with the highest RCA (between 1.7 and 1.8).

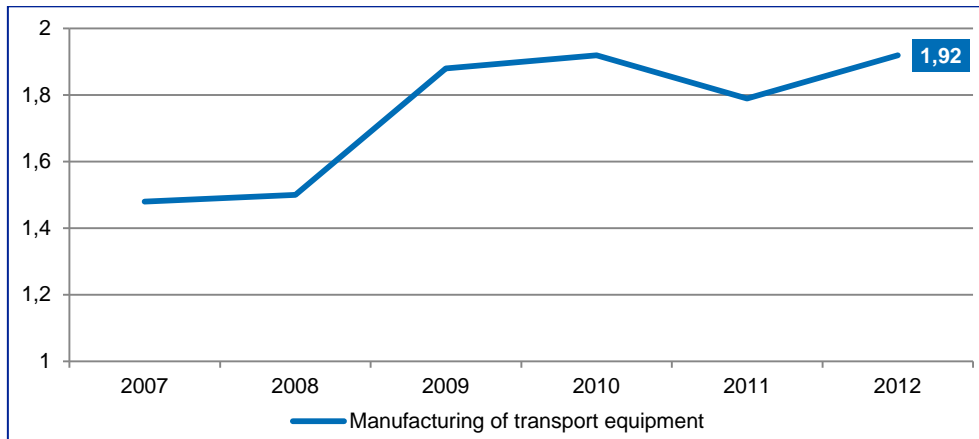
Figure 11.8 Revealed Comparative Advantage (RCA) of EU member states and the US based on gross exports



Source: OECD TiVa database.

The EU competitiveness report (2014) also mentions the RCA for all manufacturing industries for the years 2007 till 2012. Although it does not allow us to compare the RCA to other countries as did the OECD TiVa database, it does give us an indication of how the sector performs compared to other manufacturing sectors in the EU for a more recent period. The EU automotive industry had an RCA of 1.48 in 2007 and has been increasing to 1.92 in 2012, with only a small drop in 2011. The automotive industry has one of the highest RCAs compared to the other EU manufacturing industries, only manufacturing of pharmaceutical products (1.96) and manufacturing of beverages (2.22) have a higher RCA.

Figure 11.9 RCA of the EU automotive industry



Source: European Competitiveness report, 2014.

The two figures above however do not show the results for the past years. According to a study by the Boston Consultancy Group⁶²⁴, the US automotive industry has significantly improved its competitiveness position over the past few years. Due to the fracking revolution and the consequent decrease in gas and oil prices the production costs of manufacturing has decreased. The study estimates that the manufacturing costs are now only 5 percent higher than in China but 10 to 20 percent lower than in the large EU countries. Moreover the US has operated 19 fewer plants since 2004 but increased the production of motor vehicles.⁶²⁵ The EU automotive industry had also a hard time to reach full capacity utilisation. However contrary to the US they have not been able to close production plants in order to increase the capacity utilisation.⁶²⁶ It is expected that the EU will not have a capacity utilisation of 85 percent before 2020, whereas the US is likely to reach the 100 percent in 2016.⁶²⁷

When looking at world production of motor vehicles, it turns out that the share of EU production has decreased over time from 34 percent in 2000 to 23 percent in 2014 (ACEA pocket guide, 2015). The EU moved from being the largest producer in the world (from 2000 till 2010) to the second place in 2014. The first place has now been taken by China, who significantly increased its share of world production (only 4 percent in 2000 and now in 2014 27 percent). North America also saw its share in world production decrease from 30 percent in 2000 to 16 percent in 2010, with a small increase again to 19 percent in 2014. Still the US share of total production remains lower than the EU share of total production in the production of motor vehicles.

11.3. Market access issues in the motor vehicle sector

This section provides an overview of both the tariffs that are currently still in place between the EU and the US as well as the Non-Tariff Measures the motor vehicle sector faces when exporting to or investing in the partner country.

11.3.1. Tariffs

The overall average tariff that EU and US exporters face is low, however in comparison with other sectors the transport sector (as well as the agriculture, processed food and other manufacturing sector⁶²⁸) still face relatively high tariffs⁶²⁹. When taking a closer look at the

⁶²⁴ Dumaine, B. (June 26, 2015). U.S. Manufacturing costs are almost as low as China's, and that's a very big deal. *Fortune*.

⁶²⁵ Boudette, N. (May 18, 2015). Production capacity balloons, but today's industry can support it, *Automotive News*.

⁶²⁶ Clark, J. (June 10, 2014). European plant capacity usage improves, but breakeven still years away. *Automotive News Europe E-Magazine*.

⁶²⁷ Stoddard, H. (Nov. 2, 2015). North American Automakers to Reach 100% 12-Month Utilization in 2016.

⁶²⁸ Manufacturing here does not include chemicals, transport equipment, processed foods, machinery and electrical equipment.

motor vehicle sector (Table 11.11) we see that tariff rates levied by the EU and the US differ substantially for the different goods within the sector. While the majority of the goods imported from the EU face a tariff rate of around 2-4 percent, there are still certain goods that face a tariff rate of around 10 percent. The latter includes motor cars and vehicles used for transport of persons. Given the large amount of imports of motor cars and vehicles used for transport, the impact of this tariff is substantial. Still, these tariffs only relate to weighted averages at HS 4 digit level, while these product groups contain many more products, all with different tariff rates. For example, motor vehicles used for goods transport face a weighted average tariff of 5.14 percent, but within this group, tariff rates can reach up to 22 percent⁶³⁰ (all different weight classes for motor vehicles for the transport of goods).

When looking at the US side, we see that the tariffs levied against EU imports of motor vehicles, including parts are significantly lower than those levied by the EU against US imports, with a maximum weighted average of 1.61 percent. Given the larger amount of imports of EU motor vehicles and parts into the US than vice versa, these relatively low tariffs can still be a substantial burden. Interesting to see is that EU tractors, containers and special purpose vehicles face a zero tariff when entering the US.

Table 11.10 Tariffs levied by the EU and the US in the motor vehicle sector 2013⁶³¹

Sub-sector (HS 4 digit)	EU levied weighted tariff average (percent)	US levied weighted tariff average (percent)	EU import value in 1000 USD	US import value in 1000 USD
Spark ignition combustion engines	3.47	0.81	426,047	2,798,531
Compression ignition combustion engines	2.56	0.86	1,087,374	2,436,111
Parts for use with combustion engines	2.5	1.13	1,066,747	1,575,620
Containers	0	0	67,249	112,700
Tractors	0.79	0	932,432	1,436,959
Motor vehicles for transport of ten or more persons	12.74	1	1,011	202,083
Other motor vehicles for transport of persons	9.97	1.25	5,810,423	37,207,937
Motor vehicles for goods transport	5.14	1.61	167,688	730,257
Special purpose motor vehicles	3.7	0	53,121	561,155
Chassis	9.88	1.5	29,017	6,138
Bodies for motor vehicles	4.5	1.33	139,472	291,162
Parts and accessories	3.8	0.81	1,797,575	7,756,530
Trailers	1.94	0.98	147,617	113,213

Source: WITS (2013).

11.3.2. Non Tariff Measures

Additional to tariffs, the automotive sector in the EU and the US also faces the burden of Non Tariff Measures (NTMs) when trading with the partner country. In a large study conducted in 2009, Ecorys already identified various NTMs to EU-US trade and investments in the automotive

⁶²⁹ WITS, authors calculations; DG for Internal Policies (2015) Internal Market and Consumer Protection. TTIP: Motor Vehicles.

⁶³⁰ WITS.

⁶³¹ One should take caution when comparing the specific tariffs lines for certain types of motor vehicles as the EU and US definition of certain car types can differ. E.g. a 4x4 vehicles is classified as a passenger car in the EU, but as a truck in the US.

sector.⁶³² According to this study, NTMs are estimated to add a significant 26 – 27 percent to the cost of trade and investment in the automotive sector (in both directions) that could be reduced to 14 percent in the EU and 15 percent in the US (a 42 percent and 48 percent reduction respectively, based on actionability of the NTMs found).

According to the Market Access Database and the Ecorys study, there are several sector specific issues, next to cross cutting measures that are faced by multiple sectors. One of these issues is the Corporate Average Fuel Economy (CAFE) Payment, which concerns taxation on cars (both imported and manufactured) when the fuel efficiency is lower than 27.5 miles per gallon. Another tax mentioned is the Gas Guzzler Tax, manufactures who fail to meet a certain minimum economy level have to pay a tax per car. Two other sector specific issues mentioned are the American Automobile Labelling Act (AALA) and the fact that US product standards (FMVSS⁶³³) differ from the international standards (UNECE⁶³⁴). The AALA requires that passenger vehicles manufactured after October 1, 1994 must be provided with labels indicating the percentage value of U.S./Canadian parts content, the country of assembly, and countries of origin of the engine and transmission.

The Federal Motor Vehicle Safety Standards and Regulations are the minimum safety performance requirements for motor vehicles or items of motor vehicle equipment in the US.⁶³⁵ In the EU these regulations are written down by the United Nations Economic Commission for Europe. Although they provide generally similar levels of safety, there exist small – and sometimes significant – differences in the specific regulations to achieve these levels of safety. These differences cause additional costs in order to adjust the car and thus comply with both regulations.⁶³⁶ Some examples of these differences are:

- Differences in markings on mirrors. In the US convex mirrors must be marked indelibly with “objects in mirror are closer than they appear”. EU legislation states that mirrors must indelibly be marked with the trade or mark name of the manufacturer, E approval mark and the number presenting the country which has granted the approval;⁶³⁷
- Sweb test requirement areas for windscreen wipers. The wipe area that is required in the US is larger than the area that is required in the EU.⁶³⁸

More specific examples concerning differences in EU and US legislation regarding lighting, direct visibility and indirect visibility can be found in the Second Test Case analysis of the European Commission. When it comes to testing the safety of the car there are large differences between the EU and the US. In the EU the manufacture needs to obtain formal approval from a government agency or testing centre, whereas in the US the manufactures need to self certify that they meet the US standards.⁶³⁹

In terms of cross-cutting NTMs, many issues are mentioned by the Ecorys study and the Market Access Database, as indicated above a full list can be found in Annex V. In terms of exporting, EU firms have to deal with inter alia Dual Use Export Controls by the US, the Container Security Initiative and a threat of 100% container scanning, which slow down the process and causes delays. Also differences in intellectual property right systems and patent legislation⁶⁴⁰, the need of double certification, differences in cetane levels in diesel fuel between the EU and the US and US customs refusal of EU origin are costly to the EU automotive sector and reduce the amount of trade between the EU and the US.⁶⁴¹

⁶³² Ecorys (2009) Non-Tariff Measures in EU-US Trade and Investment – An Economic Analysis Reference: OJ 2007/S 180-219493.

⁶³³ Federal Motor Vehicle Safety Standards and Regulations.

⁶³⁴ United Nations Economic Commission for Europe.

⁶³⁵ <http://www.nhtsa.gov/cars/rules/import/FMVSS/>.

⁶³⁶ http://trade.ec.europa.eu/doclib/docs/2015/january/tradoc_153012_4_9%20Vehicles.pdf.

⁶³⁷ European Commission, 2015. Second test case on recognition of equivalence in relation to US and EU lighting and vision standards.

⁶³⁸ Idem.

⁶³⁹ <https://www.hsdl.org/?view&did=751039>

⁶⁴⁰ “First to file” versus “first to invent” principle.

⁶⁴¹ Ecorys (2009).

The EU trade policy review conducted recently by the World Trade Organization ⁶⁴² does not specifically describe NTM regarding the automotive sector. However if we take a look at the complaints the WTO receives regarding NTMs we see that most complaints concern regulation regarding renewable energy and emissions in the EU, as well as testing and grading of tyres. Complaints regarding NTMs applied in the US are primarily focused on safety standards; regulation on emission standards/labelling and air pollution, and regulation concerning crash test dummies and crash protection. There are however much more complaints filed against the US than against the EU.

Also exports from the US to the EU are not free of trade measures. Not surprisingly the US side also mentions that differences between EU product (UNECE) standards and US products standards (FMVSS), difference in certain levels and the need of double certification are a burden for trade. Other issues that the US automotive industry mentions are the Waste Electrical and Electronic Equipment (WEE) directive, which sets rules on the collection and recycling of electrical and electronic equipment, the difference in tax based regulations on CO2 emissions and enforcement of EU custom systems among EU Member States. When it comes to investments, burdensome issues faced by the US are the difference in investment regimes in EU Member States.

11.4. Expected impacts of TTIP on the EU motor vehicle sector

In this section we present and discuss the expected impact of the TTIP agreement on the motor vehicle sector. For the economic, social and environmental impact we make use of the modelling that has been performed as well as additional literature and stakeholder interviews.⁶⁴³ The modelling results will be presented for both the ambitious and less ambitious scenario, but we will discuss the results of the ambitious scenario in more detail. For comparison we will show the expected impact on the US sector as well, but these numbers will not be discussed as in much detail as the EU impacts.

Before we present the expected impacts, there is one important note to make:

- The scenarios for the modelling have been made before the start of the negotiations based on assumptions about the future agreement. However, as the negotiations progressed some assumptions made might not reflect the real ambition as accurate as before. See section 11.4.2 for more explanation.

11.4.1. *The motor vehicle sector in the TTIP negotiations*

In the TTIP agreement the objective of the negotiators is to reduce both tariffs in the sector as well as the burden stemming from NTMs by means of regulatory cooperation. We know that they aim to reduce the majority of tariffs, however up to date it is not yet known whether all tariffs will be removed, whether any products will be exempted, and whether the tariffs will be removed immediately, or over a specified time frame.. As for the improved regulatory cooperation, the EC has published a sectoral fact sheet and position paper.⁶⁴⁴ The fact sheet indicates four goals that they hope to achieve:

- Agree where EU and US technical standards match in order to recognise each other's requirements as equivalent to their own;
- Develop global regulations and encourage third countries to adopt them;
- Agree to harmonise certain EU and US regulations. For example in cases where regulations are needed but not yet present;
- Coordinate plans for new regulations (in order to avoid creating new NTMs) and for research on new technologies.

⁶⁴² WTO Trade Policy Review. WT/TPR/S/317 • European Union, 2015.

⁶⁴³ The different modelling scenarios are presented in Chapter 1 and 6.

⁶⁴⁴ http://trade.ec.europa.eu/doclib/docs/2015/january/tradoc_153012.4.9%20Vehicles.pdf.
http://trade.ec.europa.eu/doclib/docs/2014/may/tradoc_152467.pdf.

11.4.2. *Expected economic impacts*

Table 11.11 below presents the expected impact results on the sector's output, exports and imports. In the less ambitious scenario the EU is expected to see its output increase by 0.2 percent and to see a significant increase of 20.0 and 23.9 percent in exports and imports respectively. In the ambitious scenario the expected increase in output is substantially larger, namely 1.5 percent. With an expected increase of 40.9 percent in exports and 42.1 percent in imports, the impacts are about doubled compared to the less ambitious scenario. The US on the other hand, is expected to see a decrease in output in both scenarios, with the largest decrease in the ambitious scenario, -2.9 percent. Still US imports and exports are estimated to increase, with a larger increase in exports than in imports. These results would suggest that the US motor vehicles sector would in addition to producing less also focus more on the world market than on the domestic market. The shortage created on the domestic market by the drop in output and increase in exports will be compensated by increased imports.

The American Automotive Policy Council (AAPC), the European Automobile Manufacturer's Association (ACEA) and Toyota have however indicated that the expected negative output impact for the US sector is not likely to occur. As explained in Chapter 1, part of the modelling has been based on the Ecorys 2009 study. According to the above mentioned organisations the current situation of the US motor vehicle industry has changed significantly compared to the situation described in the Ecorys 2009 study. The US industry has become much more competitive compared to the period 2007-2009. Consequently the US sector is much stronger and more able to reap the benefits of a trade agreement than modelled in our analyses. According to AAPC every \$1 billion of exports roughly supports 6,000 jobs in the US, so the expected increase in exports should bring about an increase in jobs and output, and not a decrease. ACCP and ACEA indicated that TTIP would be a win-win situation for the motor vehicle industry for both partners.

Table 11.11 Expected economic impacts, 2030

	EU ambitious	EU less ambitious	US ambitious	US less ambitious
Output	1.5%	0.2%	-2.9%	-0.6%
Exports	40.9%	20.0%	57.3%	33.5%
Imports	42.1%	23.9%	19.5%	10.1%

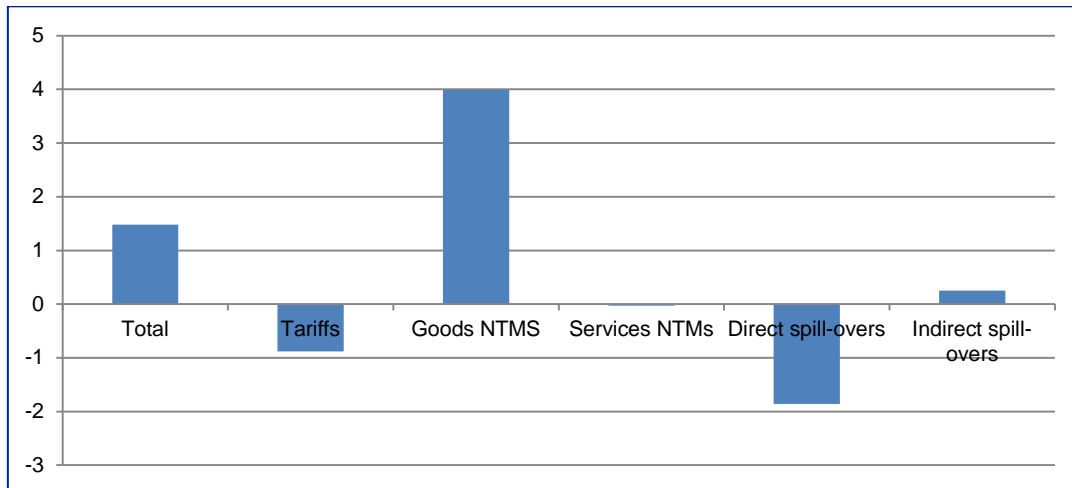
Source: Updated CEPR results.

When looking at the different contributors to the total impact on output it is clear from the figure below that the reduction of NTMs on goods is the largest contributor to the overall impact. Also the impact from the direct spill-overs is relatively large, although negative. The direct spill-overs indicate the increased trade of third countries with the EU and the US once the EU and US regulations are more aligned. When EU and US regulation differ in the motor vehicle industry, countries that export to both the EU and the US need to adapt their production process in order to meet EU or US regulation before their products can enter the EU or US market. If (a large share of) EU and US regulations are aligned, third countries would only need to adapt their production process once to the EU/US regulation when exporting to either market. This benefits third countries in two ways:

- Third countries that already exported to both markets can save costs as they now need to adapt their production process to one set of regulations instead of two when exporting to both the EU and US market;
- Third countries that currently only exported to one market (either EU or US), because it was too costly to adapt the production process twice, would now also have access to the other market.

The bar for direct spill-overs in the figure below is negative and thus indicates that the EU is negatively impacted by the improved trading conditions for third countries when trading with the EU and the US. The EU motor vehicle sector will face some increased competition from third countries on the EU and US market. Still the overall impact on the EU sector's output is positive.

Figure 11.10 Decomposition of the EU output results, ambitious scenario

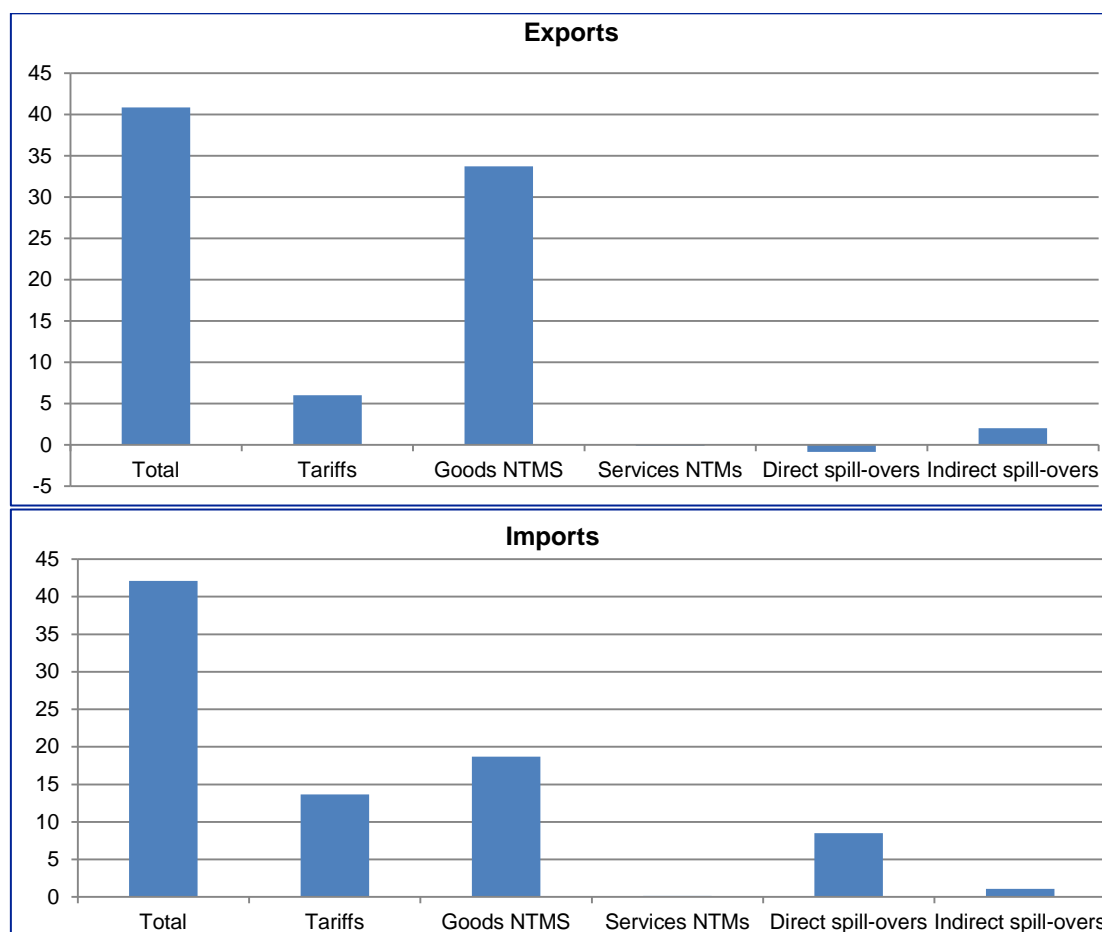


Source: Updated CEPR results.

Also for the impacts on the EU sector's exports and imports, the results have been split out. For exports, the majority of the gains comes from the reduction of NTMs on goods, almost 80 percent of the total impact. The reduction of NTMs on services and the spill-overs on the other hand, only have a very small share in the total impact. The reduction of NTMs on goods is again the main source of the increase in imports. The difference with the other components is however not that large as it is for output and exports.

The potential gains from the agreement are not limited to large firms only. SMEs are expected to gain from the agreement as well. Although a large share of SMEs does not export to the US, they do supply their semi-final products and component to the automotive firms that export. As production and trade of these exporting firms increases, additional inputs are needed and demand for products from companies in the different tiers increases. The larger demand for products from SMEs can again lead to an increase in production and employment for these firms.

Figure 11.11 Decomposition of the EU exports and imports results, ambitious scenario



Source: Updated CEPR results.

A study conducted by the Peterson Institute of International Economics (2015) estimates the potential benefits from regulatory coherence in the automobile industry.⁶⁴⁵ Their analysis was based on the 1958 agreement, which established uniform standards for vehicles and parts regarding safety, environmental, energy and antitheft requirements. The EU had joined the agreement, whereas the US did not. They have first analysed the benefits that occurred from 1958 agreement before estimating the benefits of uniform standards within TTIP. The study estimates that US-EU auto trade could be increased by 20 percent because of harmonisation, which would result in national income gains of \$20 billion for the US and the EU combined. Important to mention is that they only focussed on safety regulation, not on environmental regulation. Larger benefits could thus be expected when the range of regulations discussed is expanded. They found that regulatory coherence has a strong positive effect on trade, more significant than a reduction of tariffs.

Another study that has assessed the impact of mutual recognition in the motor vehicle industry is the study by the Centre for Automotive Research (CAR).⁶⁴⁶ They have estimated the cost of compliance with both US and EU vehicle safety regulation, as well as assessed the potential cost savings and benefits of mutual recognition of these safety regulations. Compared to the Peterson study they have only analysed safety regulations, and not theft or emission regulations. They calculated that total costs (EU and US combined) incurred from differences in safety regulations was between \$3.3 and \$4.2 billion in 2014. When comparing these with the costs related to tariffs it becomes once more clear that the regulatory burden is much larger than the tariff burden. The CAR study calculated that the total tariff costs equalled \$1.6 billion in 2014.

⁶⁴⁵ Freund, C. and Oliver, S., 2015. Gains from harmonizing US and EU auto regulations under the Transatlantic Trade and Investment Partnership.

⁶⁴⁶ Centre for Automotive Research, 2016. Potential cost savings and additional benefits of convergence of safety regulations between the United States and the European Union.

The industry associations have also indicated that the largest gain for the motor vehicle industry will come from regulatory cooperation. Toyota for example, indicated that for one of their cars, around 500 adjustments need to be made before the car can be sold on the US market. If (part of) these small differences in regulation can be overcome, it would save an enormous amount of time and additional costs. Not only in terms of adjusting the car, but also in terms of testing the car a second time. Compared to other industries, the motor vehicle industry associations on both sides of the Atlantic are more aligned in terms of what they aim to get out of TTIP.

11.4.3. *Expected social impacts*

For both the EU and the US the expected impacts on labour are in line with output impacts. In the EU both low skilled and high skilled employment is expected to increase by 0.1 percent in the less ambitious scenario. For the ambitious scenario employment for high skilled (1.3 percent) is expected to increase slightly more than for low skilled (1.2 percent). In the US low skilled employment is estimated to decrease by 0.7 and 2.9 percent for the less ambitious and ambitious scenario respectively. High skilled employment is also expected to decrease in both scenarios, but slightly less than low skilled employment. Since total output is expected to decrease in the US sector, it is likely that fewer employees are needed and consequently we see a drop in both low and high skilled employment. Note that the earlier remark from the motor vehicle industries made on the estimated output impacts of the US also applies to the employment impacts. Since they expected the US industry to gain from the agreement in terms of output, they think that the US industry is more likely to see its employment increase instead of decrease. According to industriALL, the expected employment impacts are rather difficult to estimate, but will in any case be small. A full reduction of tariffs could lead to a slightly negative impact on employment, since EU tariffs are higher than US tariffs. The US would be able to benefit more from increased market access than the EU. Mutual recognition, on the other hand, could lead to an increase in employment. Depending on the intensity of mutual recognition, the positive impacts on employment could cancel out the negative impacts resulting from a tariff reduction.

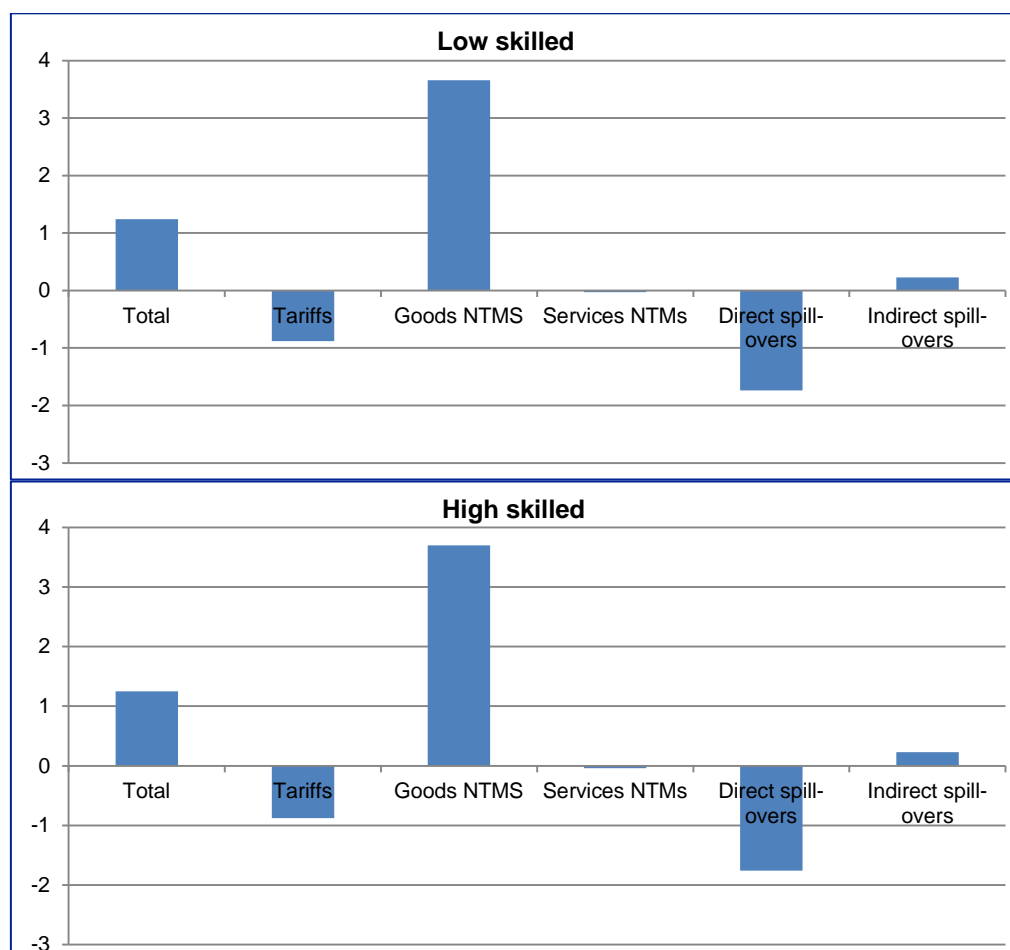
Table 11.12 Expected employment impacts, 2030

	EU ambitious	EU less ambitious	US ambitious	US less ambitious
Low skilled	1.2%	0.1%	-2.9%	-0.7%
High skilled	1.3%	0.1%	-2.8%	-0.6%

Source: Updated CEPR results.

Similar to the total impacts, the decomposition of the employment impacts follow the decomposition of the output impacts. The largest contributor to the increase in EU employment stems from the reduction of NTMs on goods, and the direct spill-overs have once again a negative impact on employment (Figure 11.12).

Figure 11.12 Decomposition of the EU employment results, ambitious scenario



Source: Updated CEPR results.

Next to the industries, consumers are also expected to gain from the agreement. The motor vehicle industry is a highly competitive market and companies have a strong drive to produce efficiently and save costs. By converting the cost reductions – due to TTIP – into lower prices, companies can improve their competitiveness position. It is therefore likely that the cost reductions will (partially) be passed on to consumers. Moreover, consumers can also benefit from more choice. It is true that the US market is generally more focussed on e.g. big rangers, SUVs or minivans, and that the EU market is more focussed on e.g. smaller cars and smaller engines, although in both countries there are nice markets for both small and large type of vehicles. Over time both the EU and the US have increased their demand for each others cars. According to ACEA it is therefore not unlikely that the variety of consumer choice in both countries will increase. The view of lower prices and an increase in product variety is also supported by the Peterson and CAR study.

11.4.4. Expected environmental impacts

The expected impacts on air pollutants in the motor vehicle sector are presented in Table 11.13 below. It is important to note that these results do not come from the CGE modelling. The study team has used the CGE output impacts in order to calculate the expected increase in air pollutants. The baseline air pollutants are taken from WIOD. These results do thus not stem from complex modelling, but are solely a reflection of the increase in output on the baseline emissions, and thus only present the scale effect. Consequently the emission of air pollutants in the EU are expected to increase and the emission of air pollutants by the US sector are expected to decrease. In absolute terms the largest increases in the EU are expected in the emission of Nitrogen Oxides, Carbon Monoxide and in Non-Methane Volatile Organic Compounds. Additional to the direct increase of air pollutants it is likely that there will also be an indirect effect on the emission of air pollutants. As exports and imports are expected to increase, additional transportation is needed to transport the goods to their new destination, resulting in increased pressure on the environment in terms of air or water pollution.

Table 11.13 Expected impact on air pollutants, 2030

	CO2	CH4	N2O	NOX	SOX	CO	NM VOC	NH3
EU baseline	19,791	4,306	605	43,428	10,145	49,926	398,976	154
EU less ambitious scenario	45.5	9.9	1.4	99.9	23.3	114.8	917.6	0.4
EU ambitious scenario	292.9	63.7	9.0	642.7	150.1	738.9	5,904.8	2.3
US baseline	20,098	2,397	822	72,470	15,451	194,273	87,224	403
US less ambitious scenario	-128.6	-15.3	-5.3	-463.8	-98.9	-1,243.3	-558.2	-2.6
US ambitious scenario	-576.8	-68.8	-23.6	-2,079.9	-443.4	-5,575.6	-2,503.3	-11.6

Note: CO2 emissions are reported in thousand tons, all other emissions in tons.

However, as indicated the above numbers only present the scale effect, i.e. the change in the emission of air pollution due to the change in output. The total environmental impact depends on the scale, composition and technique effect. The composition effect presents the change in the emission of air pollutants, due to a shift of production from one sector to another. This change can be either positive or negative, depending on whether the production shifts to more polluting sectors or less polluting sectors. The technique effect is generally negative and shows a reduction in the emission of air pollutants due to innovation and/or greener technology. This technology effect can be brought about in several ways. For example, in their fact sheet, the European Commission has indicated that they aim to set harmonised regulations for new technologies or in areas where there are no regulations yet. Electrical vehicles is such an area. It would benefit both producer and customer if the EU and the US can already set harmonised standards instead of developing two different sets, as producers would not need to comply with two different sets of regulations and test the vehicle twice. Not only could there then be more choice in terms of electrical vehicles on both markets, but they can also be supplied at lower prices. This can make it more interesting for consumers to switch from a diesel or gasoline car to an electrical car. Though a necessary condition to make electrical vehicles more attractive is of course the present of sufficient charging points for the car. Also, AACP has indicated that although more cars are produced and consumed, increased trade has also brought increased efficiency, both in the production process itself and in the car's usage. This increased efficiency has resulted in less pollution during the production process and while using cars. Moreover, new and less polluting cars that enter the market, often replace the older and more polluting ones. Over the past ten years environmental pollution in the production process has decreased.⁶⁴⁷ Although the exact environmental impact is thus not known, it is not likely that TTIP will lead to (any significant) negative impact on the environment in the long run.

11.4.5. Expected global impact

The total impacts, as presented above, also include direct and indirect spill-overs, i.e. the extent to which third countries benefit from the TTIP agreement. The direct spill-overs indicate the gain for third countries because of more aligned EU and US regulation when third countries trade with the EU and the US. According to Taeho Bark (2015)⁶⁴⁸ this could especially be beneficial for Korea, given its trade with the TTIP countries. Morocco, Mexico and South Africa are also countries that could gain from TTIP regarding the automotive industry. These countries are highly integrated in either the EU or the US motor vehicle value chain, and a significant share of exports is destined for the EU and US market (IFO, 2015).⁶⁴⁹ Because of this, a reduction in transatlantic barriers could be beneficial for these countries and lead to increased trade with TTIP countries. One precondition is however, that mutual recognition is extended to third countries as well, and not only applicable to EU and US products. Meaning that products from third countries complying with EU regulations and standards will be accepted on the US market as well, and vice versa. If this is not the case it could negatively impact third countries as it

⁶⁴⁷ ACEA, pocket guide 2015-2016.

⁶⁴⁸ CEPR and TEPAV, 2015. Catalyst? TTIP's impact on the rest.

⁶⁴⁹ Felbermayr, G. et al. (2015). Mögliche Auswirkungen der Transatlantischen Handels- und Investitionspartnerschaft (TTIP) auf entwicklungs- und schwellenländer. IFO Institut.

would result in a barrier to enter the transatlantic market.⁶⁵⁰ In addition it would not encourage third countries to adopt EU/US regulation. This would make it harder to realise one of TTIP's goals, that is, setting global standards.

The indirect spill-overs indicate the gains for third countries because of more aligned EU and US regulation when third countries trade amongst themselves. When multiple third countries adopt the aligned EU/US regulations and standards they cannot only use them when trading with the EU and the US but also when trading with other third countries who have adopted the aligned EU/US regulations and standards. In this way third countries would need to adjust their production process fewer times.⁶⁵¹ In a sector where many different parts and components from different parts of the world are needed to produce a final product, the use of global standards would be beneficial for third countries as well.

Both the EU and the US already import a large share of intermediate products from Asia. However, if these products now become similar to the EU and US products and no or fewer adjustments are needed before they can be used, it becomes more interesting to import parts and components from countries outside the EU or US. Perhaps from countries where the parts and components are produced more cheaply. Toyota has pointed out that this increased flexibility is not only useful in terms of trade. In the case of major events like an earthquake, or a flood, entire production plants could be shut down. As inputs can no longer be delivered to the next manufacturer, inputs are quickly needed from other suppliers from other countries. This will of course be more easier in the case of global standards.

According to AACP it is not likely that TTIP would lead to trade being diverted from third countries for several reasons. Normally a removal or tariffs between two partners could be harmful for third countries who trade with the former and who do not face any tariffs. This could result in more competition for these third countries. However, the average tariff in the motor vehicle sector is rather low. According to ACCP these tariffs are low enough, so that a reduction of them would not have any large impact on third countries. Moreover, third countries are often focussed on different products and stages in the supply chain, than the EU and the US are. Indicating that an improvement in EU/US trade conditions would not directly affect third countries.

When NTMs are reduced, additional time and resources (both money and man power) could be used in more effective ways, e.g. for on research and development. When more time and resources are spent on R&D and innovation, the EU industry could improve its production efficiency and its competitive position. The industry could now also improve its productivity by making more use of returns to scale, as they would need to produce one car instead of two when supplying to the transatlantic market. (Peterson, 2015). Given the fact the US has significantly improved its competitiveness position over the past years, mainly due to the decreased gas and oil prices, and is producing more efficient than EU firms at the moment (see section 11.2.6), this could be a welcome boost to the EU industry in order to strengthen its competitiveness position. Additional to direct cost savings, removing regulatory barriers could also bring other benefits. For example, it creates lower barriers to introduce a vehicle on the partner's market. It also creates more opportunities for SMEs to enter new markets (CAR, 2016).

11.5. Conclusions and recommendations

The motor vehicles sector is one of the largest EU sectors in terms of turnover and value added. The sector has strong ties with the US, which is its number one export destination. Trade with the US is however not free of barriers. Besides tariffs (tariffs levied by the US range from 0 to 1.6 percent) the sector has to deal with several NTMs. Several of these issues are differences in safety regulation, need for double certification, or differences in emission standards. These NTMs add an additional 27 percent to the cost of trade and investment. The reduction of trade barriers could clearly benefit the EU motor vehicle sector. In the case of an ambitious scenario the EU's output would increase by 1.5 percent and its exports and imports by more than 40

⁶⁵⁰ CEPR and TEPAV, 2015. Catalyst? TTIP's impact on the rest.

⁶⁵¹ Assuming that third countries also trade with countries who have not adopted the aligned EU/US regulations and standards.

percent. Also low skilled and high skilled employment is expected to increase, by 1.2 and 1.3 percent, respectively. Besides changes in employment, consumers are also expected to gain from the agreement in terms of lower prices and a larger variety of products. The US is however expected to see a decline of 2.9 percent in both output and employment in the ambitious scenario. Trade on the other hand, is expected to increase. Stakeholder and results of other studies have indicated that the negative impacts for the US are not likely to occur. The output and employment in the US sector is expected to also increase. It is more likely that TTIP will be a win-win for both the EU and the US sector. The difference in study outcomes is mainly related to the different (baseline) data used for the analyses. The baseline data on NTMs and competitiveness as used in the modelling stems from the Ecorys (2009) study. The outcomes of the Peterson and CAR study are based on real impact data of regulatory cooperation and on current regulatory costs in the motor vehicle sector. While this impact assessment analyses the reduction of tariffs and NTMs, the Peterson study assessed the impacts of uniform safety, anti theft and emission regulations, whereas the CAR study solely looked at safety regulation. Given the changes in the US market since 2009, the expert views of stakeholders and the outcomes of other studies, we believe that the US motor vehicle sector could be positively impacted as well in terms of output in employment. The impact on the environment is, however, less clear. On the one hand, increased production could lead to increased environmental pressure in terms of an increase in air pollutants and resources used. Whereas, on the other hand, pollution could be reduced by means of improved technologies. For example, additional time and resources available due to TTIP could be used to improve the production efficiency or stimulate R&D with respect to electric cars. During the past years pollution has already decreased in the sector, due to increased efficiency in the production process and the replacement of old polluting cars by new and greener cars.

Based on the above analyses and outcomes the following recommendations are proposed:

1. Given the significant impacts in the ambitious scenario and the large differences with the expected impacts from a less ambitious scenario, we suggest to negotiate an ambitious TTIP agreement for the motor vehicle sector. An ambitious scenario in the motor vehicle sector should include a reduction of both tariffs and NTMs. As the European Commission is currently negotiating a reduction in tariffs and increased cooperation regarding safety regulations, we recommend to continue with this approach and not to lower the ambition for the motor vehicle sector.
2. The decomposition of the results has shown that the tariff reduction will have a slight negative impact on EU employment and output. This is more than compensated for by the positive impact stemming from a reduction in goods NTMs. We therefore recommend the European Commission to go beyond tariff reduction and also include regulatory cooperation in the motor vehicle sector in the agreement.
3. Currently the TTIP agreement looks only at differences in safety regulations, not at differences in emission or fuel efficiency regulations. Although the safety regulations are more important in terms of cost savings, the alignment or mutual recognition of emission regulations could lead to additional cost savings as well as environmental benefits for society. While these regulations are currently too divergent to discuss in the TTIP negotiations, alignment or mutual recognition of emission regulations could be reconsidered in the future, should regulatory cooperation in the sector be beneficial. In case the European Commission does opt in the future to also align emission standards, this should be done without compromising the current environmental standards.
4. We have not found any significant negative impacts on third countries with regards to the motor vehicle industry. However, in order for third countries to also benefit from the agreement, it is suggested to extend the mutual recognition to third country product's complying with either EU, or US standards.

12. Potential TTIP impact on the maritime and air transport services sectors

12.1. Introduction

This sector analysis will give an overview of the maritime and air transport services sector in the EU, and will discuss the potential impacts of TTIP on the sector. The first section will give an overview of the economic, social, and environmental baseline situation in the maritime and air transport services sector in the EU. The second section will discuss the main trade barriers and service restrictions to EU-US trade and investments that are in place in the sector. These two sections will provide the basis for the sectorial impact assessment in section 12.4.

Box 12.1 Take away from this chapter

- The US is the most important export destination for both the EU maritime and air transport sector. Exports in 2012 were respectively €19,602 million and €12,170 million;
- EU transport companies have no access to the US domestic (cabotage) market because of The Jones Act. Transport of cabotage between US points in national waters can exclusively be done by vessels that are built, owned, crewed and documented by the US. On the contrary, intra-EU maritime transportation (i.e. between Member States) is free;
- The EU air transport sector faces market access restrictions due to ownership restrictions in the US.
- An ambitious TTIP scenario could lead to a 0.9 percent increase in the EU maritime transport sector's output. Exports and imports are expected to increase by 1.2 and 1.3 percent respectively. Output in the air transport sector is expected to grow by 0.4 percent. The changes in export and import are respectively 1.1 and 0.7 percent.
- High skilled and low skilled employment is expected to increase by 1.3 and 1.2 percent respectively in the EU. Also consumers are expected to gain from the agreement in terms of lower prices and increased product choice. Additional employment of 0.4 percent for both low skilled and high skilled is expected in the EU maritime transport sector. In the air transport sector this equals 0.1 percent.

12.2. The maritime and air transport sectors in the EU

12.2.1. Overview of the sectors

The sector definition used in the CEPR (2013) report, water transport and air transport, corresponds to GTAP sectors 49 and 50, and NACE codes H50 and H51.

Table 12.1 Sector definition

Sector selection (CEPR, 2013)	GTAP-57	ISIC (rev. 3)	NACE (rev. 2)
Water transport	49	61	H50
Air transport	50	62	H51

NOTE: this sector study only includes transport services, not the manufacture of maritime or air transport equipment.

When following the NACE definition, the maritime transport sector consists of both inland and sea transport and of both freight and passenger transport. The same applies to the air transport sector: following the NACE definition, it contains both freight and passenger transport. This sector study will thus focus on the transport of both freight and passengers and not on related services like e.g. dredging.

12.2.2. Economic structure of the sectors

The maritime transport sector recorded a turnover of €112.9 billion in 2013, and produced €23 billion of value added. The majority of turnover and value added can be attributed to the transportation of freight, for which a turnover of €92 billion was recorded, while passenger transport contributed €21 billion of total turnover (Annex V). Table 12.2 shows that turnover increased until 2008, then saw a drop in 2009 and increased again to pre-crisis levels in 2012. In terms of the geographical breakdown, turnover in the maritime freight transport sector is the largest in Germany, followed by Denmark and France. Global trade is dominated by a number of large shipping companies, such as A.P. Møller Maersk from Denmark, CMA CGM from France and Hapag Lloyd from Germany.⁶⁵² Therefore it is not surprising that these countries have the largest share of EU turnover in the sector. The sector employed 180,000 employees in 2012, compared to the previous years, this is relatively low. Since the crisis period, the number of employees has been decreasing. As expected there are more employees active in freight transport than in passenger transport (100,200 and 79,800 respectively). The International Transport Workers' Federation pointed out though, that a large share of the jobs in the EU maritime transport services sector is taken up by Filipinos and not by Europeans. Indicating that the number of European employees working in the EU sector is much lower than 180,000

Table 12.2 Overview of the maritime and air transport sector (million €)

	2006 ⁶⁵³	2007	2008	2009	2010	2011	2012	2013
Maritime transport								
Turnover (million €)	98,612	110,041	117,210	95,118	109,020	112,313	117,160	112,942
Value added (million €)	21,792	25,944	27,069	19,531	-	-	21,334	23,000
Number of employees (x100)	1,856	1,969	1,980	1,954	1,995	1,900	1,800	-
Air transport								
Turnover (million €)	120,676	128,399	132,031	111,512	120,755	126,808	133,878	138,184
Value added (million €)	30,524	30,000	26,370	22,805	28,170	28,137	26,195	28,094
Number of employees (x100)	4,093	4,110	4,097	3,763	3,713	3,724	3,617	3,477

Source: Eurostat SBS data.

The air transport sector recorded a turnover of €138.2 billion in 2013, and produced €28.1 billion of value added. Contrary to the maritime transport sector, the air transport sector's turnover is largely derived from passenger transport (€125.1 billion turnover), and not so much from freight transport (€13.1 billion turnover) (Annex V). The largest countries in terms of turnover in the air transport sector are United Kingdom, France and Germany. When looking at the number of passengers transported per year the largest airlines in 2014 can be found in Ireland (Ryanair, 90 million), in Germany (Lufthansa, 77 million) and in UK (EasyJet, 65

⁶⁵² <http://www.ship-technology.com/features/featuremega-shippers---the-worlds-10-biggest-shipping-companies-4518689/>; <http://www.therichest.com/rich-list/the-biggest/the-biggest-shipping-companies-in-the-world/>.

⁶⁵³ Data for the years 2008 till 2010 contains EU27, data from 2011 onwards contains EU28. Applies to all Eurostat SBS data.

million).⁶⁵⁴ In comparison the three largest US airlines transport 136 to 171 million passengers per year. The number of employees active in the air transport sector equalled 347,700 in 2013, which is much more than in the maritime transport sector. Just like in the maritime transport sector the number of employees has been fluctuating ever since. The difference between freight and passenger transport is much clearer in air transport sector. While there were 327,300 persons employed in 2013 in passenger transport, there were only 20,500 employed in freight transport.

Table 12.3 depicts the size distribution of the sector by both turnover and value added. For both the maritime and air transport sector the majority of the firms are small scale enterprises, relatively speaking there are only a few large enterprises.

Table 12.3 EU28 size class data 2011

	Total	1-9 employees	10-19 employees	20-49 employees	50-249 employees	250 or more employees
Water transport						
Number of enterprises	21,306	18,832	1,100	800	400	134
Turnover (million €)	112,313	17,361	-	7,630	-	-
Number of persons employed (million)	2,170	382	133	228	420	1,004
Air transport						
Number of enterprises	-	1,009	245	236	186	118
Turnover (million €)	126,808	2,424	1,377	3,632	10,587	108,788
Number of persons employed (million)	3,750	58	34	74	220	3,364

Source: Eurostat SBS data.

International dimension

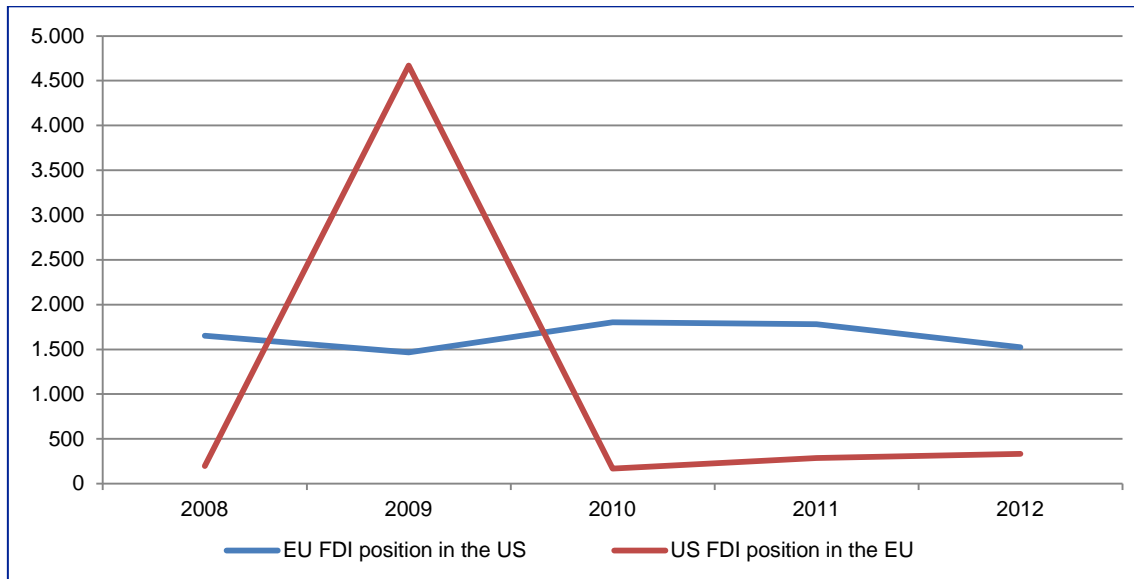
When compared with other services sectors, outward investment in both the maritime and air transport sector is relatively small. In 2012, the EU Outward FDI position for all services equalled €7.6 trillion, whereas the EU OFDI in maritime transport amounted €37.2 billion, and in the air transport sector €19.4 billion.⁶⁵⁵ Figure 12.1 and Figure 12.2 show the investment position of the EU maritime and air transport sector with regards to the US.

The EU maritime investment position in the US has been rather stable over time, ranging from €1.5 to €1.8 billion. The investment position of the US maritime sector in the EU is much smaller. Except for the year 2009, the value of the investment position ranges from €170 to €335 million. For the year 2009 Eurostat however, reports an investment position which is more than tenfold the value reported in other years. It is most likely that there is an error in the 2009 data. Indeed, stakeholders have indicated that is highly unlikely that the US investment position of €4.7 billion is correct, since the US is only a small investor in the EU maritime transport services sectors.

⁶⁵⁴ Airline Business.

⁶⁵⁵ Eurostat, direct investment position

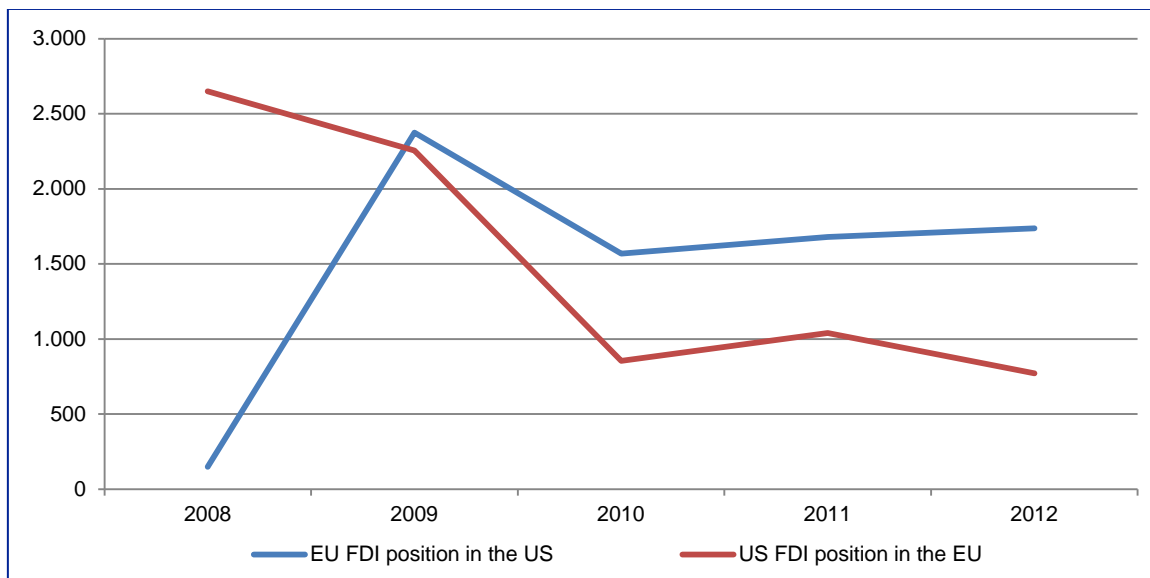
Figure 12.1 Maritime transport EU-US investment position (million €)



Source: Eurostat, European Union direct investments

Compared to the maritime transport sector, the EU and US investment position in the air transport sector is less stable. The EU investment position in the US has increased significantly from €149 million in 2008 to €2.4 billion in 2009. After a drop in 2010, the sector is now slowly strengthening its position again. The US investment position on the other hand, has only been decreasing. While the investment position amounted €2.6 billion in 2008, it only amounted €771 million in 2012.

Figure 12.2 Air transport EU-US investment position (million €)



Source: Eurostat, European Union direct investments

As illustrated by the data in Table 12.4, the European maritime transport sector is very much internationally oriented. From 2008 till 2012 the value of total exports exceeded the value of turnover made in the sector. Also the value of total imports as a share of turnover value is high, on average 82 percent. These numbers are lower in the air transport sector; the value of total exports equals between 64 percent and 70 percent of turnover value, for imports the shares are lower and amount to around 59 percent.

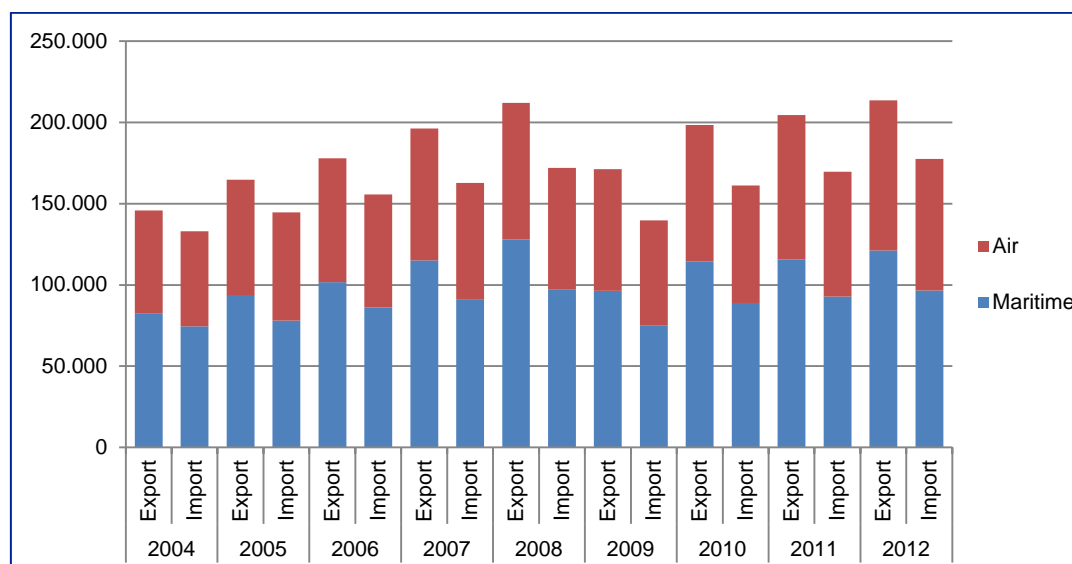
Table 12.4 Export and import as share of turnover

Europe	2008	2009	2010	2011	2012
Maritime transport					
Export as share of turnover	109%	101%	105%	103%	103%
Import as share of turnover	83%	79%	82%	83%	82%
Air transport					
Export as share of turnover	64%	67%	70%	70%	-
Import as share of turnover	56%	58%	60%	61%	-

Source: Eurostat.

Total exports in the transport sector have been growing over time until 2009, when they dropped sharply, subsequently recovering to pre-crisis (2008) levels in 2012. The same trend can be seen with regards to imports in the sector. This overall pattern for the transport sector can be seen in the maritime and air transport sector as well (Figure 12.3). Until the crisis exports in the maritime transport sector grew on average by 11 percent per year, however, in 2009 exports dropped by 25 percent. Overall, in the period from 2004 till 2012 total exports grew by 47 percent. Imports grew to a lesser extent, on average 7 percent, but saw also a drop of 23 percent in 2009. Export growth in the air transport sector equalled 7 percent until 2009, when the air transport sector also saw a sharp decrease in exports by 11 percent. However, in contrast to the maritime transport sector, the air transport sector recovered faster from the crisis and experienced an average growth rate of 7 percent per year in the period from 2010 till 2012. Also with respect to imports the air transport sector recovered faster, the average growth rate per year after the crisis exceeded the pre-crisis growth rate (6 vs. 8 percent).

Figure 12.3 Europe's export and import over time (million €)

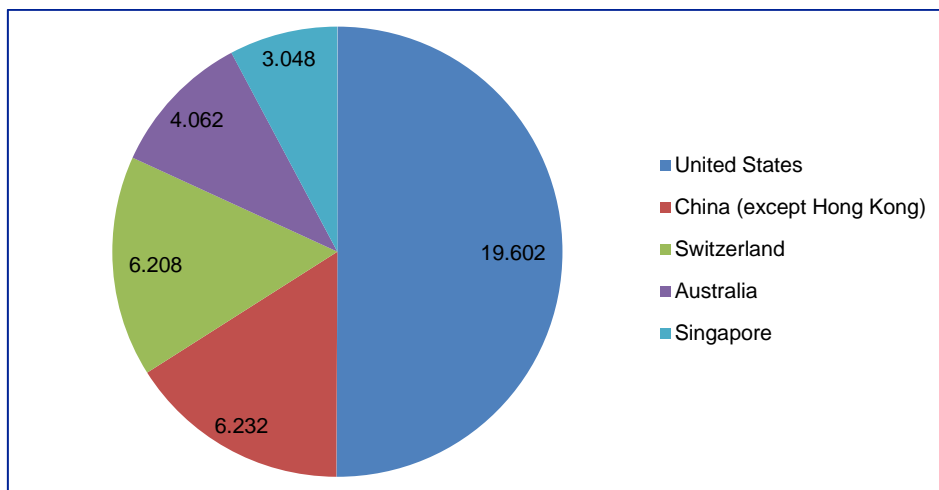


Source: Eurostat.

In 2012 total exports in the maritime sector equalled €121 billion, the most important export destination was the US. As can be seen from Figure 12.4, the value of exports to the US is three times as large as the value of exports to the number two export destination, China. After the US the most important export destinations are China, Switzerland, Australia and Singapore. The majority of the services that are exported are the transport of freight, which accounts for 85 percent of total exports. The other 15 percent consist of passenger transport (12 percent) and auxiliary services to transport (3 percent). Whereas the value of exports of the latter two remained steady in the period from 2004 till 2012, the value of exports in freight transport

increased by 53 percent. Also for the export destinations indicated above, freight transport takes up the largest share of exports.

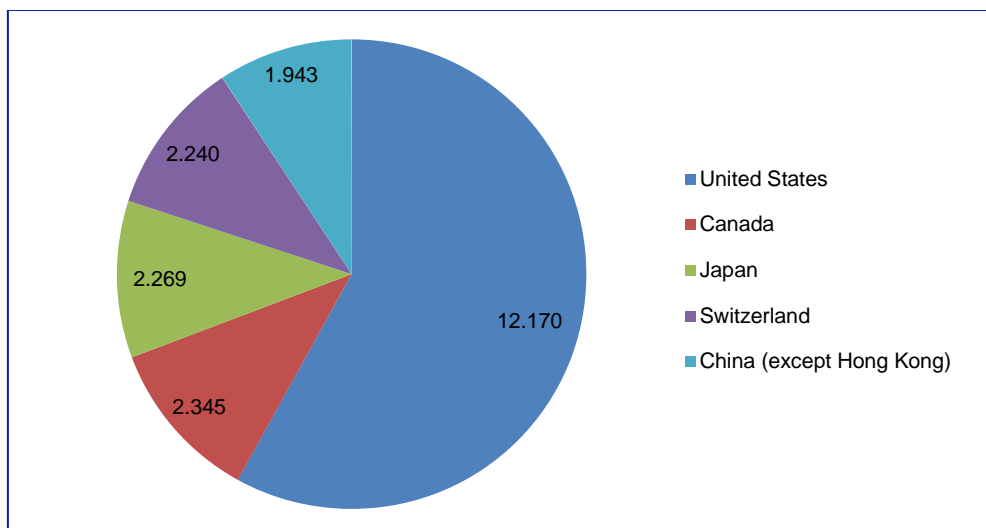
Figure 12.4 Top 5 export destinations outside EU28 in 2012, maritime transport (million €)



Source: Eurostat.

The value of total exports of the air transport sector in 2012 amounted to €92 million. The top export destinations of the EU are the US, Canada, Japan, Switzerland and China. Whereas the importance of the US is clearly visible, the value of exports to the other countries lies closely together. When taking a closer look at the different kind of services exported we see that the larger share of services exported is passenger transport, accounting for 57 percent of total exports. The other 43 percent consists of auxiliary services (30 percent) and freight transport (13 percent).

Figure 12.5 Top 5 exports destinations outside EU28 in 2012, air transport (million €)



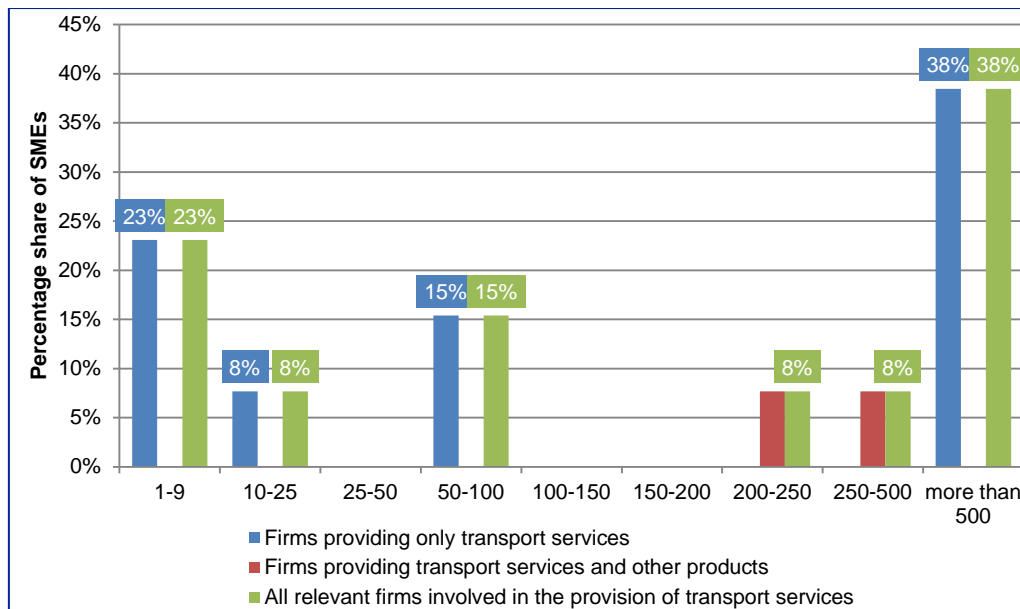
Source: Eurostat.

SME survey

In cooperation with the European Commission, Ecorys conducted an SME survey in the context of the TTIP agreement. The results of the survey are used as additional input, next to the Eurostat SBS database, to give an insight in the sector and its structure, particularly as it relates to SMEs. The first part of the SME survey contained general questions on the size and structure of the companies that took part in the survey. It should, however, be noted that, although there was a large number of responses to the SME survey, only few stemmed from the maritime and air transport sector. With a number of 13 respondents these figures presented below are not representative for the whole industry but merely give a view of the few firms that

did respond. Figure 12.6 shows the size distribution of survey respondents within the maritime and air transport sector.⁶⁵⁶ Almost half of all respondents appear to be small or medium size scaled firms (100 employees or less), and about 38 percent are large size enterprises with over 500 employees.

Figure 12.6 Size distribution of the survey respondents (2013), N=13

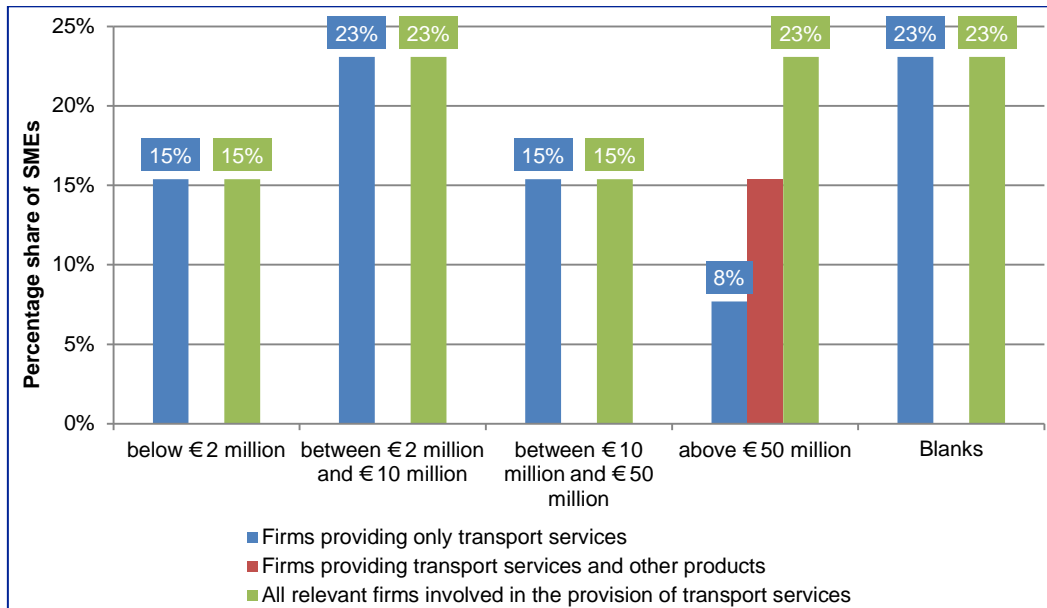


Source: European Commission and Ecorys SME survey 2014.

When looking at the total turnover generated by these respondents in 2013, we see that the turnover reported is quite equally distributed over the different turnover categories. The respondents that reported to generate a turnover of €2 million, and between €2 and €10 million were mostly firms with either 1 to 9 employees or with 10 to 25 employees. The respondents that indicated to have a turnover between €10 and €50 million or more were firms who employed 200 or more persons, except for one respondent who employed between 50 and 100 persons. Although this division seems logical, these numbers are not representative for the sector as a whole as indicated earlier, while the Eurostat data in Table 12.3 is.

⁶⁵⁶ Due to the small number of respondents in the sector and the fact that the majority of the firms that replied are active in both transport sectors, maritime and air transport are grouped together.

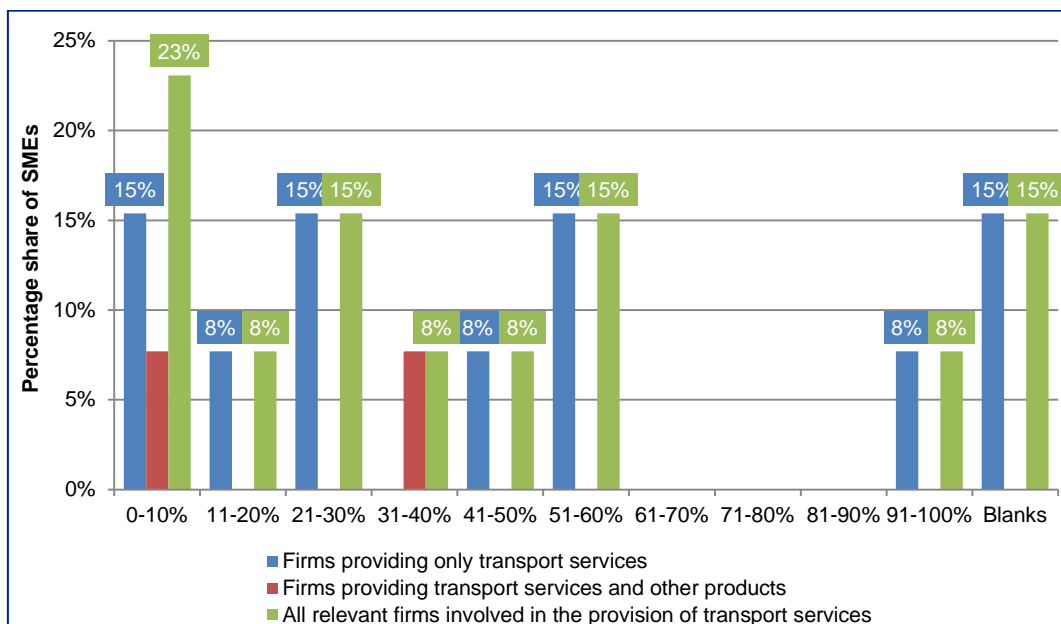
Figure 12.7 Turnover of survey respondents (2013), N=13



Source: European Commission and Ecorys SME survey, 2014.

The second part of the SME survey focussed on the international aspect of the sector, i.e. exports, with a particular focus on the US. Of all the firms in the maritime and air transport sector that replied to the survey, 85 percent indicated that they do export to a country outside the EU (of which 77 percent directly and 8 percent via an intermediary), 16 percent indicated that they currently don't export at all, but might do so in the future. Although the majority of the firms do export, the share of total services exported does differ a lot. As can be seen from the figure below, the larger share of respondents exports only 0-10 percent of its total sales, and one respondent exports 91-100 percent of its total sales and all other respondents export 11-60 percent of total sales. When we take a closer look at the SME survey data we see that the firm that exports the majority of its sales, is actually a small scale firm with only 1-9 employees.

Figure 12.8 Share of total sales exported outside Europe (2013), N=13



Source: European Commission and Ecorys SME survey, 2014.

In addition, the survey asked the respondents which share of their exports is destined for the US. About one quarter indicated that they do not export any services to the US, whereas almost half of the respondents did.⁶⁵⁷ They exported between 0.1-25 percent of total sales to the US.

12.2.3. Value chains and fragmentation of the supply chain

Compared to goods manufactured, the supply chain for services is less straight forward. With a product that is build from scratch it is more clear to see what the exact process is (i.e. a raw material that undergoes a series of transformations, additions, assembly, etc. to become a final product) than with a service provided. For services, there are several actors, actions, goods and consumables that come together to provide a service.

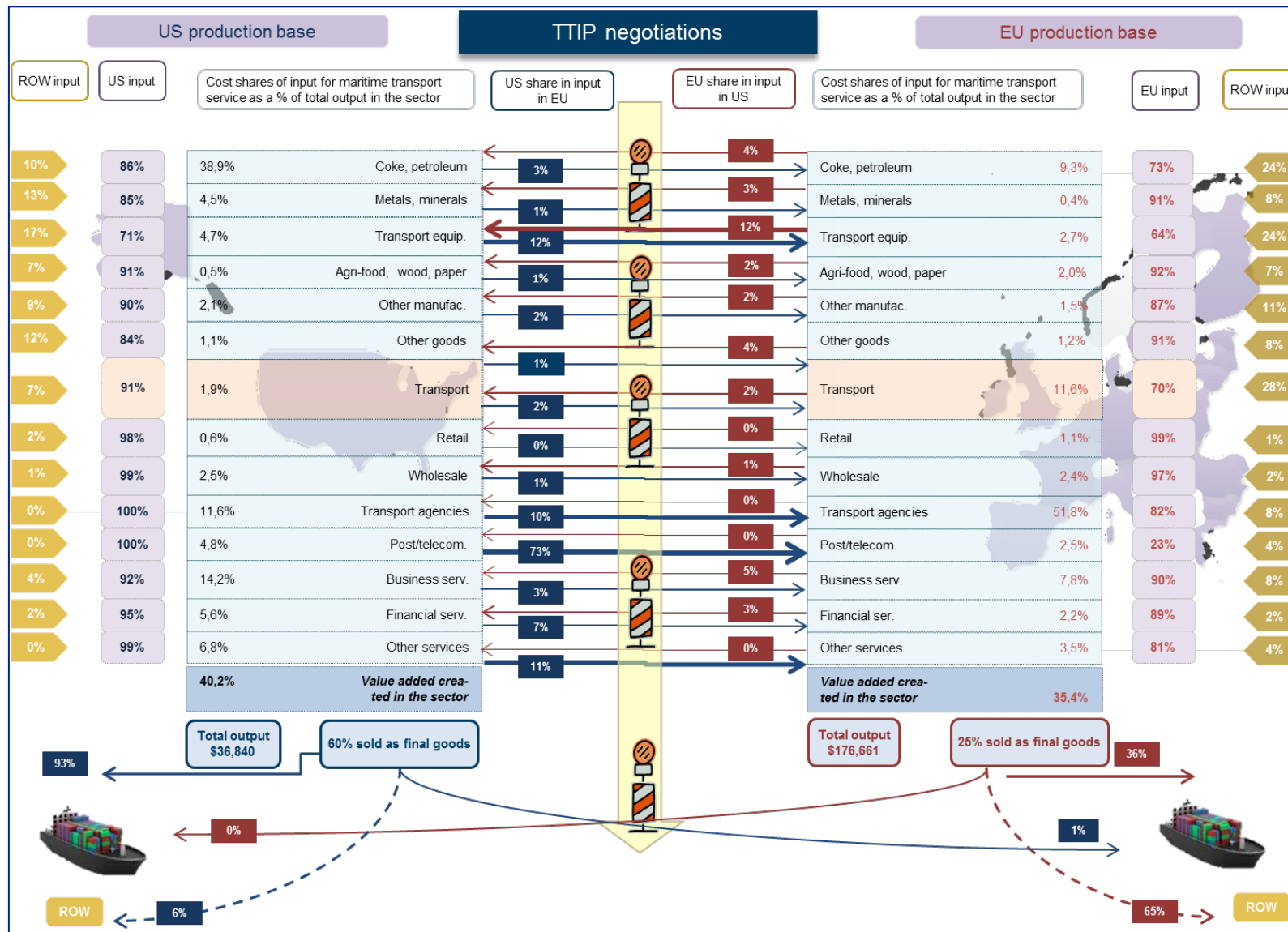
As the name indicates, transport services are used to transport goods and persons from one place to another. Raw materials are transported to factories, intermediates are transported to new factories, and final goods are transported to the consumer or warehouses. However, by making use of WIOD we can provide an overview of the supply chain in both service sectors and indicate the main inputs used to provide the service and where the inputs are sourced from. While we will only discuss the outcomes of this figure, a more general explanation of this figure and how to interpret it can be found in Chapter 6.

Maritime transport services

Figure 12.9 indicates that the EU maritime transport service sector clearly makes intensive use of transport agencies; the latter accounts for 52 percent of total cost share of inputs used. The two other inputs that have a relative large cost share in total output are transport services (11.6 percent) and coke and petroleum (9.3 percent). When looking at the region of sourcing for inputs used in the sector, the first noticeable thing is the large share of post and telecommunication services that is sourced from the US, namely 73 percent, while only 23 percent of inputs are sourced domestically. Also transport equipment, transport agency services and other services are sourced to a large extent from the US. From the RoW, the EU sources mainly coke and petroleum, transport equipment, and transport services.

⁶⁵⁷ 30 percent did not reply to this question.

Figure 12.9 Global value chain, maritime transport (2011)



Source: WIOD, author's calculations.

On the US side, the cost shares of inputs used are rather different. The largest input cost share is for coke and petroleum (38.9 percent), followed by business services (14.2 percent) and services from transport agencies (11.6 percent). When looking at the source country of all intermediate goods and services, we see that the US is much more domestically oriented than the EU. The input from other services is almost completely sourced domestically, ranging from 91 percent to 100 percent. Only transport equipment is to a larger extent sourced from the EU (12 percent). The intermediates that have a relatively large share of RoW sourcing are transport equipment (17 percent), metals and minerals (13 percent) and other goods (12 percent).

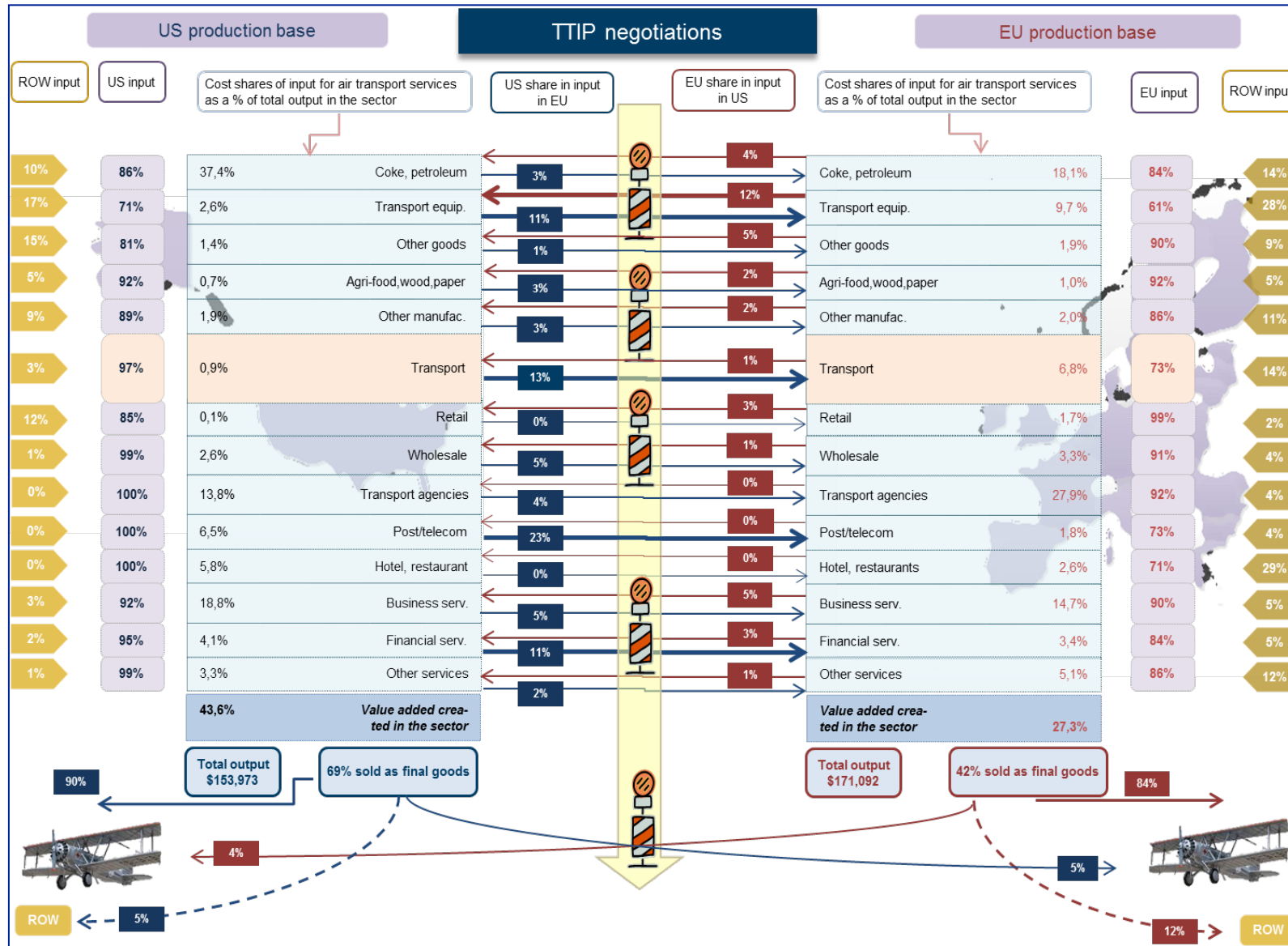
In 2011 the EU sector generated an output of \$176,661 million, of which 35.4 percent was value added. The EU sold 25 percent of its total output as final goods (the other 75 percent was sold as intermediate input), of which the majority went to the RoW (65 percent) and none to the US. The US sector on the other hand only generated an output of \$36,840 million, but had a higher share of value added (40.2 percent). Contrary to the EU, the US sold 60 percent of total output as final goods, of which 93 percent was sold on the domestic market.

Air transport services

The EU air transport services sector also makes intensive use of inputs from transport agencies services to produce an average service, it accounts for 27.9 percent of costs shares of total output (Figure 12.10). The other inputs that have high cost shares are coke and petroleum, business services and transport equipment. These inputs also make up the majority of the cost shares of total output (70 percent) on the US side. When considering the sourcing countries for inputs used in the air transport service sector we see that, relatively speaking, the EU sources a substantial share from the RoW; 29 percent of all hotel and restaurant services input, 28 percent of all transport equipment input, and 14 percent of all coke and petroleum, and transport services input is sourced from the RoW. In addition, a substantial share of inputs is sourced from the US, including post and telecommunication services (23 percent), transport services (13 percent), transport equipment (11 percent), and financial services (11 percent). In contrast, the US air transport sector sources less inputs from the RoW and the EU, and sources more domestically. The products and services that are sourced relatively intensively from the RoW are transport equipment (17 percent), other goods (15 percent), retail (12 percent), and coke and petroleum (10 percent). The main products that the US sources from the EU are transport equipment (12 percent), other goods (5 percent), and business services (5 percent).

In 2011, the EU sector generated a total output of \$171,092 million, of which 27.3 percent was value added. The EU has sold 42 percent of total output as final goods to the EU (84 percent), US (4 percent) and the RoW (12 percent). In contrast to the maritime transport sector, the US has generated a similar amount of total output, namely \$153,973 million. The share of value added is much higher than in the EU sector, namely 43.6 percent.

Figure 12.10 Global value chain, air transport (2011)



Source: WIOD, author's calculations.

12.2.4. Social perspective

Table 12.5 provides an overview of the division of labour costs in the EU transport sector. It is clear from the table that the larger share of personnel costs consists of wages and salaries and only a small part of social security costs. Since maritime transport services mainly focus on freight transport, it is not surprising that about two thirds of labour costs are attributed to the latter. In the case of air transport, the larger share of labour costs is attributed to passenger transport.

Table 12.5 Labour costs in the EU transport sector, million €

	2008	2009	2010	2011	2012
Maritime transport					
Personnel costs	9,193	-	9,099	9,213	9,768
Wages and salaries	7,607	-	7,603	7,797	7,591
Social security	1,586	-	1,495	1,416	2,177
Air transport					
Personnel costs	25,727	24,282	24,152	24,372	25,457
Wages and salaries	19,963	18,620	18,742	18,974	18,855
Social security	5,765	5,661	5,410	5,398	6,603

Source: Eurostat SBS data.

When looking at the working conditions, employees active in maritime transport services often work with many different nationalities and sail under a flag with a different nationality. According to the ILO, seafarers are often exposed to difficult working conditions and occupational risks. Because they work far from home they are vulnerable to *inter alia* non-payment of wages, poor diet and poor living conditions.⁶⁵⁸ In 2006, the Maritime Labour Convention was adopted, which sets the conditions for decent work in the maritime sector. This convention updates and consolidates 68 ILO maritime Conventions and Recommendations and sets provisions on e.g. conditions of employment, health protection, hours of work and rest, medical care and social security protection.

Providing air transport services also requires that many employees are often away from home, although for a shorter period than seafarers. Also other issues play a role in the air transport sector. Employees have to deal with irregular working times and shifts since the air transport services is a (close to) 24 hours business. In the context of the internationalisation of the industry and rising global competition, pressure on airlines to reduce operational costs has been significant. Many EU air carriers, some of which are struggling to restructure their activities, have outsourced non-core activities and gradually also core activities to improve productivity and profitability. New business and employment models have emerged, such as the multiplication of operational bases and new atypical forms of employment.

In the air transport sector more and more activities are outsourced or performed by part-time employees in order to reduce costs. According to studies by Eurofound and Steer Davies Gleave (2015) this could lead to lower hourly wages and reduced social conditions compared to employees working fulltime.⁶⁵⁹

12.2.5. Environmental perspective

Both air and maritime transport are large contributors to air pollution and the emission of greenhouse gasses in the world. In 2014 the maritime transport sector emitted 1,000 million tonnes of CO₂ and was responsible for 2.5 percent total global GHG emissions⁶⁶⁰. The majority

⁶⁵⁸ <http://www.ilo.org/global/standards/subjects-covered-by-international-labour-standards/seafarers/lang--en/index.htm>.

⁶⁵⁹ Steer Davies Gleave, 2015 *Study on employment and working conditions in air transport and airports*, <http://ec.europa.eu/transport/modes/air/studies/doc/2015-10-employment-and-working-conditions-in-air-transport-and-airports.pdf>

⁶⁶⁰ http://ec.europa.eu/clima/policies/transport/shipping/index_en.htm.

can be contributed to international shipping. It is expected that by 2050 the emission of greenhouse gasses will increase by 50 percent to 250 percent. The air transport sector contributed 3 percent of the EU's total greenhouse gas emissions, and total emissions by aviation are expected to increase by 300 percent to 700 percent by 2050⁶⁶¹. Not only air pollution is a by-product of transportation services that effects the environment, other effects one should think of are waste disposal in the seas, oil leakages (often with disastrous environmental impacts) and noise pollution.

Over the past years several initiatives have been taken by the EU and internationally in order to reduce (air) pollution in the transport sector. One of these initiatives is the Energy Efficiency Design Index of the IMO set in 2012, which sets compulsory energy efficiency standards for new ships. In addition the European Commission has set out a new strategy in 2013 for reducing GHG domestically. The strategy consists of the monitoring, reporting and verifying of CO₂ emission of large ships using EU ports, of GHG reduction targets, and of other market based measures.⁶⁶² Another initiative to reduce pollution is the European's Commission call in 2009 for the zero-waste, zero-emission objective. This objective aims at both improving the environmental performance and competitiveness of the sector by 2018.⁶⁶³ A measure that has been taken in the air transport sector is the EU Emission Trading System (ETS). Since 2012 emissions from aviation are also included in the ETS, just like companies they receive a certain amount of emission rights and they can buy additionally if needed or sell their rights when not needed. There is, however, more that can be done as the aviation sector currently enjoys a fossil fuel tax exemption (i.e. they currently don't pay taxes on the fuel they use).⁶⁶⁴ This exemption does not stimulate the reduction of emission and the fight against climate change. Additionally it prevents the use of tax policies used to close the price gap between kerosene currently used, and alternative and more sustainable fuels.⁶⁶⁵

When looking at the air pollutants, as shown in Table 12.6, it can be noted that the maritime transport sector is much more polluting than the air transport sector. Important to mention though, when taking into account the volumes transported, air and maritime transport are less polluting than other modes of transport like for example road transport. Both sectors have reduced the emission of air pollutants over time, but the reduction is much larger in the maritime transport sector. The largest reduction in air pollutants in the maritime transport sector can be found from 2008-2009, this however might be more related to drop in economic activity due to the crisis than to (policy) efforts to reduce air pollutants.

Table 12.6 Air pollutants in the EU, measured in tonne

	2008	2009	2010	2011	2012
Maritime transport					
SOx	1,730,153	1,447,364	1,292,647	1,194,183	1,225,083
NOx	3,316,567	2,871,921	2,850,061	2,853,816	2,772,071
PM2.5	170,665	146,943	137,422	135,894	129,065
PM10	184,732	157,412	151,425	149,846	142,985
Air transport					
SOx	25,444	23,554	20,755	20,655	20,535
NOx	388,698	357,919	354,296	344,282	342,790
PM2.5	11,649	13,397	10,528	10,603	9,201
PM10	13,249	12,266	12,043	12,159	10,762

Source: Eurostat, environment and energy data.

⁶⁶¹ http://ec.europa.eu/clima/policies/transport/aviation/index_en.htm.

⁶⁶² http://ec.europa.eu/clima/policies/transport/shipping/index_en.htm.

⁶⁶³ Levent Kirval and Alper Kilic – The impact of the “European Union’s ‘Zero-waste, Zero-emission’ maritime transport policy” on the development of environment friendly maritime transportation in the world.

⁶⁶⁴ <http://www.euractiv.com/section/climate-environment/opinion/responsible-flying-grounded-by-aviation-s-fuel-tax-exemption/>.

⁶⁶⁵ http://carbonmarketwatch.org/wp-content/uploads/2015/04/Aviation-Policy-Brief_final.pdf.

In order to reduce the emission of Sulphur oxides (SOx) and Nitrogen oxides (NOx) Emission Control Areas (ECA) have been introduced. These areas have stronger requirements, than other waters. According to the IMO the maximum Sulphur limit in fuel is 3.5 percent in 2015 and 0.5 percent from 2020 onwards, while in SOx Emission Control Areas (SECA) the maximum limit is 0.1 percent (from 2015 onwards).⁶⁶⁶ In Europe the Baltic Sea and the North Sea have been a SECA since 2006 and 2007 respectively, the US on the other hand has only SECAs since a few years (US Caribbean Sea and the waters within 200 seal miles of North American).⁶⁶⁷ Contrary to the EU, the US has also two NOx Emission Control Areas (NECAs), namely the US Caribbean Sea and the waters within 200 seal miles of North American. All ships build from 1-1-2016 are obliged to meet the emission standards of the so called Tier III when sailing in a NECA.⁶⁶⁸ The NOx emission limits in these areas are 80 percent more stringent than in non NECAs⁶⁶⁹.

12.2.6. Competitiveness of the EU maritime and air transport sectors

The competitiveness of the EU maritime and air transport service sectors cannot easily be compared with similar sectors in other countries, as data is more limited compared to goods sectors. However, some qualitative information is available for both sectors, which is listed below.

Maritime transport

There are several factors in place that determine or affect the competitiveness of the maritime sector. The competitiveness of the maritime transport sector depends to a large extent on the links of ports with their hinterland. The infrastructure is a key factor determining the competitiveness of this sector.

According to EU transport commissioner Violeta Bulc, until recently, vessels sailing between EU ports were facing several complex administrative procedures and custom formalities, which affected their competitiveness in an adverse way.⁶⁷⁰ The Reporting Formalities Directive (RFD – Directive 2010/65/EU), which came into force on the 1st of June 2015, aims to simplify and harmonise the administrative procedures for the shipping companies doing business within the EU internal market.⁶⁷¹

According to Business Europe, the European shipping industry is increasingly encountering competition from third countries, especially Asia. Furthermore, administrative burden, congestion at ports and inefficient connections with the hinterland are seen as major issues in the EU sector.⁶⁷² These are, however, issues that many different ports in key industrialised countries face and in comparison with the US, the EU ports are still more competitive. For example when looking at the top 50 world container ports, it includes 5 US ports (place 19, 21, 26, 44 and 46) and 7 EU ports (place 11, 15, 16, 25, 31 34 and 40).⁶⁷³

When looking at the United States, it appears that there is underinvestment in ports and inland waterways, which affects the competitiveness of the maritime transport sector adversely.⁶⁷⁴

Air transport

According to several stakeholders from the European aviation industry, including business, regulators and governments, the European air transport sector is doing worse compared to other regions in the world in terms of connectivity and airline profitability.⁶⁷⁵ Table 12.7 below

⁶⁶⁶ <http://cleantech.cnss.no/policies-and-instruments/sulphur-emissions/>.

⁶⁶⁷ <http://www.lngbunkering.org/lng/regulations/IMO-regulations/emission-control-areas>.

⁶⁶⁸ <http://cleantech.cnss.no/policies-and-instruments/nox-emissions/>.

⁶⁶⁹ The exact numbers can be found in annex VI. Tier III applies to NECAs and Tier II to non NECAs.

⁶⁷⁰ <https://www.theparliamentmagazine.eu/articles/opinion/competitiveness-eu-shipping-industry-rise>.

⁶⁷¹ <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=URISERV%3Atr0047>.

⁶⁷² <https://www.businesseurope.eu/sites/buseur/files/media/imported/2015-00379-E.pdf>.

⁶⁷³ <http://www.worldshipping.org/about-the-industry/global-trade/top-50-world-container-ports>.

⁶⁷⁴ <http://www.economist.com/news/united-states/21571167-underinvestment-ports-and-inland-waterways-imperils-american-competitiveness-crying-out>.

⁶⁷⁵ <http://centreforaviation.com/analysis/european-air-transport-competitiveness-capacity-contributes-to-the-debate-at-ecaceu-dialogue-176666>

shows the average airline profitability per region for recent years, which reveals that the margin in North America is significantly higher than in Europe.⁶⁷⁶

Table 12.7 Net profit margins (as a percentage of revenues) by region

Region	2013	2014	2015F
North America	3.5	5.2	7.5
Latin America	0.6	0.0	1.8
Middle East	0.6	1.2	3.1
Asia Pacific	0.9	0.6	2.5
Europe	0.5	1.6	2.8
Africa	-0.8	0.0	0.1
Global	1.5	2.2	4.0

Source: IATA (<https://www.iata.org/whatwedo/Documents/economics/IATA-Economic-Performance-of-the-Industry-mid-year-2015-report.pdf>).

Based on the figures, the European airline industry seems to be less profitable than the air transport sector in the US, which is seen as the most consolidated and the most profitable airline market. The low margins in Europe in a global context seem to be the result of increasingly growing and competitive markets in other parts of the world. In this regard, the Commission had conducted a public consultation on the competitiveness of the EU aviation sector. The consultation revealed that EU carriers have difficulties in competing with carriers from outside the EU. Important issues that were mentioned were the cost advantages of non-EU carriers (including lower labour cost), more favourable tax regimes or potential subsidies.⁶⁷⁷ In this context the external dimension has been emphasised within the Aviation Strategy for Europe adopted in 2015 by the European Commission, which promotes an ambitious international aviation policy⁶⁷⁸. In addition the European airlines face increased competition due to the rise of Low Cost Carriers, who are active on short and medium haul routes.

In the past years, there has been a wave of airline mergers in the US. In 2013, 82 percent of the domestic seating capacity was held by the top five carriers – United, Delta, American Airlines, Southwest Airlines and US Airways. Also in the EU, market concentration has increased, but the rate is still far behind the US. In the EU, only 52 percent was held by the top five airlines in 2013 (Lufthansa, Air France-KLM, International Airlines Group, Ryanair and EasyJet). One of the reasons of the increased market concentration in the US seems to be that the procedures for mergers in a single country are simpler than in the case that multiple countries are involved.⁶⁷⁹

12.3. Market access issues in the maritime and air transport sectors

In contrast to manufacturing industries, there are no tariffs on services, yet the services industry faces many trade burdens in the form of NTMs. This section will discuss the most important or burdensome NTMs faced by the maritime and air transport sector in EU-US trade based on several trade restriction databases, surveys and literature.

12.3.1. Non Tariff Measures on maritime transport

Probably the most well known (discriminatory) market access restriction for maritime transport is The Jones Act. Officially called The Merchant Marine Act of 1920, it sets a restriction on coastwise trade in the US. The Act states that merchandise can only be transported between US points in national waters by vessels that are built, owned, crewed and documented by the US. The only way foreign flagged ships can engage in domestic services is by receiving an exemption from the US coastguard, but this is only exceptionally provided (e.g. only when there

⁶⁷⁶ <http://centreforaviation.com/analysis/european-air-transport-competitiveness-capacity-contributes-to-the-debate-at-ecaceu-dialogue-176666>.

⁶⁷⁷ <http://ec.europa.eu/transport/modes/air/consultations/doc/2015-aviation-package/synopsis-report.pdf>.

⁶⁷⁸ COM(2015) 598 final

⁶⁷⁹ <http://www.ft.com/cms/s/0/79458f9a-9d4a-11e2-a8db-00144feabdc0.html#axzz3rwsbgFHH>.

was a shortage of vessels after hurricane Katrina struck). In this way, European companies can thus transport merchandise from and to the US, but cannot transport cargo between two US ports. Intra US transportation of cargo is only allowed by Jones Act vessels.

In addition to restrictions on shipping, US legislation also sets restrictions on shipbuilding and repair/maintenance of ships, and thus limits the EU presence in the market. Although this is not a direct barrier to maritime transport services, the following barriers do indirectly affect the maritime transport services sector as well. Some of these barriers are The Jones Act Second Provision and the tariff act of 1930. The Jones Act Second Provision states that when a non-US built hull or superstructure is added to a Jones Act vessel, and if it constitutes more than 10 percent of the vessel's steel weight, such a vessel will be considered as rebuilt foreign and loses its Jones Act status. The tariff act of 1930 states that if a Jones Act vessel is sent to a foreign shipyard for repair work or the installation of certain equipment, the work is subject to declaration, entry and payment of a 50 percent import duty upon return to the US.⁶⁸⁰ Despite the existence of these two measures, some US vessels are repaired in the EU, as the total cost (repair and transport from the US to the EU and back) is lower in the EU compared to repairing a vessel in the US.⁶⁸¹ According to the Ships & Maritime Equipment Association (SEA) Europe, a reform of the US marine cabotage regulations to open up trade for EU specialised products, vessels, and EU repair maintenance and conversion services would enable the European Ship building industry to enter a new market. When comparing this potential future market with the markets they currently do have access to, this new market seems to be substantial.

In addition, the US also poses restrictions on global transport of certain government owned or funded goods. Even in international waters these goods need to be transported by US flagged commercial vessels. Box 1 provides an overview of the different acts that constitute to the obligation of using US flagged vessels.

Box 12.2 Obligation of using US flagged vessels

- The Cargo Preference Act of 1904 – All items procured for or owned by the military departments can only be transported by US flagged vessels;
- Public Resolution N17 – All cargo generated by US government loans must be transported on US flagged vessels;
- The Cargo Preference Act of 1954 – At least 50% of all US government generated cargo (and 75% of agricultural cargo destined for assistance programs) must be transported by US flagged vessels;
- US Mineral Leasing Act – Exports of Alaskan North Slope oil must be transported by US flagged vessels.

Source: European Commission Market Access Database.

Also the Container Security Initiative (CSI) is a measure that affects EU (freight) transport companies. The CSI is part of the US Customs and Border Protection and was put in place based on the events of September 2001 in order to counter potential terrorist threats. The main elements of the measure are to identify and pre-screen high risk containers before they arrive in US ports.

Next to the above mentioned sector specific NTMs, the sector faces also cross-cutting measures that are faced by many other industries as well. A few examples are:

- Foreign ownership restrictions;
- Differences between federal and state level law;
- Need of double certification due to difference in the EU's Authorized Economic Operator (AEO) program and US customs;
- Obligation to use certain local services;

Issues that are faced by all EU companies but are explicitly mentioned by SMEs in the SME survey are restrictions on the movement of persons, border procedures, government procurement measures and export related measures. Note that these do also apply to air transport services.

⁶⁸⁰ SEA Europe position paper on the future EU Transatlantic Trade and Investment Partnership.

⁶⁸¹ Interview with SEA Europe

From the US side, less specific and more crossing cutting issues have been reported. Concerning a sector specific issue, a number of Member States have in place some limitations on cabotage, the transport of goods or persons between two points in a country executed by a foreign firm. In order to benefit from the freedom to provide cabotage services, in some Member States the vessels have to be registered and sail under the flag of an EU Member State, or alternatively be granted a specific authorisation. However, trade between Member States is fully free. Only few Member States have fully opened their domestic market to non EU or non EEA flagged vessels. More general and cross cutting issues that are reported by US firms in the Ecorys 2009 report are: restrictions on foreign ownership and control, need of double certifications due to differences in the EU and the US, differences in privacy laws versus security considerations, and differences in the enforcement of the unified custom systems across EU Member States.

12.3.2. Non Tariff Measures on air transport

The air transport sector is also affected by NTMs rather than tariffs. Although there are no restrictions imposed on the building of aircrafts – as contrary to the shipping industry – the air transport sector is also affected by restrictions on cabotage. Although they are not classified as NTMs, the restrictions on ownership are seen as a market access restriction. US law requires that 75 percent of voting interest of airline corporations are held by US citizens, and two-thirds of the board of directors must consist of US citizens. While the EU thus only may own maximum 25 percent of US airlines, US interest may own up to 49 percent of EU airlines, which is a significant difference.

The EU and the US have signed the Open Skies agreement in 2007 which liberalised competition and foreign ownership restrictions. Regulatory limits were removed on the number of flights, the routes, the type of aircraft used and the number of carriers a country may designate.⁶⁸² However, foreign ownership is still restricted to minority status (as shown above) and the supply of domestic air services is still limited to US carriers.⁶⁸³ Regarding the latter, flights between two points in US territory can only be provided by US carriers, whereas US airlines are also allowed to fly between countries in the EU.

Also on the EU side there exist trade measures that are burdensome for American aircraft companies. One can think of general measures one sees in multiple sectors like restrictions on the use of foreign temporary workers, differences in certifications or differences in privacy and security laws. There are also more specific measures that cause differences on both sides of the Atlantic. The EU has several operating restrictions at airports, like specified flying times⁶⁸⁴ (e.g. certain aircrafts are not allowed to take off or land on Schiphol airport between 23 p.m. and 7 a.m.⁶⁸⁵) or access to customs. Differences in the EU and US environmental regulation have been indicated as barriers by stakeholders in the Ecorys 2009 study. The EU applies the Emission Trading System (ETS)⁶⁸⁶, whereas the US has the Clean Air Act (CAA) in place to regulate air emissions. The EU ETS is a cap and trade system and is one of the many means to achieve a reduction of emissions to a level of 20 percent below the 1990 levels for the year 2020. The CAA is the US federal law that regulates air emissions. The EU ETS is more advanced than the US CAA. Since 2012 the EU ETS is also applicable to aviation, the US however opposed the inclusion of aviation outside EEA territory and prohibited US airlines from complying with the system.⁶⁸⁷ Though the US has indicated that it intends to participate in the Global Market Based Measures regarding Carbon Offsetting and Reduction Scheme for International Aviation.⁶⁸⁸

⁶⁸² International Trade Administration, 2007. The impact of the 2007 US-EU Open Skies Air transport agreement.

⁶⁸³ CATO institute, 2014. Opening the Skies, put free trade in airline services on the transatlantic trade agenda.

⁶⁸⁴ Also in the US there are (night) flight restrictions, but to a much lesser extend than in the EU.

⁶⁸⁵ Faber, J. Brinke, L. and Smit, M. 2012. *Night flight restrictions and airline responses at major European airports*.

⁶⁸⁶ http://ec.europa.eu/clima/policies/ets/index_en.htm.

⁶⁸⁷ [http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/571347/EPRS_BRI\(2015\)571347_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/571347/EPRS_BRI(2015)571347_EN.pdf).

⁶⁸⁸ <http://www.mlit.go.jp/common/001146859.pdf>
<https://www.whitehouse.gov/the-press-office/2016/09/03/fact-sheet-us-china-cooperation-climate-change>

12.4. Expected impacts of TTIP on the EU maritime and air transport sectors

In this section we present and discuss the expected impact of the TTIP agreement on the maritime and air transport services sector. For the economic, social and environmental impact we make use of the modelling that has been performed, as well as of literature and stakeholder interviews.⁶⁸⁹ The modelling results will be presented for both the ambitious and less ambitious scenario. For comparison we will show the expected impact on the US sector as well, but these numbers will not be discussed as in much detail as the EU impacts. Important to keep in mind is that the scenarios for the modelling have been made before the start of the negotiations based on assumptions about the future agreement. However, as the negotiations progressed some assumptions made might not reflect the real ambition as accurate as before.

12.4.1. *The maritime and air transport services sectors in the TTIP negotiations*

Regarding services in general, the EU aims, according their fact sheet, amongst others to improve access to the US market, agree on new rules, and agree on high standards regarding licencing and approvals.⁶⁹⁰ The EU proposal for services, investment, and e-commerce, does include more specific outlines for the maritime and air transport services.⁶⁹¹ On maritime transport services, the EU has proposed the following provisions mentioned below. Note that the below provisions are presented in this TSIA from an EU point of perspective for readability purposes only, but that in reality the provisions do apply to both the EU and the US.

- Ships flying the EU flag or operated by the EU should be treated not less favourable than US flagged ships or operated by the EU with regard to access to ports, use of port services and infrastructure, use of maritime auxiliary services, and fees and charges.
- EU international maritime transport services suppliers should be allowed to provide feeder services between US national ports under authorisation.
- EU international maritime transport services suppliers should be allowed to have an enterprise in the US under establishment and operation conditions no less favourable than US suppliers.
- EU international maritime transport services suppliers should have access to port services in the US on non-discriminatory terms.
- EU international maritime transport services suppliers should be allowed to re-position owned or leased transport equipment between US ports.

The document also indicates that these provisions should also apply to shipping companies that are established outside the EU, but are controlled by nationals of EU Member States, if their vessels fly the EU Member State flag, and if they are registered according to the EU Member State regulations.

With regards to air transport the document indicates that from the EU perspective the negotiations will only focus on some auxiliary services, and most importantly on ownership and control establishment issues. These auxiliary services include repair and maintenance, selling and marketing, computer reservation system, groundhandling services, airport operation services, and rental of aircraft with crew.

12.4.2. *Expected economic impacts*

Table 12.8 presents the expected economic impact results for the maritime and air transport services sectors. With regards to maritime transport services, for both the EU and the US the expected output and trade impacts are positive in the less ambitious scenario. In the ambitious scenario these impacts are about doubled. The EU is expected to see its output increase by 0.9 percent and its export and import by 1.2 and 1.3 percent respectively in the ambitious scenario. For the US these numbers are 0.4, 1.4 and 1.4 percent respectively.

⁶⁸⁹ The different modelling scenarios and details are presented in Chapter 1 and 6.

⁶⁹⁰ http://trade.ec.europa.eu/doclib/docs/2015/january/tradoc_152999.2%20Services.pdf

⁶⁹¹ http://trade.ec.europa.eu/doclib/docs/2015/july/tradoc_153669.pdf

Also for the air transport services sector the expected impacts are positive in both scenarios. In the ambitious scenario output is expected to increase by 0.4 percent for both the EU and the US sector. Also the sector's imports will equally increase (0.7 percent). The exports are however expected to increase slightly more in the US (1.5 percent) than in the EU (1.1 percent).

Table 12.8 Expected economic impacts, 2030

	EU ambitious	EU less ambitious	US ambitious	US less ambitious
Water transport				
Output	0.9%	0.5%	0.4%	0.2%
Export	1.2%	0.6%	1.4%	0.7%
Import	1.3%	0.6%	1.4%	0.7%
Air transport				
Output	0.4%	0.3%	0.4%	0.1%
Export	1.1%	0.6%	1.5%	0.7%
Import	0.7%	0.3%	0.7%	0.3%

Source: Updated CEPR results.

As already indicated above, some EU stakeholders indicated that targeted exceptions to The Jones Act for EU companies, and a reduction in foreign ownership restrictions in both maritime and air transport services, could bring significant benefits to EU firms.⁶⁹² As it would provide the EU (more) access to the US market, it could benefit both the maritime and air transport services sectors in terms of output and employment. US stakeholders, on the other hand, would rather see both services excluded from the TTIP agreement.⁶⁹³ According to them, the EU proposals for both sectors cover much more than any US agreement has ever covered on these two sectors. They fear the EU companies would take over part of the market and jobs, and that it would harm their national security.

In addition to the overall benefits for the sector as presented in Table 12.8, it is expected that SMEs can also greatly benefit from the agreement. In both the maritime and air transport sector, SMEs are affected more by the current barriers and restrictions than larger firms. SMEs often lack the expertise, resources or time to deal with these barriers or to be present in the partner country. According to ECSA larger firms do have the possibility to be present in the partner country more frequently, to discuss administrative and regulatory issues, or gather related information. This gives them a greater advantage and more possibilities to be active in certain markets. Although large firms will also benefit from a reduction in trade barriers, SMEs can proportionally gain more.

12.4.3. Expected social impacts

The impact of TTIP on employment in both sectors is expected to be positive. For both the EU and the US in both scenarios the impacts are relatively small but in line with the expected output impacts. Within the EU maritime transport sector we see an increase of 0.2 percent in the less ambitious scenario and 0.4 percent in the ambitious scenario for both skill types. In the US, these changes equal 0.1 and 0.2 percent, respectively. For EU air transport services, the expected increase in employment is the same in both scenarios and for both skill types (0.1 percent). In the US, no impact is expected for low skilled employees in the less ambitious scenario, while high skilled employment is expected to increase by 0.1 percent. In the ambitious scenario both skill types will see their employment increase by 0.2 percent.

⁶⁹² <https://www.buinessseurope.eu/sites/buseur/files/media/imported/2013-01314-E.pdf>
Interview with ECSA and SEA Europe.

⁶⁹³ <http://aviationweek.com/commercial-aviation/viewpoint-keep-air-transport-out-us-eu-trade-talks>
<http://ttd.org/policy/policy-statements/u-s-trade-negotiators-must-keep-aviation-and-maritime-out-of-ttip/>

Table 12.9 Expected social impacts, 2030

	EU ambitious	EU less ambitious	US ambitious	US less ambitious
Maritime transport				
Low skilled	0.4%	0.2%	0.2%	0.1%
High skilled	0.4%	0.2%	0.2%	0.1%
Air transport				
Low skilled	0.1%	0.1%	0.2%	0.0%
High skilled	0.1%	0.1%	0.2%	0.1%

Source: updated CEPR results.

The European Transport Worker’s Federation (EFT) indicated that the expected impacts for the EU are most likely overestimated. Many employees working on EU maritime vessels have a nationality other than EU, so increased output and trade will most likely lead to more employment for them than for European workers. Though some small impacts could arise in the shipbuilding industry. The European Community Shipowner’s Association (ECSCA) recognises that the majority of employees are non European, but they do expect that European employees can benefit from the agreement as well. Not only the European employees working on the ships, but also the employees operative in port services, at the EU headquarters, or operative in other services which facilitate maritime transport services.

12.4.4. Expected environmental impacts

When it comes to transport services and environmental impacts, one quickly thinks of the emission of air pollutants. The expected changes in air pollutants for both sectors are presented in Table 12.10 and Table 12.11. It is important to note that these results do not come from the CGE modelling. The study team has used the CGE output impacts in order to calculate the expected increase in air pollutants. The baseline air pollutants are taken from WIOD. These results do thus not stem from complex modelling, but are solely a reflection of the increase in output on the baseline emissions, and thus only present the scale effect. Consequently the emissions of all air pollutants presented below are expected to increase in both the maritime transport sector and the air transport sector.

Within the EU maritime transport sector, the largest increases are expected in the emissions of Nitrogen Oxides, Sulphur Oxides, and Carbon Dioxide. For the US these are the emissions of Carbon Monoxide, Nitrogen Oxide, Sulphur Oxide, and Non-Methane Volatile Organic Compound. For air transport services, the emissions that are expected to see the largest absolute increases are slightly different. Within the EU the largest increases are expected for the emissions of Nitrogen Oxide, Carbon Monoxide and Carbon Dioxide, whereas for the US these are Carbon Monoxide, Nitrogen Oxide, and Carbon Dioxide.

Table 12.10 Expected impact on air pollutants, maritime transport, 2030

Maritime transport	CO2	CH4	N2O	NOX	SOX	CO	NMVOC	NH3
EU baseline	111,584	3,586	4,637	2,519,639	1,224,622	318,659	120,620	233
EU less ambitious scenario	502.1	16.1	20.9	11,338.4	5,510.8	1,434.0	542.8	1.0
EU ambitious scenario	1,004.3	32.3	41.7	22,676.8	11,021.6	2,867.9	1,085.6	2.1
US baseline	56,179	11,986	2,920	1,129,946	758,490	6,303,479	518,393	1,652
US less ambitious scenario	95.5	20.4	5.0	1,920.9	1,289.4	10,715.9	881.3	2.8
US ambitious scenario	213.5	45.5	11.1	4,293.8	2,882.3	23,953.2	1,969.9	6.3

Table 12.11 Expected impact on air pollutants, air transport, 2030

Air transport	CO2	CH4	N2O	NOX	SOX	CO	NM VOC	NH3
EU baseline	261,953	2,855	8,182	561,205	32,261	344,257	61,659	1,864
EU less ambitious scenario	681.1	7.4	21.3	1,459.1	83.9	895.1	160.3	4.8
EU ambitious scenario	969.2	10.6	30.3	2,076.5	119.4	1,273.8	228.1	6.9
US baseline	155,830	5656	6674	654,412	53,821	843,857	4,6198	No data
US less ambitious scenario	218.2	7.9	9.3	916.2	75.3	1,181.4	64.7	no data
US ambitious scenario	576.6	20.9	24.7	2,421.3	199.1	3,122.3	170.9	no data

Although the emission of air pollutants is expected to increase because of an increase in transportation services, it is not per se the case the vessels or airplanes itself become more polluting as well. For maritime transport the EU and the US have SOx Emission Control Areas in place (the US has also NOx Emission Control Areas in place). In these areas the allowed maximum of SOx and NOx emissions is significantly lower than outside these areas (see section 12.2.5). In order for vessels to sail through these areas they would still need to comply with the maximum emission levels. Also the COP21 could help to offset some of the increases in emissions. Moreover, new vessels and airplanes are often cleaner and less polluting than older vessels and airplanes that are in use. When these new vessels and airplanes replace the old polluting ones, this could reduce the current pressure on the environment. ECSA and SEA Europe have indicated that targeted exceptions to the Jones Act for EU companies could also be beneficial to the environment. Compared to the EU, the US is still operating with very old vessels. Also intra-US transport is often done by road transport, which is more polluting than maritime transport. If a partial non-application of the Jones Act could be granted to EU companies, US shipowners would be able to make use of the more modern and less polluting EU ships. Additional benefits could be reaped if these vessels would then also be used for intra-US transport.

Besides the increase in air pollution, the environment could be impacted in other ways as well from increased transportation. Both the air transport industry and the maritime transport industry will need additional (fuel) resources, in order to fly and sail their vessels across the globe. Given that the majority of shipping costs for maritime transport are fuel costs, it is not unlikely that firms will look for more efficient ways to operate their ships.⁶⁹⁴

Increased air and maritime transportation could also lead to more waste disposal, oil leakages and noise pollution. The increase in noise from air transportation is likely to be more harmful for humans, whereas the increase in noise from maritime transportation will most likely be more harmful for sea animals. Additional to noise, an increase in the number of vessels crossing the oceans could damage sea life in other ways as well. According to a study by Corber and Winebrake (2008), there is a positive relation between the number of whales struck by vessels and the presence of large and fast ships.⁶⁹⁵

12.4.5. Expected global impact

Within the maritime transport sector, one of the most restrictive barriers is The Jones Act, as presented in section 12.3.2 the barrier excludes the EU from the US internal market. If targeted exceptions to The Jones Act would be granted to EU companies it would deliver a large potential to the EU industry, since they would be able to operate in a new market. Since EU vessels and technology are more advanced than in the US, the EU could obtain a (competitive) position in the US market. It is at this point, however, not clear to what extent the US might be willing to grant targeted exceptions to The Jones Act for EU companies, and it is thus uncertain whether

⁶⁹⁴ Corbet, J. J., Winebrake, J. 2008. The impacts of globalisation on international maritime transport activity.

⁶⁹⁵ Idem.

the EU could strengthen its competitive position. Nevertheless, it is still the EU's ambition to reach an agreement on this.

The current shale gas revolution in the US could have an opposite effect on the EU's competitiveness. Energy and fuel costs make up the larger share of transportation costs. The US currently benefits from cheaper fuel and can use this as a competitive advantage. Due the previous restrictions on export, the EU has not yet access to these cheaper energy resources. Some stakeholders, however, don't think that this event will have an effect on the EU's competitiveness position. They say that the EU has, compared to the US, a very strong competitiveness position, and the shale gas revolution will not make the US substantially more competitive. Also the stark difference in openness should not change this. ECSA has indicated that the EU is strong and competitive enough, and they have no fear of increased competition from the US.

12.5. Conclusions and recommendations

The maritime and air transport sector are two important industries when it comes to the transportation of goods and passengers. While the maritime transport sector is more focussed on the freight transport, the air transport sector is more focussed on the transportation of passengers. In terms of exports, the US is the most important export destination for both maritime and air transport. Although the services industries do not face the burden of tariffs, they are impacted by other trade barriers. A significant market access restriction in the maritime transport sector is The Jones Act, which excludes the EU industry from the US internal market. Also foreign ownership restrictions, the container security initiative, or local content requirements hinder trade. Air transport services are for example hindered by foreign ownership restrictions. Although not all trade barriers will be lifted in these two sectors, the modelling results show that in both the ambitious and less ambitious scenario output and trade will increase for both sectors. EU maritime transport output is expected to increase by 0.9 percent, and exports and imports by 1.2 and 1.3 percent, respectively, in the ambitious scenario. EU air transport services are expected to see a 0.4 percent increase in output in the ambitious scenario. Exports and imports are estimated to change by 1.1 and 0.7 percent, respectively. The changes in employment levels for low skilled and high skilled are in line with the output results, they are expected to increase as well. The direct increase in transport is likely to lead to a larger emission or air pollutants (around 0.9 percent in maritime transport and 0.4 percent in air transport). There are however other factors that might be able to offset these increases. If additional transport leads to an increased demand for ships, more younger and less polluting ships will be used and could potentially replace the old and more polluting vessels. More polluting road transport could be replaced with maritime transport if EU companies would be granted a partial non-application of the Jones Act. Based on the above analyses and outcomes the following recommendations are proposed:

1. Given large differences in expected impacts between a less ambitious scenario and an ambitious scenario, we suggest to negotiate an ambitious TTIP agreement for both the maritime and air transport sector. An ambitious scenario should include both a reduction of NTMs in the two transport services sectors, as well as a reduction of tariffs and NTMs in other goods sectors. Enhanced trade of goods between TTIP countries will also increase the demand of transport services.
2. Although The Jones Act has been in place since 1920, and many attempts (from the US side) to repeal it have failed. Targeted exceptions to the The Jones Act for EU companies could bring significant benefits to both the EU maritime transport services sector and the EU shipbuilding sector, as well as to the environment. Despite the fact that a full repeal of The Jones Act for EU companies within TTIP is highly unlikely, we suggest the European Commission to negotiate as many targeted exceptions for EU companies as possible.

13. Potential TTIP Impact on the Financial services (incl. insurance) sector

13.1. Introduction

In this chapter we provide an overview of the EU financial services sector, including insurance, and discuss the potential impacts of TTIP on the sector. Given the unique nature of the sector we start by providing a definition and defining the scope of the analysis. This is followed by an outline of the EU ambitions for the sector within the TTIP. Subsequently we present an overview of the economic, social and environmental baseline situation – based on available data and information. Different to other sector chapters, we dedicate a separate section to the regulatory framework for financial services, in light of both the recent regulatory reforms in response to the financial crisis, and the importance of the aspect of regulatory cooperation for this sector in the TTIP negotiations. In section three we discuss the main barriers to EU-US trade and investments that are in place in the sector. Given these barriers and the proposed measures in the TTIP agreement we subsequently present our sectorial impact assessment. In the final section of this chapter we provide a synthesis of the analysis and our recommendations

Box 13.1 Take away from this chapter

- The financial services sector includes insurance and banking and other financial services. The EU and US are the biggest players in the global financial services sector;
- It is estimated that the financial services sector contributed on average 4.9 percent to gross value added in the Eurozone (1999 - 2013) and that the sector's value added contributed just over 5 percent to EU27 GDP in 2011. Despite losing market share due to the crisis, Europe remained the largest insurance market in the world in 2012;
- Both the EU and US financial services sectors were hard hit by the financial and economic crisis; recovery in the US seems to be faster, as the EU is grappling with a sovereign debt crisis that directly affects the banking system, while the general economic downturn has a clear effect on the consumption of insurance products;
- In the aftermath of the financial crisis, regulation was redesigned on both sides of the Atlantic, based on principles agreed upon at the international level (G20 and Basel III framework). The reforms target the bank-level, or *micro-prudential regulation*, as well as *macro-prudential, system wide risks*;
- The EU27 is a net exporter of financial services and a net exporter of insurance services; however insurance services exports show a declining trend since 2012;
- The US is a major trading partner for the EU, with approximately 35% of all financial services exports, and almost 42% of insurance exports destined for the US;
- US exports of respectively financial and insurance services to the EU accounted for 36% of all US financial services exports and 23% of total US insurance exports;
- FDI data confirm the strong integration between the EU US financial sectors. EU outward FDI stock in the US over the past few years accounted for approximately 30-36% of all EU financial services outward FDI stock. US FDI stock in the EU sector over the past few years amounted to approximately 40% of all inward FDI stock;
- The financial service sector has strong links with other sectors in society and can potentially affect the real economy through the interest rate channel, balance sheet channel, bank capital channel and uncertainty channel. In addition the increasing financialisation of economies can have perverse effects on other sectors as well as consumers, as the financial crisis has clearly demonstrated;
- Apart from the financial crisis and ensuing regulations, EU banks and financial services providers are facing challenges to their competitiveness driven largely by technology, and customers (changing consumer preferences, expectations and trust) in combination with regulations;
- Despite cooperation through international forums and bilateral dialogue mechanisms to guide regulatory reform in the EU and US, the regulatory divergence – brought about in part as international standards were not always implemented in a similar way (i.e. through similar measures and regulations) form an important barrier to EU-US trade and investment in the sector;
- Rather than address specific issues (NTMs) in, and substance of, the financial services sector, the EU ambitions for the financial services sector under the TTIP would be to further improve and enhance regulatory cooperation. This does not affect prudential regulation, i.e. the right to regulate by each party and the regulations already in place.

- **Main expected impacts:** According to our modelling results the TTIP agreement will have a direct positive effect on trade and to a lesser extent on output for the EU. It should be noted that these results are relatively modest, which is in part due to limitations of the economic model used in the study, which focus on services provided on a cross-border basis. However, trade in financial services takes place mainly through establishment (Mode 3) and to a much lesser extent cross-border trade. Moreover, FDI is not included in the model. Based on the existing literature and given the already strong financial linkages between the EU and US, we expect FDI impacts to be positive and more substantial than trade impacts. Regulatory cooperation will create a more level playing field, thus encouraging investments, and decrease regulatory fragmentation, hence reduce systemic risks - insofar regulatory reforms on both sides of the Atlantic continue to emphasise this.

13.1.1. Definition and breakdown of the financial services sector

Given the complexity and specific nature of the sector, to give a clear understanding of how it works, below we first discuss the role of the sector in the wider economy, the specific services provided by the sector, the actors providing these services and the markets on which they operate.

The role of financial services in the EU economy

In essence the financial sector provides intermediation services between providers and users of capital; it provides money management services such as banking, investment, brokerage, and insurance. According to the WTO, the financial services sector plays a critical role in any modern economy, its key functions including:

- facilitating transactions (exchange of goods and services) in the economy;
- mobilizing savings (for which the outlets would otherwise be much more limited);
- allocating capital funds (notably to finance productive investment);
- monitoring managers (so that the funds allocated will be spent as envisaged); and
- transforming risk (reducing it through aggregation and enabling it to be carried by those more willing to bear it).⁶⁹⁶

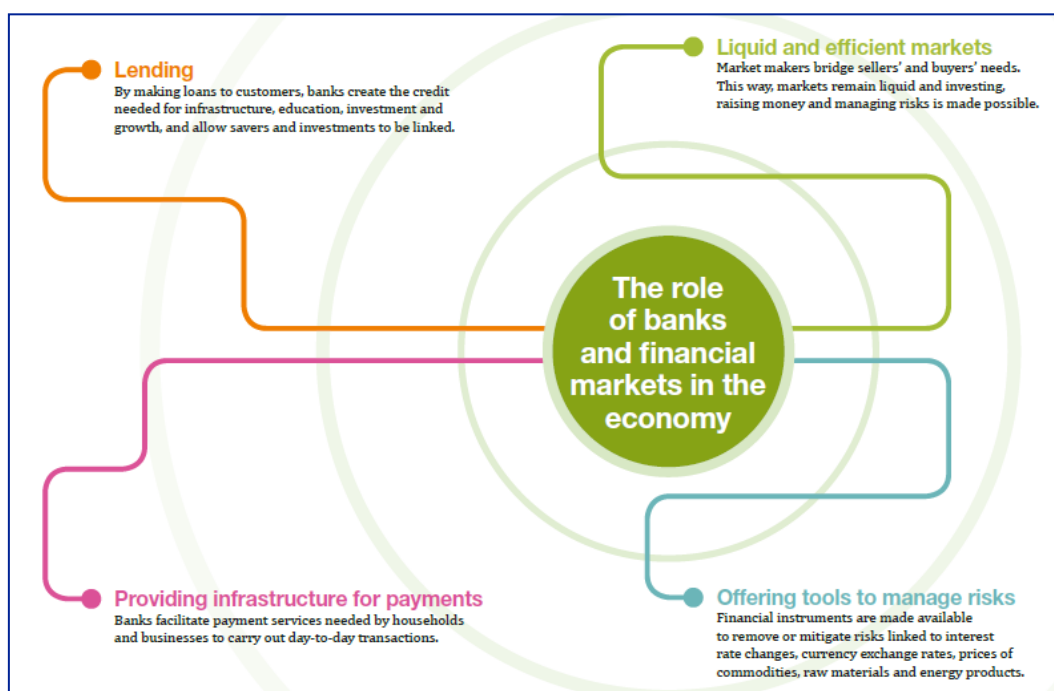
While financial services providers sell specific products and services for which they may charge a fee or premium (interest charges), understanding its importance in terms of the wider economy requires considering the sector's role as a financial mediator. Thus the transactions that are enabled by the sector such as the provision of a loan to an SME, derived from deposits or capital markets and backed by securities, play an important role in the ability to invest and spread risks.

On the flip side, if not properly managed, the sector can also be a source of financial and economic instability as was clearly demonstrated by/in the financial crisis. As such the sector is considered systemic – it can affect the entire economy through different channels, as discussed in more detail in Section 13.2.4.

The figure below was taken from the Association for Financial Markets in Europe (AFME) and schematically presents the role of banks and financial markets in the economy.

⁶⁹⁶ www.wto.org/english/tratop_e/serv_e/finance_e/finance_e.htm.

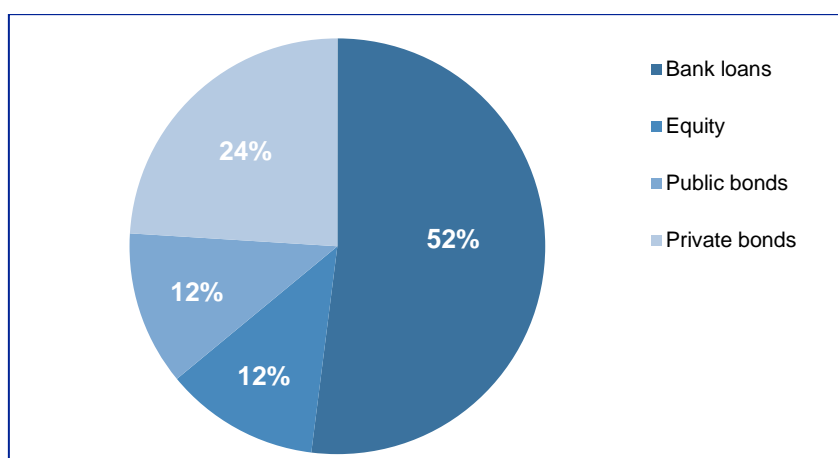
Figure 13.1 Main roles of banks and financial markets in the economy



Source: AFME (2014) "Funding the EU economy. The role of banks and financial markets."

Traditionally the non-financial corporate sector in Europe depends on banks; around 70 percent of its debt financing is provided by banks. This contrasts with the US, where bank financing is around 30 percent of debt.⁶⁹⁷ The European Financial Services Round Table (EFR, 2014) even puts the percent of corporate debt financing by banks in the EU at 80 percent.⁶⁹⁸ Constraints faced by the banking sector could thus lead to a large corporate funding gap, as pressure (from regulators) on banks to deleverage limits new lending. Thus, while bank loans remain the main source of financing of the EU economy, EU corporates are increasingly raising funds from bond markets and other funding sources. A trend that is believed to continue according to AFME, although banks will remain the primary lenders to small and medium businesses due to the size of transactions and the local nature of commercial relationships. The figure below presents the percentage of private and public debt securities outstanding, stock market capitalisation, and formal banking sector assets, illustrating how the EU economy is 'funded'.

Figure 13.2 Funding of the EU economy (2011)



Source: AFME (2013).

⁶⁹⁷ AFME (2014) "Funding the EU economy. The role of banks and financial markets."

⁶⁹⁸ <http://www.eur-lex.europa.eu/legislation/documents/news/The%20Road%20Ahead.pdf>.

Clearly the lending capacity of banks is of utmost importance in Europe, where SMEs in particular are still largely dependent on bank loans. However, there is also concern among EU policymakers about businesses' heavy reliance on bank funding. Although total EU stock market capitalisation amounted to 65% of GDP by the end of 2013, this is a lower proportion than more developed equity markets in other advanced economies, such as the US, Canada, Australia and Japan. The recent proposal for the EU Capital Markets Union - complementing the Banking Union (see also section 13.3 on the regulatory framework) therefore seeks to develop deep and liquid capital markets across borders that complement banks as a source of financing.⁶⁹⁹

The *insurance sub-sector* plays an important role in the overall economy in terms of the amount of premiums it collects, the scale of its investment and, the social and economic role it plays in reducing risks and insecurity for societies by covering personal and business risks.⁷⁰⁰ EFR (2014) describes the role of insurance services in society as follows:

"Insurers and reinsurers take on many of the short- to long-term risks faced by individuals and businesses: from the uncertainty that arises from an accident or burglary, to helping people provide for their retirement. The insurance sector contributes to economic growth by covering the productive activities of their customers against unexpected expenses arising from unforeseen events; in return, customers pay a fee, or premium. This benefits both parties because through the pooling of risk there is less volatility and the insurer can hold the risk more cheaply than any single party. Insurers pool risks among themselves to limit individual losses and in doing so transfer risks to those that are more able and willing to take them. Insurers invest the majority of their profits and other assets in long-term illiquid assets, such as property and infrastructure. Asset management firms, including those owned by insurers, also invest the pooled funds of retail investors, providing them with diversification, liquidity and investment opportunities."

Source: <http://www.efr.be/documents/news/The%20Road%20Ahead.pdf>.

A detailed breakdown of specific services within the two main sub-sectors of financial services (insurance, and banking and other financial services) is provided in the Box below.

Box 13.2 GATS financial services classification

The GATS Services Sectoral Classification List (SSCL) (MTN.GNS/W/120, 10 July 1991) includes the following services and activities under the two financial services sub-sectors:

(1) Insurance and insurance-related services include the following services:

- Life, accident and health insurance services;
- Non-life insurance services;
- Reinsurance and retrocession;
- Services auxiliary to insurance (including broking and agency services).

(2) Banking and other financial services include the following activities/services:

- Acceptance of deposits and other repayable funds from the public;
- Lending of all types, incl., inter alia, consumer credit, mortgage credit, factoring and financing of commercial transaction;
- Financial leasing;
- All payment and money transmission service;
- Guarantees and commitments;
- Trading for own account or for account of customers, whether on an exchange, in an over-the-counter market or otherwise, the following:
 - money market instruments (cheques, bills, certificate of deposits, etc.);
 - foreign exchange;
 - derivative products incl., but not limited to, futures and options;
 - exchange rate and interest rate instruments, incl. products such as swaps, forward rate agreements, etc.;
 - transferable securities;

⁶⁹⁹ PWC (2015) "Where Next Europe: the Future of European Financial Services." Research report commissioned by the City of London Corporation.

⁷⁰⁰ <http://www.oecd.org/finance/insurance/globalinsurancemarkettrends.htm>

- other negotiable instruments and financial assets, incl. bullion;
- Participation in issues of all kinds of securities, incl. under-writing and placement as agent (whether publicly or privately) and provision of service related to such issues;
- Money broking;
- Asset management, such as cash or portfolio management, all forms of collective investment management, pension fund management, custodial depository and trust services;
- Settlement and clearing services for financial assets, incl. securities, derivative products, and other negotiable instruments;
- Advisory and other auxiliary financial services on all the activities listed in Article 1B of MTN.TNC/W/50, incl. credit reference and analysis, investment and portfolio research and advice, advice on acquisitions and on corporate restructuring and strategy;
- Provision and transfer of financial information, and financial data processing and related software by providers of other financial services.

Conceptually financial services can be seen as relating to either:

1. Retail services to individuals / companies (i.e. providing loans, holding deposits (savings), facilitating transactions, providing insurance cover, some forms of asset management, etc.);
2. Wholesale services to enable and facilitate the raising and mobilisation of capital, the trading of financial products / instruments, spreading or hedging of risk, providing(temporary) liquidity, investing, re-insurance, etc..

An increasingly important and from a regulatory perspective sometimes controversial⁷⁰¹ part of the sector is the so-called 'shadow banking' system. According to the Financial Stability Board (FSB, 2011) the (very broad) definition of shadow banking is: "credit intermediation involving entities and activities outside the regular banking system." The two main functions of the shadow banking system that are most close economically to those of traditional banks include securitization and collateral intermediation. Both assist in intermediating funds from savers to investors, and both involve risk transformation.⁷⁰²

"Securitisation is the process of pooling together a large number of loans (such as mortgages, auto loans or SME loans) held on the balance sheet of a bank or other financial institution (the Originator) and selling them to a newly created and legally separate entity (the Issuer). This entity finances the purchase of the loans by issuing bonds to investors. The loans generate cash flows (for example, monthly mortgage payments from homeowners), which are used to repay the investors. In this way, loans which would otherwise be illiquid can be converted into more liquid and tradeable securities."⁷⁰³ While securitisation is often directly equated with the root cause of the financial crisis (the so called subprime mortgage crisis in the US is widely seen as the main trigger for the crisis), according to the Association of Financial Markets in Europe (AFME), European based securities have performed relatively well⁷⁰⁴ and "can help banks raise funding, and support new lending to SMEs and other key players in the real economy."⁷⁰⁵

Collateral intermediation involves the intensive re-use of collateral, so that it can support as large as possible a volume of financial transactions. Dealer banks source collateral from parties that require funding (such as hedge funds), or from agents that want to enhance return by

⁷⁰¹ Prior to the 2008 financial crisis shadow banking institutions were not subject to the same prudential regulations as depository banks, so they did not have to keep as high financial reserves relative to their market exposure as regulated banks did. As such they were able to have a very high level of financial leverage, with a high ratio of debt relative to the liquid assets available to pay immediate claims – in other words they were able to take on a lot more risk. Since the crisis the EU has developed regulation to bring the shadow banking system within the framework of its financial regulations.

⁷⁰² Claessens, Stijn, Zoltan Pozsar, Lev Ratnovski, & Manmohan Singh (2012) "Shadow Banking: Economics and Policy." IMF staff discussion note, December 4, 2012, SDN/12/12.

⁷⁰³ AFME (2016) (<http://www.afme.eu/WorkArea//DownloadAsset.aspx?id=14233>).

⁷⁰⁴ As also asserted in a 2011 OECD report, which argued that "Securitisation acted primarily as a legitimate funding tool in Europe, as opposed to securitisation being an "end in itself" for capital arbitrage reasons as was often the case in the US." (www.oecd.org/finance/financial-markets/48620405.pdf).

⁷⁰⁵ AFME (2016) (<http://www.afme.eu/WorkArea//DownloadAsset.aspx?id=14233>).

'renting out' assets as collateral (insurers, pension funds, and sovereign wealth funds acting through custodians). Then, collateral is pledged to other parties to obtain funding or support other contracts. This starts a system of repeated re-use of collateral where a single unit can support multiple transactions.⁷⁰⁶

Financial services providers

Financial services providers include:

- **Monetary and financial institutions (MFI)** e.g. Retail banks, Wholesale banks, Commercial banks, Investment banks, Private banks & wealth managers, etc.;
- **Investment funds** / asset managers e.g. Traditional investment managers, Hedge funds, Private equity companies, Real estate investors, etc.;
- **Financial vehicle corporations (FVC)**, (sometimes also referred to as special purpose vehicles or entities) – issuers of securities. A FVC is a tax-exempt company or trust set up for the funding of the assets in the securitisation process. They form the link between the originator and the investor and arrange for the trading of securities.
- A number of different actors such as Central counterparties (CCP) clearing houses, Central Securities Depositories (CSDs), Securities Settlement System (SSS), etc. comprising the **Financial Markets Infrastructure (FMI)**.
- **Financial information providers** (e.g. Reuters or Bloomberg), rating agencies and other **auxiliary services providers**.
- **Insurance and re-insurance & retrocession providers.**
- **Insurance brokers or agents.**

Table V.14 in the annexes provides a detailed overview of these different actors and the services they provide.

Banks are still very much at the heart of the financial sector. In most countries they constitute the largest deposit-takers and financial services providers, albeit that the market shares and power of other organizations like insurance companies or post office savings institutions is increasing. The last decade also saw the spectacular rise of a financial infrastructure, entities and practices collectively referred to as a shadow banking system, comprising among others such businesses as hedge funds, private equity funds, money market funds and special investment vehicles.⁷⁰⁷

A bank's most important role is the matching up creditors and borrowers. In addition banks are essential to the *domestic and international payments system*—and they *create money*. Creation of money happens when banks lend the remainder of the money depositors give them, after retaining the required reserves.

Apart from taking deposits as a source of funding for their lending, banks can complement this by directly borrowing in the money and capital markets." They can issue securities such as commercial paper or bonds; or they can temporarily lend securities they already own to other institutions for cash—a transaction often called a repurchase agreement (repo). Banks can also package the loans they have on their books into a security and sell this to the market (a process called *liquidity transformation and securitization*) to obtain funds they can relend."⁷⁰⁸

Financial markets

Virtually all of these providers also trade on financial markets. "Financial markets bring buyers and sellers together to trade in financial assets such as stocks, bonds, commodities, derivatives and currencies. The purpose of a financial market is to set prices for global trade, raise capital and transfer liquidity and risk. Although there are many components to a financial market, two of the most commonly used are money markets and capital markets. Money markets are used for a short-term basis, usually for assets up to one year. Conversely, capital markets are used

⁷⁰⁶ <http://voxeu.org/article/shadow-banking-economics-and-policy-priorities>

⁷⁰⁷ Idem.

⁷⁰⁸ <http://www.imf.org/external/pubs/ft/fandd/basics/bank.htm>

for long-term assets, which are any asset with maturity greater than one year. Capital markets include the equity (stock) market and debt (bond) market."⁷⁰⁹

Capital markets channel savings and investment between suppliers of capital such as retail investors and institutional investors, and users of capital like businesses, government and individuals. Capital markets are vital to the functioning of an economy, since capital is a critical component for generating economic output. Capital markets include primary markets, where new stock and bond issues are sold to investors, and secondary markets, which trade existing securities.⁷¹⁰ Although capital markets are generally concentrated in global financial centres such as London, New York, Tokyo, etc., most of the trades occurring within capital markets take place through computerized electronic trading systems. Some of these are accessible by the public and others are more tightly regulated.⁷¹¹

Together the money and capital markets comprise a large portion of the financial market and are often used together to manage liquidity and risks for companies, governments and individuals.

including clearing houses, enables and manages the trading on financial markets.

Focus and presentation of the chapter

General data for the financial and insurance services sector are only available at a more aggregate level and thus a detailed overview of the volume and value of each of the individual financial and insurance activities is not feasible in the context of this study. In combination with the overall ambition of the EU negotiators in TTIP to establish a framework for regulatory cooperation (see next section), this sector analysis will focus on the sustainability impacts of TTIP at a more aggregate level for financial services and insurance, and where possible and relevant (e.g. when particular regulations affect particular activities more than others) references will be made to specific areas, types of services or institutions. This sector analysis thus differs from the other sector-specific impact assessments in this study (particularly manufacturing sector), where issues under negotiation are more specific and often technical, and relate more strongly to particular subsectors (i.e. specific market access issues).

Having said this, while this chapter concerns all financial services *including* insurance, in several instances we will present data and results for these two main sub-sectors separately. This concerns specifically general economic and trade data. In the remainder of the chapter, when we refer to financial services this includes insurance, unless otherwise specified.

13.1.2. EU Ambitions for financial services in the TTIP

Both the US and EU have been hard hit by the global financial and economic crisis, which was triggered by the sub-prime crisis in the US in 2008. One of problems identified as playing an important part in the crisis becoming a global one has been that while the sector has seen strong globalisation over the past decades, the regulatory and legislative frameworks governing it have by and large remained nationally focused and thus inadequate in identifying specific risks and dealing with the fall-out. As was noted in the EC position paper for financial services in TTIP "The global nature of financial services allows systemic risks to be transmitted across national borders. Financial stability is not served by a fragmented regulatory approach, inconsistent rules and a low level of co-operation among supervisors."

Since the financial crisis of 2008/2009, both the US and EU governments have embarked on ambitious financial sector reform programmes aimed at improving the regulatory framework for this sector so as to improve its transparency and accountability and reduce risks.

The ambition levels of the TTIP negotiations must thus be seen in the light of such ongoing reforms in the EU and US and cooperation and dialogues that are already taking place at multilateral and bilateral levels to ensure international regulatory coherence and cooperation in this process of reform.

⁷⁰⁹ www.investopedia.com/articles/investing/052313/financial-markets-capital-vs-money-markets.asp.

⁷¹⁰ www.investopedia.com/terms/c/capitalmarkets.asp.

⁷¹¹ Idem

In the aftermath of the financial crisis, regulators on both sides of the Atlantic rapidly (re)designed regulation in order to make the financial sector safer, with the wider objective of trying to reduce negative impacts on the rest of the economy in times of adverse developments in the financial sector. Even though the existing bilateral and multilateral fora provided for the possibility to align the efforts to improve the health of the sector in the EU and the US, not always were similar regulation and measures adopted. In some cases this gave rise to different rules and regulations in both the EU and the US, with adverse impacts on bilateral trade and investment.

Thus regulatory divergence as a hindrance to trade and investment (both ways) can be seen as a key barrier to trade and investment for the financial services sector as it adds to the cost of doing business across the Atlantic.

As is true more generally for services and thus for financial services as well, regulatory cooperation is increasingly seen as key to meaningful trade liberalisation in services. As Mattoo (2015) argues "Decades of services trade negotiations have produced a plethora of rules and commitments but very little real liberalization. One reason is a form of "negotiating tunnel vision," which has led to a focus on reciprocal market opening rather than on creating the regulatory preconditions for liberalization." The problem is that the very nature of services 'production' and 'consumption' makes pre-consumption inspection and post-production regulation (as is custom for goods) difficult. Thus in services, in order to address national market failure and / or pursue public policy interests, regulators focus on regulating services providers. However regulating *foreign* services providers poses a jurisdictional challenge, while the actions (or inaction) of regulators in exporting jurisdictions may affect consumers in importing jurisdictions. Regulatory cooperation ensures that there is policy coordination between importing and exporting countries, and that commitments are made by both importers and exporters.⁷¹²

EU ambitions for the financial services sector under the TTIP would thus be to further improve and enhance regulatory cooperation, rather than address specific issues (NTMs) in, and substance of, the financial services sector. The EU and US already discuss regulatory issues in financial services in the Financial Markets Regulatory Dialogue (FMRD). According to the EU, however, while "(t)hese dialogues are clearly important and have achieved some important successes over their lifetimes (...) in the post crisis era where we have fundamentally upgraded financial regulation on both sides of the Atlantic, we should also seek to upgrade the mechanisms for regulatory co-operation. Especially as we continue to shift our focus from agreeing high level international standards to implementing them in detailed regional and domestic rule making."⁷¹³

According to the latest EU position paper on financial services, EU ambitions (or principles) for the sector in the TTIP are as follows:

- Joint work to ensure timely and consistent implementation of internationally-agreed standards for regulation and supervision;
- Mutual consultations in advance of any new financial measures that may significantly affect the provision of financial services between the EU and the US and to avoid introducing rules unduly affecting the jurisdiction of the other party (unless there are overriding prudential reasons);
- Joint examination of the existing rules to examine whether they create unnecessary barriers to trade;
- A commitment to assessing whether the other jurisdiction's rules are equivalent in outcomes.

⁷¹² Mattoo, Aaditya. Services Trade and Regulatory Cooperation. E15Initiative. Geneva: International Centre for Trade and Sustainable Development (ICTSD) and World Economic Forum, 2015. www.e15initiative.org/ and Mattoo, Aaditya (World Bank, 2015) "Integrating Services Markets and Regulatory Cooperation". 2nd APEC Structural Reform Ministerial Meeting September 2015, Cebu (2015/SRMM/002 Agenda Item: III).

⁷¹³ EU Position paper: "EU - US TRANSATLANTIC TRADE AND INVESTMENT PARTNERSHIP (TTIP). Cooperation on financial services regulation." (27-01-2014), pp.2.

These general principles would be backed up by specific (institutional) arrangements for the governance of the EU-US regulatory cooperation, guidelines on equivalence assessments and commitments to exchange necessary and appropriate data between regulators.⁷¹⁴

The TTIP would *not* look to alter regulations and legislation in the two economies or affect the ability of individual regulatory agents in either economy to regulate.

“The aim of the EU proposal is not to negotiate within the TTIP on the substance of the international standards, on the on-going implementation of these standards or on other elements of on-going regulatory reforms (e.g. the Volcker rule, or rules on foreign banking organisations) that are being currently implemented. Discussions on these subjects may continue in parallel with, but outside of, the TTIP negotiations.”⁷¹⁵

The debate on regulatory cooperation in financial services under TTIP

The EU and US have not yet agreed on whether or not to include financial services in the agreement. While the EU is in favour, it wants to address regulatory cooperation in financial services in addition to market access issues, while the US is of the opinion that regulatory issues can be solved within the existing multilateral (e.g. G20, BIS, etc.) and bilateral (e.g. FMRD) forums and only wants to include market access. Interestingly, sector organisations on both sides of the Atlantic have pushed for inclusion of financial services, including regulatory cooperation, in the TTIP, indicating that the resistance towards addressing financial regulation within TTIP comes mostly from US regulators.⁷¹⁶ Their view seems to be that financial regulation is not a trade issue and international cooperation in this area should thus not fall under trade negotiations but in separate forums including financial regulators – not trade negotiators.

In addition, civil society has expressed serious concerns over the inclusion of regulatory cooperation on financial services in TTIP. These concerns seem founded in the belief held by many such organisations that the TTIP is largely driven by corporate interests and that the agreement would serve as a platform for corporations to push for deregulation and stronger influence on public policy making. See e.g. the Open Letter on TTIP and Financial Regulations to U.S. and EU Negotiators. October 1, 2014, signed by 28 EU and 24 US civil society organisations. They argue that ‘financial regulations do not belong in a framework that targets regulations as potential “barriers to trade”.’ Implying the parties to the agreement are considering regulation only as a hindrance to trade, not as a legitimate outcome of national democratic processes.

Whilst civil society thus seems to ‘side’ with the US government on the issue of whether or not to include financial services in the agreement, its fears are more deeply founded in the mistrust of corporations and their perceived strong leverage over public policy making in their own interest. This view is not supported by the actual EU proposals, which have consistently stressed that existing regulations will not be altered or watered down, that prudential regulation will not be subject to ICS and that the right to regulate in order to achieve public policy objectives will not be affected.

In response the European Commission has stressed that under TTIP, ‘we will keep our high levels of protection. In a number of areas EU and US regulations provide similarly high levels of protection and could be compatible. In others, we will keep our different levels of protection’; ‘TTIP will reaffirm governments’ right to regulate to achieve legitimate public policy objectives’ and; ‘TTIP will not change the rules set out in the EU treaties about how our regulations are made’.⁷¹⁷ The most recent EU proposal clearly reflects “that TTIP will not automatically result in lower levels of protection in the EU, that the right to regulate is not legally restricted, and that the general, treaty-based decision-making procedures in the EU will not be changed.”⁷¹⁸

⁷¹⁴ Idem, pp.3.

⁷¹⁵ Idem, pp.4.

⁷¹⁶ <http://www.euractiv.com/sections/eu-policies-and-insurance-sector/insurers-lead-moves-include-financial-services-ttip-314007>.

⁷¹⁷ http://trade.ec.europa.eu/doclib/docs/2015/january/tradoc_153002_1%20RegCo.pdf.

⁷¹⁸ De Ville, Ferdi (2016) « Regulatory Cooperation in TTIP. A risk for democratic policy making? ». FEPS Policy Brief, Feb. 2016.

In addition the European Commission has started to emphasise more the potential benefits of regulatory cooperation beyond the facilitation of trade and investment by adopting and sharing experiences on best practices and learning from regulatory variation.

Latest developments in the negotiations

Due to the discussion on whether or not to include regulatory cooperation on financial services in TTIP and the EU's reluctance to table an offer on market access in the absence of progress in this area, no substantial discussions on financial services have taken place in the negotiations up until July 2016. In order to break the stalemate and to achieve its goal of having everything on the table by the summer of 2016, the EU proposed improvements to the existing Financial Markets Regulatory Dialogue and submitted an offer on market access.

In an exchange of letters and an attached joint statement on July 18 the EU and US outlined a new forum for financial services regulatory cooperation to replace the Financial Markets Regulatory Dialogue, based on a proposal by the EU. The Joint EU-U.S. Financial Regulatory Forum ('The Forum') will immediately replace the FMRD. The purpose of the new Forum is to strengthen regulatory cooperation in a parallel track to the TTIP negotiations.

"The Forum should be used as a platform for enabling regulatory cooperation as early as practicable in our respective law-making processes, with the general operational objective to improve transparency, reduce uncertainty, identify potential cross-border implementation issues, work towards avoiding regulatory arbitrage and towards compatibility, as appropriate, of each other's standards, and, when relevant, promote domestic implementation consistent with international standards. It goes without saying that our regulatory dialogue should not restrict the ability of either jurisdiction to implement regulatory or other legal measures that it considers appropriate. Bilateral contacts may continue, as appropriate, outside the Forum on any issue related to our ongoing regulatory cooperation." (Joint Statement on Improvements in U.S.-EU Regulatory Cooperation, 19 July 2016).

These elements were also reflected in the EU's proposal in TTIP for financial services regulatory cooperation. The fact that, according to the statement, regulators should cooperate "as early as practicable" in the new Forum, indicates an improvement over the current practice in the FMRD. EU Trade Commissioner Dombrovski has made it clear that the EU has not changed its position that regulatory cooperation should be included in TTIP (in the letter sent to US Treasury Secretary Lew, he indicated that the creation of the new forum is "without prejudice to EU and U.S. negotiations" in TTIP). However, in his response, the US Treasury Secretary Lew reiterated the US position that financial services regulatory cooperation should not be included in TTIP. As of yet it is therefore unclear how and to which extent regulatory cooperation will be an integral part of the TTIP agreement, or run alongside it through The Forum.

The EU has also tabled its offer on market access for financial services (on July 14, 2016) and the US has tabled its offer. The two [parties are now reviewing the offers and going through all the technical details, but it is not expected that there will be significant commitments other than the formalising of current practices. On Mode 1 in particular both parties are most likely hesitant to make far reaching commitments, implying they will also not push for such commitments from the other party.

13.2. The economic structure of the financial services sector in the EU

13.2.1. *Introduction and overview*

Given the nature of financial services, Eurostat data for the sector do not include the standard indicators found for other industries (e.g. employment, value added, output, etc.). The data tables are kept separately and apart from including a more limited set of indicators, show quite substantial gaps, often due to confidentiality issues. Therefore not EU level data are provided either. For these reasons, we did not make use of Eurostat data for presenting the key characteristics of this sector.

Instead we used a combination of data obtained from the European Central Bank (ECB) and the European Banking Federation (EBF), which bases its annual Facts & Figures publications largely

on ECB data, and the Association for Financial Markets in Europe (AFME). For insurance, data on the basic characteristic of the sector are mostly taken from Insurance Europe (IE).

Structure and characteristics of the market

Financial institutions

Looking at the financial services sector *excluding* insurance, there were a total of 7,760 monetary and financial institutions (MFIs) in the EU, approximately 3,600⁷¹⁹ financial vehicle corporations (FVCs) and well over 55,000 investment funds (IFs)⁷²⁰ in 2016 (ECB, 2016).⁷²¹ The table below provides a more detailed overview of the number of institutions.

Table 13.2 Overview of number of financial institutions in EU (2016)

Financial institutions	Number of entities		
	Euro area	Non-Euro area	EU total
MFIs total*	6,055	1705	7,760
- Central Bank	20	8	29**
- Credit institution	5,163	1,557	6,720
- Money market fund	652	128	780
- Other institutions	218	13	231
FVCs***	3,570	14[#]	3,584
IFs total***	52,102	3,503[@]	55,605

* Data for August 2016

** Includes the ECB

*** Data Q2 2016;

Data for the non-Euro area were only available for Bulgaria and Sweden; particularly the omission of Great Britain is likely to lead to a significant *underestimation* of the total for the EU.

@ While this includes figures for the UK, it is doubtful if the number is correct as it is relatively low (17 IFs) while the UK Asset management sector is the largest in Europe and the second largest in the world.⁷²²

Source: ECB (2014) (<https://www.ecb.europa.eu/stats/money/mfi/html/index.en.html>)

Credit institutions

Taking a closer look at trends in the number of credit institutions (the biggest category within the MFIs in the table above), it becomes clear that a process of consolidation is taking place. This involves both the number of credit institutions as such and the number of branches that these institutions each have. This is illustrated in the two graphs below.

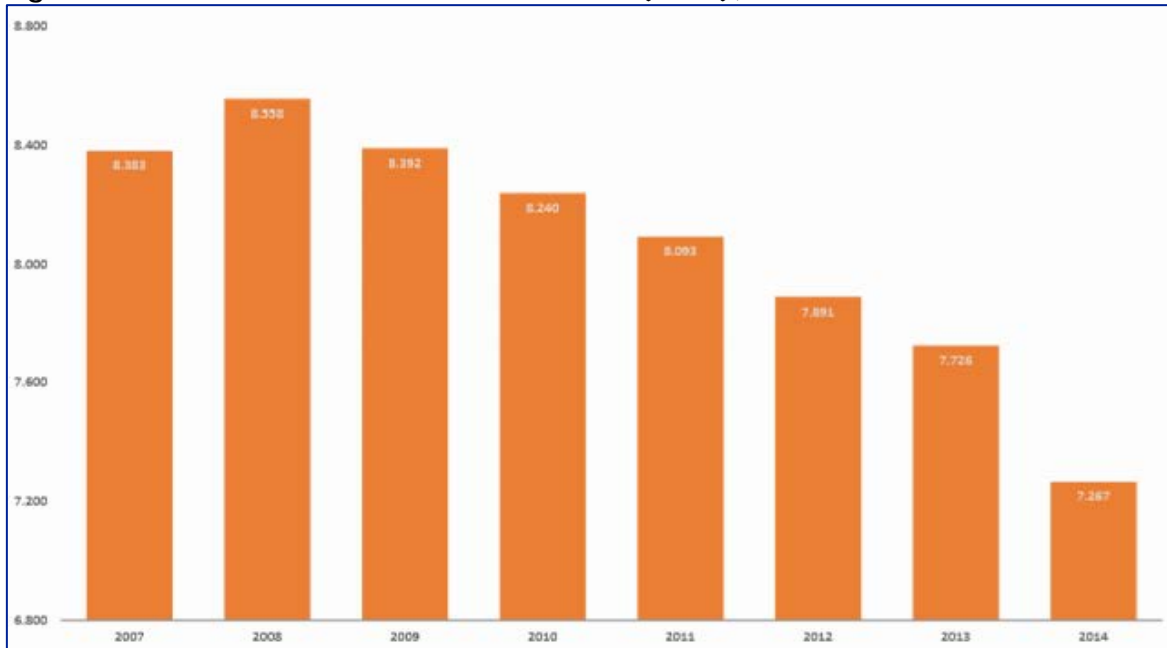
⁷¹⁹ Note: this is likely to be an underestimation as it does not include data for a number of non-Eurozone countries, most notably the UK.

⁷²⁰ The ECB categorises these funds by their investment policies, i.e. bonds/equities/hedge/mixed/real estate/other

⁷²¹ ECB, List of Financial Institutions (<https://www.ecb.europa.eu/stats/money/mfi/html/index.en.html>)

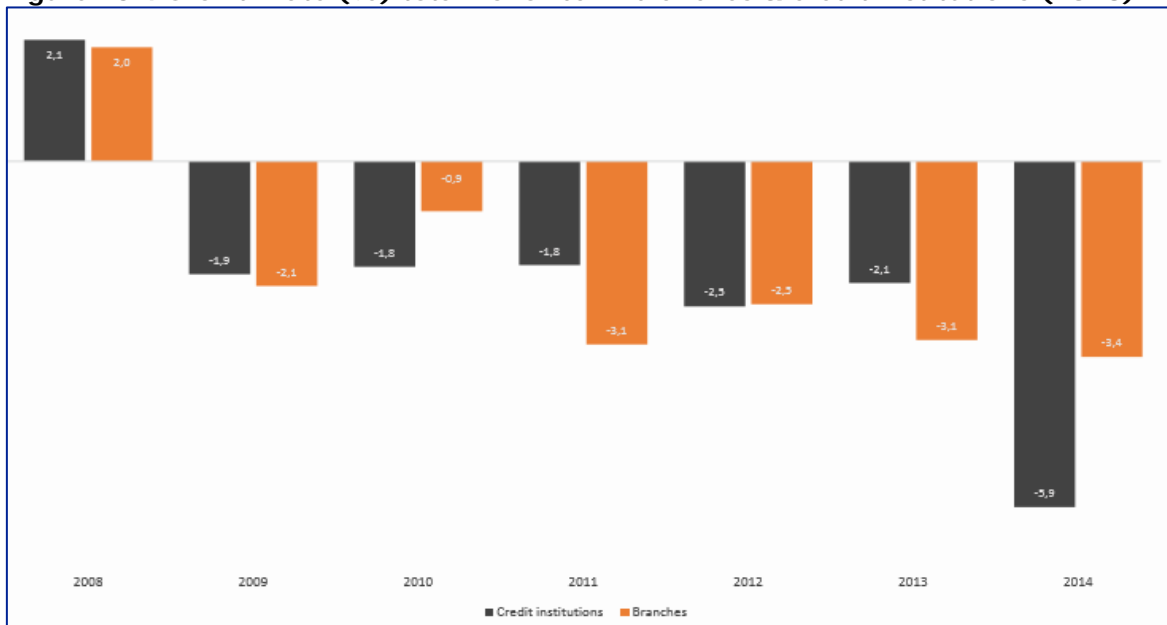
⁷²² <http://www.theinvestmentassociation.org/about-the-investment-association/>

Figure 13.3 Total number of credit institutions (EU27); 2007 – 2014



Source: EBF (2015)

Figure 13.4 Growth rate (%) total no. of bank branches & credit institutions (EU28)



Source: EBF (2015)

While the crisis and new EU regulations are playing a part in this process of consolidation, there are more structural processes taking place simultaneously, specifically technological changes and the use of online banking. As EBF (2015) notes: “(...) the share of European Union citizens using the internet for internet banking increased considerably from 25 percent to 44 percent between 2007 and 2014. And at the same time it is noted that total numbers of EU-28 credit institutions and branches have been continuously declining since 2009.”

According to the EBF in 2014 a total of 7,267 European credit Institutions held € 43.3 trillion in assets, € 21.9 trillion in deposits and provided € 22.9 trillion in loans.⁷²³

⁷²³ EBF Facts and Figures 2015 (<http://www.ebf-fbe.eu/publications/statistics/>).

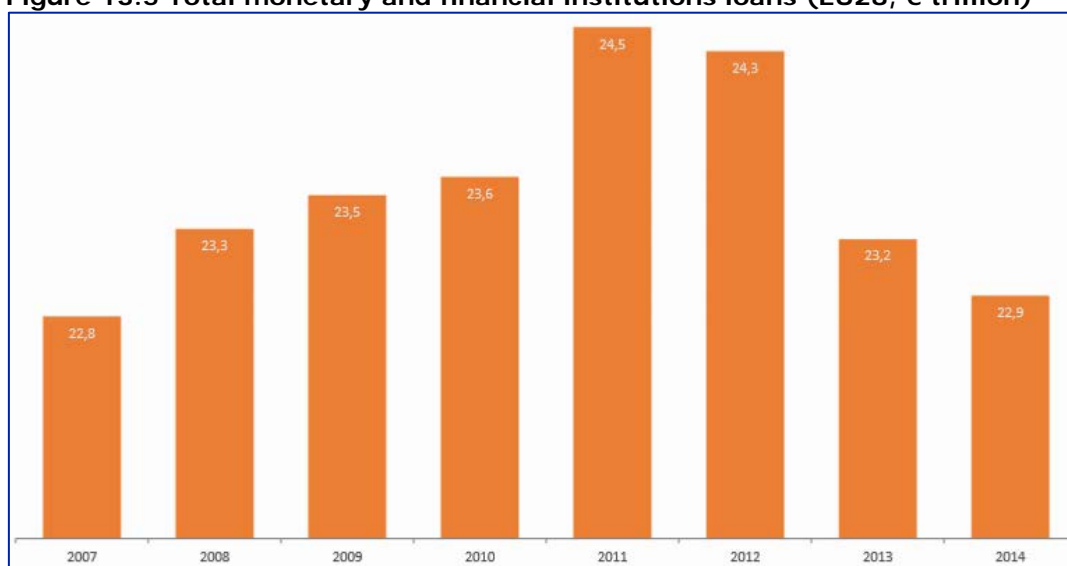
The year 2014 marked by a moderate increase in the *total assets* held by EU banks after two years of contraction, -1.8 percent in 2012 and -6.6 percent in 2013. Leverage across other large global economies in 2014, increased as well. For example, the total assets of banks operating in the EFTA countries grew by €259 billion or 8.7 percent and the total assets of commercial banks in the United States increased by 7.2 percent.

The total *stock of deposits* in EU banks has increased steadily since 1998. While they contracted slightly, by 2.4 percent in 2013, 2014 saw a return to this pattern of growth as deposits grew by +0.2 percent. The contraction in 2013 was generated in the Euro area, however, the rise from 2014 onwards is also only attributable to Eurozone countries, where bank deposits expanded by €171.3 billion or 1.0 percent. At the same time, non-euro area EU countries' deposits contracted by €127.9 billion or 2.4 percent. Generally speaking there is wide divergence between EU member states in pretty much all key characteristics relating to size and structure, which in part has to do with the relative size of MS economies, but also reflects more structural differences and differences in the overall macro-economic environment and economic performance of countries.

Of the 22.9 trillion in *loans* provided by MFIs in 2014, most (€7.7 trillion or 33.5 percent of the total), went to households, while 29.1 percent of the total (€6.7 trillion) went to other MFIs (which represented the largest group of recipients from 2007 to 2009 and in 2011). Of the loans to households, 77.4 percent were provided for the purchase of real estate. The third and fourth groups of recipients of EU bank financing were non-financial corporations (NFCs) (23.1 percent or €5.3 trillion), and governments (5.3 percent or €1.2 trillion); insurance corporations and pension funds constitute other loan contract counterparts.

As is illustrated in Figure 13.5 below, while the volume of loans increased from € 22.8 to € 24.5 trillion between 2007 – 2011, in the period since total loans of MFIs decreased steadily, but according to EBF (2015) picked up again from Q4 2014 onwards.

Figure 13.5 Total monetary and financial institutions loans (EU28, € trillion)



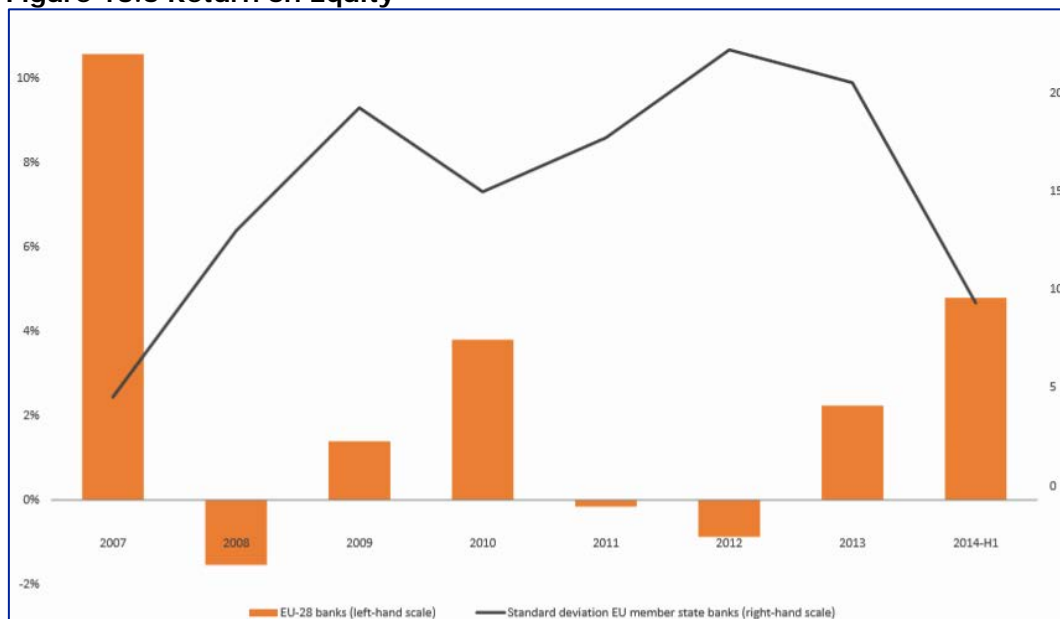
Source: EBF (2015)

A decline of the outstanding volume of loans to NFCs in the EU was recorded in 2014 as in the two previous years, despite the recovery of the EU economy. The volume of these loans fell by €72 billion or 1.4 percent in 2014. This could reflect a shift of credit from this asset class to others that are eligible in the liquidity ratio, notably government bonds. In absolute terms, the decrease stemmed to a large extent from the euro area periphery. For instance, loans to NFCs declined by €66.6 billion in Spain, €20.0 billion in Ireland, €13.3 billion in Portugal, €6.8 billion

in Italy, and €1.5 billion in Greece.⁷²⁴ Conversely, large increases were recorded in the Netherlands (€26.1 billion), France (€23.2 billion), and the United Kingdom (€13.2 billion).

While most banks are by now recovering from the crisis, growth is slow and profitability remains low. According to the EBF: “Since 2008, return on equity (ROE) – a key indicator to assess the bank sector’s attractiveness for investors – in the EU banking industry has remained subdued. As a result of the severe impact of the euro area crisis, this ratio has been negative in the years 2008, 2011 and 2012. It recovered slightly in 2013, but the 2.2 percent average rate recorded in 2013 was still considerably lower than the 10.6 percent seen in 2007”.⁷²⁵ See Figure 13.6 below. Moreover, the return on equity across EU countries has diverged much more strongly since 2008. As an evident sign of this growing fragmentation, particularly across the Euro area, the dispersion around the average return on equity in 2013 was more than twice that prior to the crisis.⁷²⁶

Figure 13.6 Return on Equity



Source: EBF (2015)

Investment Funds

While by far the largest category of institutions is constituted by investment funds, this includes a diverse category of funds, many of which are quite small. The asset management industry is also a rather concentrated industry and whilst there are many funds, the vast majority of funding flows through a very limited number of these funds.

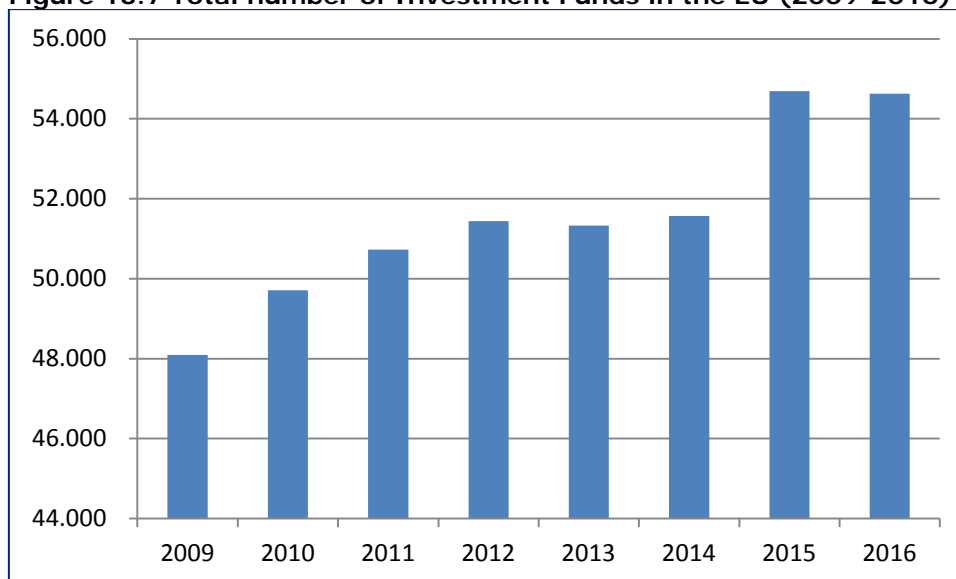
There has been a steady increase in the number of investment funds in the EU, as is illustrated in the graph below.

⁷²⁴ According to EBF “Increasing risk, measured by the gross total doubtful and non-performing loans as a percentage of total debt instruments, loans, and advances, helps to explain the trend in the euro area’s periphery.” (EBF Facts and Figures 2015, pp.31; <http://www.ebf-fbe.eu/publications/statistics/>)

⁷²⁵ EBF (2014) European Banking Sector Facts and Figures 2014 (<http://www.ebf-fbe.eu/publications/statistics/>).

⁷²⁶ Idem.

Figure 13.7 Total number of Investment Funds in the EU (2009-2016)



Notes:

- Data for Q4, except for 2016, where data are for Q2
- Figures for Denmark, the UK and Sweden are not included in 2015 and 2016 and were not available for the preceding years.

Source: ECB

The total assets and liabilities held by these funds showed a similar increase. Possible explanations for this relatively strong performance of funds in the post crisis years (contrary to what was observed in other sub-segments of the sector) include Governments introducing several rounds of “quantitative easing”, whereby a large amount of extra money was pumped into the economy. This money was then used to buy bonds from investors such as banks or pension funds, providing a major boost to the economy overall. In addition low interest rates may have contributed to the observed trend. This means the difference in gains between those who invested and those who saved was substantial.

Financial markets

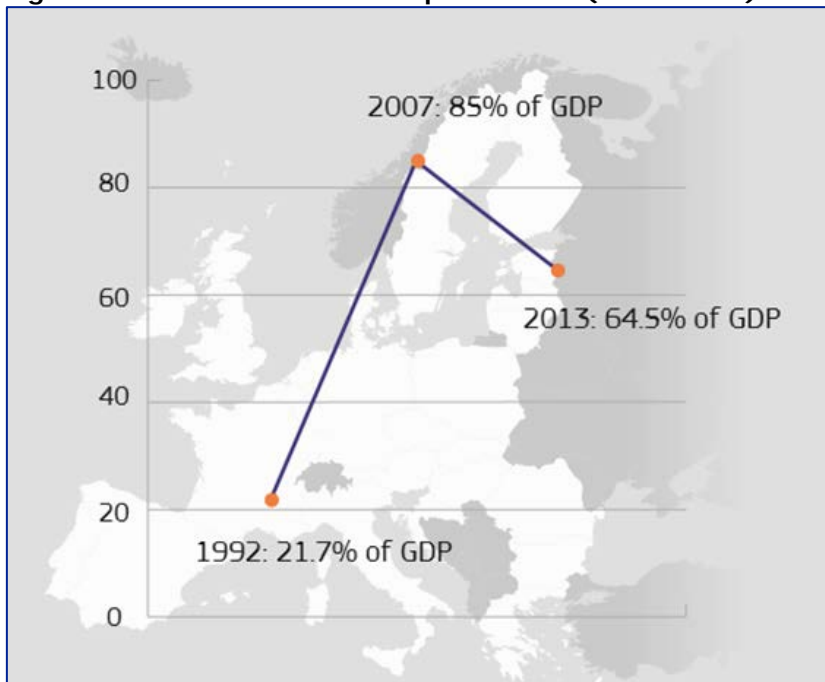
Funding of the EU economy takes place through the banking system and through financial markets, of which capital markets form the largest source. EU capital markets are smaller than in several other developed and even emerging economies⁷²⁷ and of a lesser importance in the overall financial system than e.g. in the US in particular - although within the EU this importance varies.⁷²⁸

Moreover, EU Capital markets have decreased since the crisis, with stock market capitalisation alone having declined from 85 percent of GDP in 2007, to just over 65 percent in 2013. See Figure 13.8 below.

⁷²⁷ For instance, in the US market capitalisation is was 127% of GDP and in China it was 84 percent of GDP on average over the period between 2010 and 2014. SeeValiante, Diego (2015) “Europe’s Untapped Capital Market. Rethinking financial integration after the crisis” Final Report of the European Capital Markets Expert Group Chaired by Francesco Papadia. Centre for European Policy Studies & European Capital Markets Institute Brussels.

⁷²⁸ For instance, local equity and debt securities markets go from almost four times the national GDP in the Netherlands to less than 100 percent in other countries, like Poland

Figure 13.8 EU stock market capitalisation (1992-2013)



Source: European Commission Infographic⁷²⁹

In terms of the financing of non-financial corporations (NFCs), in the aftermath of the financial crisis, loan stocks declined by 11.5 percent (between 2008 – 2014), down to €4.3 trillion, while corporate bond stocks (an alternative source of financing) increased by €424 billion, or 74.4 percent, up to €993 billion, thereby constituting 18.9 percent of total NFC financing by the end of 2014. Thus there has been some rebalancing, however, net bond issues are declining again, indicating a deceleration of this re-balancing.

Another important aspect of financial market performance is the level of securitisation, as it allows for the spreading of risks and is thus seen as encouraging the freeing up of new capital to the real economy.

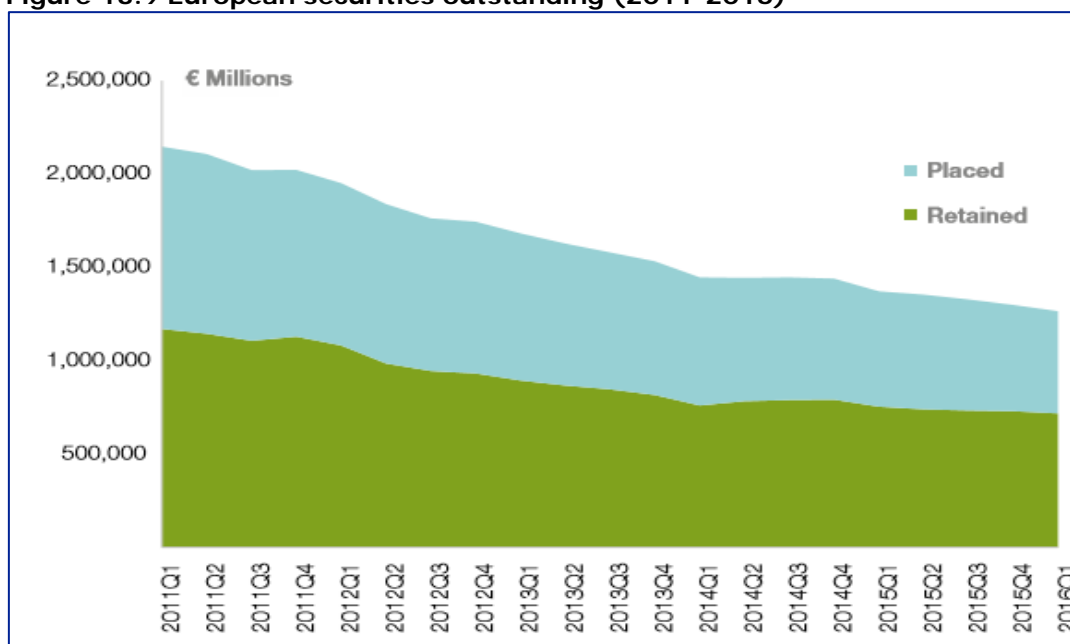
For NFCs and SMEs in particular, accessing loans and capital more generally has become harder since the crisis, which has been exacerbated by the fact that the securitisation market declined substantially since the crisis as well.⁷³⁰ See Figure 13.9 below. In addition to the overall reduction in securitisation, much of the issuance since the crisis has been retained by issuing banks for the primary purpose of using it as collateral with the European Central Bank and the Bank of England."⁷³¹

⁷²⁹ http://europa.eu/rapid/attachment/IP-15-4433/en/CMU_Infographics_A4_printing.pdf

⁷³⁰ European Commission (http://europa.eu/rapid/attachment/IP-15-4433/en/CMU_Infographics_A4_printing.pdf)

⁷³¹ Miguel Segoviano, Bradley Jones, Peter Lindner, and Johannes Blankenheim (2015) "Securitization: The Road Ahead" IMF Discussion Note, January 2015

Figure 13.9 European securities outstanding (2011-2016)



Note: Retained securities are securities issued, but retained on the balance sheet of the originator (i.e. banks), while placed securities have been placed with investors; banks tend to retain securities to prop up their reserves.

Source: AFME (2016)

The implications of these trends is that access to capital for the EU economy has become harder due in large part to the financial crisis and as some argue due to some of the more stringent regulations put in place since as regards e.g. financial institutions solvency. Recent initiatives such as the Banking Union and notably the Capital Markets Union are striving to redress the imbalances in the EU financial system and open up channels for more efficient funding and risk sharing. See also Section 13.2.4 on financial regulations.

Insurance

Insurance Europe (IE) put the number of insurance companies operating in the EU at approximately 3,700 in 2015, down 3.1 percent on the previous year and down from 5,100 in 2012. This is the number of domestic companies and branches of non EU/EEA country companies and includes mostly joint stock or mutual fund companies, but other forms also exist, such as public institutions or cooperatives. In 2014, 578 branches of EU/EEA companies were operating in the EU and around 7,600 licensed insurance operations were overseen by national supervisory authorities on the basis of freedom of services.

Insurers sell their products either directly or through a variety of distribution channels, of which the traditional ones are brokers, agents and *banc assurance*. The distribution of products is, however, increasingly influenced by channels such as the internet and mobile phones. As a result, many insurers are developing multi-channel strategies.⁷³²

Total gross written premiums in the sector amounted to € 1,167 billion in 2014. Life insurance accounts for approximately 61 percent of all premiums written. Health insurance accounts for approximately 10 percent of all premiums written, while other Non-life insurance accounts for just over 28 percent of total. The latter includes a number of specific business lines, most prominent among them motor and property. The figure below presents an overview of total gross premiums written per sub-segment.

⁷³² Insurance Europe (2014) "European Insurance in Figures." Statistics N°48, February 2014.

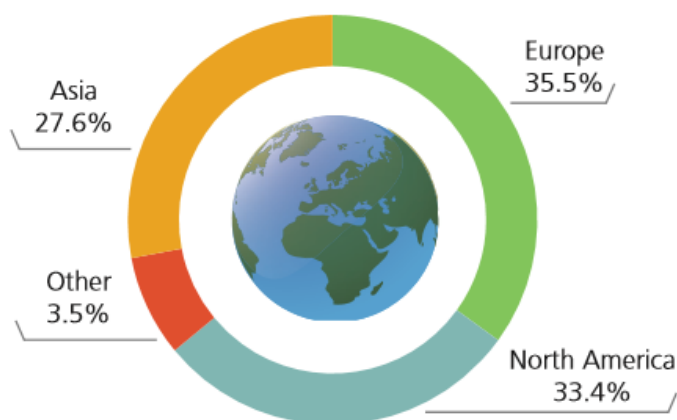
Figure 13.10 Premiums and growth (at constant exchange rates) – 2012-2014

	Gross written premiums (€bn)			Nominal growth (%)	
	2012	2013	2014	2012/2013	2013/2014
Life	640	676	713	5.6%	5.4%
Health	114	117	120	3.4%	2.2%
Non-life	327	330	329	0.8%	-0.2%
Motor	131	130	131	-0.4%	0.1%
Property	88	89	91	1.0%	2.0%
General liability	35	32	32	-7.6%	-0.6%
Accident	33	33	34	1.8%	1.7%
Other non-life	41	45	42	10.7%	-6.8%
Total	1 086	1 129	1 167	3.9%	3.4%

Source: Insurance Europe (2015)

Globally, after a year of stagnation in 2013, premiums grew 4.0 percent in 2014, reaching USD 4,780 billion (€3,936 billion). The highest growth rate was in Oceania (11.8 percent); Asia and Latin America grew 5.2 percent and 5.3 percent respectively, while North American markets increased by 2 percent. In the aftermath of the financial crisis, Europe's share in the global insurance market (in terms of gross premiums written) started to decline, mostly to the benefit of Asia, while North America also experienced a decline until 2012. However, in recent years it has regained some market share again and Europe remained the largest insurance market in the world in 2014, with a 35.5 percent share, followed by North America at 33.4 percent and Asia at 27.6 percent. See Figure 13.11 below.

Figure 13.11 Distribution of worldwide insurance premiums (2014)



Source: Insurance Europe (2015)

Total benefits and claims paid to customers by European insurers decreased by 1.7 percent in 2014 to € 950 billion. Over the past decade, benefits and claims paid grew substantially and were up 43 percent between 2005 and 2014.

Investments are an integral part of the insurance business model: the premiums insurers receive are invested until claims or benefits become due. The insurance sector is the largest institutional investor in Europe. Since most of their assets back long-term liabilities, insurers have a long investment horizon. Their investment portfolio is closely linked to a range of (macro-)economic factors and the evolution of financial markets. (Macro-)economic developments affect the inflow of premiums to be invested, while developments in financial markets directly affect the performance of existing assets. The total value of European insurers' investment portfolio was € 9, 574 billion in 2014 up by 9.8 percent from 2013. This can be largely explained by an increase in premiums, as well as an increase in the prices of fixed-

income products (government and corporate bonds) and a mixed performance in equities. Insurers tend to channel their investments into debt like products rather than equity, and approximately 47 percent (2014) of insurers' assets are government and corporate bonds.

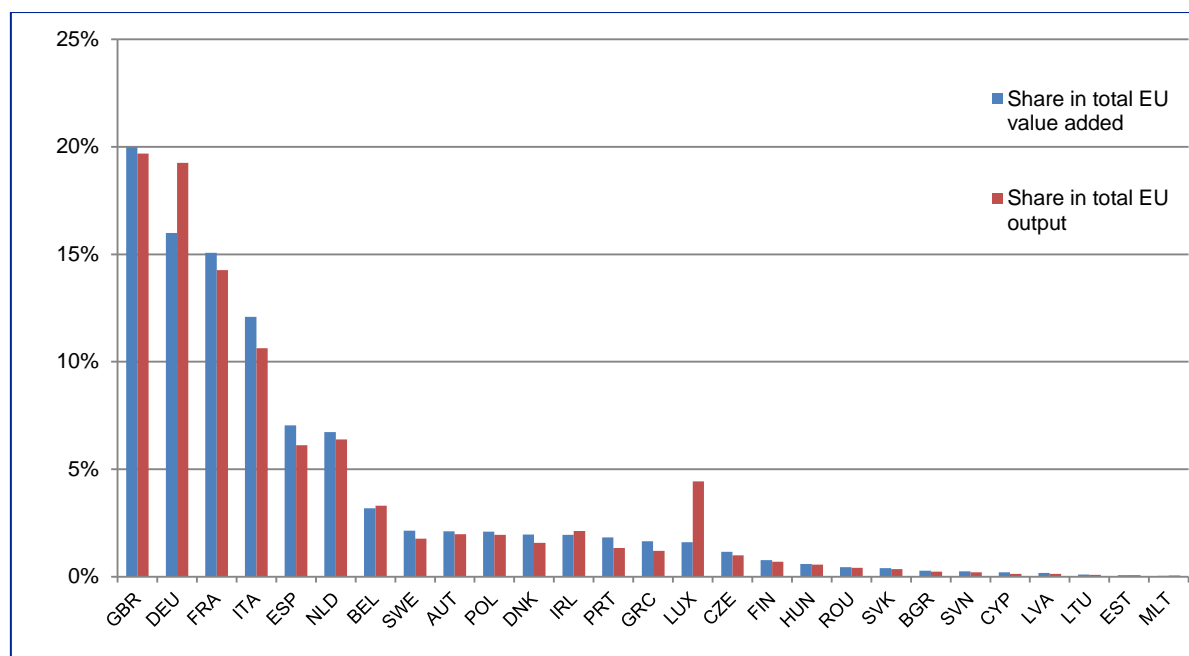
Output and value added

Given that the financial services sector does not produce any tangible outputs, its output is measured differently from production sectors. Generally, the measurement of the financial sector's contribution to economic outputs is challenging, as bank output is derived from implicit and explicit service charges. The latter include direct charges and fees, such as account services fees and asset management cost. However, these only represent part of the output measured in the national accounts framework; implicit charges are a second key component of this output. These implicit charges are based on interest rate margins for loans and deposits.⁷³³

As for output measurement for insurance services, this is effectively a service charge. It is measured at national level and within the EU would follow ESA95 and more recently ESA10 guidance. An example of an approach to measuring sector output is by taking insurance premiums earned + premium supplements -/- insurance claims -/- change in provisions. The insurance output is then reported including the full amount of risks accepted by the insurer (gross of reinsurance); this is the preferred international approach.⁷³⁴ Without going into the full details of calculating financial services sector outputs, the unique features of output (and value added for that matter) in this sector should be kept in mind.

Based on WIOD⁷³⁵ data, total EU27 output (at basic prices) of financial services was USD 1.76 trillion in 2011 and value added (at basic prices) stood at USD 8.86 billion in that same year. Not surprisingly, the biggest shares in both output and value added are taken up by the biggest economies, with Great Britain leading the way, followed by Germany and France. Luxembourg's importance as a financial centre is reflected in its disproportionate share in EU output in particular.

Figure 13.12 EU member states shares in EU financial services output and value added (2011)



Source: WIOD, 2011; Ecorys calculations.

⁷³³ To measure these implicit charges the concept of Financial Intermediary Services Indirectly Measured (FISIM) has been developed internationally since 1995. For a discussion on this method, see: *Jenny Osborne-Kinch, Dermot Coates, Aoife Moloney and Christopher Sibley (2014) An Alternative Methodology for Measuring Financial Services Sector Output In Ireland. Working Paper for Central Bank of Ireland Statistical Conference, 29 April 2014.*

⁷³⁴ UK Office for National Statistics (2012) "Improvements to Blue Book 2012: Measurement of insurance services." 26 June 2012.

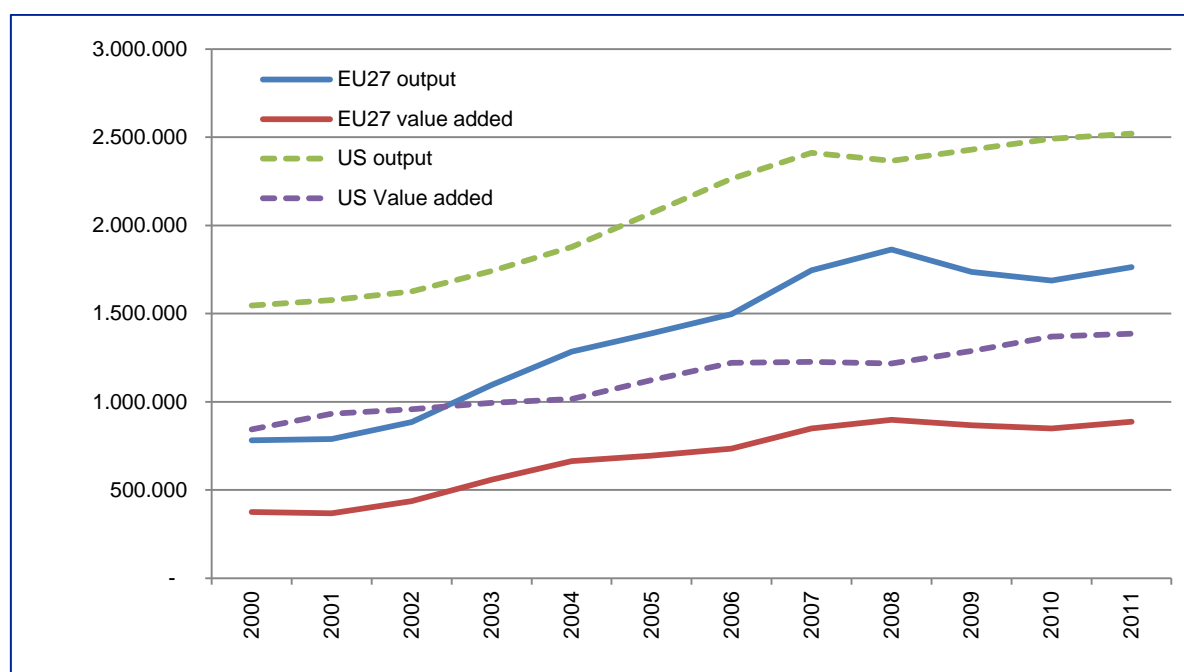
⁷³⁵ WIOD, World Input Output Tables, www.wiod.org.

Based on these data and EU27 GDP in 2011 (Eurostat), it is estimated that the sector's value added contributed just over 5 percent to EU27 GDP.

By comparison, in 2011 US output stood at approximately USD 2.52 trillion, while value added was more than USD 1.38 trillion. Given that the EU economy, in GDP terms, is slightly bigger than the US economy, this means the contribution of the financial services sector to GDP in the EU is smaller than in the US, which has the biggest financial services sector in the world.

Overall EU27 output and value added for the financial services sector have shown a steady increase over the 2001-2008 period, after which an initial sharp decline and subsequent modest recovery followed, in accordance with the financial crisis. As can be seen in the figure below, US output and value added developed in a similar way, although it shows a stronger recovery since the crisis. These trends underline the interconnectedness of global financial markets and the EU and US markets in particular.

Figure 13.13 EU27 and US financial services output and value added 2001-2011 (million USD)



Source: WIOD; Ecorys calculations.

The financial services sector ('financial corporations') contributed on average 4.9 percent to gross value added (at basic prices) in the Eurozone between 1999 and 2013.⁷³⁶

Employment

Employment in the financial sector (including insurance) stood at approximately 6.4 million people (or 3 percent of total EU employment).⁷³⁷ While no detailed breakdown for each type of provider is available, below we discuss employment figures for two main sub-segments of the sector: banking (based on EBF data) and insurance (based on IE data).

⁷³⁶

http://epp.eurostat.ec.europa.eu/portal/page/portal/sector_accounts/detailed_charts/contributions_of_each_sector.

⁷³⁷ PWC (2015) "Where Next Europe: the Future of European Financial Services." Research report commissioned by the City of London Corporation. Figures based on Eurostat data.

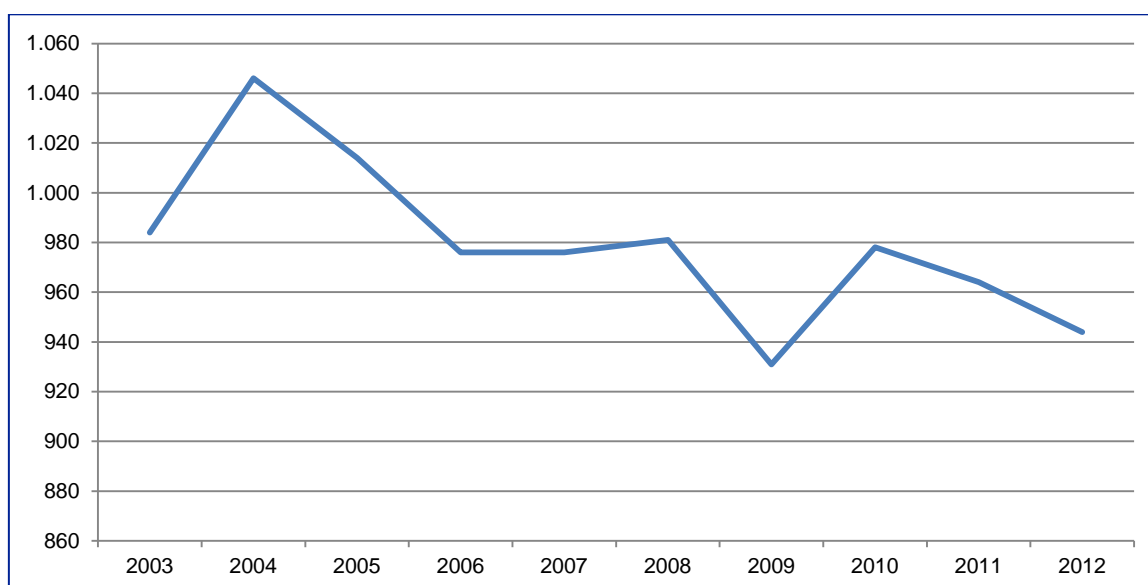
Banking sector (credit institutions)

According to EBF (2015) at the end of 2014, approximately 2.9 million staff members were employed by EU credit institutions, down from 3.08 million in 2010 and 3 million in 2012.⁷³⁸ A study commissioned by DG Employment and published in 2009, estimated that the total number of persons employed in financial services was 5.6 million of which 65 percent worked in banks, 20 percent in the insurance industry and 15 percent for intermediaries.⁷³⁹ This would put the number of persons employed in the banking sector at approximately 3.65 million. Clearly there is thus a declining trend in employment in the sector, which correlates with the decline in number of institutions, and can in part be attributed to the financial crisis. But there seem to be some more structural changes taking place as well affecting employment in the sector, including internal re-organisation and productivity gains. Economies of scale are very important in the sector and have opened a wide field for productivity increase. ICT technologies and automation in back office administration, increasing use of the internet, and outsourcing internal support services have all had substantial impacts on employment in the sector (see also section 13.2.6 on Competitiveness).

Insurance

The insurance sector employed approximately 944,000 people in 2012. Employment in the sector also shows a declining trend, caused by similar factors as described above. Particularly the fact that consumers can increasingly inform themselves and buy products online plays an important role.

Figure 13.14 EU employment in insurance services 2003-2012 (number of employees x1,000)



Notes:

* The 'slump' in 2009 is primarily caused by a decrease in number of employees in the UK between 2008 and 2009 (from approximately 178,700 to 117,000) followed by an increase back to 175,739 in 2010; it is unclear what would have caused such a sudden drop and such a sudden recovery and it is likely that this concerns 'missing data'.

* These data reflect direct employment in insurance companies, hence do not take into account additional outsourced employees and independent intermediaries, estimated to total roughly 1 million people.

Source: Based on figures taken from Insurance Europe (2013).

The above figures suggest that other services providers in the financial sector, such as funds, payment services operators, infrastructures, etc. employ around 2-2.5 million people.

⁷³⁸ EBF Facts and Figures 2015 (<http://www.ebf-fbe.eu/publications/statistics/>).

⁷³⁹ Danielle Kaisergruber & Kurt Vogler-Ludwig (2009) "Skills scenarios for the Financial Services Sector in the European Union" Study undertaken for the European Commission Employment, Social Affairs and Equal Opportunities DG Unit Working Conditions, Adaptation to Change. VT/2007/090.

Consumers

Financial services are consumed (or used) by all sectors in society: individuals, households, private companies and public institutions. Consumers can be roughly divided into retail consumers⁷⁴⁰ or professional consumers. When speaking of financial services consumption it is good to briefly consider what a financial service actually is; a financial service is not the financial good itself – e.g. a mortgage loan to buy a house or a car insurance policy – but something that is best described as the process of acquiring the financial good.⁷⁴¹ For this service a fee is paid.

Any services associated with unsecured lending (credit cards, personal loans, overdrafts) is treated as final consumption, as are all imputed services to households who hold deposits.⁷⁴²

However, services associated with borrowing for house purchase (primarily mortgage fees and FISIM on the outstanding stock of mortgages) are actually classed as intermediate consumption by another industry, not as consumption by the household sector.

Professional consumers also require some form of financial services in order to operate efficiently, such as bank accounts, savings and investment products, credit and payment services support. In addition financial institutions play an important role in financial intermediation for non-financial corporations, who will enlist the services of banks or other actors on financial markets to secure capital for their investments (e.g. underwriting debt and equity issuance) or business operations (e.g. trade finance), (temporarily) improve liquidity positions, manage risks (e.g. foreign exchange or interest rate risks), insure assets, etc.

Financial services providers also sell their services to other financial services providers (e.g. reinsurance) or may provide intermediation services (e.g. brokerage) to professional consumers.

Retail consumers

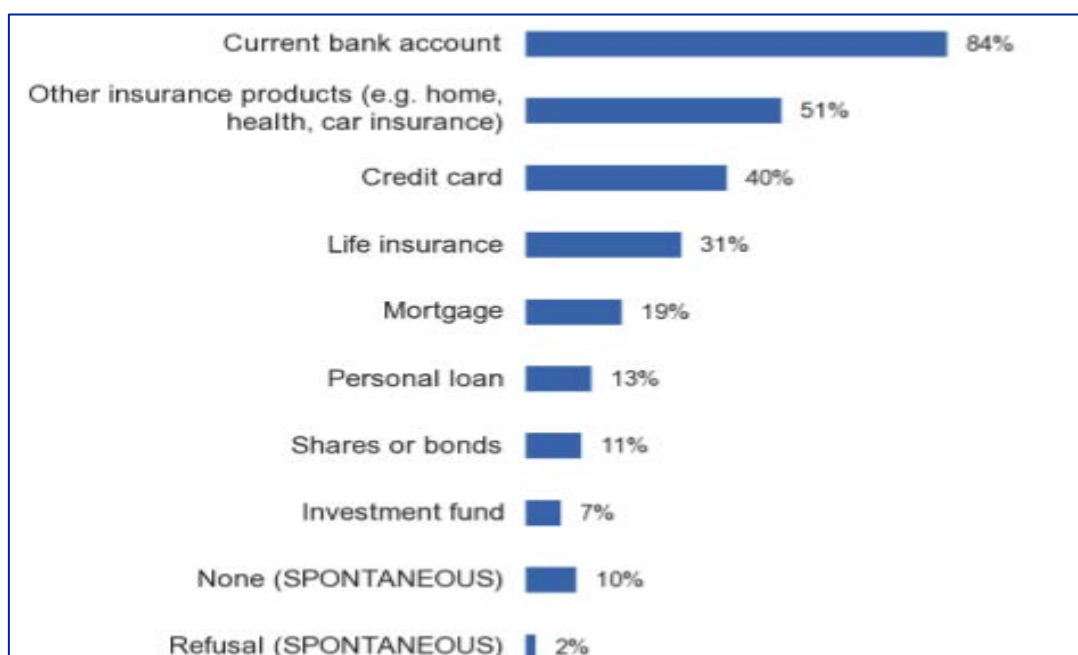
The main financial services purchased by retail consumers across the EU include current banking accounts and non-life insurance products. Other products such as investment funds are less common. There are great variations among Member States in the types of products typically consumed, within the EU15 consumers generally make use of a larger range of products, while in the newer member states significantly less financial products/services were purchased/used. A 2012 Eurobarometer survey found that 10 percent of survey respondents had not purchased any financial products at all (see Figure 13.15 below).

⁷⁴⁰ The definition of retail clients usually includes individuals, families and small businesses

⁷⁴² www.bankofengland.co.uk/publications/Documents/quarterlybulletin/qb110304.pdf.

⁷⁴² www.bankofengland.co.uk/publications/Documents/quarterlybulletin/qb110304.pdf.

Figure 13.15 Financial products purchased by EU retail consumers (based on EU-wide survey, n=26,856)



Source: Special Eurobarometer 373 / Wave EB76.1 – TNS Opinion & Social (2012)

A 2009 study, carried out for the European Commission, that compared the prices for payment accounts in the 27 Member States found very significant variations in prices in absolute terms, both within and across Member States. This study found that on average, the annual cost of an account ranged from €41.17 to as much as €243.64.

Comparing accounts and understanding their cost was found to be difficult for consumers due to complex wording used by account providers as well as complicated and opaque fee structures, hidden or undisclosed costs, etc. Consumers found it difficult to know how much their account costs and those looking to set up a new account found it difficult to compare fees. In part as a consequence of this switching between providers is also low.

In response to these and similar findings on costs of and information on credit and investment, policies have been developed at EU level to improve consumer protection, transparency and information. Policies promoting cross-border consumption of financial services are seen to further promote competition between providers, reducing prices and increasing choice for consumers.

In 2011, the total stock of consumer credit in the European Union, as recorded by national central banks, stood at €1,041 billion, or 8.2 percent of the EU's GDP. This includes different types of credit varying from overdrafts to credit cards, student loans, personal loans, car loans, personal credit lines, loans / financing for new goods and services purchased, etc. The cost of credit will vary between type of credit and provider of the credit. E.g. specialised lenders tend to charge higher rates than banks, while car loans tend to be cheaper than personal loans and particularly short term loans. Costs also vary across Member States, as cross-border consumer loans are still relatively limited.

Consumer credit can be an important driver behind economic activity, as this credit is used to e.g. finance home improvements or acquire consumer goods.

The consumer credit market has tightened since 2008. End of December 2013, the amount of outstanding loan in the European Union amounted to €1,061 billion, which was a decrease of 0.9 percent compared to the year before, while in that same year the global consumer credit market grew by 6.8 percent. Growth of the unemployment rate (an average of 6 percent in

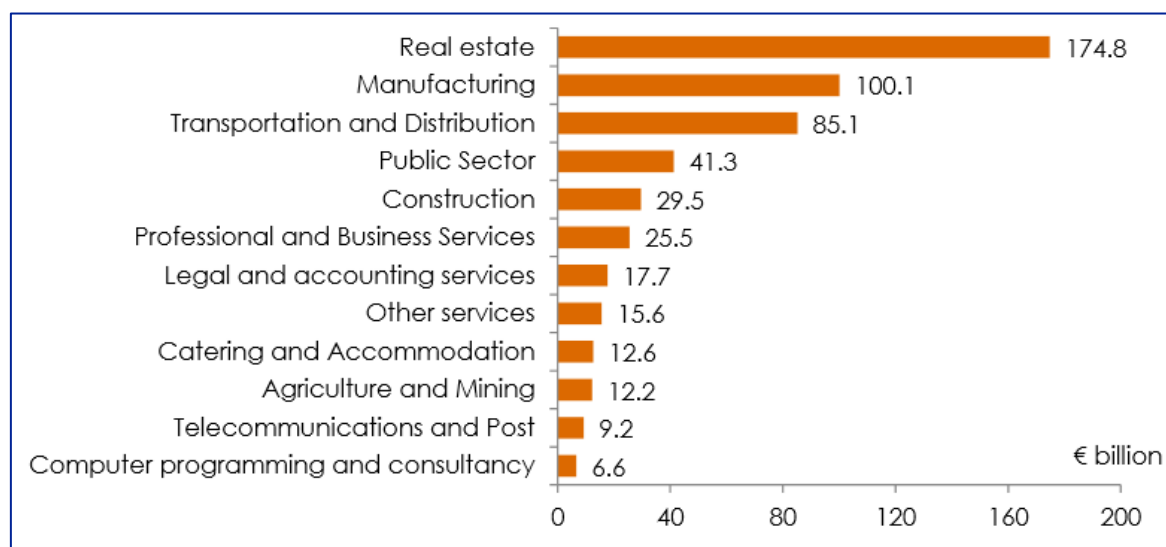
2008 up to 11 percent in 2013) and the difficulties of some banks in the Eurozone are the main factors explaining this trend.⁷⁴³

Beyond the downward trend, the average level of loan outstanding is relatively low in Europe: While the average loan outstanding per inhabitant was €2,100 in the European Union in 2013, it was more than double that figure - €5,900 - in North America (including the US, Canada and Mexico).

Professional consumers

In 2011 the financial services sector supplied services worth €530 billion to EU businesses, equivalent to 4.7 percent of total intermediate demand from other sectors. The figure below shows a breakdown of the value of financial services products and services that are purchased by other sectors (i.e. professional consumers excluding other financial services providers).

Figure 13.16 Financial services sector products & services purchased by other sectors (2011)



Source: PwC (2015), based on Eurostat figures.⁷⁴⁴

The real estate sector is clearly the largest consumer of financial services (after the financial sector itself that is) – much of this involving mortgage and refinancing of real estate.

Insurance density and penetration

Whilst consumption of insurance services by retail consumers in essence involves costs for services provided by e.g. an insurance agent⁷⁴⁵, considering insurance density and penetration in Europe gives an indication of the level of consumption of such services.

In 2012 an average of €1,843 per capita was spent on insurance in the 32 full member countries of Insurance Europe, which includes all EU member states.⁷⁴⁶ Of this, €1,083 was spent on life insurance and the remaining €760 on non-life insurance, of which €190 was spent on health insurance. These figures are broadly stable compared to the previous year. Insurance

⁷⁴³ Crédit Agricole Consumer Finance (2014) « Consumer credit market in Europe 2013 overview. » 9 July 2014

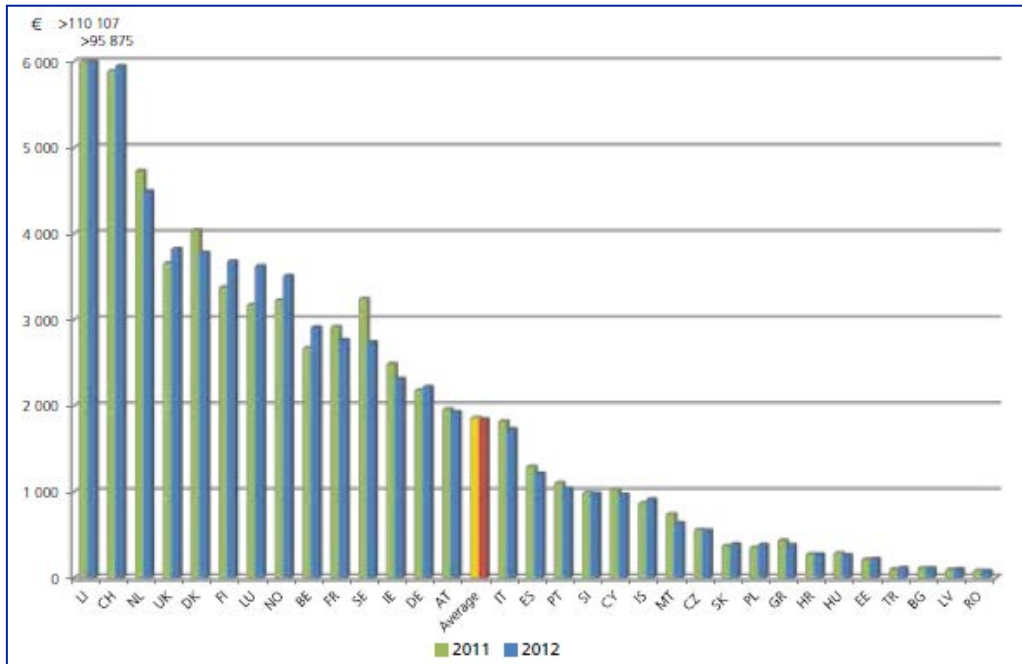
⁷⁴⁴ PwC (2015) " Where Next Europe: the Future of European Financial Services." Research report commissioned by the City of London Corporation.

⁷⁴⁵ although it must be noted that these days many insurance products can be bought online (sometimes directly from the main insurer or underwriter)

⁷⁴⁷ See also e.g. http://www.oliverwyman.com/content/dam/oliver-wyman/global/en/files/insights/financial-services/2014/Jan/Oliver%20Wyman_State%20of%20Financial%20Services%20Industry%202014.pdf.

density figures differ significantly across the EU28, ranging from less than €100 in Romania to approximately €4,500 in the Netherlands. This is reflected in the figure below.

Figure 13.17 Total European premiums per capita — 2011–2012 (€)



Notes:

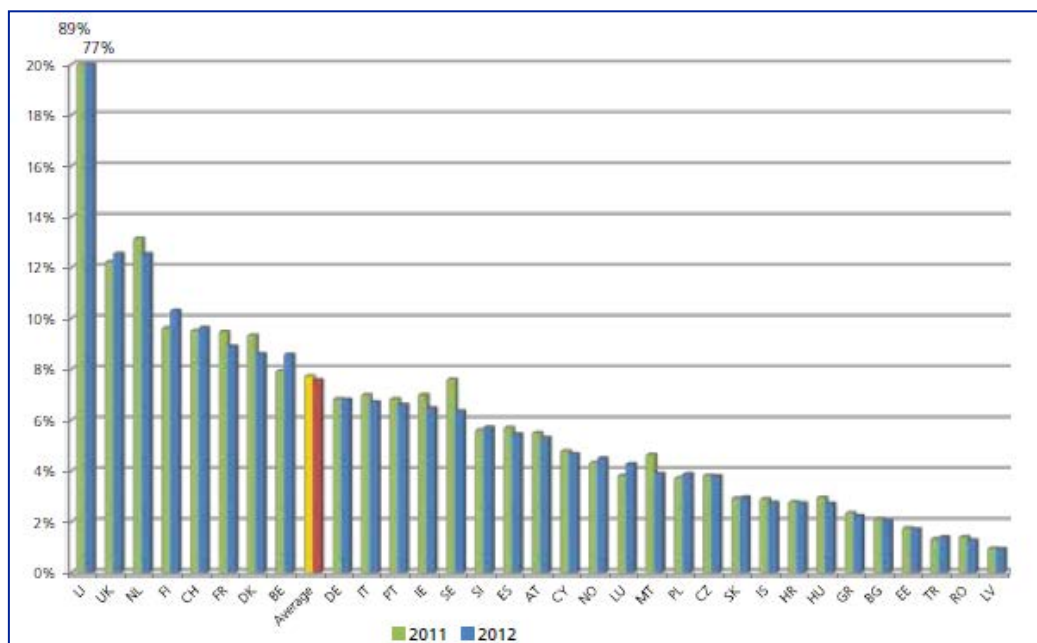
- Calculated at constant exchange rates;
- Finland includes pension funds;
- Germany includes "Pensionskassen" and pension funds;
- For Liechtenstein cross border trade is included; the huge amount of cross-border life business explains its total of more than €100 000 of premiums per capita.

Source: Insurance Europe (2013).

The chart shows that density is highest in large financial centres and Scandinavian countries, where the life insurance sector dominates. The only exception to this rule is the Netherlands, where the high levels of density are driven primarily by (compulsory) private health insurance.

Insurance penetration is a commonly recognised indicator of insurance activity, expressed as gross written premium volumes as a percentage of GDP. According to Insurance Europe average insurance penetration in Europe fell slightly from 7.7 percent in 2011 to 7.6 percent in 2012. A review of life and non-life business shows that both average penetration rates in Europe decreased in 2012, amounting to 4.5 percent (4.6 percent in 2011) and 3.12 percent (3.14 percent in 2011) respectively.

Figure 13.18 Ratio of total European premiums to GDP (2011–2012)



Notes:

- Calculated at constant exchange rates;
- Finland includes pension funds;
- Germany includes “Pensionskassen” and pension funds;
- Liechtenstein includes cross-border business.

Source: Insurance Europe (2013).

Demand for and consumption of insurance services is highly dependent on the macro-economic environment, and as such has been affected strongly by the global economic downturn and the weak performance of EU economies, as is explained in the box below.

Box 13.3 Effects of economic downturn on demand for insurance services

The European life insurance industry continued to operate in a difficult macroeconomic environment in 2012. A significant proportion of Europe’s consumers found it increasingly difficult to commit part of their income to long-term investments, with short-term priorities such as day-to-day expenses or paying back debt generally taking precedence. Consumers also seemed to have a greater preference for liquidity in their products, partially due to a lack of confidence in financial markets. Demand for life insurance was further affected in a number of countries by factors such as a reduction in the tax incentives for life insurance investments and competition with other (more liquid) savings products.

The non-life insurance market, with its three main business lines — motor, health and property — exhibits a significant correlation with the economic conditions and cycles in each individual market. Higher levels of general economic activity typically result in higher levels of demand for protection products. Demand for general insurance is also price-sensitive because of the limited degree of product differentiation inherent in the non-life industry.

Source: Insurance Europe (2013) “European Insurance in Figures.” Statistics N° 48, February 2014.

At the same time it should also be noted that the EU market in particular presents a relatively mature insurance market approaching saturation, in which growth is per definition limited.⁷⁴⁷

⁷⁴⁷ See also e.g. http://www.oliverwyman.com/content/dam/oliver-wyman/global/en/files/insights/financial-services/2014/Jan/Oliver%20Wyman_State%20of%20Financial%20Services%20Industry%202014.pdf.

The insurance industry in the United States is the largest in the world in terms of revenue. Since 2011, the annual revenue of the industry (insurance premiums) exceeded the \$1.2 trillion mark.⁷⁴⁸ However, despite its high premium volume, insurance penetration is lower than it is in the EU.

13.2.2. *International dimensions of the market*

Global markets shares

From February 2014 to February 2015, global financials made \$8,607 billion in revenues, compared to the \$1,176 billion made by global technology services, the \$4,085 billion made by consumer retail and the \$2,171 billion made by global industrial services. The US' share in this global financials revenue was 22.9 percent, while Europe (including non-EU) represented 25.3 percent. While the US has seen a slight increase in this share, Europe's share has decreased over recent years.⁷⁴⁹

The period since the mid-1990s can be characterised as one of unprecedented financial globalisation involving significant foreign direct investment (FDI) in banking, in the form of bank expansion across borders, especially in commercial banking. The years leading up to the crisis also saw a trend towards the financing of banks in the wholesale market (rather than through retail deposits) and at the global rather than national level, including in financial and off-shore centres. This globalisation paired with consolidation (through M&A) resulted in a highly concentrated global banking sector: "The five largest banking groups controlled more than 16 percent of global banking assets in 2008, which was more than double their market share in 1998. A small number of countries dominate cross-border banking. France, Germany, the UK, the US, Switzerland and the Netherlands account for about a half of cross-border banking assets, while 50 percent of cross-border banking liabilities are accounted for by the US, the UK, France, Germany, Japan and the Netherlands."

Trade in financial services

Trade in services takes place in four so-called Modes: 1) Cross-border supply; 2) Consumption abroad; 3) Commercial presence; 4) Temporary presence of persons. Given the nature and unique characteristics of the financial services industry, it is useful to provide some examples of what trade in financial services actually comprises under these four modes of supply. These are provided in the table below.

Table 13.3 Four modes of supply in financial services – some examples

Mode	Example 1	Example 2
Mode 1: Cross-border supply	A bank established in the City of London accepts deposits via telephone or internet banking from a client in the Republic of Korea.	A Singaporean firm sells commercial aviation insurance to a French airline company located in France.
Mode 2: Consumption abroad	A Spanish company opens a bank account in Colombia for transactions occurring in Colombia.	A Swiss company takes out accident insurance from a Singaporean firm for its work in Singapore.
Mode 3: Commercial presence	A London bank establishes a branch in Korea to lend funds in Korea.	An American insurance company establishes a German subsidiary to provide reinsurance services in Germany
Mode 4: Temporary presence of persons	The management of a Korean branch is staffed by British citizens from the bank's London headquarters.	A German portfolio manager travels to Canada to provide counsel and advice to a 'high-net-worth' Canadian client.

⁷⁴⁸ <http://marketrealist.com/2015/02/us-insurance-industry-largest-world/>

⁷⁴⁹ Global Financials: Exploring Revenue Trends & Fundamentals | Investopedia (www.investopedia.com/articles/markets/050416/global-financials-exploring-revenue-trends-fundamentals.asp#ixzz4KhVEMD2p)

Source: European Parliament 2014⁷⁵⁰.

Dominant modes of supply in financial services trade

Financial services providers tend to serve foreign markets in two main ways: through cross-border exports (Mode 1) or by establishing agencies, branches or subsidiaries in the host country (Mode 3). It should be noted that investment is the dominant mode of supply as cross-border trade (Mode 1) still is comparatively limited and restricted (even under GATS) particularly in insurance. This has everything to do with supervision considerations, which are harder to enforce on operators from outside the jurisdiction in which they do business. As Rouzet (2014)⁷⁵¹ notes "Foreign direct investment dominates in retail financial services, where proximity with the consumer matters to expand market share and where regulations often restrict cross-border sales by banks and insurers subject to their home country prudential framework."

With goods trade, a country can liberalize trade policy and still apply its own technical regulation at the border. However, the intangibility of financial (and other) services and the simultaneity of production and consumption make pre-consumption inspection and post-production regulation difficult. Regulators tend to respond to national market failure in services by regulating services providers and this is even more true for financial services, as the sector is seen as a systemic one, in which, as the recent crisis has demonstrated, market failures can have significant consequences for the wider economy. However, regulating foreign services providers poses a jurisdictional challenge. For insurance issues related to claims and under which jurisdiction they will fall is a limiting factor for cross-border trade. Therefore, most countries still impose relatively higher levels of restriction on cross-border trade in financial services, while national borders also seem to form natural barriers to trade in financial services.

The direct provision of financial services to foreign persons (Mode 1) is more relevant for services which target sophisticated corporate clients, such as large commercial loans and reinsurance. The regulatory constraints on these services are typically lighter since large corporations are presumed to be better able to assess the quality of foreign suppliers and the risks associated with purchasing financial services abroad.

It should be noted though that as retail financial services are increasingly 'provided' online – implying a reduced need and importance of physical branches as distribution channels - the potential market for cross-border transactions is growing. An issue in this respect is that "when transactions take place through the internet, cross-border supply (Mode 1) and consumption abroad (Mode 2) become increasingly difficult to distinguish. (...) This has become an issue insofar as GATS commitments undertaken on consumption abroad are typically more liberal than on cross-border supply."⁷⁵²

In the case of insurance services, reinsurance/retrocession is the most globalised segment of the sector, and the main component of cross-border trade, for similar reasons as discussed above. Trade that does not involve direct provision of services to individuals, but rather to corporate clients (insurance and reinsurance companies) tends to be less regulated and hence restricted. Freight and large commercial risks, including marine, aviation and transport (MAT), are also commonly insured with non-established underwriters.

EU27 overall trade

International transactions in financial services are reflected in Eurostat balance of payment statistics and although these comprise a range of different types of services and activities are only presented at aggregate level. The table below presents the exports, imports and net balance of EU27 financial services excluding insurance.

⁷⁵⁰ European Parliament (2014) "Financial Services in EU Trade Agreements." Study prepared by the Policy Department A for the Economic and Monetary Affairs Committee (ECON). IP/A/ECON/2014-08 ([www.europarl.europa.eu/RegData/etudes/STUD/2014/536300/IPOL_STU\(2014\)536300_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2014/536300/IPOL_STU(2014)536300_EN.pdf)).

⁷⁵¹ Rouzet, D. et al. (2014), "Services Trade Restrictiveness Index (STRI): Financial Services", OECD Trade Policy Papers, No. 175, OECD Publishing. <http://dx.doi.org/10.1787/5jxt4nhssd30-en>

⁷⁵² Rouzet, D. et al. (2014), "Services Trade Restrictiveness Index (STRI): Financial Services", OECD Trade Policy Papers, No. 175, OECD Publishing. <http://dx.doi.org/10.1787/5jxt4nhssd30-en>

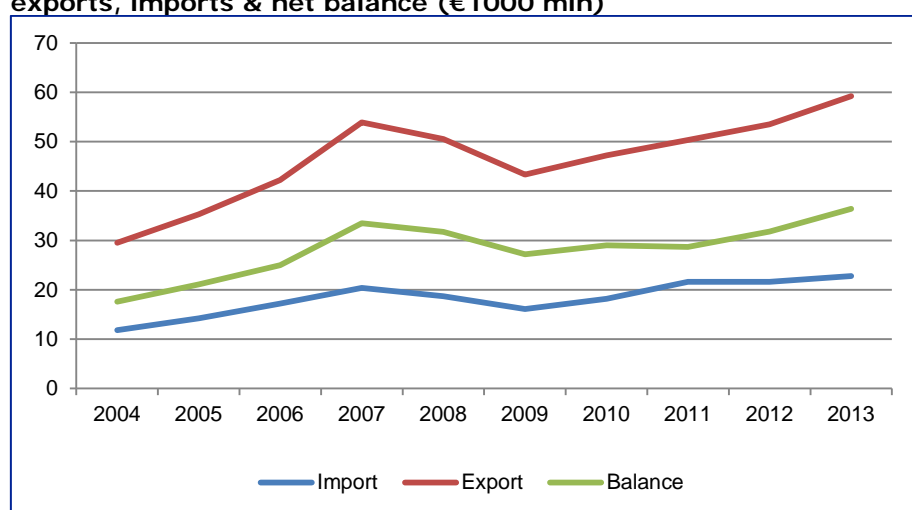
Table 13.4 EU27 international transactions in financial services: exports, imports & net balance

Trade in €1,000 mln	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013(p)
Export	29.5	35.3	42.2	53.9	50.5	43.3	47.2	50.3	53.5	59.2
Import	11.8	14.2	17.2	20.4	18.7	16.1	18.2	21.6	21.6	22.8
Balance	17.6	21.1	25.0	33.5	31.7	27.2	29.0	28.7	31.8	36.4

(p) = provisional.
Source: Eurostat.

Clearly the EU27 is a net exporter of financial services and despite a slump right after the crisis has increased both exports and its net balance of financial services trade since 2004. This trend can be clearly observed in Figure 13.19 below.

Figure 13.19 EU27 international transactions in financial services: exports, imports & net balance (€1000 mln)



Source: Eurostat.

For insurance services the picture is slightly more erratic. See table 13.5.

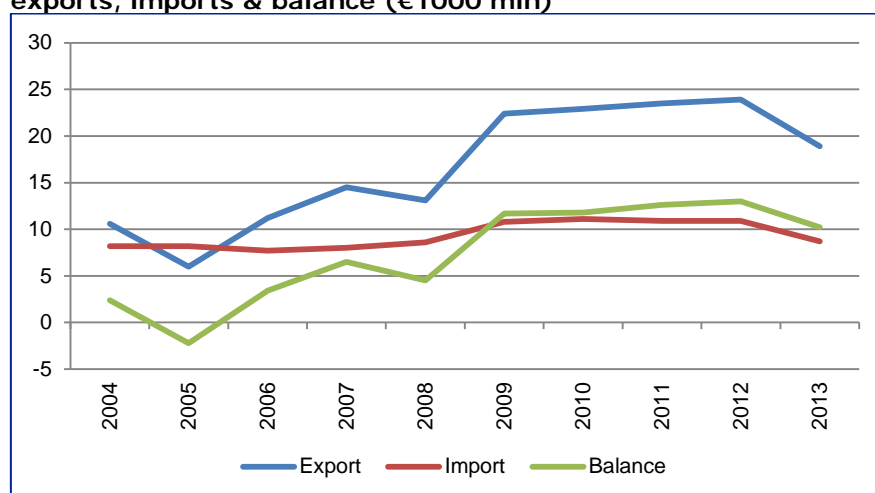
Table 13.5 EU27 international transactions in insurance services: exports, imports & balance (€1000 mln)

Trade in €1,000 mln	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013(p)
Export	10.6	6.0	11.2	14.5	13.1	22.4	22.9	23.5	23.9	18.9
Import	8.2	8.2	7.7	8.0	8.6	10.8	11.1	10.9	10.9	8.7
Balance	2.4	-2.2	3.4	6.5	4.5	11.7	11.8	12.6	13.0	10.2

(p) = provisional.
Source: Eurostat.

While the EU27 is a net exporter of insurance services, exports have decreased substantially in several years over the past decade, where in some cases this even resulted in a trade deficit (2005). In addition, while financial services seemed to have recovered reasonably well from the crisis, trade in insurance services and particularly exports show a declining trend again since 2012, after an initial recovery between 2009 and 2011. This is clearly reflected in the figure below.

Figure 13.20 EU27 international transactions in insurance services: exports, imports & balance (€1000 mln)



Source: Eurostat.

EU share in global exports

Globally the EU28 is the main exporter both of insurance and pension services and of financial services. The extra-EU28 exports share in global insurance and pension services exports in 2014 was approximately 35% and in financial services exports 24%. The second and third biggest exporters for both types of services were the US and Switzerland respectively.

Trade in financial services is relatively concentrated among higher income and emerging economies, with the top 10 exporters of insurance and pension services accounting for approximately 92% of global exports and the top 10 exporters of financial services accounting for approximately 96% of global exports in 2014.⁷⁵³

EU-US trade in financial services

The EU has an overall trade surplus for both financial services and insurance services trade with the US, as is clearly reflected in the tables below.

Table 13.6 EU-US trade in financial services (EU reporter, US partner) in million €

Trade	2004	2006	2008	2009	2010	2011	2012	2013
Exports	9,977.748	12,951.783	15,178.915	12,617.412	13,845.50	15,058.972	18,469.403	17,053.243
Imports	5,239.004	7,078.107	6,455.346	5,810.067	7,410.082	8,848.256	9,825.967	9,457.984
Balance	4,738.744	5,873.675	8,723.569	6,807.345	6,435.368	6,210.716	8,643.435	7,595.259

Source: Eurostat.

Table 13.7 EU-US trade in insurance services (EU reporter, US partner) in million €

Trade	2004	2006	2008	2009	2010	2011	2012	2013
Exports	5,311.176	4,757.908	6,420.168	10,875.282	10,663.876	10,520.025	10,027.979	5,781.264
Imports	2,332.361	2,367.872	2,333.810	2,648.830	3,007.274	2,806.273	2,791.787	1,734.736
Balance	2,978.815	2,390.037	4,086.358	8,226.452	7,656.602	7,713.753	7,236.192	4,046.528

Source: Eurostat.

⁷⁵³ WTO (2015) International Trade Statistics
(https://www.wto.org/english/res_e/statis_e/its2015_e/its2015_e.pdf)

The figures in tables 13.4-13.7 suggest that the US is a major trading partner for the EU, with approximately 35 percent of all financial services exports destined for the US and almost 42% of insurance services exports destined for the US.

Similarly, the EU is an important export destination for US financial and insurance services exports. According to a 2013 report by the UK Embassy in Washington on financial services in TTIP, US exports of financial services to the EU amounted to USD 27 billion in 2011, accounting for 36 percent of all financial services exports (see figure below).⁷⁵⁴

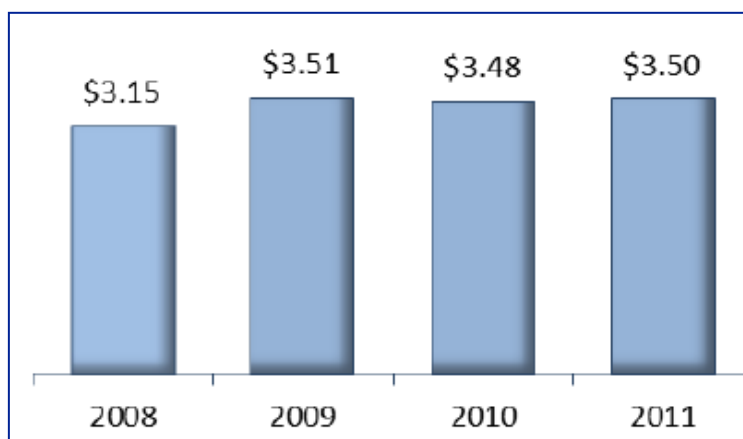
Figure 13.21 US exports of financial services to the EU – billion US\$ (2008-2013)



Source: UK Embassy Washington, 2013.

According to the same source, US exports of insurance services to the EU amounted to USD 3.5 billion in 2011 (see Figure 13.22 below). Significantly less than its exports of financial services to the EU, but still accounting for approximately 23 percent of total US insurance services exports.⁷⁵⁵

Figure 13.22 US exports of insurance services to EU – billion US\$ (2008-2011)



Source: UK Embassy Washington, 2013.

The figures of EU-US financial services trade clearly indicate the importance of these two markets for one another. Removal of remaining trade barriers is thus likely to have a positive impact given the already strong links between the two sectors.

⁷⁵⁴ www.gov.uk/government/uploads/system/uploads/attachment_data/file/288145/TTIP_and_the_US_Financial_Services_Sector.pdf.

⁷⁵⁵ www.gov.uk/government/uploads/system/uploads/attachment_data/file/288147/TTIP_and_the_US_Insurance_Sector.pdf.

Investment and investment patterns

Data on foreign direct investment flows of the EU financial services sector are derived from Eurostat, Balance of Payments accounts (<http://ec.europa.eu/eurostat/web/balance-of-payments/data/database>). We have looked inward and outward FDI flows and positions, for a selected number of origins / destinations, as presented in the tables below. FDI has been further broken down by three main destinations (outward) and origins (inward). Unfortunately data for insurance services are limited. In addition, it was not possible to extract data for other, potentially interesting regions, such as Asia.

Outward EU27 financial services FDI by sub-sectors and main destinations

Table 13.8 EU27 Financial services outward* FDI flows (million €)

Destination	2008	2009	2010	2011	2012
Financial and insurance activities					
Extra EU-27	112,227	142,989	102,429	155,286	184,756
European Free Trade Association	19,815	45,028	-3,942	33,454	7,494
United States	35,856	42,169	28,831	62,300	71,258
Financial service activities, except insurance and pension funding					
Extra EU-27	104,527	140,588	87,908	160,055	177,579
European Free Trade Association	20,287	46,619	-6,892	34,259	-16,232
United States	31,239	41,155	21,600	67,995	63,807
Insurance, reinsurance and pension funding, except compulsory social security					
Extra EU-27	:	:	:	-8,153	:
European Free Trade Association	:	:	2,748	-649	:
United States	:	:	1,642	-5,408	:
Activities auxiliary to financial services and insurance activities					
Extra EU-27	:	:	:	3,385	:
European Free Trade Association	:	:	201	-155	:
United States	:	:	5,593	-282	:

* Financial account, Direct investment, Abroad.

: no data available.

Note: negative investment flows indicate a dis-investment for that specific year.

Source: Eurostat.

Table 13.9 EU27 Financial services outward* FDI position (million €)

Destination	2008	2009	2010	2011	2012
Financial and insurance activities					
Extra EU-27	1,106,398	1,376,864	1,570,715	1,716,148	1,742,233
European Free Trade Association	166,031	235,477	264,790	341,498	331,513
United States	374,773	429,283	478,874	620,796	620,102
Financial service activities, except insurance and pension funding					
Extra EU-27	1,028,611	1,275,390	1,425,148	1,558,047	1,507,757
European Free Trade Association	148,695	216,703	228,572	323,253	313,053
United States	350,614	397,952	443,619	568,606	562,853
Insurance, reinsurance and pension funding, except compulsory social security					
Extra EU-27	:	:	:	:	:
European Free Trade Association	:	:	34,706	16,441	:
United States	:	:	27,355	43,263	:
Activities auxiliary to financial services and insurance activities					
Extra EU-27	:	:	:	:	:
European Free Trade Association	:	:	1,509	1,803	:

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United States	:	:	7,900	8,928	:
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* Financial account, Direct investment, Abroad.

: no data available.

Note: negative investment flows indicate a dis-investment for that specific year.

Source: Eurostat.

Inward EU27 financial services FDI by sub-sectors and main destinations

Table 13.10 EU27 Financial services inward* FDI flows (million €)

Origin	2008	2009	2010	2011	2012
Financial and insurance activities					
Extra EU-27	90,844	137,737	105,450	389,189	216,971
European Free Trade Association	-4,197	10,017	-120	29,466	33,913
United States	-2,607	71,390	54,008	253,195	82,499
Financial service activities, except insurance and pension funding					
Extra EU-27	95,960	115,582	92,394	380,027	212,025
European Free Trade Association	-156	10,061	-591	29,541	31,322
United States	-1,991	55,157	47,323	247,209	79,143
Insurance, reinsurance and pension funding, except compulsory social security					
Extra EU-27	:	:	:	-823	:
European Free Trade Association	:	:	642	-820	:
United States	:	:	2,015	-595	:
Activities auxiliary to financial services and insurance activities					
Extra EU-27	:	:	:	9,984	:
European Free Trade Association	:	:	-164	750	:
United States	:	:	4,669	6,582	:

* Financial account, Direct investment, In the reporting economy.

: no data available.

Note: negative investment flows indicate a dis-investment for that specific year.

Source: Eurostat.

Table 13.11 EU27 Financial services inward* FDI position (million €)

Origin	2008	2009	2010	2011	2012
Financial and insurance activities					
Extra EU-27	879,354	1,037,240	1,172,743	2,582,910	2,727,490
European Free Trade Association	104,337	118,416	117,890	294,440	326,533
United States	311,741	421,136	479,034	1,075,804	1,112,517
Financial service activities, except insurance and pension funding					
Extra EU-27	823,062	938,146	1,070,024	2,456,822	2,600,923
European Free Trade Association	92,535	107,601	106,708	283,566	315,127
United States	286,230	361,599	419,473	1,005,706	1,065,859
Insurance, reinsurance and pension funding, except compulsory social security					
Extra EU-27	:	:	:	:	:
European Free Trade Association	:	:	5,525	5,814	:
United States	:	:	11,358	11,152	:
Activities auxiliary to financial services and insurance activities					
Extra EU-27	:	:	:	:	:
European Free Trade Association	:	:	5,655	5,062	:
United States	:	:	48,202	58,946	:

* Financial account, Direct investment, In the reporting economy.

: no data available.

Note: negative investment flows indicate a dis-investment for that specific year.
Source: Eurostat.

The FDI data in the table confirm the strong integration between the EU US financial sectors. In terms of EU financial services FDI stock, the outward FDI to the US over the past few years accounted for approximately 30-36 percent of all EU financial services outward FDI stock. US FDI stock in the EU sector over the past few years amounted to approximately 40 percent of all inward FDI stock. FDI flows between the two regions fluctuate more, but are substantial overall, with EU inward FDI flows in the sector originating from the US accounting for 38 to as much as 65 percent over the past few years and the US being a destination for 28-40 percent of all EU financial services outward FDI flows.

The figures also illustrate the importance of FDI in comparison to trade in the financial services sector: While in 2011 EU exports of financial services including insurance outside the EU and to the US amounted to approximately €74 billion and €26 billion respectively, the sector's FDI outward flows in that same year amounted to €155 billion and €62 billion respectively.

While FDI data for the insurance sub-sector are limited, the available data show indications of dis-investments in 2011.

The investment data presented above further confirm the strong relations and integration of the EU and US financial services markets and point to the importance of addressing NTMs and specifically regulatory issues in an agreement between the two economic blocs.

Here we should note that merely considering trade and even investment data does not give a complete picture of the international dimension of the financial services sector or rather its international linkages. Firstly because it does not capture foreign affiliates trade (foreign affiliate trade statistics or FATS are unavailable for the sector), hence misses the, most likely substantial, international flows that take place here. Secondly, and more generally speaking, cross-border financing takes place between and within financial institutions (cross-border banking, re-insurance and retrocession, etc.), while non-financial corporates often obtain not just domestic funding sources, but also direct cross-border credit from foreign banks, through issuing international debt securities, and/or raising equity funding from foreign investors. In addition intra-firm cross-border financial transactions of multinational corporates in some cases can even mean that they can take on roles as financial intermediaries by simultaneously issuing liabilities in some locations and currencies, and acquiring financial assets in other locations and currencies. Households or individuals can hold foreign bank deposits and other financial assets, real estate and, on the liability side, foreign loans.⁷⁵⁶

Given the high levels of FDI between the EU and US such cross-border financing (within and between financials and NFCs) is likely to be substantial as well – the crisis being a clear illustration of this type of integration (cross-border positions). However, as Lane (2015) points out “Despite the vast expansion in the availability of international financial data over the last 15-20 years, the existing data sets remain inadequate for the interpretation and analysis of cross-border financial linkages.”⁷⁵⁷

Regulatory cooperation is highly relevant for these linkages, as it is not so much the cross-border transaction itself that is impeded through e.g. a tariff or market access restrictions, it is the fact that differing requirements, standards, rules and regulations between the two jurisdictions make these transactions costly and cumbersome. As the recently established Transatlantic Financial Regulatory Coherence (TFRC) Coalition (an international group of 14 trade associations and business groups) notes: “the most pressing impediments to cross border finance between U.S. and EU capital markets are the result of insufficient regulatory cooperation.”⁷⁵⁸

⁷⁵⁶ CEPR (2015) « Cross-border financial linkages: Identifying and measuring vulnerabilities », 26 January 2015. Column on CEPR's online policy forum : <http://voxeu.org/article/cross-border-financial-linkages-identifying-and-measuring-vulnerabilities>.

⁷⁵⁷ Idem

⁷⁵⁸ <http://www.transatlanticbusiness.org/news/transatlantic-financial-regulatory-coherence-tfrc-coalition-formed/>

13.2.3. Small and Medium Sized Enterprises

While the financial services sector conjures up images of large multinational banks and financial institutions making billions in turnover, the share of SMEs in the sector is still relatively high. Many companies in the insurance and auxiliary services sub-sectors consist of small business, often with only a few employees. While the response to the SME survey for financial services providers was very low – implying its results cannot be seen as representative for the sector as a whole – the majority of the respondents fall into the 1-9 employees size category and can thus be labelled as micro enterprises. Most of these respondents fell into the category of auxiliary services suppliers.

However, new technologies mean that even core banking services can increasingly be provided by smaller and non-traditional entities, as many financial transactions can be done online these days. Thus for instance Bunq, a recent start-up ‘bank’ or rather financial service provider, in the Netherlands was established by IT experts rather than traditional bankers.⁷⁵⁹

The role of SMEs in the sector may therefore become even more important in the future, while generally the size of financial institution can be expected to reduce rather than increase, given trends stimulated by regulation to reduce the number of very large financial institutions providing a huge range of different services (e.g. regulation addressing the ‘too big to fail’ issue and the forced splitting up of e.g. investment banking and retail functions of certain banks).

13.2.4. Value chains in the sector

Financial services value chain

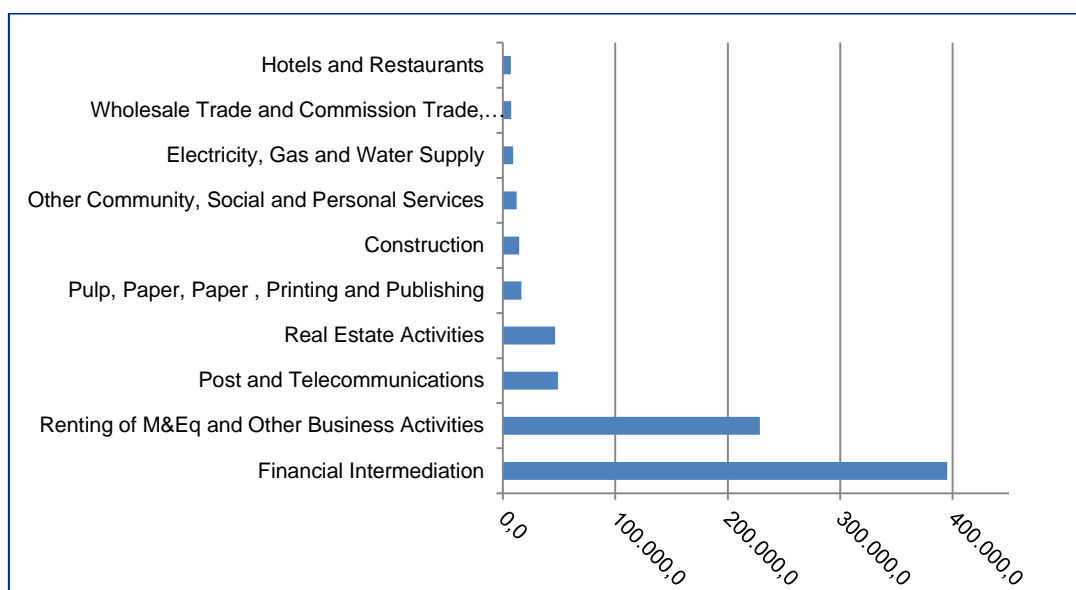
The financial services value chain is unlike the typical value chains found in product markets, since it does not follow the basic flow of a raw material input through to a final output / consumer product. Ultimately the value chain of the financial services sector ‘transforms’ savings in a society into investments. Doing so requires a host of different actions and transfers involving various different financial services providers, as was explained at the beginning of this chapter. In the process other goods and services are consumed / used, such as real estate, IT equipment and services, accounting services, printing, travel and accommodation, etc. However, this consumption is small in comparison to the transactions taking place within the sector itself, which are at the core of the value chain.

As regards sales to other sectors, key consumers of financial services include the real estate sector, business services sector and trading sectors – as was illustrated in the section on professional consumers above.

The main inputs sourced by the financial services sector (apart from inputs sourced from other financial services providers) were also bought from other services sectors, such as business services, post and telecommunications services, real estate services, etc. See Figure 23.

⁷⁵⁹ <http://fd.nl/ondernemen/1120675/voor-het-eerst-in-tien-jaar-een-nieuwe-bank>.

Figure 13.23 Main goods and services sourced by the FS sector from other sectors in the EU (2011)



Note: The graph only includes the top 10 providers of products and services to the FS sector – there are more sectors providing services and goods to the sector, but their shares are relatively small
Source: WIOD

Close to 64 percent of financial services sector output concerns intermediate outputs (or sales to professional consumers), while the remaining 36 percent concerns final sales to households (retail consumers). As indicated before, cross-border trade in retail financial services is very limited

Table 13.12 below provides an overview of the sectorial distribution of global financial services sales to professional consumers for the year 2011, looking at sales to the US in particular.

Table 13.12 Financial services intermediate sales* (million USD) by sector (2011)

Financial Intermediation	EU	USA	US % of total	RoW	Total	% total intermediate sales
Financial Intermediation	362,001	13,630	3.4%	21,460	397,092	35.4%
Food processing & manufacturing	119,128	383	0.2%	41,168	160,679	14.3%
Trade	89,920	2,448	2.2%	16,683	109,051	9.7%
Real Estate Activities	102,163	3,809	3.5%	3,435	109,407	9.7%
Renting of mach. & equipm. and other business activities	66,780	2,138	2.9%	5,664	74,582	6.6%
Transport services	38,195	946	1.7%	15,698	54,838	4.9%
Construction	36,116	58	0.1%	10,084	46,258	4.1%
Primary sectors (agriculture & mining)	16,412	193	0.8%	6,712	23,317	2.1%
Electricity, gas and water supply	13,872	8	0.0%	3,821	17,701	1.6%
Hotels and	15,470	830	4.6%	1,890	18,190	1.6%

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Restaurants						
Post and Telecommunications	14,066	48	0.3%	2,471	16,585	1.5%
						<i>Share total output</i>
Total intermediate services sales	948,645	28,700	2.6%	144,870	1,122,215	63.6%
Total final services sales	598,868	7,671	1.2%	35,275	641,814	36.4%
<i>Output (2011)</i>					1,764,030	

* Sales to professional consumers

Source: WIOD (2011); Ecorys calculations.

From these figures one could conclude that the US is a relatively unimportant market for EU financial services output, making up only 2.6 percent of intermediate sales and a mere 1.2 percent of final sales. However, this would be an incorrect conclusion as these data are somewhat misleading. The table above does not present separately the financial services provided by foreign firms in the EU (established through FDI) and those provided by domestic firms. And vice versa, the US figures do not reveal anything about the role of EU financial services companies present in the US. As was illustrated in previous sections, the role of FDI in the sector is substantially more important than that of trade, suggesting that a much larger part of the EU output is actually generated by US companies and vice versa for US output. Limited cross-border transactions are thus reflective of the very nature of trade in financial services, where most countries (including the EU and US) do not take substantial cross-border commitments in most financial services sub-sectors.

It should be noted that considering the inputs sourced from other sectors and outputs sold to other sectors provides a far from complete picture of the importance of the sector to other sectors. The actual services provided may be intermediation, but the capital transferred this way plays a crucial role in the funding of productive investments, consumption, construction, etc.; thus indirectly financial services affect many other sectors and the economy as a whole much more profoundly.

In a recent research report commissioned by the City of London Corporation a number of ways in which the EU FS sector contributes to the EU economy were reviewed. The conclusions of this review included:

- In 2013, the sector generated €731 billion of GVA (in real terms), accounting for around 5.9 percent of EU-27 total GVA. It employed 6.4 million people, or 3 percent of the workforce. The sector is more productive than the rest of the economy;
- The total value of intermediate goods and services purchased by the FS sector from other sectors amount to €316 billion. It is a key source of demand for other sectors, particularly professional services, computer programming, and telecommunications and postal services. The FS sector supplies essential services of €530 billion in value to EU businesses, which is equivalent to 4.7 percent of total intermediate demand from other sectors;
- The FS sector has a key role of intermediating between savers and borrowers, allowing savers to earn returns and unlocking both business and residential investment;
- The €72 billion trade surplus in financial services provides a powerful contribution to the EU trade balance, and demonstrates the EU's competitiveness in financial services. It is an important source of trade diversification alongside a far larger surplus in manufacturing (worth €547 million);
- The FS sectors in France, Germany, Italy and the UK combined generated nearly €209 billion in taxes annually, equivalent to an average of 6.6 percent per annum of total tax receipts in these countries.⁷⁶⁰

These findings still highlight mainly direct contributions and links within the value chains. However, perhaps even more important, is looking at the relationship and interaction between

⁷⁶⁰ PWC (2015) "Where Next Europe: the Future of European Financial Services." Research report commissioned by the City of London Corporation.

the financial sector and the wider, real economy. This has become a pertinent issue in light of the financial crisis, which clearly demonstrated how the real economy and economies as a whole can be negatively affected by problems that initially started in the financial sector. And while “the reasons why financial crises occur vary over time, [...] the channels through which they affect the real economy are more persistent.”⁷⁶¹

The function of the sector in the wider economy was explained at the start of this chapter. Here we consider more specifically how changes and developments in the sector may affect other parts of the economy given the sector’s systemic character.

Effects of the financial services sector on the real economy

Essentially the financial services sector and financial markets are to ensure that sufficient capital is made available to those sectors and processes which can put it to (the most) productive use - by raising capital on the one hand and providing it on the other. There is an assumed positive relationship between capital and economic growth, which states that capital triggers economic growth. But the relationship between these two is not linear, as Peetz & Genreith (2011)⁷⁶² point out. There are numerous examples from the recent past of countries in which financial assets (measured in total bank assets) grew significantly faster than GDP (e.g. Germany between 1990-2010 and Iceland between 2003 and 2008). This is due to what economists have referred to as financialization, which describes the process whereby “increasingly more corporate earnings and personal income result from financial transactions as such and not from real economic growth, i.e. increased production and related employment.” (Peetz & Genreith, 2011, pp.41). Financialisation can affect the functioning of productive sectors in that it can distort normal supply and demand principles and provides incentives that are not or no longer related to a company’s core business and/or create negative social and environmental impacts. This was clearly illustrated by the US car industry in the wake of the financial crisis. Having focused more on the provision of financing rather than the production of cars (where profits stemmed mainly from the former and not the latter) meant several of these manufacturers had to be bailed out when the crisis hit to avoid companies going under and thousands of people becoming unemployed. Another example includes financialisation in the agri-food sector, which according to Vander Stichele (2015) has changed the dynamics of the food supply chain and “poses challenges to the key function of the sector [from a societal perspective] – to provide nutritious food to as many people as possible in an environmentally friendly and socially sustainable way.”⁷⁶³

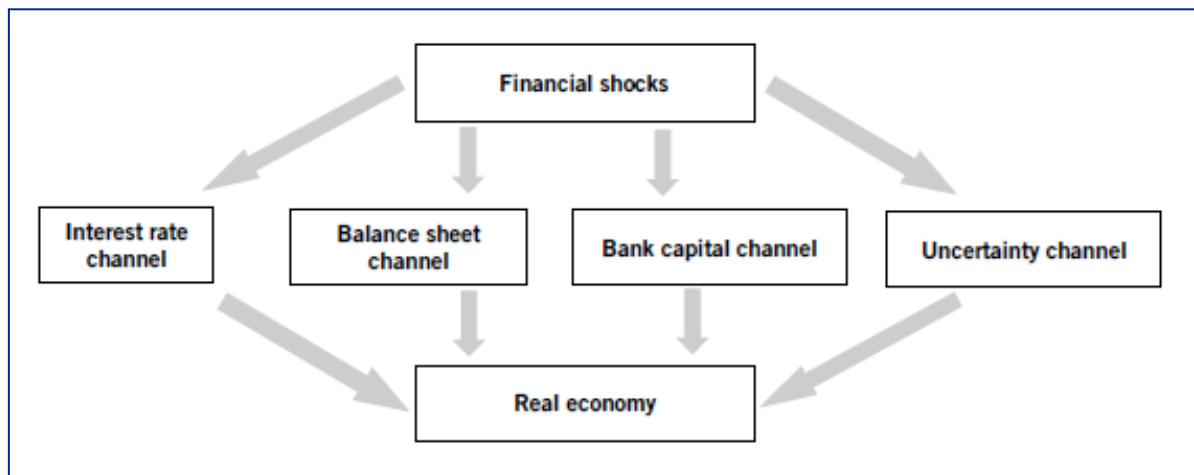
More generally, financial transactions as such can potentially and quite substantially affect the real economy, as the financial crisis has demonstrated. This is because financial shocks work through a number of different channels ultimately reaching the real economy, i.e. business, consumers, and even governments. See Figure 13.24.

⁷⁶¹ “The Interaction between the Financial System and the Real Economy.” Report from the Economic Affairs Department at the Ministry of Finance 2012:1.

⁷⁶² Dietmar Peetz & Heribert Genreith (2011) “The financial sector and the real economy.” Real-world economics review, issue no. 57, pp.41-47.

⁷⁶³ Vander Stichele, M. (2015) “How financialization influences the dynamics of the food supply chain.” Canadian Food Studies, Vol. 2, No. 2, pp. 258-266.

Figure 13.24 Channels through which financial shocks affect the real economy



Source: Economic Affairs Department at the Ministry of Finance, Sweden (2012).

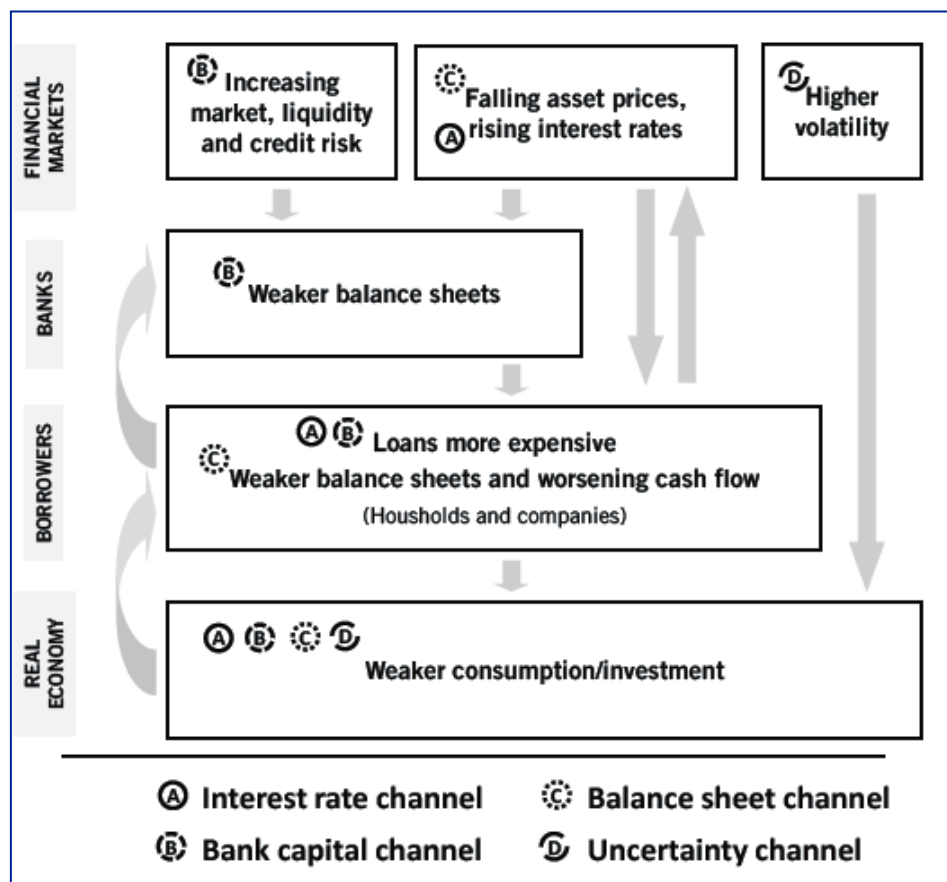
These channels illustrate not just the effects of a financial shock, but more generally how the financial services sector may affect the wider economy. Which should also be kept in mind when looking at e.g. the effects of trade liberalisation and regulation, in the sense that these may trigger effects and/or responses in the financial sector, which ultimately find their way through to the real economy.

Thus, as EBF notes, the ongoing deleveraging in the corporate, household, government and financial sectors, in part due to new regulations, is a key factor making the EU economy less dynamic compared to other parts of the world. Investment and job creation in particular have continued to feel the hit. Capital expenditure in the Euro area has fallen from a level of around 23 percent of GDP prior to the crisis to 18 percent in 2013. Similarly, the number of unemployed people is estimated to have risen to seven million in the same period.⁷⁶⁴

A recent report by the Economic Affairs Department at the Ministry of Finance, Sweden, elaborated on these various transmission channels and identifies and uses summary indicators for an analysis of these channels and the effects on the economy. The report develops an analytical diagram depicting the effect of the financial system on the real economy, which is presented below.

⁷⁶⁴ EBF Facts and Figures 2014 (<http://www.ebf-fbe.eu/publications/statistics/>).

Figure 13.25 Analytical diagram for the effects of the financial system on the real economy



Source: Economic Affairs Department at the Ministry of Finance, Sweden (2012).

According to the report:

“The **interest rate channel** (channel A) describes how the real economy is affected when market interest rates rise, for example because the central bank increases the repo rate. Rising market interest rates lead, in turn, to higher borrowing costs, which lead to low consumption/investments by households/businesses.

The **bank capital channel** (channel B) describes how different types of risk associated with the operations of banks (e.g. market risk, credit risk and financing risk) worsen bank balance sheets by, for example, reducing the value of the bank’s assets and equity. However, banks must meet certain requirements concerning capital adequacy, solvency and liquidity. Banks can choose to either raise their lending rates (thereby increasing their profit and equity) and/or reduce their lending to be able to fulfil these requirements. Both a higher lending rate and less lending lead to lower consumption and less investment.

The **balance sheet channel** (channel C) describes how falls in asset prices, e.g. house prices and stock prices, reduce the value of assets held by households and businesses. If the value of assets used as security for loans falls, lenders can tighten security requirements at the same time as the loan terms get worse, e.g. because the lending rate is higher or the borrower is not allowed to borrow as much as they may want to. This then draws down asset prices even more, leading to a financial accelerator effect. Ultimately this leads to lower consumption and less investment.

The **uncertainty channel** (channel D) describes how more uncertainty in the form of price fluctuations in financial markets, i.e. greater volatility, leads to higher precautionary savings and lower consumption as well as less investment.”

This diagram provides a useful framework for understanding possible impacts of the financial system on the real economy, and can be used to subsequently analyse for instance potential social impacts at broader, societal level.

13.2.5. Social and environmental perspective

Social

On average the financial services sector employs medium to high skilled employees and labour conditions in the sector in the EU are by and large good, as is average pay. However, the recent financial crisis and ongoing consolidation as well as restructuring (e.g. increasing use of IT and online communication and distribution channels) have put pressure on employment in the sector. As such, recent ILO work covering financial services and professional services has focussed on the employment effects of mergers and acquisitions in banking and financial services as well as the impact of the financial crisis on finance sector workers.⁷⁶⁵

At a broader, societal level, as described above, the financial services sector can have an impact on the real economy, with indirect social impacts as a consequence. As SOMO argues "The value creation by the financial industry (...), needs to be balanced by the costs for society and customers (bail-outs, high fees or bonuses, too little financing of SMEs considered as non-lucrative, etc.)."⁷⁶⁶ The example of the effects of financialisation on other sectors as provided in the previous section illustrates how the sector can have substantial social impacts, while the crisis in particular has brought to the fore indirect social impacts of the sector, as overleveraging in the sector essentially led to a sovereign debt crisis in the EU, with substantial consequences in terms of reduction in government resources, unemployment and access to finance for companies and SMEs in particular.

Environmental

Similar to the business services sector, there are limited direct environmental issues related to the financial services sector.

In recent years there is an increasing trend towards 'paperless' communication of financial services providers with their customers in an effort to reduce wastage. Generally, the increased use of modern information and communication technology has implied less direct interaction, hence less travel, less buildings, staff, etc., hence a smaller environmental footprint. One could argue that counterbalancing this is the need for large data processing centres, which are known to be highly energy intensive.

Indirectly, financial institutions can have environmental impacts through the activities they fund or invest in. Some banks have come under public scrutiny for their financing of e.g. heavily polluting industries, or companies engaged in unethical behaviour. CSR issues in the sector thus relate as much to the banks themselves as the clients they serve. The sector's role in CO₂ emissions should thus not be measured solely by a bank's physical operations, which typically have a modest climate impact, but also by "financed emissions," the greenhouse gas emissions induced by bank loans, investments, and financial services. It has been argued that while it is increasingly acknowledged that the financial sector has an important role to play in the reduction of emissions and the move towards a low carbon economy, often banks do not disclose their financed emissions or commit to any significant reductions.⁷⁶⁷

There are signs of increased awareness among financial services providers of the issues surrounding financed emissions and more broadly the important role the financial sector has to play in achieving a "low carbon, climate resilient world." In a recent publication by a number of investor groups and networks on climate change numerous examples are provided on how climate leadership is emerging in the finance sector, such as initiatives by financial services providers in low carbon and energy efficiency finance and investing, emissions reducing finance and investing, adaptation finance and investing (primarily in developing countries), etc. While leadership is emerging in these areas, the report concludes "The sector has come a long way but it is clear that much work needs to be done, both by the industry and by governments. The

⁷⁶⁵ <http://ilo.org/global/industries-and-sectors/financial-services-professional-services/lang--en/index.htm>.

⁷⁶⁶ Excerpt from consultations.

⁷⁶⁷ BankTrack & Rainforest Action Network (2012) « Bankrolling Climate Disruption: The Impacts of the Banking Sector's Financed Emissions. »

task ahead is to build on these actions and move them into mainstream finance.” 768 To do so the report urges action from both governments and the sector, as well as partnerships between these two. To this the inclusion of NGOs should be added.

13.3. EU institutional and regulatory framework for financial services

The EU has established a legislative framework aimed at strengthening the financial services sector, in particular in order to improve the performance of financial operators and boost liquidity, competition and financial stability. Financial services policy covers the banking system, insurance and securities. In addition, transparency and consumer protection are important pillars which have become more explicitly incorporated into the policy and legal framework in recent years. The EU policy on financial services shares some concerns with that on the free movement of capital when it comes to facilitating, and improving the security of, financial activity.

In its recent and ongoing reform agenda for financial regulation, apart from laying down rules for operators and investors, the EU thus gives greater protection to consumers in specific areas such as retail financial services. Due to the very fast evolving regulatory framework in that area, the developments below represent a snapshot of the EU's regulatory framework as it stood in 2015.

*EU Financial institutions*⁷⁶⁹

The European Central Bank (ECB) is one of the key EU financial institutions. Its main purpose is:

1. To keep prices stable (keep inflation under control), especially in the Eurozone countries;
2. To keep the financial system stable – by making sure financial markets and institutions are properly supervised.

The ECB works with the central banks in all 28 EU countries. Together they form the European System of Central Banks (ESCB). It also leads the close cooperation between central banks in the Eurozone – the 18 EU countries that have adopted the Euro. The cooperation between this smaller, tighter group of banks is referred to as the ‘Eurosystème’.

European financial supervision⁷⁷⁰ falls under the responsibility of:

- European Systemic Risk Board (ESRB);
- European Banking Authority (EBA);
- European Insurance and Occupational Pensions Authority (EIOPA);
- European Securities and Markets Authority (ESMA)⁷⁷¹.

The EBA coordinates the EU stress tests for banks, which have been compulsory since 2009 and are conducted in cooperation with the ECB and EC.

Recent changes and developments in the EU institutional and regulatory framework⁷⁷²

International developments

In response to the global financial crisis of 2008, at the 2008 **G20** Washington Summit members confirmed that the most effective response was a common roadmap for financial regulatory reform, to ensure a level playing field (see box below). Since then, the intensity of the international cooperation on financial regulation has been stepped up.

⁷⁶⁸ <http://www.iigcc.org/publications/publication/financial-institutions-taking-action-on-climate-change>.

⁷⁶⁹ http://europa.eu/about-eu/institutions-bodies/ecb/index_en.htm.

⁷⁷⁰ http://europa.eu/legislation_summaries/internal_market/single_market_services/financial_services_general_framework/mi0017_en.htm.

⁷⁷¹ http://europa.eu/legislation_summaries/internal_market/single_market_services/financial_services_general_framework/index_en.htm.

⁷⁷² For an elaborate overview of the reform agenda, its aims and potential impacts, see: EC Commission Staff Working Document (2014). Economic Review of the Financial Regulation Agenda. A Reformed Financial Sector for Europe. {Com(2014) 279 Final}. http://ec.europa.eu/internal_market/finances/docs/general/20140515-erfra-working-document_en.pdf.

G20 commitments for financial sector regulatory reform

The first G20 summit in 2008 developed an extensive agenda for stabilising the world economy and the financial system, with the aim of preventing future crises, mainly by improving global regulation and supervision. Later summits agreed on a G20 work programme with a set of concrete commitments on issues including:

- higher capital requirements;
- remuneration in the financial sector;
- derivatives;
- accounting standards;
- credit rating agencies;
- hedge funds;
- strengthening compliance with international standards (especially in loosely regulated jurisdictions).

Leaders also committed to bringing all financial institutions, instruments and markets under appropriate regulation and supervision. The agenda is being constantly updated and new elements are being added (e.g. resolution regimes, corporate governance).

Source: http://ec.europa.eu/internal_market/finances/global/index_en.htm.

The EU has been an active participant in this process, and takes part in several of the key driving bodies and forums.

The second key international framework upon which EU reforms have been based is the so called **Basel III Framework**, developed by the Basel Committee on Banking Supervision of the Bank of International Settlements (BIS), for more resilient banks and banking systems. Basel III is a comprehensive set of reform measures to strengthen the regulation, supervision and risk management of the banking sector. These measures aim to:

- improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source;
- improve risk management and governance;
- strengthen banks' transparency and disclosures.

The reforms target:

1. bank-level, or *micro-prudential, regulation*, which will help raise the resilience of individual banking institutions to periods of stress;
2. *Macro-prudential, system wide risks* that can build up across the banking sector as well as the pro-cyclical amplification of these risks over time.

These two approaches to supervision are complementary as greater resilience at the individual bank level reduces the risk of system wide shocks⁷⁷³.

EU reforms

The financial crisis clearly highlighted the risks to the economy that the (globalised) financial services sector can pose and EU policymakers have responded with a number of initiatives to create a safer and sounder financial sector for the single market. These initiatives, which include stronger prudential requirements for banks, improved depositor protection and rules for managing failing banks, formed a single rulebook for all financial actors in the 28 Member States of the European Union. The principle of the single rulebook is to put in place measures to (1) prevent, (2) intervene early and (3) manage potential financial crises in the future. The single rule book aims to strengthen banks and supervision (prevention) through the Capital Requirements Regulation and Directive (CRD IV), and proposals to ring-fence banks' operations that seek to reduce the likelihood of bank failure and address the issue of 'too big to fail' (TBTF). Regulations such as the Recovery and Resolution Directive (RRD) aim to reduce the cost of bank failure, while other regulations such as the European Market Infrastructure Regulation (EMIR) and the Markets in Financial Instruments Directive (MiFID II), are being implemented, with the intention to improve capital markets' infrastructure and transparency and bring the shadow banking system under the EU financial regulations framework.

⁷⁷³ <http://www.bis.org/publ/bcbs189.pdf>.

As the financial crisis evolved and turned into the Eurozone debt crisis, it became clear that, for those countries which shared the Euro and were even more interdependent, a deeper integration of the banking system was needed. Therefore, on the basis of the single rule book the European Commission developed a roadmap for the creation of the Banking Union. Under this Banking Union the EU institutions agreed to establish a Single Supervisory Mechanism (2014) and a Single Resolution Mechanism for banks. As a next step in November 2015, the Commission put forward a proposal for a European Deposit Insurance Scheme (EDIS), which would provide a stronger and more uniform degree of insurance cover for all retail depositors in the banking union. The Banking Union applies to countries in the Euro-area. Non-Euro-area countries can also join.

In total the Commission has proposed 28 new rules to better regulate, supervise, and govern the financial sector, with the aim of preventing that taxpayers will have to foot the bill when banks make mistakes. Most of these rules are now in force or being finalised.

The comprehensive reforms aimed at strengthening the EU regulatory framework for financial services was based on a harmonised internal market and international commitments within the Basel Accords framework and G20 grouping. However, EU financial reforms are not only about implementing international standards but more importantly about creating a common set of rules for the Euro area and the EU, thus contributing to a stronger and more integrated EU financial system which would also benefit the global economy as closer integration should encourage better risk diversification.

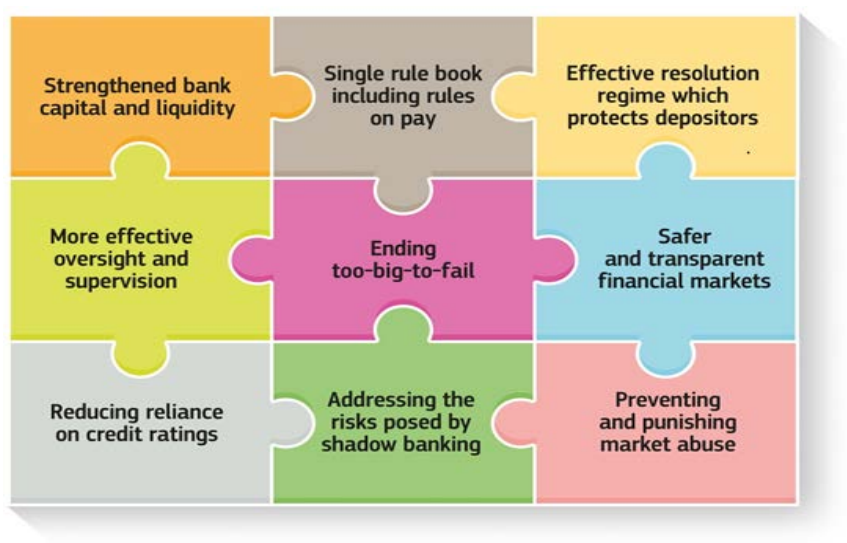
Valiante (2015) illustrates the still limited extent of cross-border banking across the EU “cross-border banking activities are very limited. Of the 129 banking groups under the Single Supervisor Mechanism (SSM), only 24% have foreign branches or subsidiaries. Within this 24%, 11% have only one foreign subsidiary and/or one foreign branch. Less than 12% have more than three foreign subsidiaries and/or foreign branches. If we look at financial activities in recent years, cross-border banking activities shrunk with the financial retrenchment to pre-sovereign crisis levels and then just stabilised in 2014. In addition most cross-border banking activities are interbank in nature, while direct lending to corporates and individuals is stable over time at less than 10% of all cross-border flows” (Valiante, 2015).

Complementing the Banking Union therefore is the proposal for the Capital Markets Union that aims to develop deep and liquid capital markets across borders that complement banks as a source of financing. As indicated earlier in this chapter, the EU economy is heavily reliant on bank funding, with a much smaller role for capital markets than in other developed economies such as the US. Moreover, as Valiante (2015) notes “evidence shows that Europe lacks (...) cross-border capital markets and banking activities, compared to other regions like the United States. (...) exposing the euro area to the build-up of excessive capital inflows in some areas in the pre-crisis period and a significant capital reversal from the beginning of the sovereign crisis.”

The Banking Union, complemented by the Capital Markets Union will lead to closer financial integration within the EU, balancing cross-border traditional banking with capital markets activities and creating a financial ecosystem based on efficient private risk sharing (risk diversification). A third element of the regulatory reforms concerns consumer protection.

The key pieces of this EU wide financial reform are illustrated in the figure below.

Figure 13.26 Key elements of EU-wide financial reform



Source: "Banking union: restoring financial stability in the Eurozone." European Commission Memo, Brussels, 15 April 2014 (http://europa.eu/rapid/press-release_MEMO-14-294_en.htm).

The table in the annex to this chapter presents a detailed overview and description of the key pieces of legislation of this reform (key Directives in the (new) EU wide regulatory framework and Banking Union).

In the US the financial sector has also gone through a process of reform since the crisis. However, the characteristics and unique features of the EU and US economic, political, and legislative institutional structures has meant that the practical implementation of the Basel III commitments have diverged somewhat. Moreover, EU reforms were also to a large extent aimed at further developing the internal market and encouraging closer financial integration within the EU. Such closer financial integration would improve the sector's competitiveness and access to capital for investors and businesses.

As regards the implementation of Basel III in the EU it should be noted that:

"1) Basel III is not a law. It is the latest configuration of an evolving set of internationally agreed standards developed by supervisors and central banks. That has to now go through a process of democratic control as it is transposed into EU (and national) law. It needs to fit with existing EU (and national) laws or arrangements.

2) While the Basel capital adequacy agreements apply to 'internationally active banks', in the EU it has applied to all banks (more than 8,300) as well as investment firms. This wide scope is necessary in the EU where banks authorised in one Member State can provide their services across the EU's single market and as such are more than likely to engage in cross-border business. Moreover, applying the internationally agreed rules only to a subset of European banks would have created competitive distortions and potential for regulatory arbitrage."⁷⁷⁴

US regulatory reform of the financial sector

Regulatory reform in the US took place mainly through the so-called Dodd-Frank Act. The Dodd-Frank Wall Street Reform and Consumer Protection Act was signed into federal law by President Barack Obama on July 21, 2010. It was first proposed by his Administration in 2009, but revised versions were introduced in the House of Representatives by then Financial Services Committee Chairman Barney Frank, and in the Senate Banking Committee by former Chairman Chris Dodd. The Volcker Rule was also introduced later, by the Obama Administration. This rule prohibits depository banks from proprietary trading. The aim of Dodd-Frank was "to promote the financial stability of the United States by improving accountability and transparency in the financial system, to end "too big to fail", to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes."

⁷⁷⁴ European Commission (2013) "Capital Requirements - CRD IV/CRR – Frequently Asked Questions," MEMO, Brussels, 16 July 2013 (http://europa.eu/rapid/press-release_MEMO-13-690_en.htm).

The Act changed the existing regulatory structure, by creating a host of new agencies (while merging and removing others) in an effort to streamline the regulatory process, increasing oversight of specific institutions regarded as a systemic risk, amending the Federal Reserve Act, promoting transparency, as well as implementing other changes. The Act was to provide rigorous standards and supervision to protect the US economy and consumers, investors and businesses, and to end taxpayer funded bailouts of financial institutions. The Act also provided for an advanced warning system on the stability of the economy, created rules on executive compensation and corporate governance, and eliminated some loopholes that were seen to have led to the 2008 economic recession. Important new agencies created under the Act included the Financial Stability Oversight Council, the Office of Financial Research, and the Bureau of Consumer Financial Protection.

The Financial Stability Oversight Council (FSOC) is the newly created macro-prudential supervisory agency in the US, charged with safeguarding the US economy from future financial crises. Although similar macro-prudential frameworks were developed in Europe and elsewhere, the FSOC is considered to have the broadest mandate, as the systemic risk body identifying financial stability threats with explicit authority over systemically important financial institutions (SIFIs) and systemically important financial market utilities (FMUs).⁷⁷⁵

The Dodd-Frank Act has been criticized as doing both too much and too little, probably reflective of the strong partisan divide existing in the US at present.

In the United States, the states are the primary regulators of the insurance industry. State insurance regulators are members of the National Association of Insurance Commissioners (NAIC), a standard-setting and regulatory support organization created and governed by the chief insurance regulators from the 50 states, the District of Columbia and five US territories. As part of an evolutionary process, through the NAIC, state insurance regulators in the US are in the process of enhancing their solvency framework through the Solvency Modernization Initiative (SMI). SMI is an assessment of the US insurance solvency regulation framework and includes a review of international developments regarding insurance supervision, banking supervision, and international accounting standards and their potential use in US insurance regulation.⁷⁷⁶

It should be noted that the process of introducing these reforms has differed as well between the two jurisdictions. Dodd-Frank encompasses many areas of financial regulation and sets out the framework for the detailed rules. The principles of this new Act needed to be fleshed out by regulators, which has been a lengthy process. While the Act itself was thus adopted in 2010, by the beginning of 2014, roughly half of Dodd-Frank had actually been implemented, i.e. turned into specific regulation. Clearly, agreeing on principles is somewhat easier (and faster) than putting in place detailed rules for every-day use.⁷⁷⁷

In order to implement G20 commitments in the EU, the EC first needed to tackle a number of divergent approaches to regulation and supervision, which still existed in the EU. Therefore, reform efforts had to be sequenced:

- First supervision of the system had to be reformed - three new European authorities were created to ensure coordination at EU level for banking, securities markets and insurance;
- Second, legislative proposals were put forward to implement the agreed global standards. In contrast to the US approach, the EU prepared separate detailed legislation for each subject to be regulated.

Since 2008 around 25 major legislative proposals were put forward by the European Commission. By early 2014 almost all of these had been adopted. But designing and

⁷⁷⁵ [http://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD000000000287478/Macro-prudential+financial+supervision+in+the+US%3A+The+Financial+Stability+Oversight+Council+\(FSOC\).pdf](http://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD000000000287478/Macro-prudential+financial+supervision+in+the+US%3A+The+Financial+Stability+Oversight+Council+(FSOC).pdf).

⁷⁷⁶ http://www.naic.org/documents/eu_us_dialogue_report_121220.pdf.

⁷⁷⁷ Speech by Nadia Calviño, Deputy Director-General for Internal Market and Services, European Commission: "Sound and resilient Financial Markets: Achieving Global Consistency" Brookings Institution Washington, DC, 29 January 2014.

coordinating a reform process built on several pieces of legislation for dozens of countries has clearly been challenging.

13.4. Competitiveness of the EU financial services sector

The EU and US financial services sectors and capital markets are the most developed sectors in the world. While the US capital markets are more developed, EU financial services and insurance companies are globally amongst the most competitive. That being said, the financial crisis has had a substantial impact on the sector, with profitability reducing markedly and a number of banks failing altogether. The financial crisis quickly became a sovereign debt crisis in the EU and this put further pressures particularly on banks holding substantial amounts of debt in countries such as Greece, Spain, Portugal and Italy (among others); in some cases this led to the downgrading of banks credit ratings by rating agencies, such as Standard and Poor's, thus affecting banks' ability / cost to borrow.

While most banks are by now recovering from the crisis, growth is slow and profitability remains low.

While the crisis was global in nature, recovery in the EU has been slower than in some other markets (notably the US), while it did not hit as hard in other countries as in the EU (e.g. large parts of Asia). The crisis had an immediate effect on the sector in the EU, but it also triggered new regulations and a comprehensive regulatory reform process, which provides both challenges and opportunities for the sector. At the same time technological changes and interlinked changing consumer preferences and behaviour are having profound effects on the sector. For existing players this has posed challenges, while it has provided opportunities for new comers or players originally coming from other sectors. Below we discuss these two main areas of challenges and opportunities to the competitiveness of the sector.

Regulatory reforms

Since the crisis, a large part of the focus of financial services providers has been on restructuring, deleveraging, improving solvency and liquidity and ultimately improving balance sheet, driven not just by the crisis itself, but also by new regulations. Driven by tighter bank solvency and liquidity requirements, EU banks have been strengthening their capital base in a number of ways. In particular, they have pursued efforts to increase their ratio of equity capital to total risk-weighted assets (RWA). This index, defined as the Tier 1 ratio, climbed from 8.3% in 2007 to 13.6% in 2013. This ratio is thus slightly above the ones of US banks (13%) and Japanese banks (12.5%).

In 2013 there was a marked decline in the total assets held by EU banks. Total assets amounted to €42.5 trillion, 6.6 percent less than in 2012. While EU banks are still deleveraging, leverage across other large global economies is increasing. For example, the total assets of commercial banks in the United States increased by some 7 percent in 2013.⁷⁷⁸

Financial institutions have argued that care should be taken not to overregulate the sector following the crisis specifically as it relates to the separation of banking operations.⁷⁷⁹ The relationship between competition and regulation in the sector is, however, a complex one. It could be argued (as has been done by e.g. SOMO and other civil society organisations) that the crisis was triggered by competition in the sector and the drive to remain competitive / increase profits. In order to do so, many financial services providers developed risky strategies and products (that were not properly regulated), which ultimately resulted in the sub-prime crisis in the US and ensuing global financial crisis. The speed with which the US sub-prime crisis spread to a full blown global financial crisis further illustrates the increasing interconnectedness of the financial systems, which in itself poses a risk and challenge to governments and regulators.

Indeed, while the economic outlook for the Eurozone has improved, threats remain and some of Europe's most important supervisors have warned that risks to the EU financial system are on the rise and have become more entrenched. In part due to quantitative easing and negative interest rates, investors are taking on more risk, as low interest rates eat into profits. Thus

⁷⁷⁸ Idem.

⁷⁷⁹ See e.g. Rabobank (2013) Position paper on separation of retail and investment banking.

there have been warnings of a renewed build-up of leverage. This heightens threat of instability, especially given the fact that uncertainties in the macro-environment remain.⁷⁸⁰

Also, as Goodhart & Schoenmaker (2016) note European banks' role in global investment banking is diminishing. This is largely a consequence of "the regulatory impositions of recent years, notably of the ring-fencing requirements of the Vickers Report (2011) and the ban on proprietary trading by Liikanen (2012)" as well "enhanced capital requirements on trading books and other measures." These policies and regulations were introduced due to concern that most European countries "would find a global investment bank to be too large and too dangerous to support, should it get into trouble." Thus European investment banking needed to be brought back to a more supportable level.⁷⁸¹

In the longer term the reforms, and especially the Banking and Capital Markets Union should thus also result in a more resilient and more efficient sector, that can allocate capital and spread risk more efficiently across borders (within the EU). This would make the sector more competitive globally as well.

Technology and customers

As has been noted by several sources, EU banks and financial services providers are facing other challenges to their competitiveness than the crisis and regulations, driven largely by technology, and customers (changing consumer preferences, expectations and trust) in combination with regulations. Thus, as PWC notes "technology and capital markets are evolving with increasing speed. These changes are challenging the business models of today's banks as alternative providers emerge across almost all aspects of the 'banking spectrum', including the core functions."⁷⁸² These trends are set to continue as barriers to entry for new banks or even non-banks to provide formerly 'core' banking services will continue to decline. Thus on the one hand there is an increasing number of alternative payment systems challenging the banking sectors core function of providing financial transaction services (e.g. Google Wallet, Apple Pay, Facebook Pay, Samsung Wallet, etc.) – all with a banking licence. A recent start up in the Netherlands explicitly markets itself as a non-bank and relies on IT skills rather than banking skills. On the other hand, there is a substantial increase in so-called alternative finance providing financing solutions to companies or even individuals. A recent study by the University of Cambridge and Ernst and Young (2015) concluded that:

"Until very recently, crowd and peer-to-peer financing activity was seen by many observers – particularly those within incumbent financial institutions – as a tiny niche with little prospect of ever impacting the broader financial system. Not any more. Our findings in this European Alternative Finance Benchmarking Report suggest that these new forms of alternative finance are growing quickly, and this growth is beginning to attract institutional investors. Alternative finance, at least in some European countries, is on the cusp of becoming mainstream."⁷⁸³

It is by now widely recognised that in order to stay relevant and remain competitive, EU services providers should thus not just improve their balance sheets and performance, but also rethink their role and strategies in society given these alternative providers and specifically embrace technology.

These changes and developments also have implications for policy makers as the scope of the regulatory challenge widens and becomes more complex, with a core focus on resilience of the network of markets and services rather than that of core institutions.⁷⁸⁴

Competitive pressures for the EU financial services sector seem to thus not so much come from international competition – the sector already operates globally in many cases – as from

⁷⁸⁰ <http://www.ft.com/cms/s/0/1507e4be-f339-11e4-a979-00144feab7de.html#axzz4C3NPVwKO>.

⁷⁸¹ Goodhart Charles & Dirk Schoenmaker (2016). « The United States dominates global investment banking: does it matter for Europe? » Bruegel <http://bruegel.org/2016/03/the-united-states-dominates-global-investment-banking-does-it-matter-for-europe/>.

⁷⁸² PWC (2014) "The future shape of banking. Time for reformation of banking and banks?".

⁷⁸³ University of Cambridge and Ernst & Young (2015) "Moving Mainstream. The European Alternative Finance Benchmarking Report." Robert Wardrop, Bryan Zhang, Raghavendra Rau and Mia Gray, February 2015.

⁷⁸⁴ PWC (2014) "The future shape of banking. Time for reformation of banking and banks?".

innovations and a more fundamental change in the shape and business models of the sector as a whole.

Insurance specific

The EU insurance industry is well developed and highly competitive, however, it has been vulnerable to the effects of the crisis, as became clear in earlier sections and recovery has not been straightforward. In addition insurance companies face similar challenges as financial services providers as regards consumer trends and technological change. Consumers can increasingly inform themselves online and even conduct their transactions online. This cuts out the necessity of many of the traditional services provided by insurers. See the box below:

Box 13.4 Changing consumer behaviour in the insurance sector

“Non-life insurers are being left behind by the rapid changes in customer expectations. Cover has become increasingly commoditised and decisions over its purchase are almost entirely driven by price as many customers fail to understand or underestimate its value. Customers have access to more information than ever before, using social media and price comparison sites to compare policies, prices and claims experience. Whilst, at the same time customers demand simplicity and want quotes and prices at their convenience via the platform they choose, access to help when they need it and to only interact when renewing or making a claim.

Loyalty is reducing and customers will happily change insurer on a regular basis and have little desire to forge a lasting relationship. Where customers are looking at value rather than just price, they want policies tailored to their requirements and to be only paying for what they need. (<http://www.pwc.com/gx/en/industries/financial-services/insurance/publications/digital-non-life.html>)

In addition regulation, and in particular the Solvency II Directive plays a part in this sector's competitiveness as well. While complying with new regulations can put pressure on EU companies' competitiveness, it could, as KPMG argues, also provide them with a competitive advantage: *“The Solvency II Directive is a world-leading standard that requires insurers to focus on managing all of the risks facing their organization. It offers European insurers a real opportunity to improve their risk adjusted performance and operational efficiency, which is likely to be good news for policyholders, for the insurance industry, and the European Union (EU) economy as a whole. Solvency II is not only on the radar of insurance companies in the EU, but also on those across the globe. The world is watching to see how the EU transforms its insurance industry and implements risk-based improvements to protect policyholders. At the same time, shareholders are also likely to reap benefits.”* (KPMG, 2011)⁷⁸⁵

13.5. Market access issues in the financial services sector

In this section we consider the barriers that still exist / are experienced in both the EU and US as regards financial services trade and investment. To this end we have consulted World Bank Services Trade Restrictiveness (STRI) database to gauge overall levels of trade restrictiveness in respectively the EU and US finance and insurance sectors, as well as key restrictions. Subsequently we have looked at the market access issues flagged in a 2009 Ecorys study on NTBs in EU-US trade and investments and issues flagged in the EU MADB. Finally we briefly consider regulatory divergence as an overriding trade and investment restriction.

13.5.1. Market access issues in EU-US financial services trade and investment

Overall levels of restrictiveness

The World Bank has developed and maintains the services trade restrictiveness database. The database covers 103 countries that represent all regions and income groups of the world. For each country, five major services sectors are covered that encompass a total of 19 subsectors. One of these is financial services, which includes retail banking (lending and deposit acceptance)

⁷⁸⁵ KPMG (2011) “Solvency II. A closer look at the evolving process transforming the global insurance industry” (www.KPMG.com).

and insurance (automobile, life and reinsurance). Within each subsector-mode policy regimes in their entirety are assessed and the bundle of applied policies are mapped into five broad categories (with associated scores):

- Completely open (0);
- Virtually open but with minor restrictions (25);
- Major restrictions (50);
- Virtually closed with limited opportunities to enter and operate (75);
- Completely closed (100).⁷⁸⁶

The tables below present the services trade restrictiveness indices (STRI) for financial services and insurance as experienced by trading partners.

Table 13.13 Financial services trade restrictiveness index for the EU and US - Banking

Country	Label	Overall	Mode 1	Mode 3
EU-20	Banking	3.8	25	0
EU-20	Lending by banks	3.8	25	0
EU-20	Acceptance of deposits by banks	3.8	25	0
United States of America	Banking	21.3	0	25
United States of America	Lending by banks	21.3	0	25
United States of America	Acceptance of deposits by banks	21.3	0	25

Source: World Bank.

Table 13.14 Financial services trade restrictiveness index for the EU and US - Insurance

Country	Label	Overall	Mode 1	Mode 3
EU-20	Insurance	5	50	0
EU-20	- Automobile Insurance	7.5	75	0
EU-20	- Life Insurance	7.5	75	0
EU-20	- Reinsurance	0	0	0
USA	Insurance	21.7	50	25
USA	- Automobile Insurance	32.5	100	25
USA	- Life Insurance	27.5	50	25
USA	- Reinsurance	5	0	25

Source: World Bank.

Overall, no major restrictions seem to exist for the banking sub-sector, in either modes, yet in insurance major restrictions still exist in both jurisdictions in Mode 1 and in particular related to life and automobile insurance. Cross-border trade in automobile insurance in most EU Member States and in the US is not allowed, while cross-border trade in life insurance is not allowed in most MS and only with restrictions in the US (with variations across States) – see annex II to this chapter. This is mostly due to the fact that claims would fall under national legislation and may thus be hard to enforce across borders. It should be noted here that as regards cross-border insurance the EU will only take limited commitments related to few sectors. The US approach is very similar and it is unlikely that it will be changed under TTIP.

Specific market access issues

From Ecorys NTM database (EU-US NTM study)

As part of a 2009 study on the impact of NTBs in US trade and investment, a range of NTMs were identified based on business surveys. These were categorised into trade and investment measures.

⁷⁸⁶ To obtain original information about applied services trade policies, the World Bank conducts surveys in 79 developing countries. The surveys are completed by local law offices which have extensive expertise in local investment laws, regulations, and the practical experience of working in these sectors.



Trade and investment measures:

1. Discriminatory taxation of European financial institutions that apply IFRS instead of US GAAP;
2. Section 319 of the PATRIOT Act that requires US correspondent banks to maintain certain records concerning foreign banks with a US correspondent account;
3. Tax Code Reporting Requirements applied to foreign-owned corporations;
4. Registration requirements for foreign banks in the US providing global custody and related services directly to US investors;
5. Differences in the implementation of the Basle II framework for banks;
6. Sarbanes Oxley Act;
7. Lack of convergence in the regulation of financial services across US states;
8. Duplicative consolidated supervision of EU Central Bank and Federal Reserve;
9. Local licencing requirements Constant Sector Survey;
10. Absence of convergence regulations in reporting standards;
11. Requirement for professional qualifications for foreign firms.

From EU Market Access Database (MADB)

Finally we consulted the EU MADB for barriers to trade and investment with the US in financial services. The results are presented in the table below. Two of these barriers have been flagged as so called key barriers, implying they receive priority in trade diplomacy and negotiations.

Table 13.15 Barrier list EU financial services trade with US (MADB)

Title	Type of measure	Creation Date	Last update /check	Key barrier
Foreign Account Tax Compliance Act (FATCA)	Other trade in services issues	14 Dec 2011	28 Feb 2014	
Services: 100 % collateral requirement on reinsurance business and discriminatory tax treatment	Other Non-Tariff Measures	17 Nov 2006	06 May 2014	

Source: MADB.

To illustrate the effect of the last (key) barrier in the table, it should be noted that the US requirement of 100 percent collateral against reinsurers' US liabilities is not applicable for domestic reinsurers and therefore highly discriminatory. According to Solvency II, EU Member States may apply collaterals only to countries where the insurance sector is not equivalent in terms of prudential regulation. Insurance Europe notes that "The current collateral US requirements for foreign reinsurers results in billions of capital being tied up in the US which could be put to better use and result in significant frictional costs for the industry. If these requirements were scrapped it would mean that European reinsurers could likely provide more competitive coverage to US insurers who in turn could then pass those savings on to their own customers."⁷⁸⁷

13.5.2. Regulatory divergence as key barrier

In the previous section we have identified a number of specific market access issues and a number of cross-cutting issues that EU financial services providers face when trading with, or investing in the US. While cross cutting issues will be dealt with under the more general provisions of the agreement on 'Trade cross-cutting disciplines and institutional provisions' as well as the Regulatory Chapter, many of the NTMs identified would fall under regulatory divergence, but relate specifically to financial regulations, for which the general regulatory chapter may be too general.

Regulatory divergence affects the industry on both sides of the Atlantic. As a recent study on the impact of the TTIP by the UK Embassy in Washington noted: "US financial services exports face a variety of non-tariff measures (NTMs) that restrict access to the EU market. These barriers often stem from divergent regulatory requirements for banking in individual EU member-states such as local licensing requirements, approval to set up operations, and the absence of national treatment in some cases. In addition, differences in accounting standards

⁷⁸⁷ <http://www.euractiv.com/sections/euro-finance/eu-gives-ttip-us-reinsurance-reform-307982>.

have a major impact. It is estimated that these NTMs are equivalent to a 11.3 percent tariff on US exports, and regulatory divergence caused by the recent financial crisis has worsened, rather than improved, these problems.”⁷⁸⁸

Central to the ambitions of the (EU) negotiators is the goal of achieving binding agreements on the principles and governance structures for financial sector regulation. As Trade Commissioner De Gucht has argued there is “(...) need [for] a common approach to avoid discrepancies in the future.”

While the EU and US already engage in regulatory dialogue under the EU-US Financial Markets Regulatory Dialogue and the US-EU Insurance Regulatory Dialogue (see box below), the EC is of the opinion that the TTIP should go further. TTIP should require the partners to consult with one another prior to implementing agreed standards. Essentially the EU is looking to upgrade the mechanisms for regulatory co-operation. Especially as the two jurisdictions shift their focus from agreeing high level international standards to implementing them in detailed regional and domestic rule making.

EU-US Financial Markets Regulatory Dialogue

The Financial Market Regulatory Dialogue has been the forum for discussion of EU and US regulators since 2002. It brings together representatives of the European Commission (DG MARKT), the European Supervisory Authorities (ESAs - European Banking Authority, European Insurance and Occupational Pensions Authority, European Securities and Markets Authority) and the U.S. Treasury and independent regulatory agencies, including the Board of Governors of the Federal Reserve System, Commodity Futures Trading Commission (CFTC), Federal Deposit Insurance Corporation, and Securities and Exchange Commission (SEC). The members of the EU-US regulatory dialogue hold regular exchanges of information on regulatory developments on both sides of the Atlantic. (http://ec.europa.eu/finance/general-policy/global/index_en.htm). Within the FMRD, officials discuss key G-20 commitments, including the implementation of Basel III capital and liquidity rules, the status of implementation of derivatives reforms (including a discussion of related cross-border issues), the development of resolution regimes and strategies, and structural proposals in their banking systems. The officials also discuss insurance, rating agencies, benchmarks, audit, accounting, money market funds, and data transfers and information sharing for supervisory and enforcement purposes. (http://ec.europa.eu/finance/general-policy/docs/global/140129_us-eu-joint-statement_en.pdf)

US-EU Insurance Regulatory Dialogue

In January 2012, the NAIC, the Federal Insurance Office (FIO), the European Insurance and Occupational Pensions Authority (EIOPA) and the European Commission (EC) agreed to participate in a U.S.-EU Dialogue Project (Project). The objective of the Project was to deepen insight into the overall design, function and objectives of the key aspects of the insurance regulatory regimes in the U.S. and EU, and to identify important characteristics of both regimes. The Project builds on the on-going U.S.-E.U. dialogue.

The Project is led by a Steering Committee that includes three top supervisory officials from the U.S. and three from the EU. The Steering Committee agreed upon the following seven topics considered fundamentally important to a sound regulatory regime and to the protection of policyholders and financial stability:

1. Professional secrecy and confidentiality;
2. Group supervision;
3. Solvency and capital requirements;
4. Reinsurance and collateral requirements;
5. Supervisory reporting, data collection and analysis and disclosure;
6. Supervisory peer reviews;
7. Independent third party reviews and supervisory on-site inspections.

In September 2012, a draft report on the commonalities and differences between the jurisdictions in key areas of supervision was produced for public comment. Two public hearings were held in October 2012 to offer participants a chance to comment on the

⁷⁸⁸ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/288145/TTIP_and_the_US_Financial_Services_Sector.pdf.

Project's draft report. Based on comments received, a revised final report was released in December 2012. Based on the report, the Steering Committee also agreed on a "Way Forward" plan, which outlines common objectives and initiatives for the parties to be pursued over the next five years, through 2017. In April 2014, the steering committee of the Project met to discuss next steps to be integrated into the five-year plan. In July 2014 an update to 'the Way Forward' was released which outlined progress to date on the Project and reaffirmed the commitment to the Project. (http://www.naic.org/cjpr_topics/topic_euus_project.htm).

Addressing regulatory cooperation in financial services within the TTIP according to the EC does not involve including in the agreement an explicit and forced recognition of each other's financial rules and regulations, rather a first exploration of the possibilities and practical implications of this principle. The EC has stressed throughout that the principle of prudential carve out (prudential exception) remains paramount. See box below. Furthermore, under the EU proposal no form of dispute settlement would apply to regulatory cooperation in financial services.

Box 13.5 Prudential carve-out

WTO members can take measures for prudential reasons such as protecting investors and depositors, and ensuring the stability and integrity of the financial system even if such measures do not conform with GATS rules. However, prudential measures should not be abused to circumvent GATS rules nor commitments made under GATS. In case of a financial services trade dispute, the WTO panel has to have the necessary financial expertise. Countries can make agreements to accept each other's prudential measures.

Source: WTO.

13.6. Expected impacts of TTIP on the financial services sector

Assuming the main achievement of the TTIP agreement will be to reduce regulatory divergence between the EU and US, in this section we outline the expected economic, environmental, social and competitiveness impact of implementing TTIP, based on modelling results and further qualitative analysis on indirect effects and regulatory dimensions.

13.6.1. *Economic impacts*

Before turning to the modelling results as a first step in our impact assessment, it is important to recall the relatively limited role of cross-border trade in the sector. Combined with the fact that Mode 3 trade is not included in the model and thus not reflected in the results, this implies that the results presented here give only a first indication and are most likely an underestimation of the impacts.

The CGE model provides results for three economic impact indicators at (sub) sector level: output, exports and imports. Below we present these model results for finance and insurance under the ambitious experiment with 20 percent spill-overs for the EU28.

Table 13.16 CGE results EU28 financial services (percent change)

EU28	Output	extra-EU exports	extra-EU imports
Finance	0.40	4.18	2.61
Insurance	0.83	4.15	2.55

The main impact of the TTIP according to the CGE model is expected for trade and particularly exports: both extra-EU finance and insurance exports are expected to increase by just over 4 percent. Output is also expected to increase, but relatively speaking only slightly. This suggests that the increased trade will mostly be intra-industry trade.

Considering the way trade in financial services takes place (see Table 13.3 in section 13.2.2 above) the impacts in the financial services sector are likely to be closely linked to impacts in other sectors. E.g. a Spanish company may open a bank account for transactions occurring in

the US, as it increases its operations in or with the US due to TTIP induced reductions in trade costs (FS trade Mode 2). Such interlinkages are included in the model as it is based on input-output databases and thus the value chain effects are already reflected in the model outcomes.

What is not reflected in the results is FDI, which is not included in the CGE model. Thus these figures most likely represent lower bounds of the potential impacts on the sector. Given the importance of international investment in the sector and particularly between the EU and US, regulatory convergence can also be expected in the medium to long run to result in more investments by existing investors and potentially encourage new entrants to establish in the market.

The regulatory convergence impact of TTIP is assumed to take place through three main channels in the model:

- NTMs on services (i.e. not just financial services): effect of the reduction in regulatory unnecessary divergences on services through regulatory co-operation;
- Direct spill-overs: effect of the convergence and closer integration of EU and US regulatory framework and standards on the EU's direct trade with third countries, particularly those which are currently mostly trading with the US;
- Indirect spill-overs: effect for the EU of increased trade among third countries enabled by the more closely aligned EU-US regulatory systems.

The CGE results for the US show a slightly different picture (see Table 13.17 below). While trade of US financial services is expected to increase as well, this increase is relatively lower and especially imports are expected to increase: by almost 6.4 percent for finance and close to 5.9 percent for insurance. By contrast, output is expected to decrease slightly – more so for insurance than for finance.

Table 13.17 CGE results US financial services (percent change)

U.S.	Output	total Exports	total Imports
Finance	-0.13	2.32	6.38
Insurance	-0.46	1.82	5.87

Building on these direct impacts, we consider here the further, indirect economic impacts from the TTIP on financial services. Following common economic reasoning, a reduction in trade and investment costs leads to increased efficiency and this may translate into lower (consumer) prices. Indeed it has been argued that removing the 100 percent collateral requirement on reinsurance business⁷⁸⁹ could enable European reinsurers to provide more competitive coverage to US insurers who in turn could then pass on those savings to their own customers. Whether such a savings pass through will indeed take place is hard to predict with any certainty, but increased competition is generally seen as having a price lowering effect.

In terms of forward and backward linkages, positive impacts from the increase on financial services outputs and trade could benefit in particular other services, notably real estate and business services, but also manufacturing sectors, as their cost of financial services inputs decreases and possibly access to / choice of financial services products improves.

Other indirect effects through the sector's pivotal role in the economy (as lender of capital, bridging buyers' and sellers' needs, manager of risks, and provider of infrastructure for payments, etc.) are harder to predict. Increased trade, investment and income for financial services providers could improve their RoE and liquidity, but whether this translates into more or easier lending for consumers and SMEs is uncertain. Especially since the expected output gains are very limited. In this respect it should be noted that the further improvement of the functioning of the internal market for financial services in the EU is likely to be an additional important factor in increasing the sector's efficiency and reducing risks, while at the same time

⁷⁸⁹ Note, as was mentioned earlier, that this requirement may already be removed before TTIP will be implemented and thus may not be an actual TTIP impact.

a more integrated market makes the EU more attractive for US (and other overseas) investments, thus potentially enhancing the positive impacts from the TTIP agreement.

Overall, there is by now an ample literature that examines the impact of financial liberalisation on host economies and host financial systems (see box below) and this supports the potential positive indirect impacts described above.

Box 13.6 Impact of financial services liberalisation

According to Rouzet et al (2014), "Cross-country evidence as well as case studies show that the presence of foreign banks is generally linked to greater competition in the banking market as it forces domestic banks to become more efficient, improves the quality of the lending techniques and lowers net interest margins, cost ratios and rents (Claessens et al., 2001; Claessens and Laeven, 2004; Cull and Martínez Pería, 2010). The entry of foreign banks also tends to enhance access to banking services for SMEs and households, especially compared to state-owned banks, despite fears that foreign banks may "cherry-pick" high-quality borrowers (Beck et al., 2004; Clarke et al., 2006; De Haas et al., 2010). The evidence on the impact of foreign banks on financial stability is somewhat more mixed. On the one hand, foreign banks improve the resilience of host economies to domestic shocks. (...) On the other hand, there is also evidence that home country shocks or shocks from third countries can be transmitted to host countries through reduced credit by foreign bank subsidiaries (Peek and Rosengren, 2000; Schnabl, 2012)."

Although empirical evidence remains scant, in general, foreign insurers are likely to enhance competition in the host market by increasing incentives to innovate in products and marketing and by providing customers with greater choice. They can transfer know-how about efficient techniques of information collection, claims management and risk management. They are also typically part of larger risk pools than domestic insurers, which can enable them to charge lower and more stable premiums as well as to insure risks that domestic companies are unable or unwilling to take on."

Source: Rouzet, D. et al. (2014), "Services Trade Restrictiveness Index (STRI): Financial Services", OECD Trade Policy Papers, No. 175, OECD Publishing. <http://dx.doi.org/10.1787/5jxt4nhssd30-en>

Regulatory dimension

Stakeholder consultations have indicated that there is a concern among civil society that the TTIP agreement could lead to deregulation and a reduction of policy (i.e. regulating) space for national governments. However, as regards financial services and financial regulations, regulatory reforms on both sides of the Atlantic have at least in principle been based on the same internationally agreed standards and requirements and as such the main divergence lies in the detailed implementation and more generally (as with all sectors) in the regulatory regimes and processes in both economies. There is already cooperation on specific issues through the Financial Markets and Insurance Regulatory Dialogues. Moreover, the EU has made clear that it has no intentions of reversing or trying to change existing regulations, while prudential carve out has been emphasised (see also below).

Interestingly, one of the main aims of including regulatory cooperation in the TTIP from the perspective of the EU is to reduce the fragmentation of the regulatory framework for an industry that is highly globalised and which has demonstrated that its risks and impacts transcend international boundaries. It thus appears that while the EC views regulatory divergence as a barrier to trade that should be reduced (a business perspective), it more importantly seeks to reduce systemic risk and its potential impacts on economies and its citizens through regulatory cooperation and has emphasised the potential benefits of regulatory cooperation beyond the facilitation of trade and investment by adopting and sharing experiences on best practices and learning from regulatory variation. A potential positive effect of the agreement would thus be decreased systemic risk through decreased regulatory fragmentation.

The overall EU financial services sector reforms are to an important degree aimed at encouraging stronger financial integration of markets within the EU, which should lead to a stronger more balanced 'financial ecosystem' where risks are diversified and capital flows more freely. This would benefit the EU, but also the rest of the world, including the US.

Financialisation of the economy and its potentially negative impacts on other sectors and consumers in particular has been flagged by civil society as an issue to consider under TTIP. While these negative impacts are acknowledged, increased financialisation of the EU and US economies *as a result of TTIP* is not considered likely. Regulatory reforms on both sides of the Atlantic aim to restrict the proprietary trading of specifically banks and the combining of high risk investment activities with retail banking activities, while at the same time bringing shadow banking under the umbrella of financial regulation. It has been argued that the convergence brought about by TTIP would lead to a weakening of democratically-enacted safeguards and more financial instability; however the EC has clearly indicated that it does not intend to negotiate within the TTIP on “other elements of on-going regulatory reforms (such as e.g. the Volcker rule, or rules on foreign banking organisations) that are being currently implemented.”

13.6.2. Social impacts

The employment impacts for the financial services sector are expected to be very modest, even in the ambitious scenario (see Table 13.17 below). The gains are lower than output increases and much lower than trade increases - possibly reflective of the increasing use of e.g. online and electronic methods of transaction.

Table 13.17 CGE results EU28 financial services (percent change)

EU28	Skilled employment	Low skilled employment
Finance	0.14	0.13
Insurance	0.59	0.58

We note here once again that these outcomes do not include potential employment generation through FDI, e.g. in foreign affiliates. Given that TTIP is likely to contribute to an increase in FDI flows between the EU and US, employment changes may be more substantial. It is hard to predict to which extent employment through FDI would indeed increase as there are several other issues at play. For instance, foreign affiliates may in part be staffed by foreign employees, or the work carried out in foreign affiliates replaces trade (or vice versa, trade becomes easier so the number of foreign affiliates can be reduced) in which cases the net effects would be unclear.

In the US, where output is expected to decrease and imports are expected to increase more than exports, the model predicts a slight decrease in employment in both sectors. Here too, the FDI impact has not been included and could show a slightly different net result for employment in the medium to long run.

Many of the potential indirect social impacts relate to the aspect of regulatory cooperation as such and have been discussed in the above. A key issue is that of the potential that systemic risks and financial instability increase (which could lead to another crisis) in case regulatory convergence would imply delays in regulatory reforms in the EU or a watering down of such reforms (i.e. deregulation); this is not considered likely.

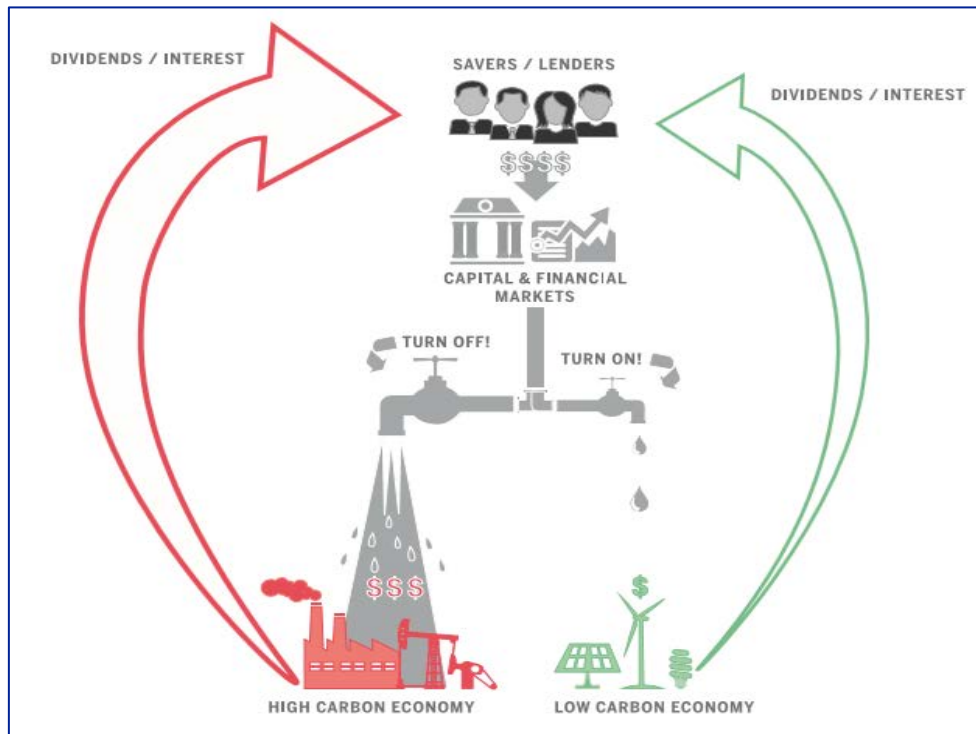
As regards other social issues, such as rights to work, job opportunities, job displacement, etc. the expected changes in employment as predicted by the model seem too small to have any substantial impact in these areas. However, through FDI such issues could be affected. For instance if such FDI would take the form of mergers or acquisitions, this may well have implications for employment and job security of finance sector workers, while job losses or opportunities could be regionally concentrated. Labour mobility between countries in the EU, but even (albeit to a lesser extent) across States in the US is typically lower than within them.

13.6.3. Environmental impacts

The financial services sector is not included in the E3MG model and there are no GHG impact estimations for the sector either. Direct environmental impacts from the implementation of TTIP are expected to be limited to negligible. Increased output in the EU would likely lead to some increase in the use of energy and electronic equipment and the generation of electronic waste. The increases in trade predicted by the model would not have the same type of environmental impacts as trade in goods does, as transportation plays a minimal role in financial services trade. Some increases in business travel may, however, be expected, however, especially if trade involves Mode 4.

As indicated, the sector's contribution to environmental impacts through 'financed emissions' and its exposure to so-called ecological imbalances is much greater than its direct environmental footprint. It is widely acknowledged that the sector can play an important role in a transition toward a more sustainable low carbon economy not just by reducing its involvement in polluting industries, but also through e.g. the financing and investing in clean technologies, energy efficiency initiatives, and the like. See Figure 13.27 below.

Figure 13.27 Turning financial flows from high to low carbon outcomes



Source: www.iigcc.org/publications/publication/financial-institutions-taking-action-on-climate-change.

It should also be noted that exposure to so-called ecological imbalances poses a risk to financial institutions and by extension the financial system. As Schoenmaker & van Tilburg (2016) note:

*“Real economic imbalances can lead to financial crisis. The current unsustainable use of our environment is such an imbalance. Financial shocks can be triggered by either intensified environmental policies, cleantech breakthroughs (both resulting in the stranding of unsustainable assets), or the economic costs of crossing ecological boundaries (e.g. floods and droughts due to climate change). Financial supervisors and risk managers have so far paid little attention to this ecological dimension, allowing systemic financial imbalances resulting from ecological pressures to build up. Inattention also leads to missed economic and financial opportunities from the sustainability transition.”*⁷⁹⁰

A consideration of the potential impact of TTIP on the contribution of the financial sector to such 'indirect' environmental impacts of the sector is thus warranted.

Potential impact from TTIP in this regard is once again related to the regulatory regimes in both countries and what the approach to cooperation between these regimes will be. To which extent, e.g. will financial institutions be held accountable for financed emissions and ecological impacts? Will they be required to report on such emissions and in which way? For instance it is possible that financial institutions will be required to measure their exposure to ecological imbalances using methodologies such as carbon and natural capital accounting, for which standards could be developed and implemented by the EU and/or that financial supervisors require financial institutions to conduct risk analysis on the basis of these exposures (stress

⁷⁹⁰ Schoenmaker, Dirk & Rens van Tilburg (2016) “Financial Risks and Opportunities in the Time of Climate Change.” Bruegel Policy Brief, Issue 2016/02, April 2016 (<http://bruegel.org/2016/04/financial-risks-and-opportunities-in-the-time-of-climate-change/>).

tests).⁷⁹¹ It is also possible that policy makers put in place incentives or dis-incentives to encourage or discourage financing or investments in certain sectors or activities.

A crucial question then will be whether such actions will be driven by policy makers, left to the sector itself (voluntary) or in cooperation between the sector, government and possibly NGOs? And will such measures be interpreted as trade barriers if the approach differs? Generally, the US tends to favour voluntary, sector led standard development, while particularly in relation to climate change and environmental issues the EU tends to take a more pro-active (policy) approach. It is impossible at this point to make predictions with any certainty of what the potential impact of TTIP will be in this regards, as detailed policies and regulations have yet to be developed in this area. But given the increasing importance attached to this issue by governments, financial supervisors, and even the sector itself⁷⁹² (particularly in Europe) the issue should be explicitly taken into account by the negotiators.

13.6.4. Impact on the international competitive position of the EU financial services sector

Greater financial integration between the EU and US through the reduction of regulatory convergence can be seen as a necessary, albeit not sufficient, condition for increasing the overall efficiency of the financial sector; other determinants of efficiency improvements include e.g. corporate governance, efficiency of the legal system in resolving conflicts in financial transactions and structural features of the banking system. These are all features that have been part of the ongoing reforms of the financial sectors in the EU and US and therefore regulatory cooperation in the financial sector should contribute to enhancing efficiency as well as to greater transparency and improved regulatory oversight. As such a more level playing field will be provided allowing for a more competitive market – of course to be set within the boundaries of what is socially and nationally acceptable in terms of risks taken. As indicated, a reduction in compliance costs and increased competition should result in lower prices for financial services.

In particular EU financial services providers are likely to gain from TTIP in terms of increased efficiency as they see a small increase in output, while the US is predicted to see a small decrease in output. The changes are small though and unlikely to see substantial shifts in competitiveness between the EU and US – particularly as a more general trends seems to be underway in some areas of the financial services sector (e.g. investment banking) of a reduced role for European players globally.⁷⁹³ The small 'advantage' for EU suppliers may be explained by the slightly higher barriers to trade they experience in the US market at present, but it may also be the case that other, more competitive sector in the US are pulling away resources from the financial services sector there.

It should be noted that while from the point of view of the incumbent or traditional financial services providers such as banks in particular, the rise of so called 'fintech' companies may pose a competitive challenge, as a development within the sector as a whole it may well increase international competitiveness of the sector. In this respect awareness and innovation in Europe is seen by some to be higher than in the US. "In Europe there is a broader awareness of what is happening globally and where leading practices are taking place. (...) Compliance and regulatory pressures (...) can (...) be an opportunity for innovation, especially in Europe where regulators are taking a more proactive role and creating an environment that supports innovation."⁷⁹⁴

To which extent TTIP may impact on such developments within the sector is very hard to predict, but developments in fintech could be influenced by how policy aimed at encouraging innovations in this area sits with regulatory cooperation under TTIP. Moreover, with the

⁷⁹¹ Idem.

⁷⁹² See e.g. <http://www.iigcc.org/publications/publication/financial-institutions-taking-action-on-climate-change>.

⁷⁹³ Schoenmaker, Dirk & Charles Goodhart (2016) "The United States Dominates Global Investment Banking: Does it Matter for Europe?" Bruegel Policy Contribution, Issue 2016/06 March 2016 (<http://bruegel.org/2016/03/the-united-states-dominates-global-investment-banking-does-it-matter-for-europe/>).

⁷⁹⁴ Interview with Bill Sullivan, head of global; financial services market intelligence at Capgemini Financial Services, quoted in Forbes (2016): Technologically Constrained Banks Face A Challenge From Agile Fintech Firms (<http://www.forbes.com/sites/tomgroenfeldt/2016/04/28/technologically-constrained-banks-face-a-challenge-from-agile-fintech-firms/#11b929a7b29e>)

increasing importance of IT technology (which in part has given rise to new 'fintech' companies, impacts from the removal of trade barriers in ICT services and in relation to e.g. data security may also affect directly the financial services sector. For instance, regulatory cooperation to ensure liberal trade in digital services and free data flows by addressing divergent standards of privacy could positively impact competitiveness of the financial services sector as well.

Given that EU and US are the biggest financial markets globally, regulatory convergence of between these two markets is likely to increase their sectors' international competitiveness, while some spill-over to third countries may also be expected. Such spill-over effects may not all be positive. As Mattoo (2015) has indicated, regulatory cooperation between two highly developed markets creates risks of exclusion, especially for lesser developed countries. He argues that: *"Harmonization creates a common standard that is the same for service providers all over the world, who can all reap economies of scale (analogous to a customs union). But if the harmonized standard is more stringent than some of the original standards, since costs of compliance vary, those less equipped to meet the higher standard could suffer."*⁷⁹⁵

Addressing regulatory divergence could arguable be even more beneficial for SME's as the cost and burdens of compliance are often higher for SMEs than for larger companies.

13.7. Conclusions and recommendations

Synthesis

Regulatory divergence is seen as the key barrier to trade and investment by the sector - and one that has been exacerbated by lack of systematic bilateral regulatory cooperation between the EU and US in the processes of regulatory reform that have taken place in response to the financial crisis on both sides of the Atlantic.

There still exist differences in views between the EU and US negotiators on whether and how financial services and particularly financial regulations should be included in the TTIP Agreement. In the view of the EU, regulatory cooperation is becoming increasingly important as the focus of reforms has moved from agreeing high level international standards to implementing them in detailed regional and domestic rule making. The EU ambitions are therefore to include regulatory cooperation in the TTIP, whereas the US seems to only want to include market access and continue regulatory cooperation through parallel channels such as the FMRD. The recent proposal of the EU and joint statement by the EU and US for the replacement of the FMRD by a more substantive Financial Market Regulatory Forum and the offers exchanged on market access suggest the parties are making progress in this important issue.

Civil society in particular has raised concerns about the inclusion of financial regulation in a trade agreement; it argues that in doing so, financial regulations will be framed as trade and investment barriers rather than the legitimate outcome of democratic processes. The EU proposals do not reflect such a view, as prudential regulation will remain at the discretion of law makers in the EU and US and financial regulation will not be subject to ISDS.

From an economic/industry perspective the effects of enhanced regulatory cooperation are seen to include:

- Reduced trade and investment costs for financial services providers on both sides of the Atlantic, resulting in increased trade and investment, as well as employment;
- Improved efficiency, productivity and competitiveness, and possibly lower prices for consumers;
- Prevention of the occurrence of future barriers to trade and investment;
- Improving stability and reducing systemic risks, by addressing these in a coordinated way (i.e. reduction of fragmented regulation for a globally operating industry).

⁷⁹⁵ Mattoo, Aaditya (2015) "Services Trade and Regulatory Cooperation." E15Initiative. Geneva: International Centre for Trade and Sustainable Development (ICTSD) and World Economic Forum, 2015. www.e15initiative.org/

The model results for an ambitious scenario with 20 percent spill-overs indicate a small positive impacts for the EU services sectors in terms of output (0.40 percent for finance and 0.83 percent for insurance) and more substantial impacts for trade, and particularly exports (increase by 4.18 percent in exports and 2.61 percent in imports for finance and by 4.15 percent in exports and 2.55 percent in imports for insurance).

The US financial services sector is expected to see a modest decline in output (-0.13 percent and -0.46 percent for finance and insurance respectively), while trade is expected to increase. However, in contrast to results for the EU, the expected increase in imports (6.38 percent and 5.87 percent for finance and insurance respectively) is higher than for exports of financial services from the US (2.32 percent and 1.82 percent for finance and insurance respectively). It should be noted that these outcomes do not cover Mode 3 trade in services, i.e. FDI. Given the relationship between trade and FDI, the focus on creating a level playing field through regulatory cooperation and the fact that FDI plays a key role in the sector and between the EU and US in particular, it can be expected that FDI between the two economies will increase as well.

Employment impacts are expected to be slightly positive for the EU (for both skilled and low-skilled employment) and slightly negative for the US. This is in line with expected output changes, although the gains are relatively smaller than for output.

The model results only reflect direct impacts and since FDI is not included in the model these direct effects pertain mostly to cross border trade. Given the nature of trade in financial services and the relatively limited commitments made in this area, these limited impacts are not surprising. However, impacts from increased FDI are potentially much more substantial. Together, the direct impacts can trigger indirect impacts as increased trade and investment (presence of foreign entities) will increase competition, and potentially decrease prices. Similarly FDI can create additional employment. The scale of such impacts is hard to predict, but the literature supports such impact mechanisms. It should also be noted that closer regulatory cooperation is likely to reduce negative impacts from new regulations, as more ample notice and information will be provided on changes, while partners may learn from one another about what works and what does not – this may also reduce systemic risks.

Minimal direct environmental impacts are expected given the limited increase in output and the fact that trade in financial services does not generally involve the transportation of goods. The issue of financed emissions and ecological imbalances could imply a bigger indirect environmental impact, but this hinges crucially on how possible policy initiatives and regulations in this area will fit in with regulatory cooperation in financial services under TTIP.

International competitiveness of the EU financial sector is likely to improve somewhat, but the modest impact of TTIP is not expected to result in significant changes in competitiveness of the EU and US vis-à-vis one another. Moreover, ongoing trends within certain areas (such as decreased role of European banks in investment banking globally and the emergence of new fintech companies) may be stronger than the impacts from TTIP. Generally, however, more integrated EU and US financial services sectors and markets are likely to increase the two blocs' competitiveness globally, due to increased efficiency and scale.

Potential negative impacts are pointed at in particular by civil society but also by several academics. However, they are not substantiated by concrete evidence, and in particular do not seem to take sufficiently into account the actual EU proposals for the negotiations.

Policy recommendations

Mitigation and flanking policy measures could include:

1. Ensure that efforts in TTIP to improve EU-US regulatory cooperation accompany, and do not overcome the EU's efforts to regulate and supervise the financial sector. Closer financial integration within Europe will also benefit the US and will enhance TTIP's impacts through FDI.
2. Given that the EU and the US are the dominant players in global financial markets, use of bilateral regulatory cooperation is advocated to strengthen the global resilience to financial risks. It is advised to review and monitor the potential indirect impacts of this effect for third

countries and to consider providing technical or other assistance to specific countries, notably less developed countries, to help them achieve the higher international standards.

3. Consider closely related issues in other negotiation areas to avoid duplication, contradiction or unintended effects in the financial services sector. Specifically this relates to:
 - o Data policies (which are already subject to discussions between EU and US financial regulators, therefore this recommendation reflects continuation of existing practice);
 - o Regulatory aspects in enabling sectors such as ICT;

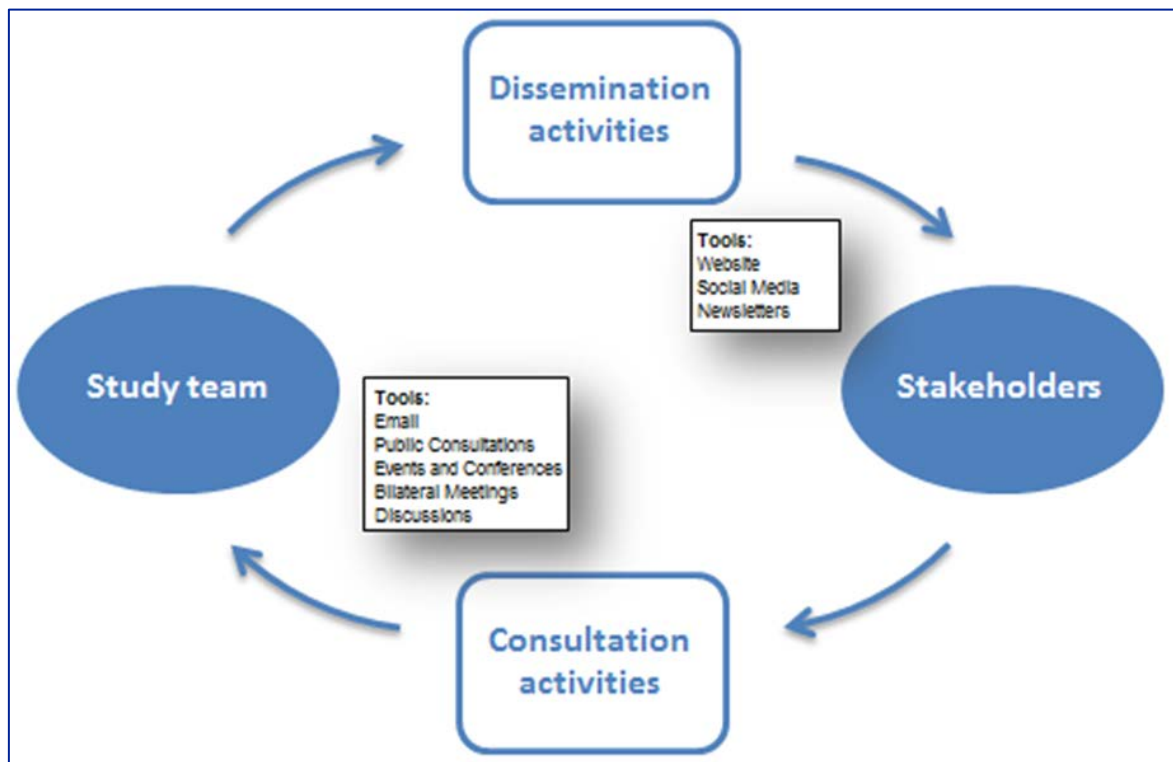
14. Consultations and communications

In this chapter we present the consultations and communications with stakeholders and civil society. We start by providing a short recap of *stakeholder consultation plan* for this study (section 14.1). We then turn to presenting the (non-exhaustive) list of *relevant stakeholders* identified so far (section 14.2). After that, a discussion on *activities conducted to date* will follow (section 14.3). Finally, we will look forward to *future activities* that will be conducted (section 14.4).

14.1. Stakeholder consultation plan

The consultation plan is based on two main types of activities: dissemination and consultation. This division ensures that relevant information and important study findings and results will be available to the stakeholders and that their views and issues are taken into account.

The following diagram illustrates the interaction between the different activities, the specific tools through which we implement the activities, and the actors. Underneath the diagram the purpose of the two main activities is described in greater detail.



Dissemination activities

In order to communicate the main study issues, news and deliverables we have created the necessary environment to effectively disseminate information.

Dissemination activities aim to raise awareness and inform stakeholders of the latest developments of the study and how to get involved. Such activities are key in order to not only inform stakeholders of the existence of the study itself, but also to keep them updated about the latest developments and important outcomes and results. Due to the nature of dissemination activities we consider dissemination an *outward* activity.

Consultation activities

The consultations include interactive engagement with the stakeholders and the wider community. For this reason several tools have been developed and set up with the aim to promote dialogue on TTIP among its key stakeholders.

This is achieved through various platforms where stakeholder opinions and issues are clearly registered, so as to be taken into account in the study; these platforms also facilitate the exchange of ideas both between the study team and stakeholders, as well as among stakeholders.

We consider these activities as *inward* activities since the opinion and views of the stakeholders are brought in to enrich the study by informing our analyses and the various selection moments in the study, and verifying / validating results and outcomes.

14.2. Relevant stakeholders

At this point we have identified a total of 606 stakeholders. In the table below we illustrate the distribution of the different stakeholders according to main categories. These stakeholders have already been contacted, or have contacted us. The detailed list can be found in Annex VI, this list includes stakeholders from the EU as well as from the US.

	Number of stakeholders		
	EU	US	Total
Business/industry	354	23	377
Environmental	40	3	43
Social and consumers	93	13	106
Other ⁷⁹⁶	73	7	80
Total	560	46	606

It should be noted that this is a working list with the aim of being as inclusive as possible. Therefore if stakeholders are identified or contact us with an interest in the study they will be added to the stakeholder list.

The team welcomes suggestions for other stakeholders to be included and will actively continue to expand the list in order to ensure that all perspectives (business, environmental, social and other) are represented sufficiently and in a balanced manner.

14.3. Activities conducted to date

We have so far created and maintained the necessary facilities in order to perform dissemination activities as well as the tools to engage in consultations. Below we will provide an overview of activities conducted to date.

Dissemination activities

The following dissemination tools have been developed and are operational:

1. Website

We have designed and created a dedicated website for this study that can be found on: <http://www.trade-sia.com/ttip/>.

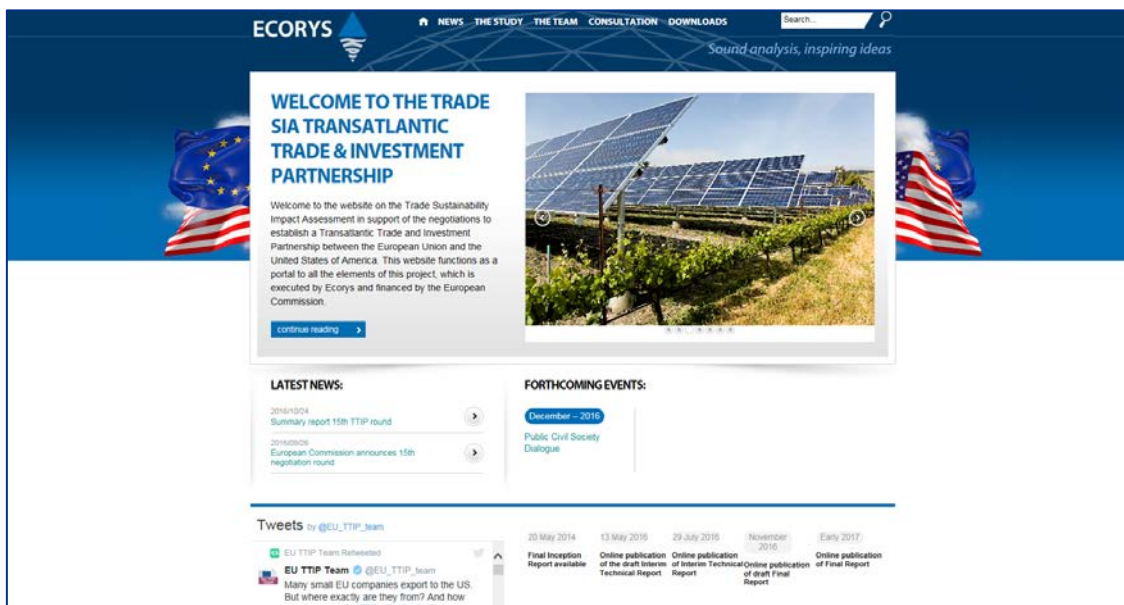
The website provides an overall introduction to the study, as well as to the future TTIP agreement more generally, it presents the study team and the timeline of the study. It also functions as a central reference point, from where any relevant outputs and updates on the status of the study can be downloaded. In addition, the website serves as a platform for the announcement of workshops, and as a tool where stakeholders can register. Since January 2014 the website has been visited over 15,000 times.

⁷⁹⁶ Other stakeholders include: , human rights organisations, academia/think thanks, governmental bodies, students and other.

Up to date the following information and documents have been shared with stakeholders via the website:

- Draft Inception Report;
- Final Inception Report;
- Draft Interim Report;
- Interim Report;
- Presentation and meeting report of the CSD on the draft Inception Report;
- Presentation and meeting report of the CSD on the draft Interim Report;
- 5 newsletters;
- Request to fill in the SME survey;
- Invitations to the two case study workshops and the sector workshops;
- Presentations and meeting reports of the workshops;
- Updates about the TTIP negotiation rounds (dates, registration for stakeholder event, and summary reports of the different rounds);
- Other information related to the TTIP negotiations (e.g. ISDS consultation report, reference to the new fact sheets and textual proposals).

Below is a screen shot of the website as it is online.



2. Social media

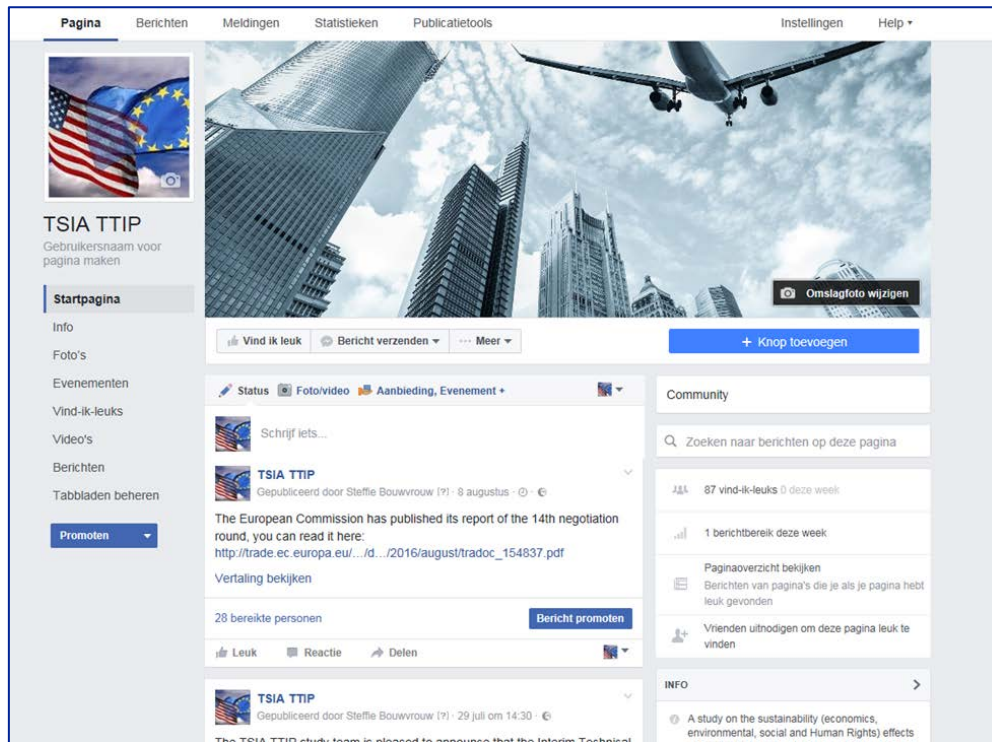
We have created a Facebook page that functions as an extension of the website, highlighting the main news and updates on the study, and linking its members to additional sources of information regarding TTIP. Moreover, members of the page can leave comments and engage in discussions. We encourage stakeholders to use and follow the page by inviting them to “like” and thus follow it. The page can be found at: <https://www.facebook.com/pages/TSIA-TTIP/1393067380960562?ref=hl>.

Up to date the consultation team has shared the links to the following documents and event information with stakeholders via Facebook:

- The TSIA TTIP website;
- Final Inception Report;
- Draft Interim Report;
- Interim Report;
- Presentation and meeting report of the CSD on the draft Interim Report;
- 4 newsletters;
- Request to fill in the SME survey;
- Invitations to the two case study workshops and the sector workshops;
- Presentations and meeting reports of the workshops;

- Updates about the TTIP negotiation rounds (dates, registration for stakeholder event, and summary reports of the different rounds);
- Other information related to the TTIP negotiations (e.g. ISDS consultation report, reference to the new fact sheets and textual proposals).

Below is a screen shot of the TSIA TTIP Facebook page:

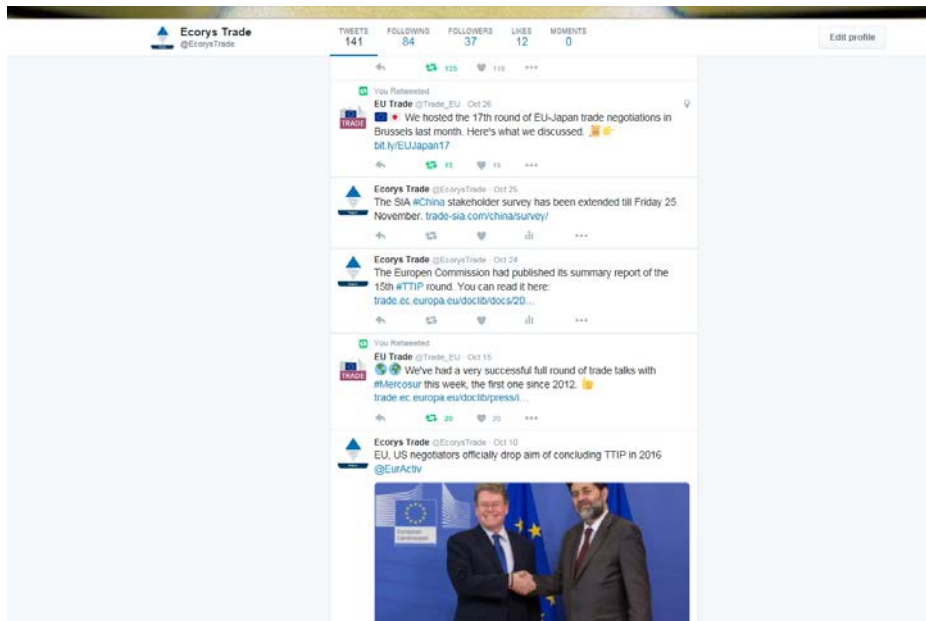


Furthermore, a twitter account has been set up, providing yet another channel through which our stakeholders can be informed in a concise and timely manner. By following our account, stakeholders are able to view (and respond to) our tweets. In addition to updating stakeholders about the study progress and upcoming events, the consultation team often also re-tweets tweets from “EU Trade”, “EU TTIP Team” and “Cecilia Malmström” about updates on the negotiations. In order to reach not only our followers but also other stakeholders, the team makes use of hashtags like #TTIP. The account can be visited at: <https://twitter.com/EcorysTrade>.

Up to date the following information has been shared via the Twitter account:

- Invitation to the stakeholder workshops;
- Link to the presentations and meeting reports of the stakeholder workshops;
- Draft Interim Report;
- Interim Report;
- Request for feedback on the draft Interim Report and to attend the CSD;
- Newsletters;
- News articles concerning TTIP;
- TTIP events organised by stakeholders;

Trade SIA on the Transatlantic Trade and Investment Partnership (TTIP) between the EU and the USA



3. Newsletters

The newsletter is another extension of the website with a specific function to update and raise awareness. The consultation team has sent five newsletters at different stages of the study. The first newsletter introduced the study to the stakeholders and already requested them for feedback regarding the sector selection. The second newsletter informed stakeholders about the final Inception Report and final sector selection. By means of the third newsletter stakeholders were updated on the progress of the study, informed about the updated modelling results and invited to attend the case study workshops. In the fourth newsletter we announced the publication of the draft Interim Report and invited stakeholders to attend the CSD, the sector workshop and to provide feedback on the draft Interim Report. The latest newsletter informed the stakeholders about the publication of the Interim Technical Report and what they can expect from the draft Final Report. Newsletters are sent to all stakeholders on our mailing list. In addition, the newsletters are also shared via the website and the other social media tools. Below is the first page of the latest published newsletter from July 2016 (a full copy can be found in the download section of the website):



Consultation activities

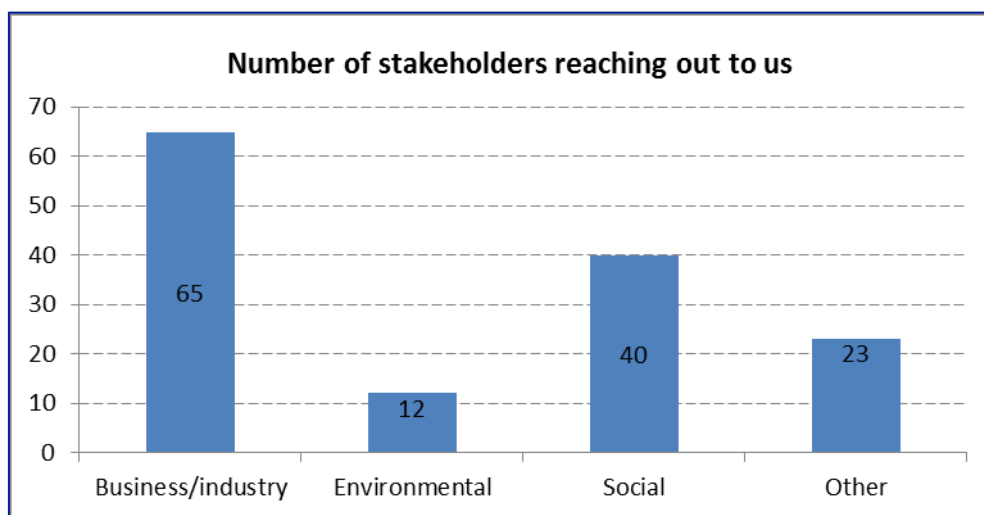
For consultation activities, the following tools have been employed:

1. Dedicated email

We have created a specific email address that is monitored by the study team and that functions as a central contact point for all stakeholders for this study. The email address is: tsia-ttip@ecorys.com.

The email is the easiest form of communication for our stakeholders and allows for comments, questions, as well as highlighting relevant sources. The consultation team responds to every email and keeps a log of all the issues and questions coming in. The latest log can be found in Annex VII. Additional to this log, an overview of all stakeholder feedback received on the draft Interim Report can be found in Annex VIII.

In the graph below, the number of stakeholders that have reached out to us on their own initiative⁷⁹⁷ are shown by category of stakeholder. From the graph it appears that mainly the business and social stakeholders have reached out to us. However, when we put this in perspective with the number of stakeholder we have in the list for each category, we get quite a different picture. From all social stakeholders, 43 percent has reached out to us on own initiative, this figure equals 30 percent for the environmental stakeholders and only 18 percent for business stakeholders.



2. Workshops

To date, three workshops have been organised by study team.

Part of the overall social and environmental impact assessment is the inclusion and discussion of six case studies. These case studies aim to assess issues that can not be dealt with quantitatively but still might be affected significantly by TTIP. On July 9th, 2015, the study team organized a stakeholder consultation workshop with the aim to identify these issues. The workshop served to validate the proposed six case study topics and to discuss the desired focus of the case studies in more detail. We have invited all interested stakeholders to provide feedback on the preliminary selection of case studies, to provide input on the suggested focus of the case studies, or to provide arguments for the selection of a different topic (replacing one of the six suggested topics). Approximately 45 different stakeholders were present at the workshop and after an explanation of the Trade SIA methodology and the purpose of the workshop, stakeholders were asked for their feedback on the selected case studies. Based on this input and the restrictions faced in the TSIA, the study team has determined – together with the EC – the final focus of the case studies:

- labour standards;
- human health;

⁷⁹⁷ This means emails not in response to newsletters, workshop invitations or requests for feedback.

- public health services;
- energy efficiency;
- fossil fuels;
- trade in natural resources.

A follow-up to this workshop took place on September 21st, 2015. During this workshop the final case study topics and focus were presented, as well as the work conducted so far on each case study. The aim of the workshop was to share the preliminary results of the ongoing work on the case studies with the stakeholders and to discuss questions, issues and preliminary findings with the stakeholders. The inputs from the stakeholders have been used to finalise the case studies.

The third workshop the team has organised took place on the 3rd of June 2016 in Brussels and was dedicated to the in-depth sector studies. During the workshop the study team presented the baseline and market access analysis which were conducted in the Interim Technical Report, as well as the preliminary impact results which will be part of the Final Report. The workshop aimed at discussing the preliminary impact results with the stakeholders and at receiving their views and inputs on the expected impacts. The inputs received at the workshop will be used when finalising the impact analysis of the sector studies.

3. Civil society meetings

After the online publication of the draft Inception Report a civil society meeting has been held where the report was presented to all interested stakeholders. During (and also after) the meeting stakeholders were given the opportunity to provide comments and feedback on the report and share their views with the team. The outcomes of the meeting have been incorporated in finalising the Inception Report. A second meeting has been held after the publication of the draft Interim Technical Report. Also here the report was presented to all interested stakeholders. The feedback received during and after the meeting has been used to improve the Interim Technical Report.

4. Bilateral meetings

It is of particular importance to get a balanced and in-depth perspective on the different (possibly opposing) views and opinions on the TTIP. A series of direct meetings with several stakeholders and experts have been organised as a way to gather their initial inputs and views. From these interviews we have been able to obtain a significant amount of detailed information and input for the study, and have managed to increase stakeholder interest to participate in the study process, and the TTIP negotiations in general.

5. SME survey

The study team and the European Commission have developed an online SME survey in order to better understand the current barriers faced by SMEs, and to feed into the TTIP negotiations. EU SMEs were invited to share experiences on the potential effects of TTIP by filling out this survey (open from June 2014 until January 2015). The participation has provided vital information for the sustainability impact assessment. The questionnaire generally concerned the importance of the US market as an export destination and the trade and investment barriers currently faced by European companies when doing business with the United States.

The European Commission has published a report on TTIP and SMEs and the importance of TTIP for SMEs based on this survey. The results of the survey have also been taken into account in the impact analyses in this report.

6. Non EC events and conferences

The study team has also attended several (non-DG Trade organised) events and conferences. These include amongst others the debate *"Is TTIP healthy?"* and *"The big TTIP debate"*. The former discussed the topics of TTIP and medicines, and TTIP and food, the latter focussed more on the general picture of TTIP and the expected impacts from different studies. Such meetings present an opportunity to not only introduce the study to a new audience, but also to reach out to new / different stakeholders and to engage in direct interaction with such stakeholders. In addition to attending these events, the study team has also viewed several livestreams of these events. Although it is here not possible to directly meet with stakeholders, it still enables us to

hear stakeholders' point of view and concerns. A full list⁷⁹⁸ of meetings attended and livestreams followed can be found in Annex V.

14.4. Future activities

1. Maintaining communication platforms

The study team intends to keep communication lines with stakeholders tight. Incoming emails will continued to be answered as the study progresses; the website and social media accounts will stay active online; the newsletters will regularly inform stakeholders with the latest updates. Furthermore, we will try to actively stimulate discussions on our website or via social media. Contributions to these discussions would provide a wide spectrum of views on specific issues. It is also a way to enhance interaction among stakeholders.

Besides these planned dissemination activities, consultation activities such as bilateral meetings and attending events related to TTIP will be continued as well.

2. Civil society dialogue

One more Civil Society Dialogue will be held after the online publication of the draft Final Report. Following the presentation of the draft report, stakeholders will have the opportunity both during and after the meeting to provide comments and feedback on the study, which will be taken into account when finalising the report.

⁷⁹⁸ Includes events organized by the EC as well.

15. Conclusions and recommendations of the sustainability impact assessment

In this TSIA we have analysed the potential impacts of a future TTIP between the EU and the US. In this chapter we present the conclusions as well as the recommendations and/or flanking measures for the overall economic, social and human rights, and environmental analyses. The conclusions and recommendations for the specific sector studies can be found in the relevant sector chapters (Chapters 7-13). Though for a complete overview, we will present the specific sector recommendations and/or flanking measures below as well.

15.1. Overall economic conclusions and recommendations

The objective of this chapter was to assess the expected economic impacts of a future TTIP agreement. Subsequently the conclusions and recommendations are presented for: 1) the macro and EU Member State results, 2) sectoral impacts, 3) impacts on third countries, including developing countries, and 4) Small and Medium sized Enterprises.

Important to keep in mind is that the modelling exercise has been conducted based on assumptions about the agreement. The scenarios do not perfectly reflect what is currently under negotiation and therefore these results are indicative.

15.1.1. Macro and EU Member State results

The CGE modelling results show that at macro level the EU will see positive effects of a TTIP agreement, both in an ambitious and less ambitious TTIP scenario. In the less ambitious scenario, EU GDP is expected to be 0.3 percent higher each year compared to a situation without a TTIP agreement. National income is expected to be 0.2 percent higher. For the ambitious scenario these figures are higher, at 0.5 percent and 0.3 percent respectively. Wages for both high skilled and low skilled workers are expected to go up by 0.3 percent in the less ambitious scenario and by 0.5 percent in the ambitious scenario. With regards to trade, the model estimates an increase in extra-EU exports of 4.6 percent and an increase in extra-EU imports of 4.0 percent in the less ambitious scenario. An ambitious TTIP could result in an additional 8.2 percent extra-EU exports and an additional 7.4 percent extra-EU imports compared to the baseline scenario. Exports to the US would see an even larger increase, 15.3 percent and 27.0 percent for the two scenarios respectively. In both scenarios the expected gains are mainly driven by the regulatory part, i.e. a reduction in NTMs. The CGE modelling results are line with other studies, but show somewhat smaller effects. An important reason for this is that in the model no NTM reduction has been assumed to result from TTIP in the processed food sector, which makes the TTIP scenario more conservative than in other studies. The choice not to model a NTM reduction in the processed food sector was for technical reasons and to ensure accurate output.⁷⁹⁹ It is not a reflection of the ongoing negotiations.

Recommendation 1: Although the macro results are positive for the EU in both scenarios, we recommend to negotiate an overall ambitious TTIP scenario that includes both a tariff reduction as a reduction in NTMs, as the modelling impacts from an ambitious scenario are significantly higher. Based on stakeholders' views and the TTIP documents that are currently publicly available on the EC's website, the overall agreement, and at sectoral level seems to be negotiated in an ambitious manner. Though, some sectors could be negotiated even more ambitious, e.g. maritime transport services, shipbuilding, or motor vehicles. Please see the sector recommendations 38 and 41 for more detail on this.

At the EU Member State level, it is estimated that all Member States will gain from TTIP ranging from a 0.1 percent GDP increase in Malta to a 1.4 percent in Ireland. Following Ireland, the largest gains in GDP are expected in Belgium (1.2 percent), Lithuania (1.1 percent) and Austria (0.9 percent). With regard to trade with the US, not surprisingly, the largest increases are found in the countries for which the US is a relative important trading partner, or in countries where certain sectors are highly integrated with the US. Part of the EU are also the EU Outermost

⁷⁹⁹ The specific details can be found in Chapter 1.

Regions (OR).⁸⁰⁰ These OR are often small islands or countries dependent on a few goods and services like bananas, rum, dairy, fishery or tourism. Although, the larger share of their trade is with their nearest neighbours, their Spanish, Portuguese or French mother countries, and the rest of the EU, the majority of the ORs does also trade with the US. However, as the CGE model did not include the EU ORs and there is little (trade) data available it is hard to make any prediction about the potential impact of TTIP on ORs.

Recommendation 2: Since the ORs are not included in the CGE modelling, it is not possible to establish the potential impacts TTIP might have. However, as this agreement covers products produced in the ORs, it will be important that, during negotiations, their specific situation and economies are taken into account. This recommendation is also relevant to the Overseas Countries and Territories (OCTs) of the EU, of which Greenland, New Caledonia, Saint-Pierre et Miquelon and possibly also the Netherlands Antilles and French Polynesia have important trade links with the EU and/or US.

15.1.2. Sectoral impacts

Additional to the macro impacts, this TSIA has also analysed the TTIP impacts at sector level. Both the size and magnitude of the impacts can differ significantly per sector. In the agriculture and other primary sectors, the expected impact of TTIP on output is generally small. Production in the agricultural sector specifically, is virtually unaffected, only in the energy sector there is a notable positive effect of 0.5 percent in both scenarios. Also for the services sectors the estimated changes in output are positive but small. The expected impacts on the manufacturing sectors are rather mixed. In an ambitious scenario output is estimated to decline with 7.9 percent for electrical machinery, 3.0 percent for non-ferrous metals and with 2.5 percent for iron and steel products. These sectors are hit harder by increased competition resulting from the reduction in tariffs and NTMs under TTIP, although, given their small shares in total EU value added, the absolute changes in these sectors are relatively small. The largest positive changes are expected in leather products (2.4 percent), clothing (1.8 percent), and textiles (1.7 percent). These sectors benefit from a reduction of the current high tariff peaks. Though, also for these sectors the expected absolute changes are relatively small as these sectors only make up a small part of the economy. In contrast, the smaller changes in the chemicals (0.3) and motor vehicles (1.5) sector are likely to have a much more significant impact, as these sectors constitute a larger part of the EU economy. The changes in employment follow the changes in output for each sector and are about equal for low skilled and high skilled employees.

Except for electrical machinery (-1.5 percent), all sectors can expect an increase in their extra-EU exports in the ambitious scenario. Given the expected large decrease in output in this sector it can be expected that the production for both the domestic and foreign market will decline, and thus the sector will see a decrease in extra EU exports. In the less ambitious scenario a small decline in exports is also expected in some agricultural and primary sectors. The largest increases in exports in the ambitious scenario will be in the motor vehicles (40.9 percent), non ferrous metals (24.8 percent) and fabricated metals (21.0 percent) sectors. In both scenarios TTIP is expected to lead to an increase in imports for all sectors. The largest import increases in the ambitious scenario can be found in dairy products (67.9 percent) and motor vehicles (42.1 percent). When disaggregating the results for the above mentioned sectors (both imports and exports) it can be seen that these sectors benefit the most from a reduction in NTMs (except for dairy since no reduction in NTMS was modelled for this sector), and to a lesser extent from the reduction in tariffs. It is indeed the case that there are still relatively high tariffs in place in the dairy, metals and automotive sector. In the automotive sector there are several burdensome NTMs in place and many small differences in regulations exist. When these are reduced, a large trade potential between the EU and the US can be realised.

Regarding the negative expected impacts in the electrical machinery sector, it is important to mention that these numbers refer to the electronic engineering sub-sector. This sector includes amongst others: electronic equipment for broadcasting and transmission, manufacture of office machinery, manufacture of television and radio transmitters or sound or video recording. This negative impact is likely to occur because of increased competition from third countries, who can benefit from greater regulatory convergence between the EU and the US market. The industry representatives, however, are not convinced of such a strong impact stemming from increased competition from third countries. The electronic goods sub-sector on the other hand,

⁸⁰⁰ Azores and Madeira (Portugal), The Canary Islands (Spain), Guadeloupe, French Guiana, Martinique, La Reunion, Saint-Martin, and Mayotte (France).

is expected to gain from the TTIP agreement. The positive changes are reflected in the other machinery impact results. The electronic goods sub-sector consists inter alia of: medical precision and optical instruments, electric and word-processing machines, automatic data processing machines, computer storage devices and scientific and technical instruments.

Recommendation 3: The model outcomes predict a decrease in both output, exports, and employment in the EU electrical machinery, i.e. the electronic engineering sub-sector. The industry representatives have, however, indicated that they deem these impacts not likely to occur. Therefore, it is suggested to monitor the developments in this subsector over time after the implementation of TTIP. If the changes in this subsector turn out to be indeed negative, additional measures could be taken to e.g. stimulate innovation in the sector, or to assist in trainings so that employees can more smoothly switch to other sectors.

15.1.3. Impact on third countries, including developing countries

Although the TTIP agreement aims to reduce tariffs and NTMs between the EU and US, the impact will not be limited to the transatlantic marketplace only, because of the substantial and deep interlinkages that exist between the EU and US and third countries. There are various channels through which TTIP can potentially affect third countries, including developing countries. The reduction of tariffs and NTMs could lead to trade diversion away from third countries. These third country producers may now face competition from EU/US producers who will face fewer costs related to trade barriers. This cost advantage would have negative consequences for third countries' suppliers. On the other hand, third countries can also benefit from increased welfare in the EU and the US, which could result in increased demand for final and intermediate goods from third countries. Additionally, further alignment between EU and US standards and regulation through mutual recognition or harmonisation can benefit producers in third countries that export to both markets. These producers no longer have to comply with two different sets of standards and regulations, but may instead adopt a single (or less divergent) set. This will push down the production costs in third countries. The restrictiveness of Rules of Origin is another channel through which third countries can be impacted. Processed food in EU trade agreements, for instance, often requires domestically produced primary commodities, before it can enjoy the benefits such as reduced barriers to trade. Less restrictive Rules of Origin may encourage products that contain imports from third countries to be traded across the Atlantic to face lower barriers.

The CGE modelling results show that overall GDP impacts are positive for third countries. Low income countries, Mercosur, China and India are expected to see no change in their GDP. Turkey and OECD countries are estimated to see their GDP grow by 0.1 percent, and ASEAN countries by 0.5 percent. The estimated overall changes in third countries' exports and imports are more significant and also positive. The largest gains in exports can be found in Turkey (2.0 percent), ASEAN countries (1.3 percent), and in OECD countries (1.2 percent). Low income countries are estimated to have the smallest increase in their exports (0.3 percent). The largest increase in imports can be found in ASEAN countries, China, and Turkey, where imports will increase with 2.0, 1.6, and 1.4 percent respectively. These gains mainly stem from spill-overs for third countries. However, at country level some trade diversion due to the TTIP agreement can be expected for Canada, Mexico Brazil, China and Japan. These countries have either the EU or the US as a main trading partner, so a reduction in transatlantic barriers could lead to a significant increase in competition for trading with the EU and/or the US.

Recommendation 4: The overall third country impacts are estimated to be small but positive, including for developing countries. There are small changes for most low income countries and larger changes for ASEAN and OECD countries, and Turkey. The positive impact mainly stems from spill-overs relating to greater alignment between EU and US regulations/standards. In addition to improving transatlantic trade, the aim of TTIP is also to encourage the development of global standards. However, third countries may sometimes not be able to meet the high EU (or US) standards, making it harder to adopt these "new global" standards. In order to reach this goal and to maximise the benefits for third countries from the TTIP agreement, third countries could be consulted to identify specific needs, which could be taken on board, and be encouraged to take an active part in the development of future global standards.

15.1.4. Small and Medium Sized enterprises

SMEs constitute a large part of the economy in the EU, they account for 99.8 percent of all non-financial business enterprises and 67 percent of total employment in these sectors. Although not

all SMEs export to the US, many do supply their goods and services to firms involved in EU-US trade. Given their size, it is often much harder for SMEs to cope with trade barriers than it is for larger firms. This concerns especially NTMs like duplicative testing, or need for double labelling and/or certifications. SMEs often lack the capacity and/or resources to deal with these differences. In addition to this, SMEs often struggle in finding the right or necessary information about specific barriers and/or regulation. A reduction in the number of these barriers could be of significant benefit for exporting SMEs in the manufacturing and services industries. They are likely to gain proportionally more from a reduction than larger firms do, due to a decrease in trade costs. In addition, this decrease in trade costs might just make the difference between exporting or not. Also, SMEs that would still not export directly after the implementation of TTIP can benefit from the agreement from cheaper imports and more product choice. Moreover, the growth in production and exports of large firms will increase the demand for goods and services from SMEs that supply to these large firms. The improvement in information availability could also encourage SMEs to trade more with the US. There is however a big challenge that needs to be overcome. During the consultations it turned out that SMEs often don't (have the time to) follow or understand the negotiations, but only will deal with it once the agreement is there.

Recommendation 5: SMEs are the employment backbone of the EU and US economies, but are disproportionately affected by trade barriers compared to large firms. If TTIP would be able to facilitate trade for SMEs by removing these trade barriers, and by providing more information in an easily accessible way, its impact would be highly significant. The provision of concrete and transparent information concerns not only regulations and trade barriers, but also the TTIP agreement. SMEs often lack the time and resources to really delve into the subject. A single information point could benefit them in many ways. In this respect, 1) the EC's proposal to set up websites with specific information to help SMEs finding out about tariffs and non-tariff measures, and 2) the EC's proposal to set up an SME committee that will interact regularly with SME stakeholders and bring their point of view on the implementation of agreement to other TTIP committees, can help SMEs to take advantage of the opportunities created by TTIP. The European Commission could start early with implementing these initiatives. This would make it better understandable for SMEs what the agreement entails and how their firm specifically could be impacted.

15.2. Overall social and human rights conclusions and recommendations

The objective of the social chapter was to assess the expected impact of a concluded TTIP agreement on social indicators. This social impact was analysed by looking at three channels of impact; the economic, trade, and regulatory channels. The social impact analysis through TTIP's economic channel was based on social indicators generated by CGE and E3MG modelling, while the remaining channels were covered by qualitative case studies. The three qualitative case studies focused on the impact of TTIP on human health, the ILO Fundamental Conventions, and public health services. In addition, the impact on human rights was analysed, focusing on the most relevant human rights. On the basis of insights that followed from this analysis, this section provides overall conclusions and proposes possible flanking measures that can be used to mitigate possible adverse effects in the social domain.

15.2.1. Main social impact through the economic channel

The main findings from the CGE model indicate that real wages are expected to increase by 0.5 percent in the EU, and a little less in the US. In all scenarios, low-skilled wages are predicted to increase more than high-skilled wages, implying that wage inequality is expected to decline slightly. Tariffs and the reduction of NTMs of goods are the main drivers of these wage results in both economic blocs. Sectoral employment changes follow the results from output changes in the economic impact chapter. Employment in the leather and textiles sectors are estimated to increase most in the EU and the metals and meats sectors are expected to benefit most in the US. We find that employment changes between sectors will be within normal market trends.

Consumer prices in the EU are expected to increase by 0.3 percent due to TTIP, whereas no changes are expected in the US in the ambitious scenario. This can partly be explained by the increase in demand for EU goods and services from across the Atlantic. This increased demand will push up the prices on the EU market as well. On the other hand, prices for imports from the US are expected to decline by an average of 4.1 percent (see Tables III.51 and III.52 in Annex III).

The total impact on household income will be positive for all income groups. The first quintile (lowest 20 percent EU-incomes) will have 0.2 percent more household income in 2030, whereas the increase in household income is twice as large (i.e. 0.4 percent) for the richest 60 percent (e.g. for each of the quintiles 3, 4, and 5). This has a slightly negative impact on income inequality, where the Gini coefficient of the EU increases by 0.1 percent. Together with the finding that wage inequality gets slightly less, this indicates that the largest gains for TTIP will arise for those that have work. It should be noted that these findings are all based on the assumption (for technical reasons) that NTMs in processed food will not be reduced. As the first quintile spends more on food than other income groups, benefits from lower food prices in reality are not included in these calculations, such that this increase in household income can be seen as a lower-bound.

Recommendation 6: The agreement could steer towards creating additional benefits for consumers by increasing the choice and variety of goods and services that become available to the consumer. This could take the form of maximizing the number of tariff lines liberalised. Combined with higher household income, this creates the largest positive impact on consumers.

15.2.2. Main social impact through the trade and regulatory channels

The first case study on the impact of TTIP on human health combines impacts through the trade and regulatory channels. It investigated the impact of lower tariffs resulting from TTIP for a number of commodities; tobacco, alcohol and sugars. It should be reiterated that tariffs may already be low for subsets of these commodities. However, in case tariffs are removed, and prices decrease as a result, consumption of these commodities may increase. Excessive consumption can lead to adverse human health effects, though the exact relationship between price and demand depends on the (price) elasticity of these commodities.

Recommendation 7: It is important for the European Commission and Member States' governments to closely monitor changes in price and consumption levels as a result of tariff and NTM reductions, and take appropriate action. TTIP safeguards the right to regulate for governments so as to implement policies to mitigate possible negative impacts on human health.

In the same case study, it was found that medical equipment may become cheaper in case of a TTIP agreement. The largest gains will not come from lower tariffs, as they are already relatively low, but from regulatory cooperation. The removal of duplicate testing requirements or faster take-up of new innovations will benefit the health care sector, and indirectly human health.

Recommendation 8: The TTIP partners could intensify the focus on facilitating trade in medical equipment by streamlining (to the extent possible) regulatory hurdles, as this provides direct benefits to consumers. TTIP should be seen as support for ongoing EU-US dialogues in this field.

The second case study focused on the ILO Fundamental Labour Conventions. We found that the impact on the EU is likely to be very limited, as all 28 MS have already ratified these eight conventions. For the US, having only ratified two conventions, there are major roadblocks in terms of federal and state law and practice. Without changes on the political scene, TTIP will likely have little impact on the actual ratification of the remaining six Conventions. However, the EU proposal for the Sustainable Development chapter already includes commitments that are comparable to the ILO Fundamental Conventions.

Recommendation 9: The EU could push for the inclusion of a Sustainable Development chapter in line with its current proposal. This chapter should then be enforceable within a TTIP-framework. This would maximize the positive impact of TTIP on the protection of labour rights in the US.

The last social case study dealt with TTIP and public health services. We find that despite many fears of stakeholders, the EU approach towards public (health) services will remain in line with the GATS framework. This includes four guarantees that will not change with TTIP; 1. EU Member State governments are free to regulate their public health sector and they can set their own quality standards suppliers need to meet. 2. For public health services, governments do not have to give access to service providers from outside the EU. 3. National, regional, local

governments can organise public services in a way that only one firm provides the service. 4. EU Member State governments at all levels are free to provide subsidies to the public health sector. In that case, TTIP will not change the way the public health care is regulated in EU Member States, nor will it lead to changes in legislation, as the principle of subsidiarity is embodied in the EU treaties.

Recommendation 10: The agreement could follow up on the promise that there will be no change in the legislation regarding public services, vis-à-vis the current GATS framework, to ensure that no change will be forced upon the public health services sector.

15.2.3. Human rights impact

Trade agreements can both have a direct and indirect impact on human rights. This section analysed six human rights that were not addressed elsewhere in the report and found that most of them are not affected by TTIP as they are out of scope, or safeguarded by other provisions. Depending on the level of ambition of TTIP, the *HR to an adequate standard of living* is improved for almost all citizens. Although these numbers present averages, a further analysis of effects on vulnerable groups does not point to possible negative impacts for certain groups. Only in a less ambitious scenario will a number of societal groups see a decline in their standard of living (due to lower disposable income). Given that there will be similar guarantees as discussed in the case study on public health services no impact on the *HR to education is expected*. The *HRs to culture and protection of personal data* are not expected to be impacted, as these topics are both out of scope of the negotiations, and in the case of the protection of personal data, this is dealt with in a separate treaty negotiations. The *HR to information* is greatly enhanced for EU citizens due to the moves towards transparency by DG Trade in the negotiation process. While these benefits cannot be directly linked to the content of the TTIP agreement, the trend towards more transparent negotiations will benefit this human right.

Recommendation 11: The EU could pursue an ambitious TTIP agreement so as to make sure that the most vulnerable groups in society also see an improvement in their *HR to an adequate standard of living*. This ambitious agreement would include a reduction in both tariffs and NTMs. Though given the sensitivities in certain sectors, the definition of “ambitious” can differ per sector.

Recommendation 12: The European Commission has done a great effort in increasing transparency with regards to the negotiations. Not only in informing stakeholders, by means of publishing position papers, proposals and negotiation reports, but also by giving stakeholders more opportunities for sharing their input and expertise with the negotiators. The published information about the agreement has been valuable to the study team as it allows for a better understanding of the agreement and consequently a better analysis. At the same time, it also ensures that stakeholders are better informed and can provide both the negotiators and the study team with more valuable and relevant feedback. We recommend the European Commission to continue their transparency initiative with TTIP but also with future trade agreements.

15.3. Overall environmental conclusions and recommendations

The objective of this section of the study was to assess what environmental impacts can be expected in case the EU and the US sign TTIP. The objective was secondly to determine the severity of the identified impacts and provide flanking measures (if relevant), that could mitigate possible harmful impacts of the trade agreement.

The environmental analysis was structured along three impact channels (economic, trade and regulatory effects) and five environmental themes (climate change, air pollution, land use & ecosystems and biodiversity, material & energy use and water & waste). The quantitative part of the study focussed on processing and discussing the results from the E3MG model, which builds on the results of CGE model on economic impacts (note that the CGE model does not include technological progress in its modelling). Two additional methodologies (causal chain analysis and three in-depth case studies) have been used to complement the quantitative analysis to identify and analyse impacts that are perhaps not fully captured in the modelling exercise and thus require more attention. In addition, this more qualitative part includes a discussion of the investment protection mechanism (ICS) that has been proposed by the EC under TTIP.

15.3.1. Main environmental impacts through the economic channel

TTIP is expected to have a small negative impact on **climate** as CO₂ emissions are estimated to go up by 0.2 percent. The increase in CO₂ emissions stems mainly from increased emissions from textile and clothing (2.3 percent), construction (0.5 percent), and food, drink & tobacco (0.5 percent), and a decrease in emissions from nonferrous metals (-2.0 percent), engineering (-1.2 percent) and iron & steel (-0.5 percent). Looking further into the total impacts on CO₂ emissions we see that the results are mainly driven by the composition effect (i.e. the change of the relative importance of certain sectors in the economy, where in this case on average more polluting sectors increase their output more than less polluting sectors). The study found further that, according to the E3MG model, the overall impact on **other emissions** is rather small. Air pollutants such as CO and PM₁₀ emissions go up by 0.1 percent, SO₂ and NO_x emissions by 0.2 percent. The share of volatile organic compounds (VOCs) in the air is expected to decline by 0.1 percent.

Recommendation 13: The above findings show that TTIP has some minor negative impact on emissions and hence on the climate. However, as the model excludes expected technological progress improvements through indirect knowledge sharing and international cooperation under TTIP, the negative findings might be overestimated. Secondly, we note that in the current model policy actions to put the Paris Agreement into practise are not included in the baseline model. We recommend to the EC to monitor the causal impact of TTIP on emissions and, if findings show that technological progress is insufficient in mitigating the increase, additional measures could be taken.

For the EU, **overall material use** is estimated to increase, mainly as a result from higher demand for construction minerals (0.4 percent). Demand for ferrous (-1.1 percent) and non-ferrous metals (-1.5 percent) decreases. Although this reduction in the demand for metals is significantly larger in percentage terms than the increase of construction materials (i.e. materials to construct roads), due to current levels of material use the net effect is a small increase. Under the ambitious TTIP scenario we find that energy demand is expected to go up by 0.2 percent in the EU. **Energy demand** at sector level is expected to increase mainly in power use, air transportation and through food, drink and tobacco. The engineering- and metal sector offsets this effect somewhat, as can be expected from the CGE results that reports a decrease in output, by showing a negative change in energy demanded of just over 1%. Per type of fuel we find that the demand will increase mainly for hard coal (0.3 percent), natural gas (0.2 percent) and middle distillates (0.2 percent).

Recommendation 14: TTIP is expected to have a minor negative impact on environment as it leads to an increase in energy demand. However actual impact is expected to be less severe as the model results date back before the Paris Agreement and as such mitigating policy measures are already foreseen. Due to additional policy stemming from the Paris Agreement we do not think additional action is required to mitigate the increase in energy demand due to TTIP.

15.3.2. Main environmental impacts through the trade and regulatory channel

The study established a link between the **environmental goods and services** sector and their share in E3MG-NACE sector classification. The CGE model output is however not available on EGS sector level and the found impact on an EGS sector is driven by impact on the sector to which it is linked. Due to this lack of available information, it is not possible to say how TTIP impacts EGS as the information is only available on sub-sector level.

Investment and FDI are a critical factor in boosting growth and jobs. Trade and investment include clauses on investment protection. The **investment protection** mechanism for TTIP, among others ICS, was proposed to the US in November 2015 and aimed to take away concerns raised by stakeholders relating to whether judges are independent, the level of openness of court proceedings, and that a Member States' right to regulate is maintained. This new system of investment protection is, according to a number of experts/ stakeholders, still insufficient in tackling concerns related to the approach of how judges are selected. Another argument often raised by critics on inclusion of an investment protection mechanism is that it could lead to 'regulatory chill' (i.e. the treat of ICS prevents the introduction of new laws and regulations). Assessing whether the ICS system sufficiently addresses all concerns raised by experts and

stakeholders is hard at this moment, as it is a new instrument and as such no practical examples can be used to strengthen arguments.

Recommendation 15: We believe that the EC could increase transparency of the investment protection clause by providing an explanation without trade specific language, so that it is better understandable for a non-technical audience. Moreover, providing more detail on how a case might successfully be brought under ICS could improve the general understanding of the mechanism. A possible approach would be to construct a number of 'mock-cases', through which it becomes (even more) apparent when an investor is entitled to compensation and when not. Such near real-life examples might take away any misunderstandings, as well as fear that the investment protection mechanism could lead to a 'regulatory chill' effect.

15.3.3. Impact of TTIP on specific selected environmental cases

The first environmental case study analysed the impact of TTIP on **illegal trade in natural resources**, such as timber, fisheries and other wildlife. The study found that including trade provisions aimed at natural resources in TTIP could trigger substantial impacts on the sustainability of natural resources at a global scale. The provisions on (illegal) trade in endangered species of wild fauna and flora, timber and illegal fish proposed by the EU for TTIP's Sustainable Development chapter, were found to have a significantly (positively) impact. The positive impact mainly stems from more coordinated action towards third countries rather than improvements in the bilateral relation (both the EU and US have high standards). Secondly, we expect that the positive impact is highest in the case of curbing illegal fishing (the volume of fisheries trade and estimated IUU fishing is significantly higher than timber and wildlife combined).

Recommendation 16: TTIP poses a great opportunity to curb illegal trade in fish, timber and wildlife through increased cooperation towards third countries. To ensure that they capitalize on these opportunities the EU and US should consider including binding and enforceable provisions in the chapter covering illegal trade in natural resources.

A case study on **trade in unconventional resources** (fossil fuels) was conducted to illuminate the figures found in the energy demand analysis. TTIP is expected to facilitate LNG export from US to the EU as national treatment rules will apply, effectively removing obstacles of a lengthy export licensing procedure. If the price for US LNG is attractive we expect that some LNG will be transported to the EU when the first LNG terminal becomes operational (2018). LNG exports to the EU are likely to be marginal in the short-run, given the current global oil and gas prices. However, strategically, if oil prices go up in the future, the LNG import option from the US could potentially keep EU LNG prices down. Further, if LNG replaces the use of coal in the EU, it could have a (local) positive impact on the environment (assuming this coal stays in the ground). In the longer run, the removal of the LNG export ban could lead to a diversification of Europe's energy mix towards more LNG. Whether the global environmental impact of such a change is beneficial to the environment is however debatable as current LNG production methods (note we refer here to the share of shale gas in total LNG) results in, among others, methane leakages that have a negative impact on climate change and leads to local ground and water pollution. Secondly, it depends on whether the energy source it replaces is not more polluting, as also renewables could be replaced in case they are not price competitive.

Recommendation 17: TTIP will facilitate US exports of US gas, including from unconventional sources. As there are still significant if's and but's surrounding the environmental impact of shale gas extraction (e.g. compared to coal) it is recommended that the EC gains a) further insight in what the factual effects of shale gas (GHG emission and other impact) are compared to the energy source that is being replaced, and b) only use the option to import US gas as a means to lower prices from competitors (diversification objective) – tax the reduction in price – and invest this additional funding in long term GHG reduction projects/ research. Action b is most in line with the Paris Agreement and EU2030 energy objectives.

To provide more insight in the regulatory channel and the impact of TTIP the final case study discussed current and possible future **co-operation in the field of energy efficiency of products between the EU and US as a result of TTIP**. There are high ambitions in the areas of TBT (reducing unnecessary and duplicative test procedures, while increasing the use of international standards) and regulatory co-operation (reduce divergent regulatory requirements, without jeopardizing environmental protection levels) in TTIP that could help to increase energy efficiency. Co-operation in the field of energy efficiency could, in the long term, lead to additional energy savings, lower retail prices for energy efficient products and reduced

conformity assessment costs for producers. TTIP's impact is most likely to come from exchange of information, the use of international standards in test procedures and, potentially, mutual recognition of conformity assessment procedures. A rough estimate of the total energy savings that could be achieved in the longer term under TTIP in the EU is 0.3 percent of total energy use by 2030. This finding is different from the CGE modelling result, because the CGE modelling result does not take into account technological improvements in energy efficiency.

Recommendation 18: We strongly support the aim of TTIP to reduce unnecessary duplicative testing and divergent regulatory requirements as long as this is not jeopardizing environmental protection levels –or energy efficiency initiatives. In this respect the EU should always assess, when increasing co-operation, whether the new aligned regulation or testing method is upholding current EU standards and leaves opportunities to impose stricter regulations (that favour the environment) in the future.

15.4. Sectoral recommendations

Below we present specific recommendations for the different sector studies. For the detailed conclusions we refer to the relevant sector chapters (Chapter 7-13).

The agri-food sector:

19. A good dialogue with the agrifood sector is necessary in order to carefully assess the existing non-tariff measures and focus on those that can benefit the EU food industry. In the same vein, an open and transparent interchange with consumers organisations is an express condition for ensuring that consumer interests are taken into account;

The chemicals and pharmaceuticals sectors

20. Given the large differences in the EU and US chemical regulations we suggest the European Commission to solely focus on the areas where gains can be achieved without altering the European chemical regulations (such as REACH). These areas include for example tariff reduction, or the commitment to use the UN GHS system for classification and labelling. Although average tariffs and the differences in e.g. labelling are relatively small, due to the intensive trade between the EU and the US in the chemical sector, the costs to trade are still significant.
21. As there are no tariffs for EU firms to export pharmaceutical products to the US market, the focus in the pharmaceutical sector currently lies on the reduction of NTMs. As significant cost savings can be achieved by reducing duplicative testing, sharing (test) data, and recognising each other's Good Manufacturing Practices, we suggest the European Commission to continue focussing on these issues in the negotiations.
22. While the reduction of duplicative testing and procedures in the pharmaceutical sector could also benefit patients in terms of better and faster access to medicines, and fewer clinical trials on children or adults, it should by no means lead to a lowering of safety standards. We propose the European Commission to consult with both the pharmaceutical industry and health organisations on which duplicative test and procedures could be reduced, without lowering the current EU levels of safety.
23. In addition to being costly to exporting firms, duplicative testing in the chemicals sector is also harmful for animals. Although animal testing is forbidden for some products in the EU (e.g. cosmetics), for certain chemicals it is still allowed to test on animals as a last resort. Also in the US, animal tests are still allowed. Animal welfare could be improved if EU and US testing agencies would share their testing results and/or research. In this way tests on animals could be reduced, or even avoided. It is therefore recommended to share, to the maximum extent possible, chemical testing results that could involve animals.
24. Although it is indicated in the EU position papers that governments retain the right to regulate in the public's interest, and that the precautionary principle will be safeguarded, it is feared that future regulatory cooperation in the chemical sector could erode the precautionary principle and lower standards. Due to the differences in EU and US regulations, stakeholders fear that regulatory cooperation would imply that Parties will have

to make some concessions. We suggest including clear provisions in the agreement to uphold EU standards also in light of future cooperation.

25. During the course of the negotiations, the European Commission has published many documents regarding the position of the EU in the TTIP negotiations. These documents have provided more insight in the negotiations and the position of the EU. Although more information is available, it is often full of trade or legal jargon and not understandable for a non technical reader. We suggest the European Commission to better explain in a more common language what the documents entail. This could especially be helpful regarding the chemicals sector. There are currently many fears that safety standards will be lowered. The European Commission has indicated that they have no intention whatsoever to lower standards, and that the documents publicly available also explain why. However, since these documents are difficult to understand for many people, their concerns, from a stakeholder point of view, seem unaddressed. An additional document explaining the chemicals annex in a more common language, but at the same time being more substantiated than solely “standards will not be lowered” could potentially resolve this issue.

The mechanical engineering sector

26. A good dialogue with the mechanical industry is necessary in order to carefully assess the existing non-tariff measures and focus on those that can benefit the EU industry.
27. Any removal of NTMs must be reciprocal and improved access to public procurement markets is of crucial importance.

The electrical and electronic equipment sector

28. Good dialogue with the electric and electronic industry is necessary in order to carefully assess the existing non-tariff measures and focus on those in the negotiations that can benefit the EU industry.
29. Any removal of NTMs must be reciprocal and market access, including access to each other's public procurement markets, is of crucial importance.

The motor vehicle sector

30. Given the significant impacts in the ambitious scenario and the large differences with the expected impacts from a less ambitious scenario, we suggest to negotiate an ambitious TTIP agreement for the motor vehicle sector. An ambitious scenario in the motor vehicle sector should include a reduction of both tariffs and NTMs. As the European Commission is currently negotiating a reduction in tariffs and increased cooperation regarding safety regulations, we recommend to continue with this approach and not to lower the ambition for the motor vehicle sector.
31. The decomposition of the results has shown that the tariff reduction will have a slight negative impact on EU employment and output. This is more than compensated for by the positive impact stemming from a reduction in goods NTMs. We therefore recommend the European Commission to do go beyond tariff reduction and also include regulatory cooperation in the motor vehicle sector in the agreement.
32. Currently the TTIP agreement looks only at differences in safety regulations, not at differences in emission or fuel efficiency regulations. Although the safety regulations are more important in terms of cost savings, the alignment or mutual recognition of emission regulations could lead to additional cost savings as well as environmental benefits for society. While these regulations are currently too divergent to discuss in the TTIP negotiations, alignment or mutual recognition of emission regulations could be reconsidered in the future, should regulatory cooperation in the sector be beneficial. In case the European Commission does opt in the future to also align emission standards, this should be done without compromising the current environmental standards.
33. We have not found any significant negative impacts on third countries with regards to the motor vehicle industry. However, in order for third countries to also benefit from the agreement, it is suggested to extend the mutual recognition to third country product's complying with either EU, or US standards.

The maritime and air transport services sectors

- 34.** Given large differences in expected impacts between a less ambitious scenario and an ambitious scenario, we suggest to negotiate an ambitious TTIP agreement for both the maritime and air transport sector. An ambitious scenario should include both a reduction of NTMs in the two transport services sectors, as well as a reduction of tariffs and NTMs in other goods sectors. Enhanced trade of goods between TTIP countries will also increase the demand of transport services.
- 35.** Although The Jones Act has been in place since 1920, and many attempts (from the US side) to repeal it have failed, targeted exceptions to The Jones Act for EU companies could bring significant benefits to both the EU maritime transport services sector and the EU shipbuilding sector, as well as to the environment. Despite the fact that a full repeal of The Jones Act for EU companies within TTIP is highly unlikely, we suggest the European Commission to negotiate as many targeted exceptions for EU companies as possible.

The finance (including insurance) sector

- 36.** Ensure that efforts in TTIP to improve EU-US regulatory cooperation accompany, and do not overcome the EU's efforts to regulate and supervise the financial sector. Closer financial integration within Europe will also benefit the US and will enhance TTIP's impact through FDI.
- 37.** Given that the EU and the US are the dominant players in global financial markets, use of bilateral regulatory cooperation is advocated to strengthen the global resilience to financial risks. It is advised to review and monitor the potential indirect impacts of this effect for third countries and to consider providing technical or other assistance to specific countries, notably less developed countries, to help them achieve the higher international standards.
- 38.** Consider closely related issues in other negotiation areas to avoid duplication, contradiction or unintended effects in the financial services sector. Specifically this relates to:
- a.** Data security (which are already subject to discussions between EU and US financial regulators, therefore this recommendation reflects continuation of existing practice);
 - b.** Regulatory aspects in enabling sectors such as ICT;

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