International Trade, 31E00500

Lecture 7: Strategic and applied trade policy

Katariina Nilsson Hakkala[1]

[1]Aalto university and the Research Institute of the Finnish Economy (ETLA)

Winter 2019

Table of contents

Table of Contents

Trade policy options

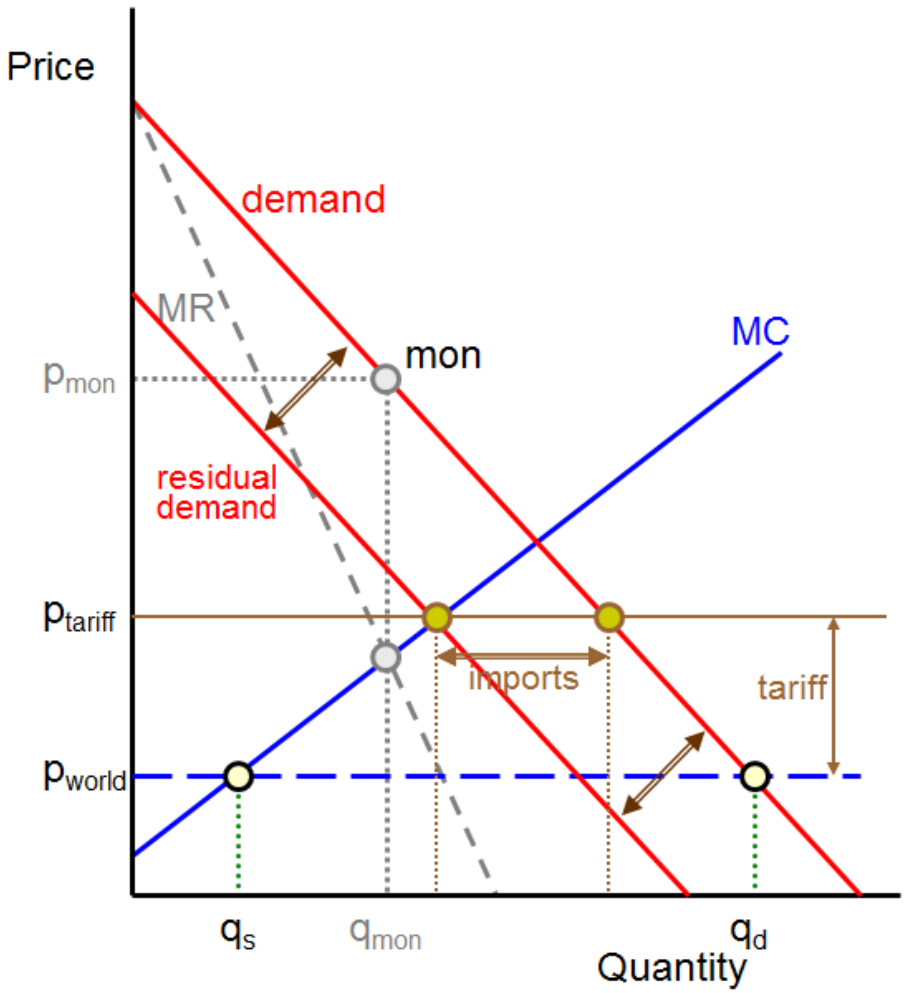
- Traditional trade policy: tariffs, quantitative restrictions or import quotas, tariff-quota systems and anti-dumping policies (e.g. EU import restrictions for sugar)
- Modern trade policy: non-tariff measures (NTMs) and non-tariff barriers (NTBs)
  - NTMs: all non-price and non-quantity restrictions on trade in goods, services and investment (e.g. technical standards and testing, licence requirements, IPR rules, differences in regulations from one state to another)
  - NTBs: NTMs that can be considered protectionists restrictions and can be disputed in WTO (e.g. excessive custom delays, firm subsidies, embargoes)
- Trade disputes and WTO: Bananas, Steel, Shrimps, Meat (hormones), but also NTB disputes e.g. subsidies to Boeing and Airbus, protection of intellectual property rights, transfer of technology (US-China conflict), the determination of normal value for "non-market economy" countries in anti-dumping proceedings involving products from China.

Market power and trade restrictions

- The impact of trade restrictions depends on the **type of competition on the domestic market**
- With **imperfect competition** quotas are more restrictive than tariffs
- With tariffs firms are always confronted with the threat of foreign competition (hence "tariffication" preference in WTO)
- Governments trying to influence competitive position of domestic firms through trade policy = **strategic trade policy**
- In practise, the evaluation of the effects of strategic trade policies rather complicated (next section)

Quotas under imperfect competition 1

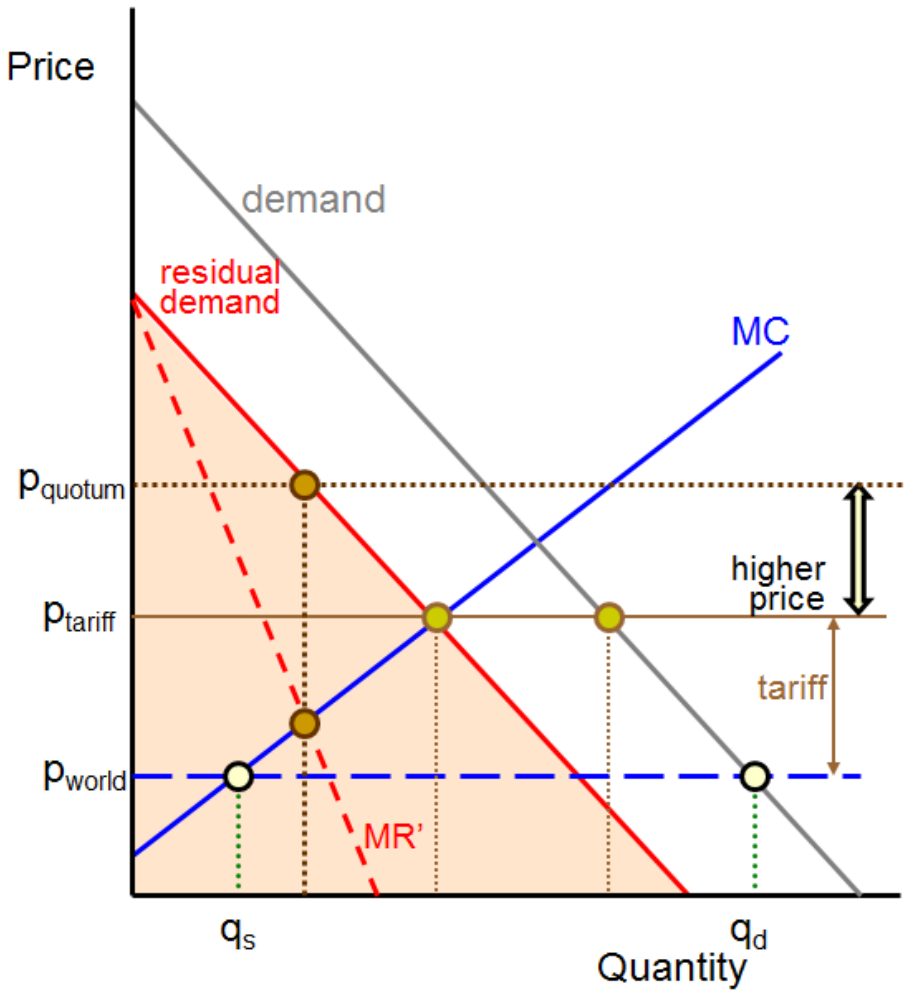
Market power and quota



- With a domestic monopolist a quotum is more restrictive than a tariff
- Recall the equivalent welfare effects of tariffs and quotas under perfect competition (subject to conditions)
- Now take the level of imports associated with this tariff
- And assume this is the quotum imposed to imports with a domestic monopolist
- Once the import quotum is filled this shifts *in* the residual demand for the monopolist

Quotas under imperfect competition 2

Market power and quota



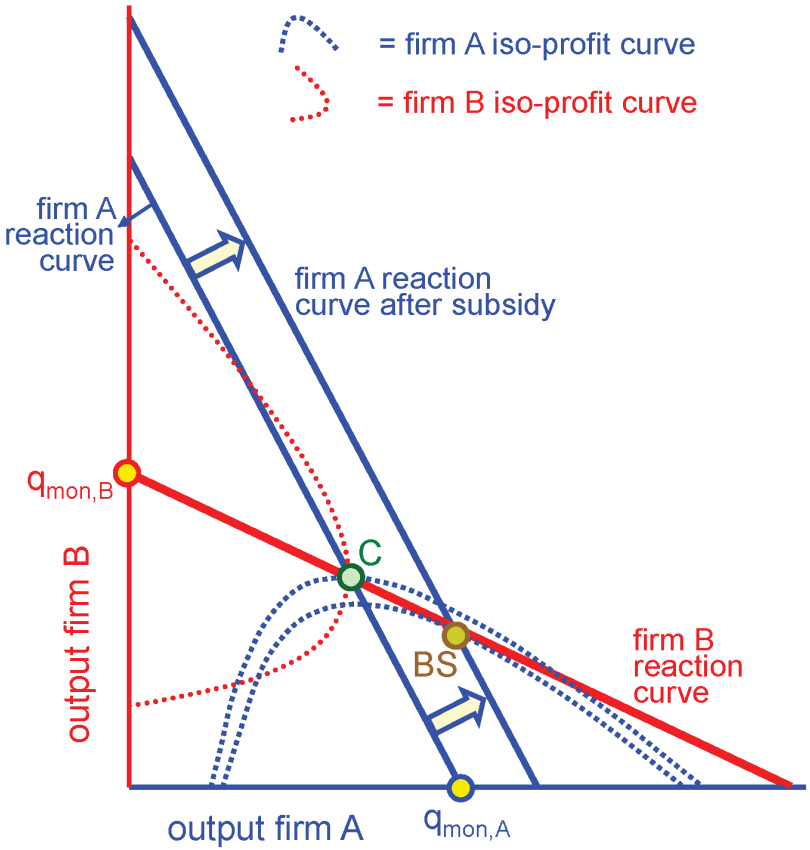
- The residual demand curve has marginal revenue MR'
- Equating MR' and MC determines price p_{quotum}
- So for the same import quantity
- The monopolist can charge a higher price (and earn higher profits) with a quotum than with a tariff
- Quotas are more restrictive as they eliminate the threat of further competition, once filled

Strategic trade policy; Brander--Spencer

- Imagine ..
- Two countries, America (A) and Britain (B), producing and exporting a good exclusively to a third country, China (C)
- The good is only consumed in China, not in America & Britain
- Firm A is the only producer in America and firm B in Britain
- The firms use Cournot duopoly competition in China
- Because of this: firm A's profits are a perfect welfare measure for America; similarly for firm B and Britain
- What should the American government do?

Strategic trade policy; Quantity competition

Brander – Spencer model ; quantity competition



- The figure illustrates Cournot duopoly equilibrium at point C (see ch. 9)
- Here are the iso-profit curves for firms A and B at Cournot
- Firm A's profits are maximized at point $q_{mon,A}$
- Given firm B's reaction curve
- Firm A can reach higher profits at point BS, where its iso-profit curve is tangent
- If the American government gives a suitable subsidy to firm A, this shifts the reaction curve to intersect at point BS

Strategic trade policy; Brander-Spencer

- The Brander-Spencer 'optimal policy' prescription:
- Subsidize exporting firm; this provides a 'credible threat' to competitors by shifting the reaction curve; increases welfare
  - Note that the BS framework is very restrictive, e.g.
  - Cournot quantity competition only
  - Two firms exporting to a third market
  - No consumption in the producing countries
  - Informational requirements: the government must know everything (demand, supply, cost structure, competition) to determine optimal policy
  - Mistakes obviously lead to suboptimal outcome

Strategic trade policy; Eaton- Grossman model

- Eaton-Grossman use the same modeling structure as Brander-Spencer, with one twist
- So: America and Britain each have one firm producing and exporting a good exclusively to China, the only consumer
- This time the firms are involved in Bertrand price competition
- Price competition makes the choice variables 'strategic complements'; pB↑ marginal profitability of pA↑ (rather than 'strategic substitutes' in Cournot quantity competition)
- Again: what should the American government do?

Strategic trade policy; Eaton-Grossman model

- The Eaton-Grossman 'optimal policy' prescription:
- Levy an export tax; this provides a 'credible threat' to competitors by shifting the reaction curve; increases welfare
- This is the exact opposite of the Brander-Spencer subsidy! (in contrast to the BS subsidy, which firms tend to like, the government may not become popular using the EG tax policy)
- Krugman therefore notes:
- "So what Eaton and Grossman show is that replacing the Cournot with a Bertrand assumption reverses the policy recommendation. Given the shakiness of any characterization of oligopoly behaviour, this is not reassuring."

Start of multilateral cooperation

Jan Tinbergen (1903-1994)

Nobel laureate 1969

"Mankind's problems can no longer be solved by national governments. What is needed is world government."

www.brainyquote.com

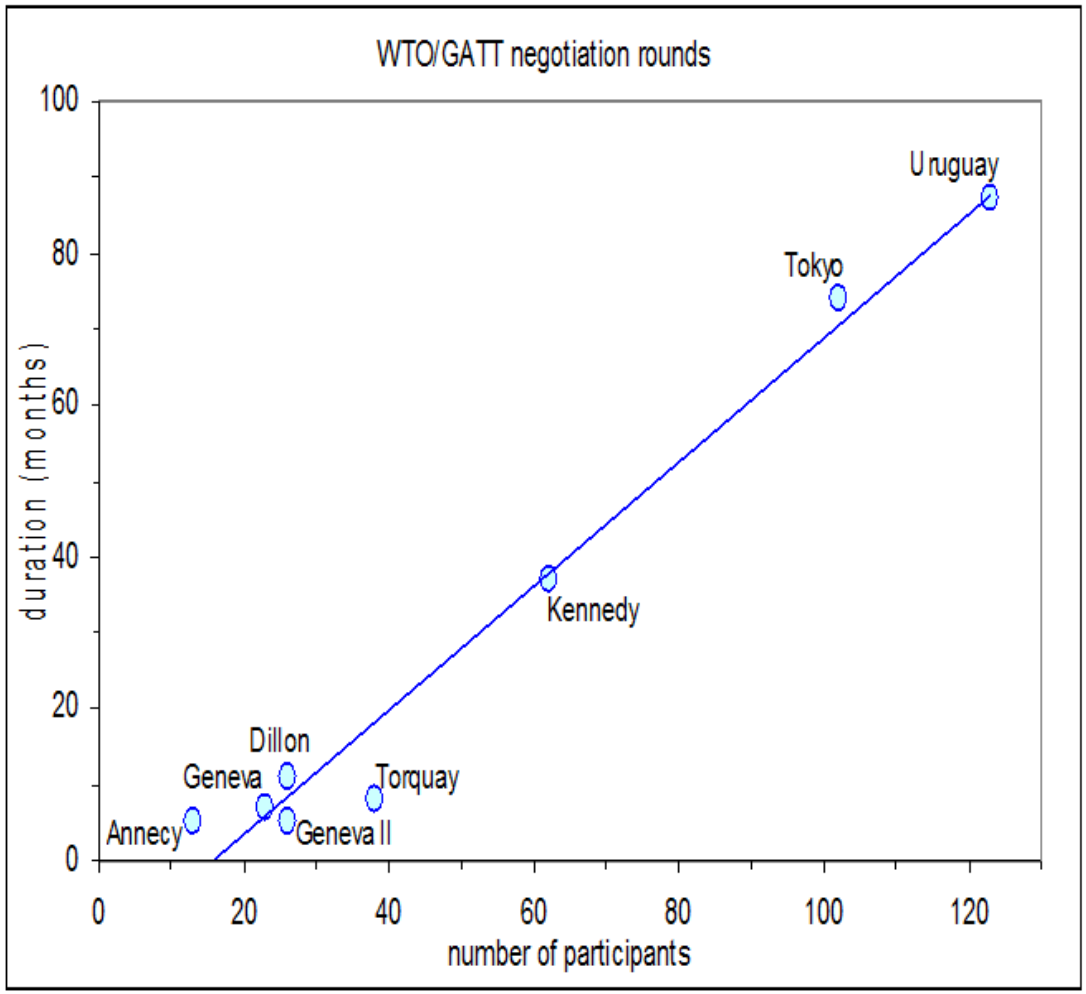
Page 4

International Trade Organizations

- The disastrous 'Beggar-thy-neigbour' policies of the 1930s showed the importance of international cooperation and rules
- World Trade Organization (previously GATT) and General Agreement in Trade in Services (GATS) most important
  - Non-discrimination
  - Reciprocity
  - Prohibition of trade restrictions other than tariffs
- United Nations and UNCTAD - global coverage
- Organization for Cooperation and Development (OECD) - rich man's club

Multilateral cooperation difficult

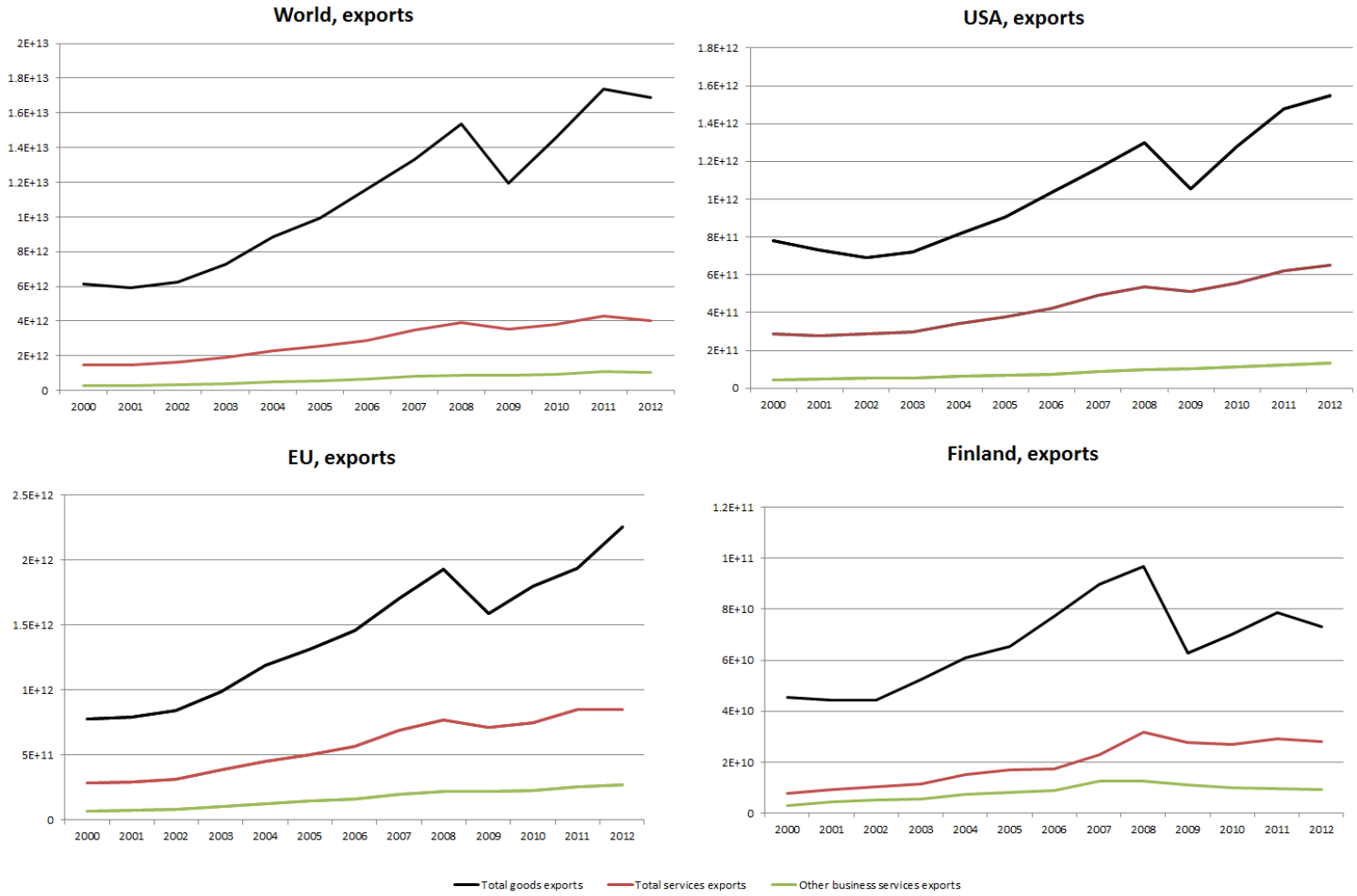
WTO/GATT talks increasingly long and complex



Page 8

Duration of GATT rounds and the number of countries involved

GATT not sufficient in current world



Services export modes defined in GATS, 1995

Services exports, different modes:

- Mode 1: Cross-border supply;
- Mode 2: Consumption abroad;
- Mode 3: Commercial presence; and
- Mode 4: Presence of natural persons.
- (Mode 5: Domestic indirect services value added embodied in goods trade, Cernat 2014)

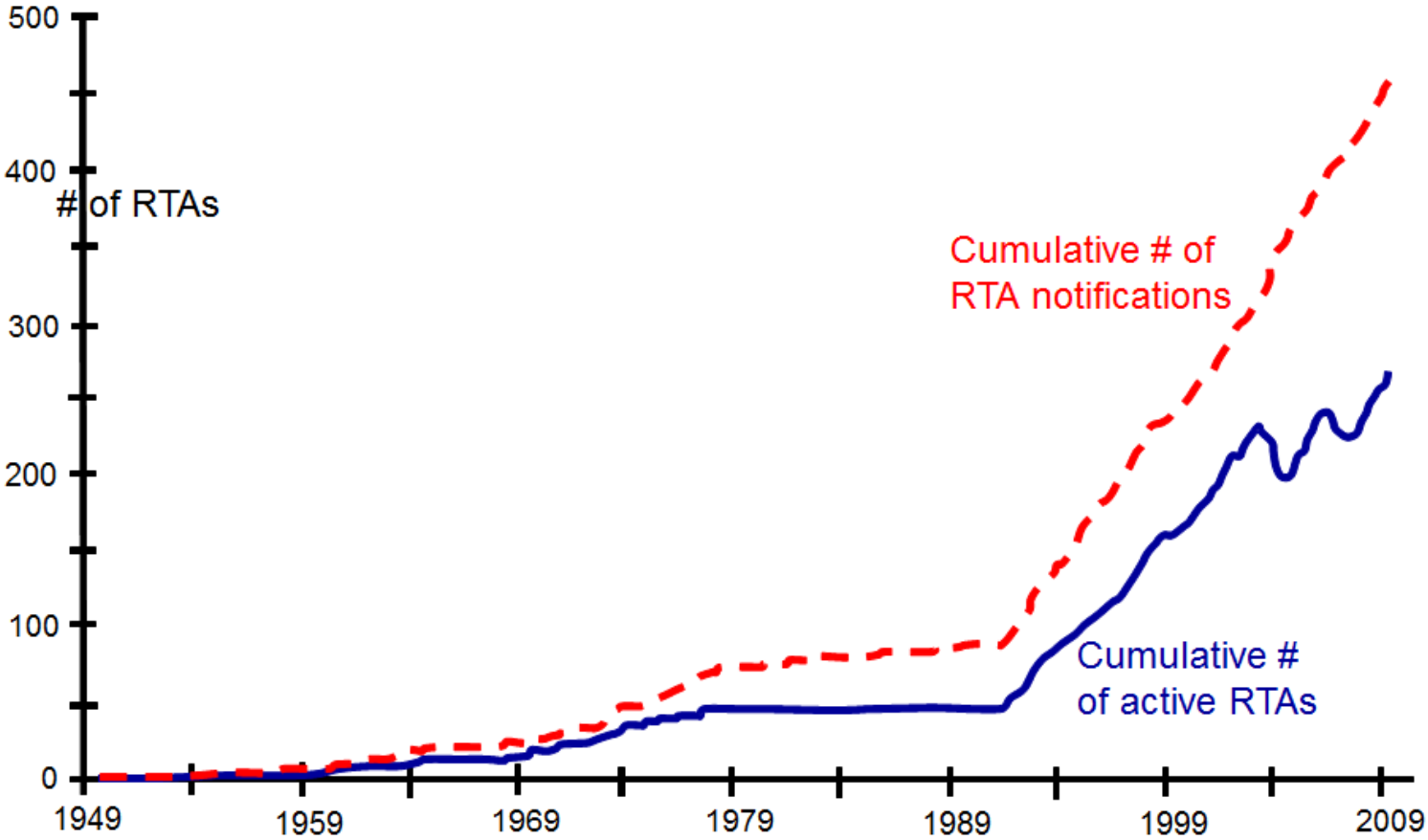
Note: *Services exports* vs. service sectors' exports

Rise of regionalism 1

- Preferential Trade Agreement (PTA); trade restrictions are reduced for some goods or services (e.g. EU - ACP countries)
- Free Trade Area (FTA); member countries eliminate internal restrictions, no common external trade policy (e.g. NAFTA)
- Customs Union; additionally: common external policy (EEC)
- Common Market; additionally: mobility of factors of production, such as capital and labour (e.g. EU)
- Economic Union, additionally: harmonization of institutions and policy coordination (e.g. EMU)

Rise of regionalism 2

Number of Regional Trade Agreements rises



Page 4

Main concepts related to RTAs

- **Trade creation?**
- **Trade diversion?**

Table of Contents

Subsection 1

Different models and databases

Trade policy analyses in practise

- Main problems of practical trade policy analyses:
  - Most agreements create **structural effects**, i.e. sectors are unevenly affected
  - Most agreements are very complex and involve many countries and many products & services
  - Mixes of tariffs reductions and NTB/NTM removals
- Analyses need to account for all effects at the same time with correct timings
- Need to be based on real statistics, theoretical analyses are not sufficient

The forest of economic model acronyms

The field of applied economics is full of models:

- (National/Regional) Computable/Applied General Equilibrium models (CGE / AGE), static and dynamic versions
- Global Trade Analyses Project (GTAP) database and global GTAP CGE model
- Partial Equilibrium models (PE)
- (Old) Input-output models
- World input-output database (WIOD)
- Dynamic Stochastic General Equilibrium models (DSGE)
- (Econometric) Macro Models
- (Econometric) Gravity Models

DSGE and Macro models typically **do not model economic structures sufficiently.**

CGE/AGE in short

- CGE and Gravity most used in applied trade policy analyses with GTAP data or WIOD data.
- One country models, regional models and global CGE models
- In short, combination of:
  1. Many (micro)economic theories on consumers, firms and public sector behavior
  2. Real data on economic structures from Social accounting matrixes (SAMs)
- Solved with special computer programs
- Account for **direct and indirect effects** of different policies
- Main adjustment mechanisms to policy changes via: 1) Price changes and/or 2) Changes in technologies and tastes

Statistics on exports' value added

- Data available from TiVA - OECD, GTAP and WIOD
- Trade in Value added (TiVA) statistisc of OECD:
  - Combination of Inter-Country Input-Output (ICIO) tables and trade data to construct domestic and foreign value added in exports
  - Includes value added in **re-imports**
  - Data for 1995, 2000, 2005 and 2008 to 2011, nowcast 2012-2014
  - 61 economies covering OECD, EU28, G20, most East and South-east Asian economies and a selection of South American countries
  - 34 industries
- More info: http://www.oecd.org/sti/ind/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm

GTAP database

- Publicly available global data base:
  - Detailed bilateral trade flows for all countries
  - Country level data on main transport costs and protection (tariffs, quotas, NTBs)
  - Country specific input-output data
  - Energy and CO2 emission datasets
  - Most recent GTAP 9 Data Base: 2004, 2007 and 2011 reference years
  - Data for 140 regions and 57 commodities
- Standard global general equilibrium modeling framework
- Global network of more than 9,000 researchers in more than 159 countries

Table of Contents

Subsection 1

What is (was) Transatlantic Trade and Investment partnership (TTIP) about?

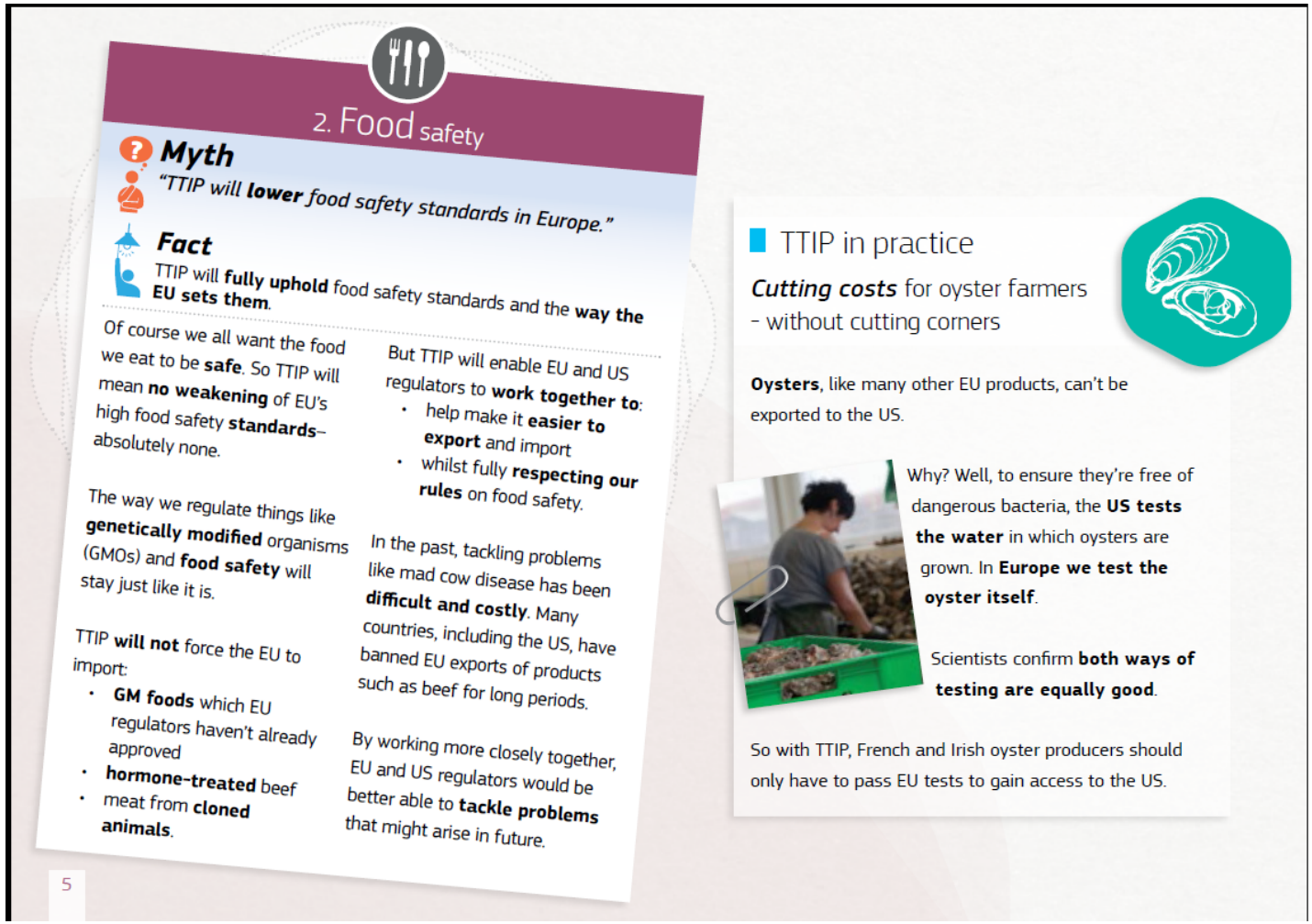
The future of TTIP

- A proposed trade agreement between the European Union and the United States.
- The largest bilateral trade initiative ever negotiated.
- Negotiations started 2013 and were interrupted by President Donald Trump, who then initiated a trade conflict with the EU.
- Multiple leaks of proposed TTIP contents into the public caused controversy.
- Trump and the EU declared a truce of sorts in July 2018, resuming talks that appeared similar to TTIP.
- The US and the EU are each other's primary investment and trade partner.

The new EU Negotiation mandate

- The negotiating directives submitted by the Commission to the Council implement the 25 July Joint Statement and cover two potential agreements with the U.S:
  1. A trade agreement strictly focused on the removal of tariffs on industrial goods, excluding agricultural products;
  2. A second agreement, on conformity assessment, that would help address the objective of removing non-tariff barriers, by making it easier for companies to prove their products meet technical requirements on both sides of the Atlantic.
- The Juncker Commission changed the way trade negotiations are conducted by making them more open and inclusive and by introducing an unprecedented level of transparency.
- The publication of the draft negotiating mandates and of any other negotiating proposals are landmark elements of this approach.

Controversies of TTIP



2. Food safety

Myth

*"TTIP will **lower** food safety standards in Europe."*

Fact

TTIP will **fully uphold** food safety standards and the **way the EU sets them**.

Of course we all want the food we eat to be **safe**. So TTIP will mean **no weakening** of EU's high food safety **standards**– absolutely none.

The way we regulate things like **genetically modified** organisms (GMOs) and **food safety** will stay just like it is.

TTIP **will not** force the EU to import:

- **GM foods** which EU regulators haven't already approved
- **hormone-treated** beef
- meat from **cloned animals**.

But TTIP will enable EU and US regulators to **work together to**:

- help make it **easier to export** and import
- whilst fully **respecting our rules** on food safety.

In the past, tackling problems like mad cow disease has been **difficult and costly**. Many countries, including the US, have banned EU exports of products such as beef for long periods.

By working more closely together, EU and US regulators would be better able to **tackle problems** that might arise in future.

5

TTIP in practice

Cutting costs for oyster farmers - without cutting corners

Oysters, like many other EU products, can't be exported to the US.

Why? Well, to ensure they're free of dangerous bacteria, the **US tests the water** in which oysters are grown. In **Europe we test the oyster itself**.

Scientists confirm **both ways of testing are equally good**.

So with TTIP, French and Irish oyster producers should only have to pass EU tests to gain access to the US.

Source: EC (2015): The top 10 myths about the TTIP, separating fact from fiction (p. 7), available in EC website

Why is EU-US trade deal important?

Table 1. U.S. Goods and Services Trade, 2017 ($ bns)

Selected Partners	U.S. Exports	U.S. Imports	Total Trade[a]	Trade Balance[b]
EU-28	$528	$629	$1,158	-$101
China	$188	$524	$712	-$336
Canada	$341	$339	$680	$3
Mexico	$277	$346	$622	-$69
Japan	$115	$171	$286	-$57

Source: Data from U.S. Bureau of Economic Analysis (BEA).
Notes: (a) Exports plus imports. (b) Exports minus imports.

EU-US top traded goods

Figure 3. U.S.-EU Trade: Top Traded Goods in 2017

U.S. $ in billions

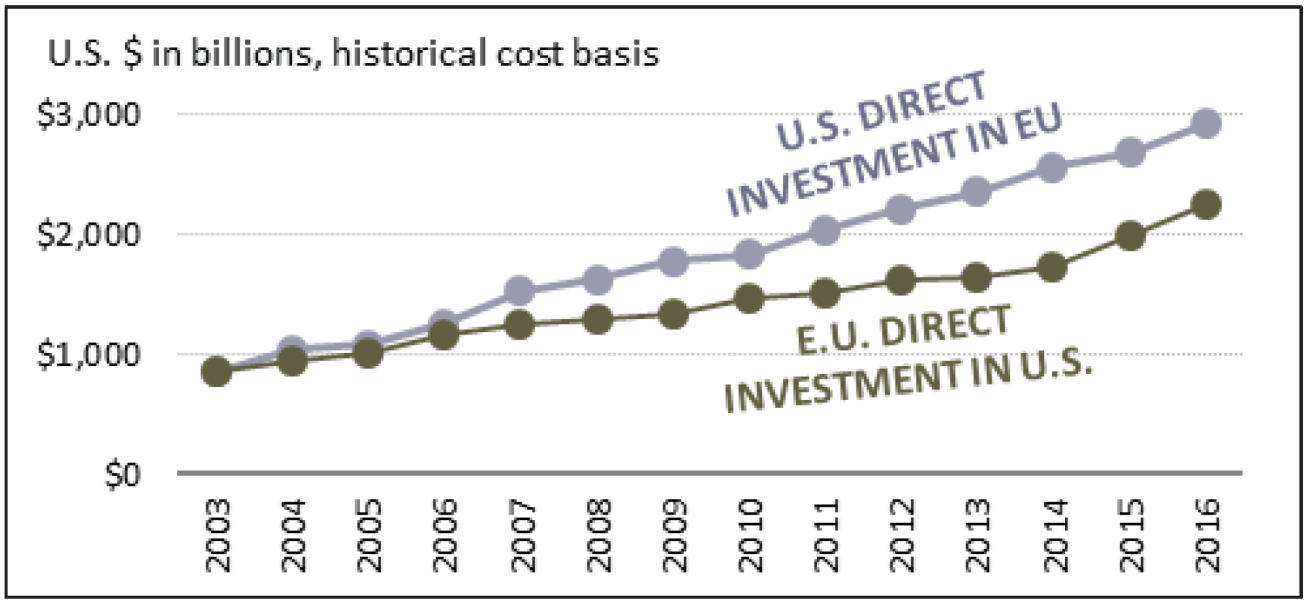
	EXPORT	IMPORT	TOTAL
Pharmaceuticals & medicines	$28.6	$72.8	$101.4
Aerospace products & parts	$33.7	$24.6	$58.3
Motor vehicles	$8.1	$46.7	$54.8
Basic chemicals	$12.3	$14.1	$26.4
Navigational/measuring/ medical/control instr.	$9.8	$16.5	$26.3
Other general purpose machinery	$5.9	$17.8	$23.7
Medical equipment & supplies	$10.3	$12.6	$22.9
Petroleum & coal products	$8.1	$10.8	$18.9
Beverages	*$1.6	$13.0	$14.6
Motor vehicle parts	*$3.9	$10.0	$13.9
Nonferrous (excl. alum.) & processing	*$8.0	*$3.8	$11.8
Oil & gas	$7.1	*< $0.1	$7.1

*Not top for that trade direction.

Source: CRS, based on U.S. International Trade Commission data.

EU-US FDI

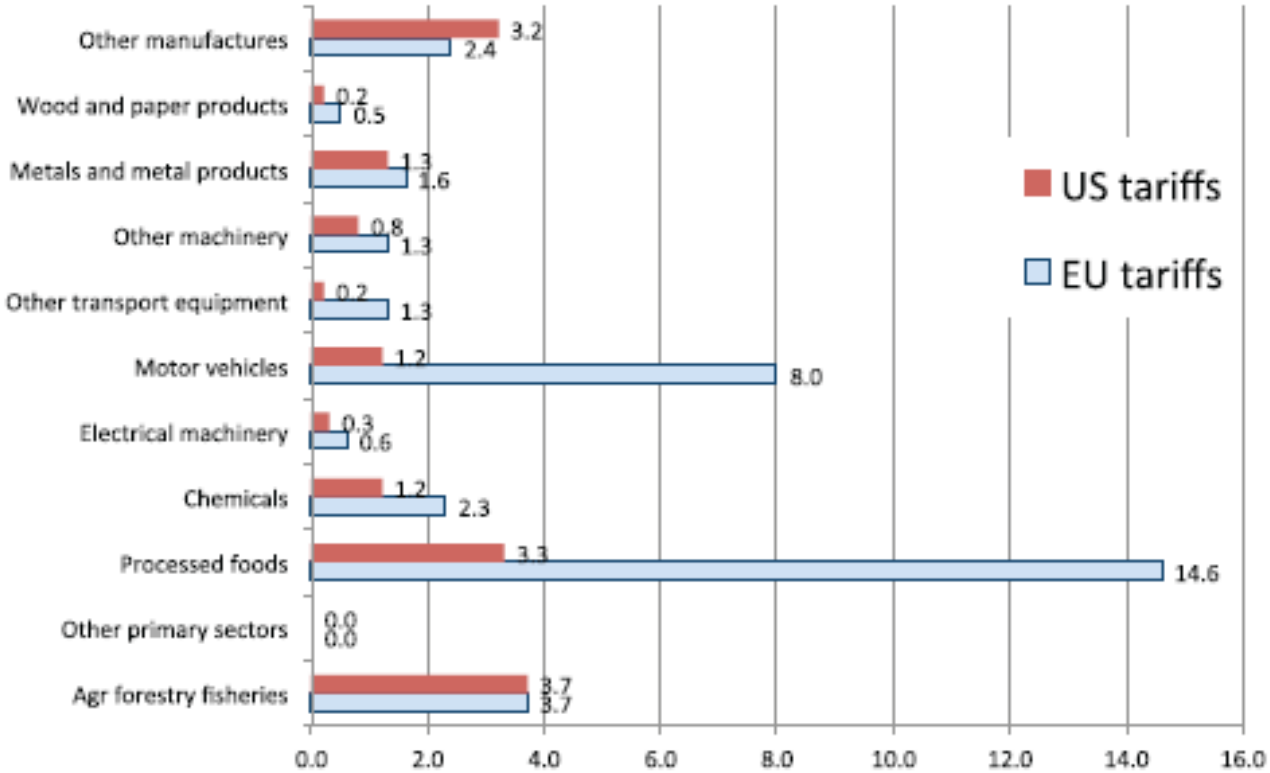
Figure 4. U.S.-EU Foreign Direct Investment (FDI)



Source: CRS, based on data from U.S. Bureau of Economic Analysis.

EU-US average tariff levels

Figure 9 Trade Weighted Applied (MFN) average tariff rates 2007



Source: WTO, CEPII, UNCTAD mapped to GTAP8

EU-US trade: tariff equivalents of NTMs

Table 2 Total trade cost estimates from NTB reduction in per cent, Ecorys (2009)

Sector	Total trade barriers: EU barriers against US exports	Total trade barriers: US barriers against EU exports
Food and beverages	56.8	73.3
Chemicals	13.6	19.1
Electrical machinery	12.8	14.7
Motor vehicles	25.5	26.8
Other transport equipment	18.8	19.1
Metals and metal products	11.9	17.0
Wood and paper products	11.3	7.7
Other manufactures	N/A	N/A
average goods	***21.5***	***25.4***
Transport		
Air	2.0	2.0
Water	8.0	8.0
Finance	11.3	31.7
Insurance	10.8	19.1
Business and ICT	14.9	3.9
Communications	11.7	1.7
Construction	4.6	2.5
Personal, cultural, other services	4.4	2.5
average services	***8.5***	***8.9***

Source: Ecorys (2009), Annex Table III.1

What kind of NTMs hinder EU-US trade?

- Different color requirements of electrical wires
- Different testing requirement for edibility of oysters
- Standards for seat belt attachment
- Acceptance of foreign (university) degrees
- Animal testing requirements of cosmetics
- Subsidies to domestic firms
- Patent legislation
- Rules related to public procurement (Buy America(n) acts)
- National requirements
- Rules of origin

Notice: Only around 50% of NTMs are **actionable**, the rest cannot be "removed"

Subsection 2

Estimates on the economic impacts of TTIP

Main economic analyses on the expected impacts of TTIP

- Berden et al. (Ecorys), 2009: Analyses of EU-US NTMs and few scenarios on the impacts of their limitation (with CGE)
- Francois et al. (CEPR), 2013: Main analyses on the impacts of TTIP, done with Prof. Francois' GTAP CGE model with imperfect competition and extensive modelling of capital flows
- Pelkmans et al, 2014, critical assessment of the Francois et al. (2013) methodology:

> The GTAP Computable General Equilibrium (CGE model), which was run to assess the potential impacts of the agreement, represents the 'state-of-the-art' in economics. The present authors are not aware of any better tool with which to estimate the long-term impacts of such a complicated trade agreement. This approach also has several

- Ecorys (2017): Trade Sustainability Impact Assessment analysis on the social and environmental impacts of TTIP

The expected impacts of TTIP (Francois,2013)

- Significant economic gains as a whole for the EU (€119 billion a year) and US (€95 billion a year): equal to an extra €545 in disposable income each year for a family of 4 in the EU, on average, and €655 per family in the US.
- Benefits not at the expense of the rest of the world.
- Income gains are due to increased trade: EU exports to the US would go up by 28%, total exports would increase 6% in the EU and 8% in the US.
- As much as 80% of the total potential gains come from reducing non-tariff barriers.
- Negligible effects on CO2 emissions and on the sustainable use of natural resources.

Francois et al (2013): Scenarios

Table 4 Scenario Summaries

Narrow (limited) FTA Scenarios	
Tariffs only	98 per cent of tariffs eliminated
Services only	10 per cent of services NTBs eliminated
Procurement only	25 per cent of procurement NTBs eliminated
Comprehensive Scenarios	
Less ambitious	98 per cent of tariffs eliminated 10 per cent of NTBs eliminated on both goods and services (20 per cent of actionable) 25 per cent of procurement NTBs eliminated
Ambitious	100 per cent of tariffs eliminated 25 per cent of NTBs eliminated on both goods and services (50 per cent of actionable) 50 per cent of procurement NTBs eliminated

Spillovers assumed since third countries will also benefit if regulations/reguirements are the same.

Francois et al (2013): Macro effects

Table 16 Changes in GDP (in per cent), 2027 benchmark, 20 per cent direct spill-overs

	A=B+C+ D+E+F	B	C	D	E	F	G
		Stemming from the liberalisation of					
	Total	tariffs	total NTBs goods	total NTBs services	direct spill-overs	indirect spill-overs	procurement
Less ambitious experiment							
European Union	0.27	0.10	0.12	0.01	0.03	0.01	0.02
United States	0.21	0.04	0.11	0.03	0.03	0.00	0.01
Ambitious experiment							
European Union	0.48	0.11	0.26	0.03	0.07	0.02	0.05
United States	0.39	0.04	0.23	0.06	0.06	0.00	0.03

Source: CGE calculations.

Francois et al (2013): Export effects

Table 19 Changes in bilateral exports to the partner country (in per cent and million euros), 2027 benchmark, 20 per cent direct spill-overs

	A=B+C+D+E+F	B	C	D	E	F	G
		Stemming from the liberalisation of					
	Total	tariffs	total NTBs goods	total NTBs services	direct spill-overs	indirect spill-overs	procurement
				In per cent			
Less ambitious experiment							
European Union	**16.16**	7.06	9.34	0.69	-0.76	-0.15	1.04
United States	**23.20**	13.67	8.80	0.67	0.01	0.02	0.78
Ambitious experiment							
European Union	**28.03**	7.67	21.00	1.40	-1.73	-0.34	2.13
United States	**36.57**	15.34	19.93	1.37	-0.08	0.03	1.62
				In million euros			
Less ambitious experiment							
European Union	**107,811**	47,083	62,289	4,598	-5,089	-989	6,957
United States	**100,909**	59,476	38,284	2,934	57	77	3,410
Ambitious experiment							
European Union	**186,965**	51,185	140,106	9,332	-11,525	-2,243	14,211
United States	**159,098**	66,720	86,698	5,966	-335	151	7,043

Source: CGE calculations.

Francois et al (2013): Import effects

Table 21 Changes in value of total imports (in per cent and million euros), extra-EU imports in case of the EU, 2027 benchmark, 20 per cent direct spill-overs

	A=B+C+D+E+F	B	C	D	E	F	G
		Stemming from the liberalisation of					
	Total	tariffs	total NTBs goods	total NTBs services	direct spill-overs	indirect spill-overs	procurement
				In per cent			
Less ambitious experiment							
European Union	**2.91**	1.09	1.22	0.10	0.23	0.27	0.18
United States	**2.81**	1.25	1.00	0.09	0.31	0.16	0.14
Ambitious experiment							
European Union	**5.11**	1.20	2.75	0.20	0.44	0.52	0.36
United States	**4.74**	1.39	2.24	0.19	0.60	0.32	0.28
				In million euros			
Less ambitious experiment							
European Union	**128,424**	48,239	53,892	4,259	10,207	11,827	7,907
United States	**118,840**	52,678	42,231	4,011	13,081	6,839	5,868
Ambitious experiment							
European Union	**225,899**	53,071	121,548	8,624	19,544	23,113	15,953
United States	**200,519**	58,543	94,830	8,183	25,351	13,611	11,896

Source: CGE calculations.

Francois et al (2013): US output effects by industry

Table 28 Changes in US output by sector (in per cent), 2027 benchmark, 20 per cent direct spill-overs

Scenario/Sector	Baseline shares in value added	Less ambitious	Ambitious
Agr, forestry fisheries	0.031	-0.01	0.00
Other primary sectors	0.023	0.02	0.05
Processed foods	0.017	-0.52	-1.13
Chemicals	0.021	0.25	-0.40
Electrical machinery	0.003	-2.03	-2.04
Motor vehicles	0.010	-0.57	-2.78
Other transport equipment	0.009	0.62	0.83
Other machinery	0.027	0.71	1.66
Metals and metal products	0.014	0.27	0.45
Wood and paper products	0.023	-0.04	-0.02
Other manufactures	0.010	0.17	0.26
Water transport	0.002	0.22	0.42
Air transport	0.004	0.19	0.39
Finance	0.074	-0.06	-0.11
Insurance	0.020	-0.24	-0.44
Business services	0.099	0.03	0.07
Communications	0.019	0.15	0.32
Construction	0.080	0.23	0.39
Personal services	0.036	0.18	0.38
Other services	0.480	0.09	0.18

Source: CGE calculations.

Francois et al (2013): EU output effects by industry

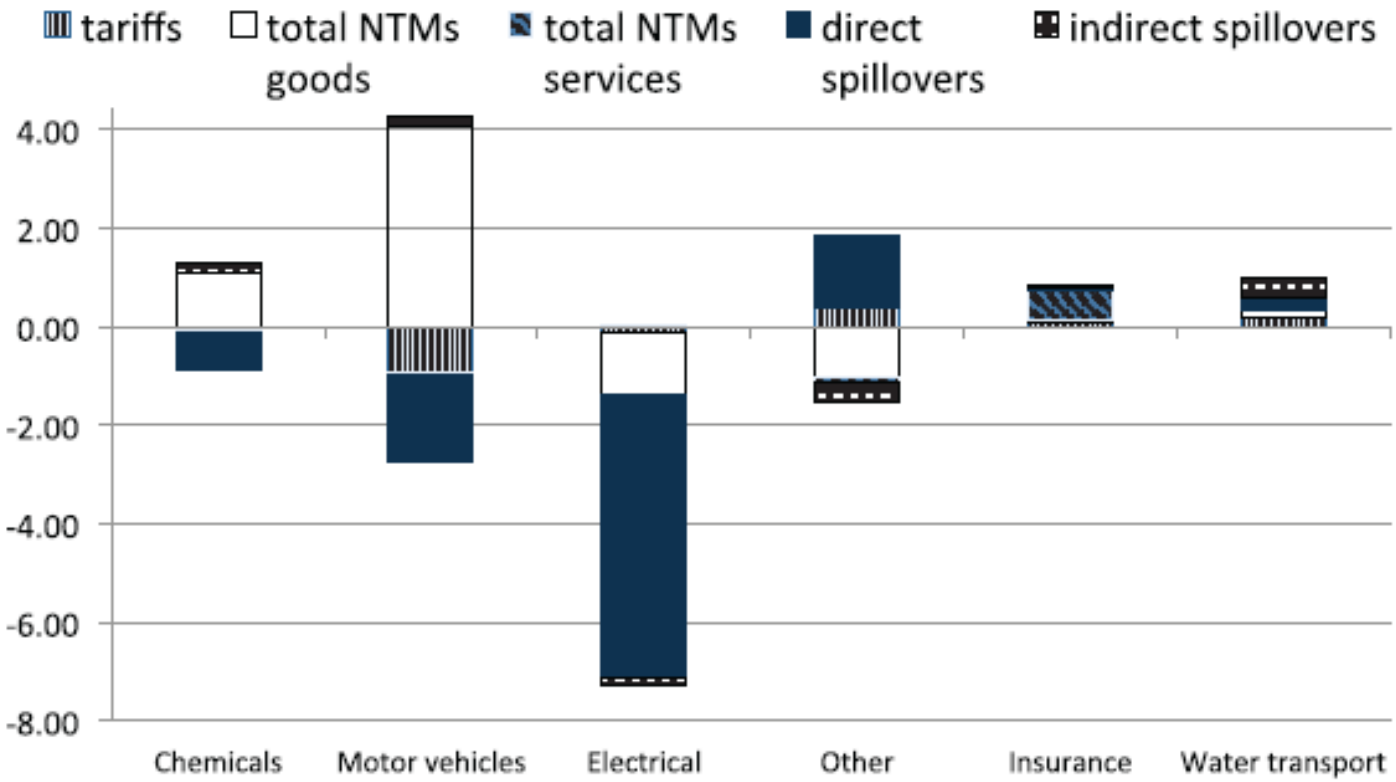
Table 27 Changes in EU output by sector (in per cent). 2027 benchmark, 20 per cent direct spill-overs

Scenario/Sector	Baseline shares in value added	Less ambitious	Ambitious
Agr forestry fisheries	0.040	0.05	0.06
Other primary sectors	0.019	0.01	0.02
Processed foods	0.030	0.30	0.57
Chemicals	0.028	0.09	0.37
Electrical machinery	0.004	-3.74	-7.28
Motor vehicles	0.015	0.24	1.54
Other transport equipment	0.007	-0.17	-0.08
Other machinery	0.037	0.40	0.37
Metals and metal products	0.021	-0.71	-1.50
Wood and paper products	0.023	0.08	0.08
Other manufactures	0.029	0.69	0.79
Water transport	0.003	0.55	0.99
Air transport	0.003	0.30	0.44
Finance	0.032	0.23	0.42
Insurance	0.010	0.44	0.83
Business services	0.222	0.15	0.25
Communications	0.023	0.10	0.17
Construction	0.083	0.31	0.53
Personal services	0.035	0.15	0.26
Other services	0.338	0.16	0.28

Source: CGE calculations.

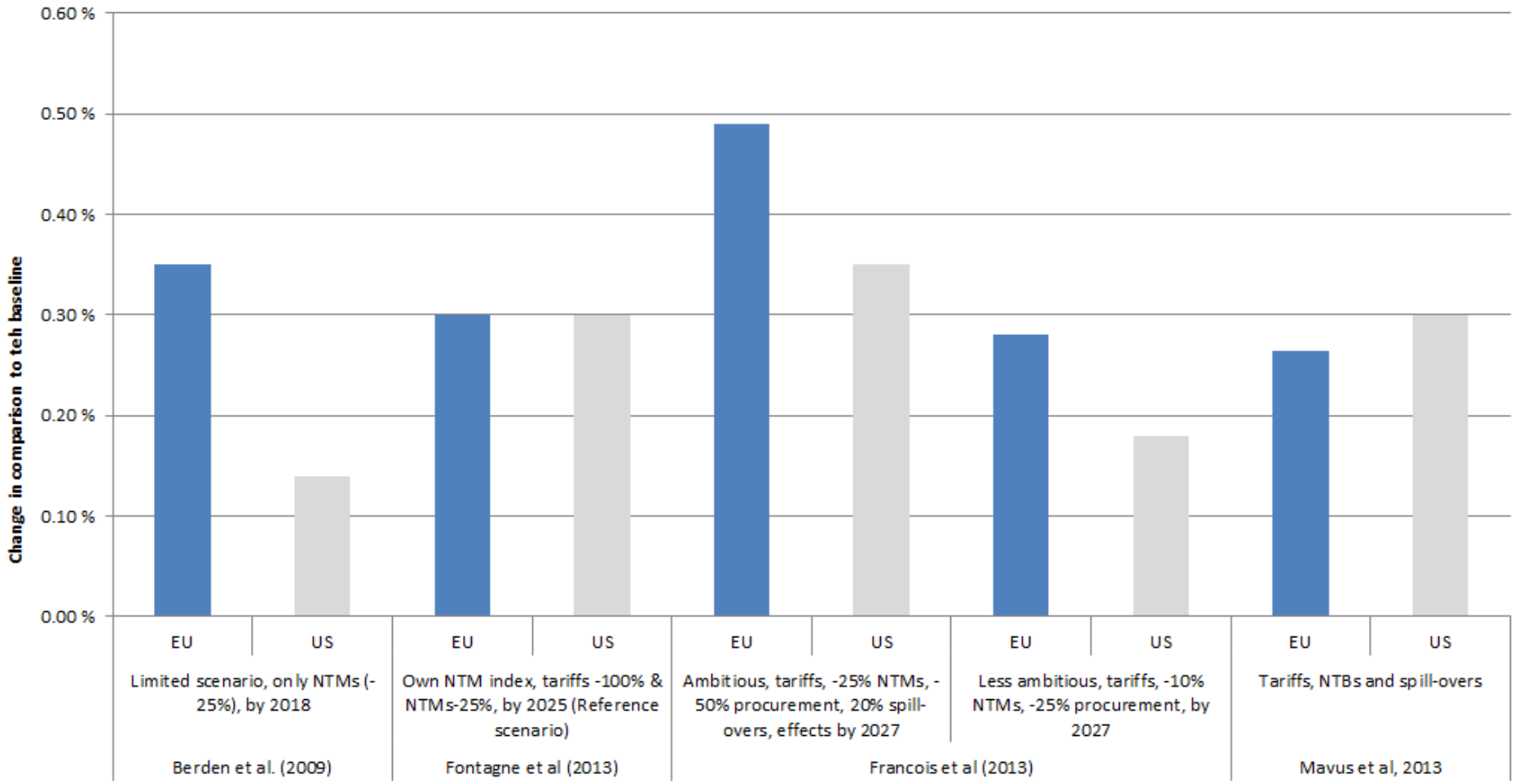
Francois et al (2013): Decomposition of EU output effects

Figure 11 Decomposition of EU output changes, ambitious scenario



Source: CGE calculations.

Comparison of different CGE estimates on real income effects of TTIP



Also few other studies

- Felbermeyer (2013, Bertelsmann Stiftung/CESIfo):
  - Structural econometric estimation of trade effects.
  - Assume that exports will increase by some 80% based on the results of previous FTAs.
  - As a result US GDP will increase by 13%.
- Capaldo (2014, Tufs):
  - Estimates based on UN GPM macroeconomics econometric model, which does not model different industries separately
  - Modelling assumptions: "...we assume that the volume of trade among TTIP countries will initially expand at the pace indicated by the existing studies.."
  - I.e. Capaldo assumes than every industry's exports are hit exactly equally and their production structures are also equal
  - UN GPM especially bad at predicting EU employment
  - Capaldo reports job losses in EU based on this methodology as breaking news results

TTIP is expected to benefit SMEs the most

- E.g. regulations and licencing based extra export costs exactly equal for all firms $\rightarrow$ higher relative cost for smaller firms
- Various studies have concluded that SMEs will benefit more from the removal of NTMs than larger firms (e.g. Felbermayr, 2013, Kaitila & Kotilainen, 2013, USITC, 2014, EC, 2015)
- The reduction of some NTMs could results in an increase in the number of export firms and a decrease in the concentration of export related benefits and income

- **Based on research, many multinationals are likely to loose due to TTIP** (their markets are opened up to more firms)

Next lecture

Thursday 31.1, 13.15 - 15, on **Firm heterogeneity and the "new new trade theory"**.

Read CvM chapter 17 before lecture.