

Economic Analysis of TTIP

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Abstract

The sheer size of the EU and US economies combined suggests substantial economic benefits from eliminating tariffs, reducing the costs of regulatory divergence, and deepening cooperation. Estimating these gains is difficult: uncertainty concerning modelling choices, data, and scenarios looms large. However, the economic *potential* of a well-done agreement is substantial. Critics are wrong by dismissing the gains as microscopic. By now, a large number of scholarly studies exist which demonstrate gains on the level of GDP per capita from 0.5 to 4.0% for the EU and a similar span for the US. Almost all of the gains arise from lower non-tariff barriers and in the form of lower prices of final and intermediary goods, higher product variety, and higher productivity. Virtually all EU member states benefit, while TTIP outsiders may lose. Estimates of job gains are even more uncertain, long-run effects are likely to be small and positive. TTIP could increase economic inequality, but the effects will be modest as the structure of comparative advantage between the two partner regions is rather similar. All existing studies rely on static models; neglecting effects on R&D, technology adoption, or human capital formation, they represent lower bounds to the true benefits.

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1. Introduction

The controversial public debate on the proposed Transatlantic Trade and Investment Partnership (TTIP) has focused on many aspects, ranging from the infamous chlorinated chicken to issues concerning constitutional law. It has also touched the economic modeling of such deep and comprehensive international agreements. One line of attack of the anti-TTIP groups, forcefully verbalized by Bode (2015), is that the risks of the agreement are potentially very large while the economic advantages are negligible. The German trade unionist Detlef Wetzel argued that the expected gains are so microscopic that the usual variation in weather conditions is more important for GDP growth¹. Similar arguments are used in the US presidential campaign to discredit the proposed Transpacific Partnership (TPP), once a matter for bipartisan support.

There has also been a substantial amount of misinterpretation of simulation results, both by proponents and by antagonists. Estimations of potentials have been wrongly interpreted as predictions; level effects on flow variables (such as GDP) have been mistaken for growth rates effects; and differences in results due to differences in scenarios have been taken as evidence for the low predictive power of models. All this has prompted the German vice chancellor Sigmar Gabriel to describe the TTIP models as “voodoo economics”². What has once been the playing ground of trade scholars and a few experts has become a hotly debated matter in party conventions, parish councils, or family reunions. In the public communication of the EU Commission, of member state administrations or of trade associations, estimates of economic gains play almost no role. This is a pity, because they do contain valuable information. This chapter aims at clarifying what the estimates can teach and what they cannot.

The variance of results on the trade, welfare, wage and employment effects of TTIP can be bewildering at times and the differences hard to explain to non-experts. Therefore, it is no wonder that the secondary literature on the quantitative studies is full of misunderstandings. This chapter tries to explain why different studies come to different quantitative and qualitative conclusions. The main reasons for divergence are the following:

- (i) Studies differ with respect to the definition of the **scenario**, ie, the extent to which researchers think that TTIP will reduce barriers to international trade.
- (ii) **Data** related issues also loom large in explaining different results. Studies employ different methods for pinning down non-tariff trade barriers (NTBs), they employ different base years, and choose different parameterizations.
- (iii) Finally, **model structure** turns out important, too. Single-sector models tend to deliver more optimistic outcomes for insiders to TTIP but more pessimistic ones for outsiders, while multi-sector models focusing on international value chains predict a stronger diffusion of effects around the globe.

Besides explaining differences, this chapter also tries to identify results which robustly emerge across the large number of quantitative studies on TTIP that now exist. These are:

- (i) Almost all studies agree that TTIP would increase real per capita income in the EU and the US; these gains need time to ramp up but *permanently* increase the level of per capita income.

¹ www.fr-online.de/wirtschaft/freihandelsabkommen-eu-usa--freihandelsabkommen-sofort-stoppen-,1472780,26460308.html .

² www.handelsblatt.com/politik/international/gabriel-zum-handelsabkommen-berechnungen-zu-ttip-sind-voodoo-oekonomie/11621820.html .

- (ii) All studies agree that the mere elimination of tariffs would have only very small effects. The positive effects almost exclusively come from lower non-tariff costs. On the one hand, tariffs are already low across the Atlantic, on the other hand, the elimination of tariffs has budgetary consequences which need to be taken into account.
- (iii) When studies present country-level detail for the EU, they agree that virtually all member states win. This is not a trivial prediction due to possible within-EU trade diversion (terms-of-trade) effects.
- (iv) Studies also tend to agree that gains are not huge, but that they are larger than what one could obtain from other realistically pursuable trade agreements.
- (v) All studies concur that the bulk of gains derives from measures in the area of non-tariff barriers, ie, the simplification of bureaucratic procedures, regulatory convergence, and the optimization of rules.
- (vi) Almost all studies conclude that some third countries would lose from the initiative, unless trade costs for outsiders go down as well due to what is called spillover effects, ie, by establishing world standards and thus lowering trade costs for outsiders, too. In this case, both outsiders and insiders would see gains from the agreement go up. Moreover, TTIP is not a zero-sum game: world GDP would increase.
- (vii) All studies are static in the sense that they neglect effects on firms' incentives to engage in research and development, the adaptation of new technology, or investment in human capital. Therefore, they represent lower bounds of the true potential.

Hoping to improve the understanding of different approaches, of their relative merits and weaknesses, this chapter could lead to a more balanced and nuanced discussion on TTIP. It may also inform a similar debate on the benefits of TPP. It is also applicable to other European trade agreements being in the process of ratification, negotiation, or deliberation, such as CETA (the EU-Canada Comprehensive Economic Trade Agreement), the deal currently negotiated with Japan, or the proposed negotiations with Australia and New Zealand.

In the following, we explain how to read the results of quantitative studies, we go through several reasons that lead to divergence in modeling results, and we touch on those sensitive issues on which models can shed light (eg, effects on developing countries)³. We start with an overview of methods employed and results obtained in the most important studies.

³ We remain silent on elements of the public debate which have not yet been addressed using economic modeling, such as settlement of investment disputes.

2. Overview of methods and results

Table 1 shows how a number of studies on TTIP differ with respect to their employed methodologies and overall results⁴. Starting from the bottom of the table, it is obvious that the cited studies have produced a wide range of estimates from very optimistic and positive to rather depressing and negative.

The study commissioned by the EU Commission in 2013 and carried out by the London-based research network CEPR (Center for Economic Policy Research) reports a long-run GDP effect of 0.5% for the EU; the ifo-Bertelsmann study from the same year finds an (unweighted) average effect that is almost 10 times as big. The study with the smallest reported GDP effect is the one conducted by the Paris think tank CEPII. It finds a GDP gain of 0.3%. More recent studies update the earlier ones. For example, Egger et al (2015) uses the same model as CEPR (2013) and has an overlapping team of authors, but it finds an average effect for the EU that is almost five times as big. Felbermayr et al. (2015) update the earlier ifo-Bertelsmann model, using more recent data and a larger country sample; they find an average effect on GDP of 3.9%. Both, the Egger et al (2015) and the Felbermayr et al (2015) have been commissioned by *Economic Policy*, a scholarly journal devoted to the scientific analysis of economic policy. Aichele et al (2014) find a GDP effect of 2.1%. The only study predicting a negative GDP effect is the one by Capaldo (2014); it is structurally very different from the other cited works and cannot be easily compared. Before we delve into a detailed discussion of methods and results, it is important to understand the nature of the cited GDP effects.

Figure 1 illustrates how the numbers reported in Table 1 have to be read⁵. They refer to the difference between a “TTIP-Scenario” (however defined) and a business-as-usual (BAU) baseline scenario, which describes the situation without TTIP. A long-run gain of about 2% (as in Aichele et al, 2014) means that the *level of GDP* “in some future” would be *permanently* 2% higher with TTIP than without the agreement. The term “in some future” means that the agreement would certainly not yield all its effects on the day of its ratification; rather, tariff reductions in sensitive industries will be gradual and regulatory cooperation will take time to bring NTM-related costs down. The ramp-up period during which the agreement becomes effective could take 10-12 years; in certain sectors even more. During that ramp-up period, the level of GDP grows faster than it would without TTIP; in the long-run, the growth rate effects of TTIP vanish, but the higher level of GDP remains.

⁴ The table shows only a subset of quantitative studies which have been written on TTIP in the last years. However, the sample is meant to be representative. The reader is directed to *Krebs and Pflüger (2015)* for a study that bears resemblance to *Aichele et al (2014)*, to *Carrere et al (2015)* which combines elements of ifo-Bertelsmann and *Aichele et al (2014)*, and to numerous country-level studies (eg, for Sweden, Austria, the United Kingdom) which draw on either the CEPR (2013) methods (or close cousins) thereof, or on ifo-Bertelsmann (2013).

⁵ The *Capaldo (2014)* study has to be interpreted differently; see below.

Table 1: Comparison of simulation studies: Assumptions and broad results

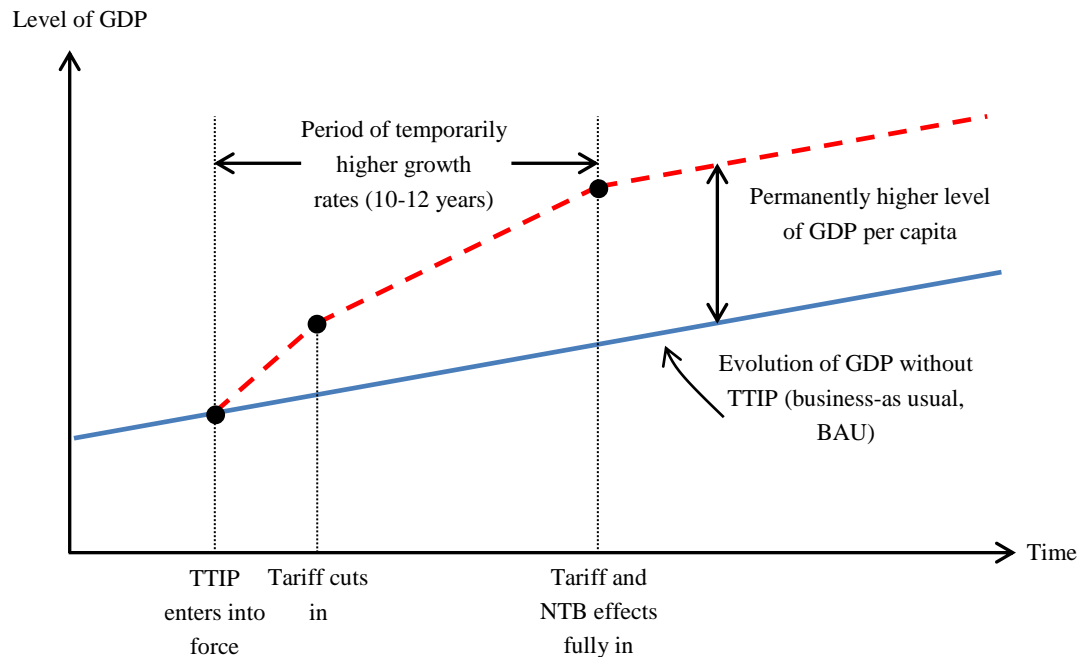
	CEPR (2013), WTI (2016)	ifo / Ber- telsmann (2013)	CEPII (2013)	Aichele et al (2014)	Egger et al (2015)	Felbermayr et al (2015)	Capaldo (2014)
Commissioned by	EU Com- mission	Bertelsmann Foundation	pro bono	pro bono	Economic Policy	Economic Policy	pro bono
<u>Assumptions</u>							
Time-horizon	Long-run	Long-run	Long-run	Long-run	Long-run	Long-run	Short-run
Model type	CGE	SCGE	CGE	SCGE	SCGE	SCGE	Keynesian
Geographical aggregation	11 regions (+ EU MS)	126 countries	13 units	134 units	17 (?) units	173 units	~25 units
Sector struc- ture	multiple	single	multiple (34 sectors)	Multiple (32 sectors)	multiple	single	single
Base year	2027	2007	2025	2007	2011	2012	?
Non-tariff- barriers	Bottom-up	Top-down	Bottom-up	Top-down	Mix	Top-down	none
Scenario	expert- driven	benchmarked to existing RTAs	expert- driven	benchmarked to existing deep RTAs	mixed	benchmarked to existing RTAs	from CEPR (2013)
Degree of ambition	low	high	low	high	mixed	high	from CEPR (2013)
Output market frictions	imperfect competition in some sectors	imperfect competition	imperfect competition	perfect com- petition in all sectors	imperfect com- petition in some sectors	imperfect com- petition	Nominal rigidities
Labor market frictions	None	search fric- tions, wage bargaining	none	none	none	none	fixed wages
Spill-overs	YES	NO	NO	NO	NO	NO	YES
Unemployment	NO	YES	NO	NO	NO	NO	YES
<u>Overall effects for EU (main scenario)</u>							
GDP effect	0.5%	5.0%	0.3%	2.1%	2.3%	3.9%	-0.5%
Wage effect	0.5%	2.3%	n.a.	2.1%	n.a.	3.9%	n.a.
Jobs	0	+1.3 mn	0	0	0	0	-0.6 mn

Source: Data from studies cited in the table. n.a. refers to “not available”. CGE: computable general equilibrium, SCGE: structural-ly estimated CGE model. Descriptions refer to default (or main) scenarios presented in the studies.

At this point, three observations are important: First, the studies in Table 1 all *assume* that trade agreements do not have any effects on long-term growth rates. This is a very conservative assumption; empirical evidence does point towards positive effects of open markets on firms’

incentives to innovate, on workers' incentives to invest in human capital, and on governments' incentives to develop smarter regulation. These dynamic effects might very well lead to permanently higher growth rates and, thus, to higher gains from trade⁶. The studies, however, rule these mechanisms out. Consequently, they may underestimate the true long-run effects of a large trade agreement such as TTIP.

Figure 1 : Effect of TTIP on the level of GDP



Source: Own illustration, based on WTI (2016).

Second, the practice of TTIP opponents, to divide the level effects by the number of ramp-up years to generate growth rate effects of TTIP is misleading at best, and exploits common confusion about growth rate and level effects. According to the conservative assumptions of models, TTIP would lead to a permanent increase in GDP, a flow variable, which materializes in every period of time in the future. For this reason, it makes sense to transform the gains in the flow of GDP into a wealth effect (a present discounted value) which carries future gains into the present using a discount factor. Such a calculation is necessary to deal with short-run adjustment costs (see below). Table 2 shows that these wealth effects can be substantial, even in the more conservative estimates.

Third, the studies differ with respect to the construction of both the “counterfactual” (with TTIP) and the BAU scenario. Some of them take BAU from the data (eg, 2012) and ask what the EU’s level of GDP would be, if, in that base year, contrary to what is observed, TTIP existed. Others predict some future baseline, e.g., in the year of 2027, and carry out the comparison for this year. This changes nothing conceptually. However, using base years very far in the fu-

⁶ Findings reported in *Bloom et al* (2014) and *Sampson* (2016) suggest that dynamic gains may double or triple the static effects reported in Table 1.

ture introduces additional uncertainties, and the assumptions used for the projections have implications for the model results. If one assumes that the transatlantic economy's share in global GDP will be substantially smaller in, say, 2027, than what it is today, the generated TTIP gains fall as the economic potential of the agreement falls. This becomes particularly transparent when comparing Ifo-Bertelsmann (2013) to Felbermayr et al (2015) which differ only with respect to the base year; the latter using more recent data reflecting a much diminished share of the EU and the US in world GDP. If the calculations refer to an observed base year, they may be best described as “model-based thought experiments” which carry out “if-then” analyses. They are not to be mistaken for a forecast which would have to take into account all possible events that could happen in the future and affect the baseline. Another case in point is the Keynesian approach of Capaldo, who postulates certain paths for future fiscal policy (eg, assuming strict austerity in EU countries to be maintained ad infinitum).

Table 2 : GDP effects of TTIP in present discounted values (PDV) terms, gross and net of adjustment costs, % of baseline GDP

	Long-run level effect	PDV, gross GDP effects	PDV, adjustment costs	PDV, net effect
CEPR (2013)	0.6	10.2	0.5	9.7
Aichele et al (2014)	2.1	42.9	1.7	41.2
Egger et al (2015)	2.3	47.0	1.8	45.2
Felbermayr et al (2015)	3.9	79.7	3.1	76.6

Source: own calculations. Assumptions: TTIP effect on GDP builds up linearly over a 10-year period, discount rate 4% p.a., reallocation needs based on Aichele et al (2014) under a two-year period of unemployment.

3. What is the right TTIP scenario?

Probably the quantitatively most important difference across studies is how researchers define the scenario. Typically, the idea is to do a simulation based counterfactual experiment: what happens if the model economy, calibrated to the observed (or projected) baseline data, is modified such that trade costs across the Atlantic are reduced. All studies assume that tariffs are fully eliminated. Concerning the costs of non-tariff barriers and the possible reduction of these costs, there are two main approaches: (i) an expert-driven approach, and a (ii) data-driven approach.

The CEPR study uses an expert-defined trade cost reduction schedule. The level of NTBs is estimated from surveys of firms and translated into ad valorem tariff equivalents using econometric techniques (Berden et al, 2009). How strongly these costs could be affected by the agreement is determined by expert opinion. In contrast to tariffs, it makes no sense to reduce NTB-related costs to zero, as not all regulatory divergence between the US and the EU can be negotiated away (ie, not all NTBs are “actionable”).

Other studies use the estimated effects of existing regional trade agreements (RTAs) from an econometric analysis of a gravity model. The assumption is that TTIP lowers EU-US trade costs as much as existing trade agreements have between their member countries. This strategy has the advantage that it does not need to specify by how much NTMs would fall in the proposed agreement, but instead relies on past observed effects of similar RTAs. This implies that the proposed scenario must be feasible (since it has been shown to have worked elsewhere). The

strategy also ensures a comprehensive treatment: not all NTBs will be reported by firms in surveys; moreover, an RTA may lead to further public or private investment not mandated by the agreement itself which brings down trade barriers (human capital, infrastructure, other areas of institutional cooperation). This approach may lead to under- or overestimation. On the one hand, the official ambition for TTIP is to go deeper than the average existing RTA, which will lead to an underestimation of the potential trade and welfare effects of TTIP when relying on the average effect of RTAs in the past. On the other hand, it is possible that the easy barriers to trade have long been removed across the Atlantic, which will then lead to an overestimation, because many past RTAs substantially lowered tariffs and NTMs. Egger et al (2015) and Aichele et al (2014) employ this strategy in a multi-sector setup; this requires the estimation of a large number of separate RTA coefficients, each for one sector. Studies differ in how to deal with the endogeneity of RTAs, what type of RTA to use to inform the exercise (all available RTAs, as ifo-Bertelsmann (2013) or Felbermayr et al (2015), or deep RTAs as Aichele et al, 2014), and how to deal with parameter uncertainty.

The key advantage of the expert-driven approach is that it spells out the type, size, and possible reductions of NTBs for different sectors; this is helpful information for negotiators. The key advantage of the data-driven approach, in contrast, is that it might provide more accurate estimations of potentials.

The data driven approach is the natural way of proceeding in so called structurally estimated CGE (SCGE) models, also referred to as New Quantitative Trade Theory (Ottaviano, 2014). These rather recent models (see Costinot and Rodriguez-Clare, 2015) try to tie the estimation of key structural parameters and the definition of scenarios as closely to the baseline data as possible. In this sense, they make progress to older approaches, which borrow parameters from external sources, and rely on expert input. Unfortunately, the strategy has been frequently misunderstood. In a study for the EU Parliament in 2014, Pelkmans et al (2014) insist several times that “*comparing TTIP potential with that of the EU (or NAFTA) is clearly unrealistic*”. This is wrong; the scenario in ifo-Bertelsmann is based on an estimate of the average trade cost effect measured for more than one hundred countries involved in more than one hundred different trade agreements (including, amongst many others, EU and NAFTA). Pelkmans (2016) reiterates the wrong assertion by stating that “*authors (erroneously) assume a transatlantic market as if it were similar to the EU Internal Market and NAFTA.*”

Finally, scenarios may differ regarding the assumption of spillovers. Essentially, spillovers refer to the possibility that the bilateral reduction of trade costs between the EU and the US could also benefit third countries (see below). This leads to a multilateralization of the agreement. In their default specification, CEPR (2013) assume that 20% of the trade cost reduction assumed for TTIP insiders is also available to outsiders. Spillovers increase the gains from TTIP: this is very transparent in the model comparison offered in Table 3. Eg, the CEPII (2013) study assumes no spillovers in its default specification. However, allowing for them drives up the gains from TTIP from 0.3% to 0.5%, effectively explaining the entire difference in simulated outcomes between the CEPR and the CEPII studies.

As a rule of thumb, across model with similar setups (eg, Egger et al (2015) and Aichele et al (2014)), differences in quantitative results are almost entirely driven by differences in the imposed trade cost reductions.

Table 3: Potential effects of TTIP on real per capita income, results of selected studies

Spillovers	[1] CEPR (2013)/WTI (2016)		[2] ifo / Ber- telsmann (2013)	[3] CEPII (2013)		[4] Aichele et al (2014)		[5] Egger et al (2015)		[6] Felbermayr et al (2015)		[7] Capaldo (2014)
	NO	YES	NO	NO	YES	NO	YES	NO	YES	NO	YES	n.a.
USA	0.3	0.4	13.4	0.3	0.5	2.7	3.4	1.0	1.1	4.9	7.1	0.4
EU	0.4	0.5		0.3	0.5	2.1	2.7	2.3	3.0	3.9		-0.4
Austria		0.4				2.4	2.8			2.8	5.6	
Germany		0.6	4.7	0.3	0.5	2.6	3.4	1.4	2.3	3.5	7.1	-0.3
France		0.3	2.6	0.2	0.4	2.2	2.0	1.3	1.9	3.5	7.2	-0.5
UK		0.4	9.7	0.3	0.4	2.3	2.8	1.8	2.2	5.1	9.0	-0.1
Italy		0.5	4.9			1.2	1.7	1.5	2.2	3.9	7.7	-0.0
Spain		0.4	6.6			1.2	1.8	0.8	1.4	5.6	9.6	
Poland		0.9		0.2	0.5							
Non-TTIP		0.1	-1.6			0.4	1.5			-0.9	0.8	
Turkey			-2.5			0.1	1.2	-0.8	1.8	-1.6	0.1	
Mexico			-7.2			-0.1	1.1			-2.6		
Brazil		0.0	-2.1			-0.0	0.6			-0.8		
Russia			-2.1			0.2	1.6	-0.2	0.2	-1.0		
India		0.0	-1.7			0.1	0.9	0.4	-0.5	-0.3		
Indonesia		0.0	-0.2			-0.1	0.9	0.4	-0.5	-0.1		
China		0.0	-0.4			-0.3	1.1	-0.3	0.3	-0.5	0.8	
World		0.3	3.3			1.3	2.2	n.a.	n.a.	1.6	3.9	

Source: Data from studies cited in the table. n.a. refers to “not available”. “Ambitious”, or “deep” scenarios. Russia “Rest of Europe”, India and Indonesia “Other Asia” in Egger et al (2015), Indonesia “ASEAN” in CEPR (2013). Empty cells: data not available.

4. What is the right model structure?

All studies except the one by Capaldo (2014) have in common that they are based on computable general equilibrium (CGE) models and that they operate under the presumption of full employment (see discussion of the few exceptions below). CGE models simultaneously model economic equilibrium outcomes in many sectors and in many countries, carefully taking feedback mechanisms and so called adding-up constraints into account. These models have been useful in identifying vulnerable industries, mapping specific policies into outcomes, and in providing assessments on aggregate variables.

The conventional models, however, have been criticized for underestimating the trade flow effects of agreements (Kehoe, 2005) and the gains from trade. The latter is due to the fact that the standard CGE models do not allow for technological progress, technology adoption or human capital formation, which are all likely to be fostered by better access to global markets and stronger competition. Another element of criticism relates to a poor fit between models and parameter estimation. This has led to the development of “new quantitative trade theory” (NQTT, Ottaviano, 2014); see the seminal articles of Eaton and Kortum (2002) and Anderson and van Wincoop (2003); Costinot and Rodriguez-Clare (2014) provide an overview. What these new approaches have in common is (i) a simpler, and thus more tractable model structure, (ii) the use of structural relationships generated by the model (such as the gravity equation) to econometrically identify the key parameters (such as trade elasticities), and (iii) scenario definitions for ex ante analysis that are based on the estimates of the treatment effects of comparable existing policies.

CEPR (2013), Aichele et al (2014) and Egger et al (2015) have used a multiple-sector model which is in the tradition of the older CGE literature. The ifo-Bertelsmann (2013) study and Felbermayr et al (2015) have instead used a much simpler single-sector model, but applied the methods used in NQTT. Multi-sector models have the advantage that they provide insights into the sectoral effects of policy changes. Moreover, they capture differences in the structure of comparative advantage of countries; this is important in assessing the strength of trade diversion effects. If one is interested in long-run aggregate effects, the advantages of multi-sector models are less obvious, as the structure of comparative advantage cannot be assumed to be fixed.

In NQTT, multi-sector models are still the exception; see for surveys Head and Mayer (2014), and Costinot and Rodríguez-Clare (2014). With the usual assumption of perfect mobility between sectors, multi-sector models are comparable to one-sector models in terms of the employment of workers: they are always ideally allocated. Therefore, the single sector view corresponds to the long-run where all structural adjustments have taken place. Additionally, it is consistent with structural changes in the economy that may happen due to TTIP, both in TTIP-member and non-member third countries. For this reason, the economic effects predicted in single sector models are typically larger.

In contrast, market structure does not make much of a difference. Felbermayr et al (2015) use a monopolist competition model, which is, in many respects, isomorphic to a model with perfect competition; see Costinot and Rodriguez-Clare (2014). Also, the introduction of frictional unemployment (ifo-Bertelsmann, 2013; Heid and Larch ((2014) does not fundamentally change the properties of the model.

The Keynesian model of Capaldo (2014) differs dramatically from the standard approach in trade modeling. It assumes that employment and production are determined by demand condi-

tions only; therefore it takes a short-run perspective (even if results simulated under these premises play out only gradually over time). It is no trade model in the sense that it does not model trade barriers (tariffs, NTMs), and does not per se generate any predictions on trade flows. Capaldo (2014) uses trade flow changes simulated in CEPR (2013) and implements them into the model. Since the results of the model depend entirely on the evolution of the trade balance, this is an important and crucial assumption.

The ifo-Bertelsmann study has received criticism from several sides. The EU Commission (2013) describes that study as an outlier compared to others. Looking at the size of welfare effects predicted this seems a valid conclusion. However, the “other studies” that the Commission compares ifo-Bertelsmann with, all used variants of the same model, data, and methodology and therefore cannot but generate similar results. It has been criticized that the effects are “unreasonable” because existing exports of the US to Europe amount to about 3.5% of US GDP only. Pelkmans et al (2014) claim, that this fact makes the simulated effects in ifo-Bertelsmann totally implausible and unrealistic, in particular for the US. While the simulated effects for the US certainly appear high, the logic in the above argument is flawed. Classical trade theory does not at all suggest that trade between two countries prior to liberalization is an indicator at all for the size of possible welfare gains. Quite the opposite is true. Take the example of two countries in autarky (that do not trade at all); opening up to international trade will be highly beneficial for them even though there is no trade at all between the countries in the initial situation.

The fact that simulated effects are large has to do with the scenario, the way NTBs are introduced, and with model structure. It also has to do with the fact that the ifo-Bertelsmann model is a stochastic model (in the sense that the underlying parameters and the baseline equilibrium are estimated and thus subject to uncertainty). Indeed, Felbermayr et al (2015) have used the same framework as ifo-Bertelsmann (but updated to a more recent base year and to a larger country sample); the structure of effects they find is similar to the earlier findings, but results look less extreme. The EU Commission has also called the methods “untested”; this is an understandable reaction, given that policy consulting has employed more or less the same type of model for more or less all quantitative exercises that the Commission has ordered; not surprisingly, these studies all tend to confirm each other. The academic literature, however, has developed alternative frameworks; ifo-Bertelsmann relies on the setup developed in a peer-refereed journal publication (Egger et al, 2011) which heavily builds on earlier scholarly work.

In a sense, the variance in results reported in Table 3 raises the question of what could plausibly be expected. Two facts suggest that even the static welfare gains from closer transatlantic integration could be sizeable: first, the two economies combined each account for about a quarter of world demand and world supply, but bilateral trade in goods and services between them amounts to about 3% of GDP only⁷. Thus, trade appears low compared to the regions’ levels of GDP and there should be room for a strong increase in bilateral commerce. Second, econometric studies suggest that trade matters significantly for countries’ levels of income; see Felbermayr and Gröschl (2013) and the references therein. This suggests that there is no reason to believe, a priori, that the potential of transatlantic trade liberalization is small, even though tariffs are already low.

⁷ In 2014, EU exports of goods and services to the US amounted to 504.6 bn. Euro; imports amounted to 388.3 bn. This is 2.7% and 3.5% of EU GDP, respectively.

Other differences in modeling approaches are less important. The CEPR model differs from the others in that it allows for some NTBs to be not resource consuming but rent-creating (such as a quota would). The other studies assume NTBs consume resources. Reducing such wasteful barriers releases larger economic gains than rent-creating barriers, as there is a direct resource saving effect.

What the difference between the conventional methodology and the less orthodox approach of Ifo-Bertelsmann teach us is, thus, that standard analyses are probably less robust than what many proponents would want to believe.

5. How are third countries affected?

A long-standing tradition in the theory of international trade argues that trade agreements between a subset of countries (regional trade agreements, RTAs) are only second-best compared to an agreement that spans the entire world. The reason is that RTAs are inherently discriminatory: they grant preferences to insiders which they deny to outsiders. This is most blatant in the case of tariffs, where rules of origin make sure that third country goods (or value added) do not benefit from preferences. However, also in the area of regulatory cooperation, discriminatory elements may exist, e.g., when product tests are mutually recognized only if the product in question originates from an insider, but not, when the producer comes from a third country.

These features lead to trade diversion: some of the trade boost between members comes at the expense of outsiders, who see demand for their goods fall as a consequence of diminished relative price competitiveness. E.g., producers of leather shoes from Romania currently face tariffs of up to 30% in the US. With TTIP, these tariffs would fall to zero, giving those producers a cost advantage of 30%. Firms from Mexico or from Cambodia enjoy tariff-free access to the US market already now: the former through NAFTA, the latter through the US system of trade preferences for poor countries. TTIP would confront them with tough competition from EU shoe producers and, possibly, lead to a loss of market share. These trade diversion effects operate only when EU or US producers actually produce goods or services that compete with output of third countries. E.g., cocoa producers from Cote d'Ivoire are insulated from relative price effects. Trade diversion effects materialize when strict rules of origin prohibit that value added from third countries ends up enjoying preferential treatment.

On the other hand, if income and production levels rise in the US or the EU, outsiders may benefit as demand for their products and services increase. Again, this effect will be most pronounced in countries, which produce goods or services that the TTIP insiders do not produce themselves. Moreover, the higher the income elasticity of demand, the stronger are the demand effects. Chocolate or safari tours are examples for goods and services featuring overproportionate increases in demand when income goes up. Finally, countries strongly linked into supply chains of EU/US producers will also benefit more than other countries.

The studies listed in Table 3 report very different effects for third countries. Single-sector models predict much stronger effects than multi-sector models. There are two main reasons for this. First, single sector models implicitly assume the toughest possible rules of origin. This maximizes trade diversion effects and makes losses in third countries likely. Second, by focusing on a single sector, these models ignore that countries differ strongly with respect to the products that they can competitively produce. Germany competes with Cote d'Ivoire in the area of tourism but not in cocoa. Ignoring the details of comparative advantage, the models impose symmetry between countries and goods, and this also tends to exaggerate third country effects. The multi-sector models, in contrast, typically fail to model the discriminatory effects of rules of origin and downplay the risks of trade diversion. Moreover, by fixing the structure of comparative advantage to the base-year, they rule out that a mega regional agreement such as TTIP influences the technological possibilities of countries. This could mean that the models underestimate the possibility that, in the absence of TTIP, Cote d'Ivoire develops a competitive chocolate industry which exports cocoa products, while TTIP makes this less likely by creating a common transatlantic chocolate market.

These considerations suggest that single-sector models overplay the dangers of TTIP for third countries while multi-sector models downplay them. Most likely, the truth lies in the middle. For countries that produce goods that compete with output from the EU or US, and which are not well integrated into the transatlantic value chains, TTIP could bring losses. Aichele et al (2014) and Egger et al (2015) show that countries in east Asia – China, Cambodia – could be negatively affected, while countries selling inputs for the EU or US industries – Morocco, Turkey – could actually benefit.

Generally, however, losses to third countries are typically small, in particular, in the case of unambitious TTIP scenarios. Also, it needs to be acknowledged that many of the countries which are negatively affected by TTIP are in the process of negotiating their own mega regional trade agreements. Cambodia, for example, is part of the Regional Comprehensive Economic Partnership (RCEP) agreement which should link ASEAN countries to big regional powers such as China and India. RCEP could prove hugely beneficial for Cambodia while it is slightly harmful for Europe. The combination of trade agreements generates a much wider range of winners than when looking at one agreement in isolation.

Comparing the existing studies, the CEPR study is the only one which assumes regulatory spillovers in its default scenario. Hence, it effectively endows TTIP with a multilateral dimension: outsiders to the agreement see their trade costs fall even though they do not participate at the negotiations. This leads the study to the gross unrealistic conclusion that Indonesia benefits more than twice (in percentage terms) from TTIP than the EU. There is very little empirical evidence to support such spillovers, see the discussion in the WTO World Trade Report of 2012 and further discussion in Felbermayr et al (2014). At the same time, spillovers would be clearly desirable. As shown in Table 3, they tend to make the gains of transatlantic integration larger for the insiders, and for the outsiders (and, consequently, for the whole world).

Compared to CEPR (2013), ifo-Bertelsmann (2013) finds strongly negative third country effects of TTIP. As explained, there are several explanations for this. However, the claim of Pelkmans, (2016) that strong trade diversion was simply “assumed” in the model is plainly wrong. Trade diversion is the endogenous outcome of a fully consistent general equilibrium model. The very fact that a very standard – if stylized – trade model can generate substantial third country effects in a TTIP scenario should stimulate a discussion about how to design mega-regionals in a development friendly way. In ifo (2015) we have developed arguments to achieve this.

6. Labor market outcomes: the short- versus the long-run

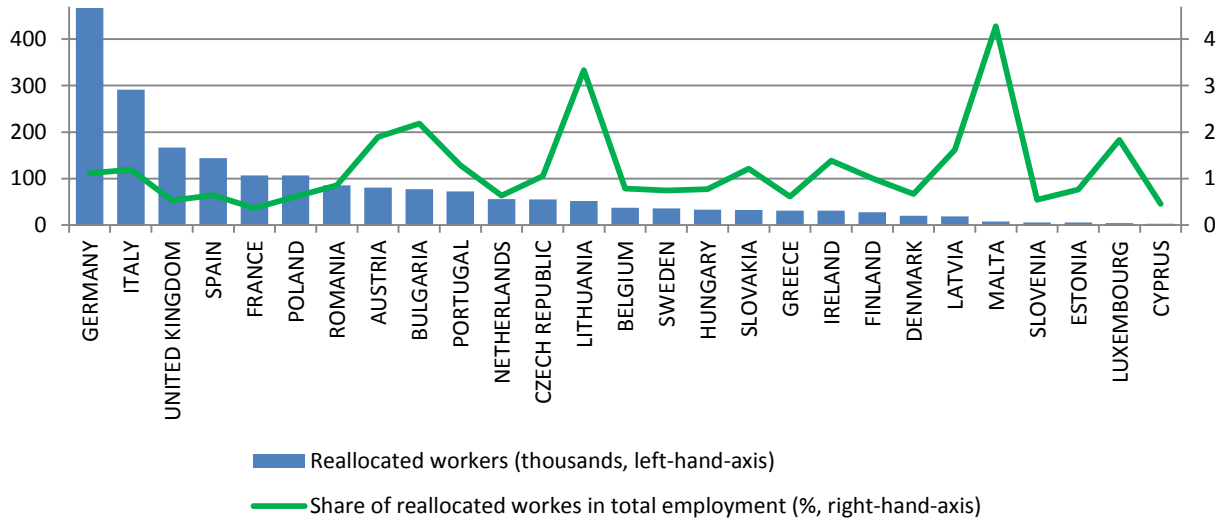
The bargaining mandate of the EU Commission from June 17 2013 states that a key objective for TTIP is to “*generate new economic opportunities for the creation of jobs*”. This is echoed in the EU Parliament’s resolution adopted on 8 July 2015 which posits that “*TTIP ... should be seen as an element in a broader European strategy to create jobs*”. In stark contrast, amongst the studies surveyed in Table 2, only ifo-Bertelsmann (2013) and Capaldo (2014) address the capacity of TTIP to affect aggregate employment. The reason for this situation is that trade economists traditionally think that “*attempts to quantify the overall employment effect of trade are largely an exercise in futility*” (Irvine, 2015).

However, recently, search theoretic foundations for unemployment and wage bargaining have been incorporated in structurally estimated CGE models of international trade; see Felbermayr et al (2011) and Heid and Larch (2014). Ifo-Bertelsmann (2013) draws on this approach. It finds that TTIP could lead to long-run employment gains as general productivity gains due to the agreement making it easier for firms to overcome labor market frictions that hold down the creation of jobs. While in models with perfect labor markets all productivity gains are soaked up by higher wages, models with frictions imply that part of the gains go into the creation of additional jobs.

Capaldo (2014) uses a very different model. In his setup, regulatory cooperation frees up workers who were earlier employed for now redundant conformity tests, unnecessary country-specific configurations of products, etc., but they fail to be reemployed in other sectors. This reduces aggregate demand and, via old-style Keynesian mechanisms, leads to a recession and unemployment. Capaldo (2014) does not use a trade model – the change in trade flows is assumed, not derived – and he ignores the overwhelming evidence that productivity gains do not lead to mass unemployment; certainly not in the long-run. The merit of his paper lies in raising awareness for short-term problems in the adjustment process following trade reform. Recent empirical studies by Autor et al (2013) and Autor et al (2014), show that these concerns are to be taken serious.

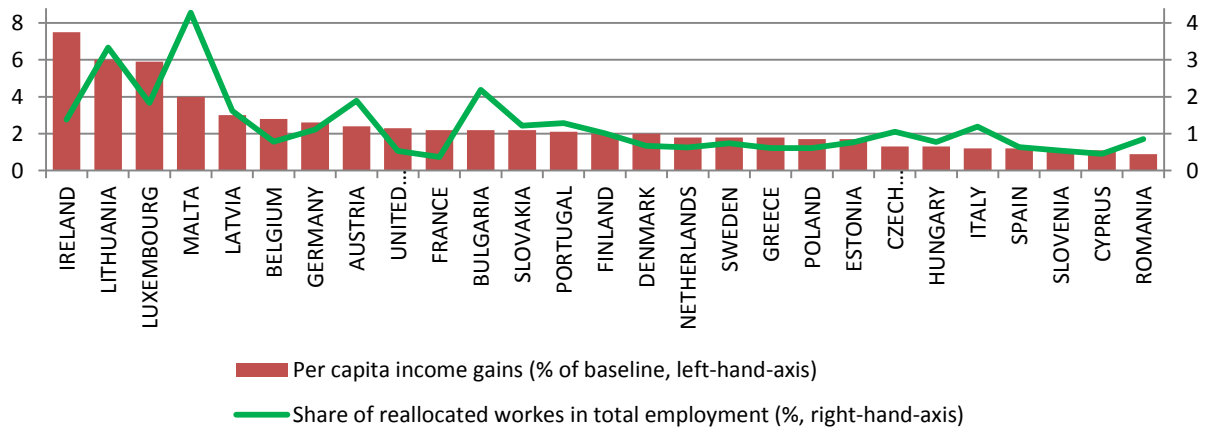
Figure 2 plots the share of workers who will have to move from one industry to another due to TTIP and their absolute number as reported by Aichele et al (2014). Clearly, we are talking about non-trivial numbers. However, reallocation needs remain below the 1% threshold in most EU member states. Figure 3 plots the share against the income gains expected from the agreement. It is apparent that higher gains require more reallocation. In that sense, the simulation exercise of Aichele et al (2014) confirms the intuition that adjustment due to reallocation can be seen as a necessary investment to unlock efficiency gains.

Figure 2: Aggregate reallocation in absolute number of persons and as a % of total employment



Source: Aichele et al, (2014), own calculations and illustration.

Figure 3: Aggregate reallocation as a % of total employment and size of economic efficiency gains



Source: Aichele et al, (2014), own calculations and illustration.

The reallocation effects occur over time as the effects of the agreement unfold. Assuming a ten year ramp-up period (as most studies to), even the high reallocation requirement of 2 million would spread out over time. Data from Eurostat suggest that the average annual change in employment in the EU manufacturing sector due to natural labor turnover was around 3%. So, over a ten year period, roughly 30% of the labor force would have been reallocated. This needs to be compared to the 0.85% reallocation rate predicted in Aichele et al (2014) or to the 0.11% reallocation rate in the CEPR study. Hence, labor turnover induced by TTIP will be by at least 30 times smaller than natural turnover.

Because long-run efficiency gains largely depend on the sectoral reallocation of labor, blocking the restructuring of industries would endanger the overall benefits of TTIP. Also, more detailed sectoral assessments will be possible only once the text of the agreement (including sectoral Annexes, details on rules of origin, etc.) is fully available. At this point, it is possible to alert policy makers that job losses could occur in comparative disadvantage industries such as Electrical machinery / electronics, in business services, and possibly in metals and metal products. Clearly, countries will differ with respect to these effects. Germany, for example, has a competitive metal industry, UK has a very competitive services industry, and so on.

Notwithstanding the rather small reallocation needs relative to natural turnover, TTIP will very likely involve some costly adjustment by workers. However, this does not undo the overall economic advantageousness of the agreement. This is illustrated in Table 2 which employs the very pessimistic assumption that all workers that need to change jobs go through a two-year period of unemployment. Expressed in present discounted values and looking across studies, the adjustment costs never amount to more than about 5% of the total gains. Their existence, therefore does not at all undo the overall advantageousness of the whole TTIP project. Nonetheless, it is clear that adequate policy instruments are required to manage the adjustment process and to support workers who need to change jobs. Rather than using special trade assistance programs, it would be better to ramp up active labor market policies and provide sufficient unemployment benefits for a limited period of time.

Some of the studies report differential wage effects for high- versus low-skilled workers (eg, CEPR, 2013). They point towards some very slight increase in the inequality of gross wages. However, as EU welfare states engage into substantial redistribution, the effect of TTIP on net wage inequality is likely to be extremely low. The main reason for this is simply that the US has a structure of gross wages which is rather comparable – despite obvious differences – to the European one.

7. Conclusions

This chapter reviews the economic modeling of TTIP. It stresses commonalities across different studies and explains differences. A robust conclusion from the existing numerous studies is that TTIP promises long-run gains for the EU as a whole with the average estimate lying around 2%. However, there is substantial uncertainty, as the precise magnitude of the effect depends strongly on how ambitious the assumed scenario is. Also, while virtually all EU member states are consistently predicted to gain, there is substantial heterogeneity. The existing studies agree that TTIP can harm outsiders, in particular if there is a considerable overlap in exported products. But also regarding third countries, TTIP is likely to have very heterogeneous effects. Only if transatlantic cooperation also leads to lower trade costs elsewhere will TTIP yield substantial benefits for outsiders. Labor market effects of TTIP are likely to be weak, both regarding long-run employment effects and net wage inequality. However, the agreement is bound to trigger reallocation of workers from shrinking firms and sectors to expanding ones. This transition can be dealt with using existing labor market instruments. Taking adjustment costs into account, TTIP still looks like a very promising investment for the EU.

This chapter has not provided sectoral details. Before details on the text are available, this is probably a futile exercise. It has also avoided issues of public interest which cannot (yet) be properly dealt with using economic models. This is the case with the controversial settlement of investment disputers, concerns about consumer protection, and potential costs associated to the loss of regulatory flexibility. There is no doubt that the robust debate on TTIP will trigger scholarly research into these questions. There is also no doubt that these issues can be dealt with provided that there is sufficient political will.

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