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Article

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TRANSATLANTIC TRADE AND INVESTMENT PARTNERSHIP

TRANSATLANTIC FREE TRADE: QUESTIONS AND ANSWERS FROM THE VANTAGE POINT OF TRADE THEORY

GABRIEL J. FELBERMAYR¹ AND MARIO LARCH²

What does this article wish to achieve?

This contribution provides answers to a number of important questions that are regularly asked in the discussion of a Transatlantic Trade and Investment Partnership (TTIP). The discussion summarises insights based on a number of studies and reports written by the authors on the topic. Space constraints require us to be relatively brief, but our earlier publications provide more details on some of the issues discussed here; references are provided at the end of this article. The article also summarises a fairly large number of studies in order to offer the reader an overview of the literature available on the general effects of trade and trade agreements.

Let us begin by asking how free trade is in today's allegedly globalised world? What are the remaining *trade costs* and what can be done about them? And should policymakers do their best to lower those barriers? We investigate the *geostrategic* background of TTIP in the current and future world economy and conclude this section with some remarks on the *specific characteristics* of the transatlantic trade relationship.

The third section of this paper discusses the state of the literature on *preferential trade agreements* (PTAs).³

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² University of Bayreuth. The authors are grateful to Sebastian Benz, Lucian Cernat, Joe Francois, Benedikt Heid, Christoph Hermann, Sybille Lehwald, Ulrich Schoof, Erdal Yalcin, and numerous others for insightful discussions and valuable comments.

³ There is some confusion as to the definition of PTAs. Economics literature usually defines PTAs as agreements in which countries extend preferences to certain countries, but not to all. PTAs can be reciprocal or unilateral. They can take the form of customs unions (where countries share common external trade policies), or free trade

We provide answers to the following questions: how effective are PTAs in terms of lowering trade costs? How do PTAs affect trade flows with and between *third countries*? And does *regulatory cooperation* provide fundamentally different answers to these questions than tariff liberalisation?

The fourth section looks at the specific issues concerning transatlantic trade. It discusses whether insights from the more general empirical literature can be applied to TTIP. The section then sheds light on the potential of TTIP to reduce trade costs across the Atlantic. It tackles the magnitude of expected effects and touches on the question of how TTIP could bring down trade barriers. We summarise findings from our earlier work on TTIP with regard to the *trade creation* and *trade diversion* effects that can be expected from a Transatlantic Agreement. We also ask how the agreement will affect trade within the *European Union*.

In a fifth step, this paper answers questions on the potential *welfare effects* of TTIP for the directly involved countries and for third countries, particularly in the developing world. It explains why the agreement is likely to affect different countries in very different ways and highlights the *heterogeneity* amongst EU member states. Finally, it offers insights into the *job creation effects* that can be expected from TTIP.

The final section of the paper touches upon questions that are less rigorously analysed in the context of TTIP, but which are answered by general literature on the topic. It examines the effect TTIP could have on *economic inequality* within participating nations, briefly touches on the *environmental aspects* of the agreement and ends by discussing its strategic implications for the *multilateral trade system*.

The article concludes with the brief presentation of our wish list for the negotiating parties. The Appendix of-

zones (where countries set their external policies independently). The term regional trade agreements (RTA) is often used synonymously, which is, however, not suitable for TTIP or the other big agreements currently being negotiated (EU-Japan, the Transpacific Partnership, etc.). Legal texts, however, refer to PTAs as agreements that have lower, but not zero, internal tariffs, and juxtapose them to free trade agreements (FTAs), where the elimination of tariffs is complete. This article sticks to the economics tradition.



fers a brief answer to why different studies on TTIP have come up with different numbers on the welfare and job effects, but have come to broadly similar conclusions as to the desirability of the entire undertaking.

How free is trade today and what is the general purpose of TTIP?

Q1: How free is trade today?

A: Trade is much less free than you may think.

Globalization is a buzzword for which Google provides virtually millions of hits. Many observers seem to think that the world is already ‘flat’, with international trade and capital flows crossing borders without restrictions.⁴ But is this true? How large is the potential for further increases in international trade flows?

To illustrate this, it is insightful to contrast the trade flows observed between countries with a hypothetical ‘friction-free’ situation in which there are no trade barriers whatsoever – political, geographic, cultural. By this benchmark, the demand for the imports of a country from a trade partner should be exactly equal to this country’s share of total world demand times the total supply of goods provided by the trade partner. Using GDPs to proxy both demand and supply offers a rough measure for that friction-free benchmark.⁵ For example, in the case of EU-US trade, the benchmark trade volume would amount to slightly less than 5 percent of world GDP in 2012. In contrast, observed EU-US value added trade (400 billion euros in 2012)⁶ amounts to about 0.75 percent of world GDP (55.25 trillion euros). So, the rate at which the fictitious trade potential is utilised amounts to about 14 percent.

Table 1 provides information about the degree at which the trade potentials in number of important bilateral trade relationships are actually utilised. It shows that US imports from France and Germany amount to 9 and 14 percent of the trade potential, respectively. US

⁴ See, for one example, Friedman’s (2005) famous book, *The World Is Flat*.

⁵ It is given by the formula $M_j = s_j GDP_j$, where s_j is the share of country j in world GDP and M_j are country j ’s imports from country j – see Feenstra (2004).

⁶ Averaging the domestic value added exports of both the United States and the EU to each other, see the OECD-WTO Trade in Value Added data base.

Table 1

		Trade potential utilisation rates				
		USA	France	China	Germany	Japan
Imports from	USA	n.a.	7%	7%	9%	9%
	France	9%	n.a.	8%	34%	5%
	China	23%	16%	n.a.	20%	23%
	Germany	14%	47%	15%	n.a.	9%
	Japan	9%	5%	23%	9%	n.a.
Exports to	USA	n.a.	9%	23%	14%	13%
	France	7%	n.a.	16%	47%	7%
	China	7%	8%	n.a.	15%	22%
	Germany	9%	34%	20%	n.a.	10%
	Japan	9%	5%	23%	9%	n.a.

Source: Trade in value added (TiVA) tables provided by the OECD; own calculations.

exports to both countries exhibit even lower rates, at 7 and 9 percent, respectively. Interestingly, Chinese imports and exports from or to Germany and France lie above those rates, implying that the degree of trade integration with China is stronger than with the United States. The highest utilisation rates, not surprisingly, are found between country pairs that have already abolished political trade barriers and that are geographically close (such as France and Germany).⁷ It would be clearly unrealistic to believe that the utilisation rates between EU countries and the United States could rise to a figure close to 1.0 since there are many goods and services that will never be traded internationally (such as housing services), but it is quite conceivable that further integration could increase EU-US rates to levels observed within the EU.

Q2: What are the remaining trade costs?

A: Something else than tariffs.

How can the low trade potential utilization rates discussed above be explained? And more interestingly, why do they differ across country pairs? A rich body of empirical literature documents how extraordinarily important trade costs still are. On average, for US trade with industrialised countries, international trade costs appear to add about 74 percent to marginal production costs.⁸

After eight rounds of multilateral trade liberalisation tariffs are very low. The trade weighted import tariff

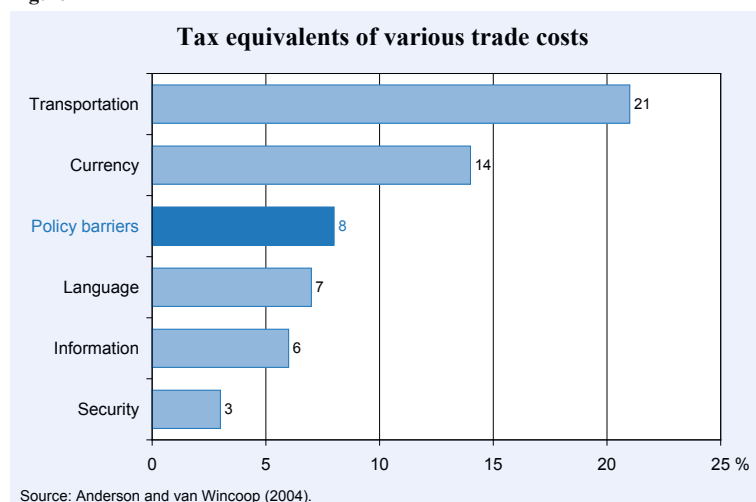
⁷ The trade potential utilisation rates reflect many things: differences in preferences, macroeconomic conditions (i.e. trade surpluses and deficits), and trade costs. The empirical literature on trade costs has made massive progress in the last years. Using appropriate statistical tools, studies find an important role for various types of trade costs.

⁸ This is the tax equivalent of ‘representative’ trade costs net of retail and wholesale costs for industrialised countries – see Anderson and van Wincoop (2004).

of the EU and the United States relative to the 159 member countries of the WTO (World Trade Organisation) amounts to less than 3 percent for industrialised goods and only marginally more for agricultural goods. It follows that the bulk of trade costs must consist of non-tariff barriers. Besides politically induced trade barriers, these costs reflect the costs of transportation and insurance, currency exchange, information, translation, legal, testing services etc. Politically induced non-tariff barriers typically arise from differences in regulatory requirements between two countries. For example, norms and standards that need to be met for regulatory approval can be different or even mutually inconsistent, meaning that expensive product changes are required if a good is to be sold in a foreign market.

Trade costs can be lowered by political action, e.g. by eliminating tariffs or fostering regulatory cooperation. They can also be brought down by private action, e.g. if businesses invest in retail networks, freight companies set up additional routes, or if individuals invest in human capital (languages) that facilitates trade. Trade agreements are typically meant to lower politically induced trade costs (which Anderson and van Wincoop (2004) estimate to amount to a tax equivalent of around 8 percent – see Figure 1). If private agents expect such policies to boost trade, they will find it profitable to improve their capacity to benefit from trade. That is, they invest in further trade cost reduction. In that way, political action kicks off a process of cumulative trade cost reduction. Below, we will see that trade agreements have effects on trade costs that go beyond the direct policy induced cost savings.

Figure 1



Q3: Why should we care about trade costs?

A: Because lower trade costs increase welfare

It is a cornerstone of classical economics that trade improves welfare. Generations of economists have worked on this concept, starting with Adam Smith (1776) who demonstrated the importance of the division of labour for the wealth of nations. David Ricardo (1817) introduced the theory of comparative advantage, which explains why countries with inferior means of production will still benefit from international trade. Economists in the ordo-liberal tradition like Walter Eucken (1939) emphasized the important role of government in ensuring and maintaining open markets. Modern economics is familiar with a number of mechanisms through which international trade improves welfare: (i) by allowing specialization, it lowers production costs, (ii) by introducing foreign varieties of goods, it increases overall product variety, (iii) by breaking up domestic monopolies, it fosters competition, (iv) by putting pressure on inefficient firms, it increases average productivity. Trade may also unfold dynamic gains, as the return on innovative activity is higher in a global market and firms' incentives to invest into physical capital may increase as a result.

Recent empirical research tries to quantify those welfare gains. The overwhelming majority of studies find that welfare gains do indeed exist, and that they are quantitatively sizeable. A key challenge is to separate cause from correlation. Frankel and Romer (1999) have proposed a celebrated instrumental variables strategy to solve this problem. They find that a one percentage point increase in openness (defined as total trade divided by GDP) raises per capita income by at least 1 percent. More recent analysis has come up with

somewhat lower effects (0.5 to 0.75 percent), which are, however, still important enough to care about.⁹ These effects are averages across countries, and they can hide substantial heterogeneity. But they are informative in terms of the potential gains from lower trade barriers and enhanced international trade. For these reasons, and because trade barriers are still substantial, it pays off to engage in political efforts to curb trade costs.

⁹ See, for recent examples, Felbermayr and Gröschl (2013) or Feyrer (2009).

Q4: Why TTIP, and why now?

A: Because chances are high that it can actually work.

Preferential trade agreements (PTAs) such as the EU customs union, the North American Free Trade Agreement (NAFTA), or the proposed US-EU deal violate the most important rule of the multilateral trade system, namely the most favoured nation (MFN) principle.¹⁰ This WTO rule says that, when a country gives special treatment (e.g. lower tariffs) to one trading partner, it has to extend these preferences to all WTO members. PTAs are legal only if they cover almost all trade between partner countries and if they do not result in higher tariffs relative to outsider countries (Art. XIV GATT).

There are excellent reasons why trade economists have a strong preference for multilateral trade agreements. At least since Jacob Viner (1950), it is known that when trade is liberalized only between a subset of countries, there are two mechanisms with opposite welfare effects: trade between countries within the PTAs goes up (trade creation), but trade with other countries can go down (trade diversion). In the presence of tariffs, it is possible that the PTA lowers world welfare, or even the welfare in one of the countries concluding it. In any case, there is a realistic possibility that third countries are hurt by a PTA: they lose market shares in the PTA countries since their products become less competitive.

The problem with the multilateral approach is, however, that since 1994, there has not been any major break-through.¹¹ Firstly, as more and more countries joined, the WTO has become a very heterogeneous group of countries with very different economic and political models and strategic interests. Secondly, the multilateral system has been very successful in doing what it was set up to do, namely to reduce tariffs. The regulatory cooperation, however, which is needed to tackle non-tariff barriers, requires similar levels of economic development, mutual trust, similar institutional setups, and democratic processes. These prerequisites are jointly met only for a subset of countries. In particular, they are likely to be met between the EU and the United States: there is a long history of economic and military cooperation, and both regions are economically advanced democracies. For this reason,

¹⁰ And so do more than 200 other plurilateral and bilateral PTAs.

¹¹ On 7 December 2013, a compromise was struck between developing countries and industrialised countries in the WTO negotiations on the island of Bali. At the time of writing, it is still unclear whether this compromise will translate into lower trade costs for trade partners around the world.

if regulatory cooperation is to work at all, it has to work for the EU or the United States.

Finally, both the EU and the United States understand that their norm-setting power is in relative decline and that they can achieve more together than separately. The rise of China and of other emerging countries has cemented this feeling.

Q5: What is special about US-EU trade?

A: It is strongly intra-industry and intra-firm.

With almost 700 billion USD worth of exports and imports, the EU-US trade relationship is the largest bilateral link in the world. The United States runs a bilateral trade deficit with the EU according to official trade statistics. However, the deficit is almost zero if expressed in value added rather than in gross terms.¹² The sheer size of the trade link is impressive. However, two further observations are important to understanding the economic potential of a transatlantic agreement.

Classical trade theory describes countries that exchange goods from one industry (or sector) against goods from a different sector. In Ricardo's famous example, England exports cloth to Portugal and imports wine. The EU-US reality is quite different: the EU exports chemical products worth about 60 billion US dollars and imports chemicals worth of 45 billion US dollars; it exports machinery worth of 50 billion US dollars and imports machinery of 50 billion US dollars; it exports cars and car parts to the tune of 36 billion US dollars and has imports amounting to almost the same amount (Felbermayr *et al.* 2013). The Grubel-Lloyd index, which measures the extent of intra-industry trade and ranges between 0 (no intra-industry trade) and 1 (all trade is intra-industry) has the value 0.89 in the manufacturing sector. Interestingly, it is even higher (0.91) in services trade. Not surprisingly, it is lower (0.73) in the agricultural sector. EU exports are dominated by alcoholic beverages (wine), while imports are dominated by classical staples (corn, soy beans, etc.). It follows that transatlantic trade does not occur primarily because of technological differences across sectors (Ricardian comparative advantage) or endowment differences that give one country a competitive edge in specific industries (Heckscher-Ohlin). Instead, trade is driven by product differentiation and economies of scale, as described by Krugman (1980)

¹² OECD-WTO Trade in Value Added Statistics, http://stats.oecd.org/Index.aspx?DataSetCode=TIVA_OECD_WTO.

in his Nobel Prize winning work. Those circumstances have implications, amongst other things, for the nature of the gains from trade and for the effect of trade on economic inequality.

A second important factor in EU-US trade is that a large share of trade takes place within multinational firms. This pattern is particularly strong for US exports. For example, about 80 percent of US exports in the automotive industry take place within firms such as General Motors or Ford. That figure is 40 percent for EU exports. In the chemical industry the share of intra-firm trade is about 75 percent for US exports and 55 percent for EU exports. The importance of trade within firms reflects the large mutual stock of foreign direct investment (FDI): many EU firms produce in the United States and many US firms produce in the United States. Most FDI between the United States and the EU is horizontal, since production cost differences are relatively low compared to other destinations of FDI. The large FDI stocks therefore reflect high trade costs between the two regions: firms wish to avoid tariffs or exchange rate risk (e.g. in the automotive industry), or costly transportation (such as in the chemical industry).

What can we learn from existing preferential trade agreements?

Q6: Do PTAs really increase their members' trade?

A: Yes. Big time.

There is a large body of empirical literature that investigates the effects of PTAs on trade flows.¹³ One of the big challenges in the empirical quantification of the effects of PTAs on trade flows lies in the fact that only countries expecting to gain a lot from an agreement are likely to sign one. For example, theoretical work suggests that country size and distance between countries are important explanatory factors for PTA membership (see the seminal paper by Baier and Bergstrand 2004). Assuming PTA membership to be exogenous (i.e., randomly assigned to countries) will therefore lead to biased estimates of the trade effects of PTAs. But will this bias be severe?

Some recent papers have given serious consideration to the endogeneity of PTAs. Trefler (1993), for in-

¹³ For early contributions, see Tinbergen (1962); Glejser (1968); and Aitken (1973). For some more recent examples, see Freund (2000); Soloaga and Winters (2001); and Carrère (2006), and for a survey, Greenaway and Milner (2002).

stance, investigates the effect of non-tariff barriers on US multinational imports. Taking into account the simultaneity of imports and non-tariff barriers, he concludes that NTBs decrease imports by 24 percent, a ten-fold increase compared to estimates taking non-tariff barriers to be exogenous. Baier and Bergstrand (2002) use treatment estimators to evaluate the effect of FTAs on trade flows and find that, on average, when acknowledging the endogeneity of an FTA, the agreement tends to increase the value of trade by 92 percent.¹⁴ Baier and Bergstrand (2007) use panel estimators to control for the potential endogeneity of PTAs and show that taking into account the potential endogeneity of PTAs substantially magnifies the estimated effects of trade flows. The point estimates imply that an FTA will, on average, increase two member countries' trade about 100 percent after 10 years, which is seven times the 14 percent increase effect estimated when neglecting the endogeneity problem. Baier and Bergstrand (2009) confirm these findings using a matching estimator. Magee (2003) finds effects that are even higher, ranging up to 800 percent.

Q7: How do PTAs increase trade?

A: Through lower non-tariff trade barriers.

Given these empirical findings, one may wonder where these big effects come from. As we have seen above, the effects cannot be explained by tariff elimination, as tariff levels are already very low. The more promising answer is that PTAs must be successful in bringing non-tariff trade barriers down. However, available measures of non-tariff measures are very incomplete and do not capture all products.¹⁵ Hence, the existing quantitative proxies of non-tariff barriers are also not able to explain the huge potential effects of PTAs. Potentially, improved estimates of NTBs may explain the huge effects. Indeed, one could interpret the large PTA estimates as evidence for substantial non-tariff barriers to trade. Felbermayr *et al.* (2013) used such an approach when evaluating TTIP, taking the observed PTAs up to 2005 and netting out the tariff reduction effects of the PTAs. Importantly, such an approach also accounts for public and private investment initiatives that also cut trade costs by, for example, improving transport infrastructure, deepening

¹⁴ They also report results for specific agreements. They report average trade increases for member countries of The Andean Pact of 326 percent, of 395 percent for member countries of the Central American Common Market (CACM), and of 222 percent for membership of MERCOSUR. NAFTA is estimated to increase trade by 86 percent (on average) among Canada, Mexico, and the United States.

¹⁵ See Anderson and van Wincoop (2004) for an excellent discussion.

currency markets, extending business networks, or lowering language barriers.

Yet another explanation for the large effects could be the complementarity between goods trade liberalization and other liberalizations, such as liberalization of investment and services trade. Egger, Larch and Staub (2012) are one example of authors who study the interrelationship of goods and services trade and trade agreements. One of their main findings is that changes in goods preferences *via* a goods trade agreement not only affect goods trade, but also services trade. The employed model leads to lower gains in goods and service trade agreements for the average economy than a one-sector goods-only model. If liberalization takes place in one sector only, focusing on a single sector economy may bias calculated trade and welfare effects upward by attributing activity (GDP and employment) in the non-liberalized sector to the liberalized sector. Hence, accounting for the interaction of goods and services trade may explain part of the large observed trade agreement effects.

Q8: Do PTAs divert trade? A: They typically do.

Panagariya (2000) nicely motivates his discussion of trade diversion and creation by stating: “any discussion of the welfare effects of PTAs must inevitably begin with the influential concepts of trade creation and diversion”. Are these trade diversion effects substantial?¹⁶ While Clausing (2001) finds little evidence for trade diversion for the Canada – United States Free Trade Agreement (CUSFTA),¹⁷ Trefler (2004) and Romalis (2007) do find evidence for trade diversion for CUSFTA and NAFTA, respectively. Whereas Trefler (2004) finds trade creation does still outweigh trade diversion to ensure that there are welfare gains from NAFTA in Canada, Romalis (2007, 417) concludes that “the more detailed data used in this paper reveals much more substantial trade diversion than Trefler, so much so that there appear to be essentially no welfare gains for any NAFTA member”. However, Romalis (2007) does not only find no welfare gains for the NAFTA members, but also finds evidence for negative third-country effects for non-NAFTA members. His analysis of trade diversion reveals that a 1 percent drop in intra-North American

tariffs leads to about a 2 percent fall in exports from other countries relative to the EU.

Chang and Winters (2001) analyses the trade diversion effects of non-MERCOSUR exports to Brazil after the inception of MERCOSUR. They find strong negative terms-of-trade effects for non-member countries and conclude their analysis with the statement: “our results give empirical backing to the well-known theoretical argument that even if external tariffs are unchanged by integration, non-member countries are likely to be hurt by regional integration” (Chang and Winters 2001, 901).

Q9: Is regulatory cooperation within a PTA trade diverting? A: Most likely, yes.

Regulatory cooperation can proceed in two main ways: by creating a joint standard, or by mutually recognising standards. Establishing joint standards is hard, so most progress has been made by negotiating mutual recognition agreements (MRAs). The problem with MRAs is that they do not create a single world standard to which third countries can adhere. Instead, these countries would have to abide by the national standards in the PTA countries, since the MRA does not extend to them. For this reason, MRAs are potentially equally as trade diverting as tariff reductions; joint standards, in contrast, could actually spur third country trade. What is the empirical evidence on this question?¹⁸

Chen and Mattoo (2008) use panel data to analyse the effects of PTAs that harmonise standards and find that while they increase trade between participating countries, the effects on outsiders are less clearly cut. They depend on the ability of the outside countries to meet standards. As the standards are more likely to be met by developed than by developing countries, Chen and Mattoo (2008) conclude that developing countries in particular will be negatively affected by trade diversion from an MRA where they are not a member. Additionally, the stringency of the rules of origin plays a crucial role for the effects on outsiders. If the rules of origin are very strict, then gains from the MRA are restricted to MRA member countries, whereas if they are not, outside countries also potentially stand to gain from the harmonisation of standards of other countries. Baller (2007) uses a gravity model accounting for heterogeneous

¹⁶ Panagariya (1999) is a nice survey discussing the likely effects of PTAs, including potential trade diversion effects.

¹⁷ Note that Clausing (2001) uses prices rather than quantities in the welfare analysis, which is problematic (see Feenstra 2004). Additionally, the results from Clausing (2001) may be driven by the rapid growth of imports that would have occurred if CUSFTA had not have been in place – see Romalis (2007).

¹⁸ For a detailed discussion, see the World Trade Report (2012) prepared by the WTO.

firms to investigate the effects of MRAs on developed and developing countries. She distinguishes between MRAs for which she finds positive effects on the extensive (entering new markets) and intensive (volume of trade) margin, and harmonisation of standards or technical regulations. For the latter she finds ambiguous effects. Specifically, in line with Chen and Mattoo (2008), she finds that developing countries' trade is affected by regional harmonisation, whereas trade with developed countries is increased.

Fink and Jansen (2009) focus on services trade and argue that the scope for MRAs is likely to be limited. The reason is that with regard to services, MRAs are mainly relevant for mode 4 movements.¹⁹ However, mode 4 trade is hardly affected by trade liberalization, making large gains from MRAs unlikely. Furthermore, MRAs for services only apply to a small number of professional services sectors, like accounting, architecture and engineering. In addition, most of the MRAs do not implement the automatic recognition of qualifications (OECD 2003), limiting their effect even further. There is also a recent paper by Cadot *et al.* (2013) that highlights trade diversion effects for non-tariff measures. The authors show that North-South PTAs hurt trade between developing countries. If the harmonisation is based on regional standards, exports of developing countries to developed countries are also predicted to be negatively affected.

How will TTIP affect world trade patterns?

Q10: By how much can TTIP potentially lower trade costs? A: By as much as existing agreements.

Having discussed empirical evidence on existing PTAs, it is very likely that we would also expect TTIP to lead to decreases in trade costs between the United States and the EU. However, TTIP has not been negotiated yet, so nobody knows exactly what the negotiating parties will agree upon. For a quantitative assessment of TTIP's potential effects, there are two options (i) make assumptions on how TTIP will change trade costs, or (ii) take other existing PTAs to infer an average effect of PTAs that we can use as our best estimate for the effects of TTIP.

¹⁹ Mode 4 movements are services supplied by nationals of one country in the territory of another. This includes independent services suppliers and employees of the services supplier of another country, like, for example, a doctor going from his home country to the patients' country to treat him there.

The second approach is the one undertaken by Felbermayr *et al.* (2013). The authors highlight that the partial (non-general equilibrium effects) of PTAs based on this approach are around 200 percent on trade flows when taking into account selection into PTAs as discussed previously.²⁰ This effect is well in line with the results of previous studies of the effects of PTAs taking endogeneity seriously. Depending on the choice of trade elasticities, such a big effect means that PTAs must have been able to reduce ad valorem trade costs by something between 15 and 30 percent.²¹ While it is unclear if the US-EU agreement can achieve as much as existing treaties, we cannot assess this any more accurately until the negotiations have been concluded.

Q11: How does TTIP affect transatlantic trade? A: It could almost double it.

In Felbermayr *et al.* (2013), we use a very standard general equilibrium trade model to simulate the effects resulting from lowering trade costs between the United States and EU countries by exactly the average reduction observed in the econometric estimates for existing PTAs. In such a scenario, GDPs of all 126 included countries adjust, and so do wages, prices, and the so called multilateral resistance indices. These variables jointly determine how bilateral trade patterns adjust. Table 2 shows effects for selected country pairs.²² We interpret the changes as long-run effects

²⁰ When assuming that PTAs are exogenous, the partial effects are around 70 percent.

²¹ For example, a trade elasticity of 8 (a commonly made choice) implies a trade cost reduction of approximately $200\% / (8-1) = 28.5\%$, which goes far beyond the measured trade policy costs of on average 8 percent reported in Figure 2.

²² More detailed information is presented in Felbermayr *et al.* (2013); and Felbermayr, Heid and Lehwald (2013).

Table 2

Long-run changes in exports, selected country pairs

Exporter	Importer	% Change
Germany	USA	93,54
Greece	USA	90,45
Italy	USA	91,75
Spain	USA	80,16
Germany	UK	- 40,91
Germany	France	- 23,34
Germany	Italy	- 29,45
Germany	Japan	4,81
Germany	China	- 12,68
USA	Mexico	- 15,99
USA	Canada	- 9,32
USA	China	- 33,35
Mexico	Canada	83,53

Source: Felbermayr *et al.* (2013).

since the empirical estimates they are based on refer to long-run estimates as well (i.e. assuming that all PTA-related trade cost reduction effects have fully played out). The table shows that trade (between EU countries and the United States) goes up by 80 to 90 percent compared to a scenario whereby no TTIP was signed.

Q12: How does TTIP affect intra-EU trade?

A: It reduces its relative importance.

In the experiment, trade between EU member states falls by 20 percent to 40 percent. A comprehensive agreement between the EU and the United States dilutes the trade diversion effects that have driven European trade integration since the creation of the EU customs union. Without TTIP producers from Germany are advantaged over producers from the United States when selling to France, as trade barriers with France are lower. TTIP undoes the relative advantage of German firms in France, since American competitors gain equal access to the French market. For similar reasons, trade between the United States and its NAFTA partners Canada and Mexico falls by 10 to 16 percent.

Q13: How does TTIP affect third countries' trade?

A: There are winners and losers.

Finally, both trade between EU members and the United States with China falls. However, there is a great deal of heterogeneity resulting from the general equilibrium effects taking place: for example, trade between Japan and Germany can be expected to go up. Trade between third parties also increases – in some cases quite substantially, as evidenced by the Canada-Mexico pairing. It is worth noting that the size of trade diversion effects is substantial, because both the EU and the United States are usually amongst the most important export destinations for most countries in the world. The EU and the United States each account for about a quarter of global demand.

Q14: What explains heterogeneity in trade effects?

A: Gravity.

The gravity equation, the workhorse model to explain bilateral trade, relates bilateral trade flows to GDPs of countries, bilateral distance, as well as multilateral trade barriers (see Feenstra (2004) for a textbook treatment). Hence, the effect of changes in trade costs induced by PTAs is also shaped by the GDPs of coun-

tries and their geography. Most importantly, trade barriers lead to larger reductions in trade between large countries than between small countries (Implication 1 of Anderson and van Wincoop 2003). Applied to TTIP, this means that large trade gains are expected between large countries, as seen in the case of the United States as a trading partner of the large EU area, for example. Additionally, more remote countries with low levels of trade are less affected, both by positive effects when part of TTIP, and by negative trade diversion effects when not a member of TTIP. This can most clearly be seen by the largest trade diversion effects for countries that are geographically close to TTIP members, but not themselves members of TTIP.

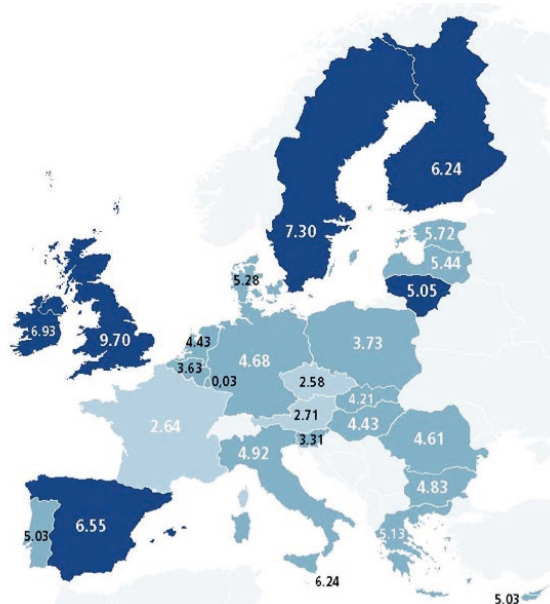
Can TTIP increase welfare and create jobs, and for whom?

Q15: How does TTIP affect developed countries' welfare? A: EU and the United States win. Others lose.

Felbermayr *et al.* (2013) present a long-term welfare analysis for 126 countries. On average, they find welfare effects (expressed as equivalent variations) of 3.3 percent in the long-run from a far reaching liberalization that not only reduces tariffs, but also abandons NTBs (measured by past average effects of PTAs). While the gains in real GDP per capita (their welfare measure) is calculated to be 4.75 in Germany and 2.6 percent in France, the United States and Britain are expected to gain substantially more (13.4 percent and 9.7 percent, respectively). Assuming the full trade cost reducing effects of TTIP to ramp up over 15 years, the yearly growth impulses from TTIP can be approximated by dividing the long-run effects by 15.

As discussed before, these gains are very likely to be accompanied by welfare losses due to trade diversion from trading partners of TTIP countries that are not themselves TTIP members. Specifically, we predict substantial welfare losses for Canada (– 9.5 percent), Australia (– 7.4 percent), Mexico (– 7.2 percent), and Japan (– 5.9 percent) as important trading partners of the United States and the EU. If the EU and the United States sign trade agreements with these countries, these negative effects are likely to be much attenuated (with the exception of Mexico, with which both the EU and the United States already have deals.) The most heavily influenced trading partners of the EU outside TTIP are Switzerland (– 3.75 percent) and

Figure 2
Long-term welfare effects of TTIP in the EU



Source: Felbermayr, Heid and Lehwald (2013).

Turkey (– 3.7 percent).²³ Amongst the BRICS countries, South Africa faces the largest losses (– 3.2 percent), Brazil, Russia and India stand to lose about 2 percent, and China remains relatively unaffected (– 0.4 percent).

Q16: How does TTIP affect the developing world?

A: A few win, more lose.

A couple of papers that highlight the potential negative effects of PTAs between developed countries for outside developing countries are cited above. This is not only the case if the PTA reduces tariffs, but also if it reduces NTBs. Out of the 126 countries under investigation in the study of Felbermayr *et al.* (2013) many countries are developing countries. Looking at their results confirms the findings of previous empirical studies of substantial negative effects for developing countries.

Taking the definition of the World Bank for low-income countries, i.e. countries with a per capita gross national income

²³ Turkey is in the peculiar situation that it is in a customs union with the EU. Therefore, it has to implement all concessions that the EU makes to the United States in the process of concluding TTIP. The United States, in turn, is not required to extend concessions given to the EU to Turkey, as Turkey is not a member of the EU.

of 1,035 US dollars or less,²⁴ the study of Felbermayr *et al.* (2013) reports the effects for 18 out of 36 of these countries. On average, the authors predict negative welfare effects of – 1.6 percent. Details for these 18 countries are given in Figure 3. Only 2 out of the 18 countries have (modest) positive effects (Burundi and Comoros), while all other 16 countries experience negative welfare effects of up to 4 percent.

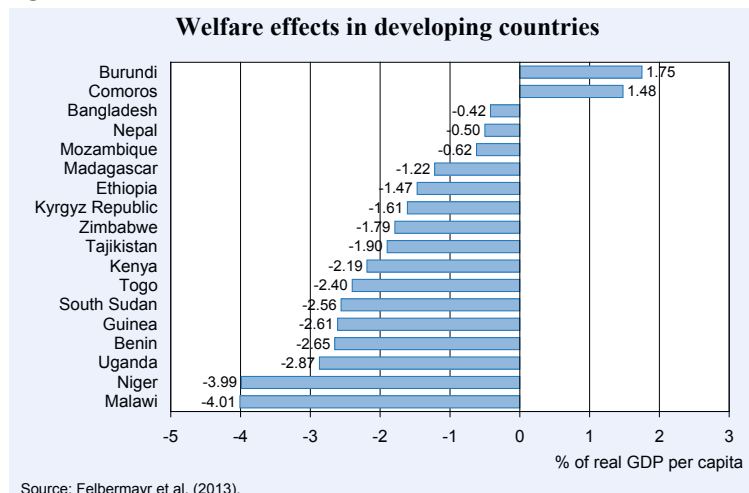
Q17: Why do the welfare effects differ so much?

A: Due to different initial trade cost structures.

Countries differ with respect to (i) how relevant trade is for final demand, (ii) how large barriers to international trade are on average, and (iii) how large those barriers are relative to the United States. Firstly, large and rich countries have large home markets; they rely little on foreign trade. So, a reduction in the trade costs of foreign trade is of limited help to them. The opposite is true for small countries as shown by the effects on the Baltic countries. Hence, all else being equal, small countries stand to benefit more from trade cost reduction than large ones. Secondly, countries that have high trade costs with the whole world are relatively closed and feature relatively high price levels. When trade costs with one specific trade partner go down, trade with this partner is spurred on significantly, and welfare can increase substantially. Thirdly, if trade costs with the United States are already low (due to the existence of a common language, for example), further trade cost reductions are applied on a large basis and this boosts the welfare effects as demonstrated by Britain, for example.

²⁴ See http://data.worldbank.org/about/country-classifications/country-and-lending-groups#Low_income.

Figure 3



Q18: Why are the welfare effects potentially large?

A: Because TTIP would be big and deep.

The United States and the EU together account for about 45 percent of world GDP (measured in US dollars). A comprehensive reduction in trade costs between these regions could therefore result in massive trade and welfare effects. Existing trade flows would be freed from costly barriers, resulting in resource savings in the EU and the United States. Tariff reform, by contrast, does not primarily lead to resource savings. Tariffs are taxes, so abolishing them implies a loss of government income (tariff income from trade with the United States amounts to about 6 billion euros for the EU in 2012). In the tariff scenario, welfare gains are 'triangular' (the famous dead weight loss), while in a trade cost scenario, they are rectangular.

Moreover, it is important to understand that the simulated trade creation in the United States and Europe is so strong, precisely because of the existence of diversion effects. This means that the negative welfare effects obtained in some countries due to the dominance of trade diversion effects contribute to the positive welfare gains elsewhere. If one assumes that – contrary to what the data suggest – regulatory reform in PTAs lowers trade costs around the world, welfare losses in third countries would be smaller, but so would be the gains in the PTA countries.

Finally, TTIP occurs in a setup in which many other PTAs already exist. The most relevant of these PTAs are the EU customs union and NAFTA. These agreements have presumably led to trade creation between member states, and to trade diversion with third countries. The fact that TTIP undoes some of the trade diversion relative to the EU or the United States activates welfare gains for the EU or the United States.

Q19: Does TTIP create additional jobs?

A: In the long-run: yes. But few.

The public is understandably concerned by effects of international trade agreements on jobs. Trade economists, however, have long argued that dysfunctional labour market institutions, which create excessive unemployment, have to be tackled by labour market reforms. International trade plays a comparatively small role.

However, the literature on this topic nevertheless provides insights into a number of important aspects. Firstly, trade liberalization typically creates winners

and losers: some sectors and firms expand, while others shrink; and this requires lay-offs in some places and job creation in others. In this process of restructuring, trade can increase unemployment in the short-run. Dutt, Mitra and Ranjan (2009) provide evidence of this effect. In the context of the TTIP, however, restructuring will mostly take place within industries, not between them, since transatlantic trade is primarily of the intra-industry type. Clearly, intra-industry reallocation is less costly than inter-industry reallocation, as human capital can be transferred much more easily between firms in the same sector than between firms in different sectors.

Secondly, in the long run, trade offers the possibility of job gains. In labour markets that are prone to search frictions, lower trade costs lower the costs of internationally sourced inputs that are complements to labour and this can encourage firms to create more jobs. These mechanisms are described in Felbermayr, Prat and Schmerer (2011a) and their empirical relevance is tested in Felbermayr, Prat and Schmerer (2011b), as well as in Dutt, Mitra and Ranjan (2009). Heid and Larch (2012) construct a quantitative trade model that allows for search unemployment and which can be implemented in a similar fashion to the approaches that we have described above. Felbermayr, Heid and Lehwald (2013) have done so for TTIP and find that the effects on employment are positive. Robustness checks carried out in Felbermayr *et al.* (2013) and in Felbermayr, Lehwald, Schoof and Ronge (2013) confirm these findings.

However, these robustness checks also confirm that job gains are relatively modest. For example, in the most optimistic scenario, employment increases by about 200,000 jobs in Germany in the long-run (15 years). This amounts to less than 0.5 percent of current employment (about 42 million workers). As mentioned above, to cure labour market problems, one needs labour market reforms; trade policy is not the right tool to apply.

What are TTIP's effects on social cohesion, the environment and the world trade system?

Q20: Will TTIP increase inequality in the participating countries? A: Possibly; but small effects.

International trade typically creates losers and winners. In the presence of aggregate gains from trade, the

winners gain more than the losers lose, so that the losers can be potentially compensated. The famous Stolper-Samuelson formalizes this in frameworks, in which trade is due to differences in factor endowments. For example, if human capital rich countries (such as Germany or the United States) engage in trade with human capital poor countries (such as China), the real wage of high-skilled individuals in Germany or the United States should go up, while that of low-skilled individuals should fall. The mechanism is that the rich countries will start exporting more of the human-capital intensive produced goods and importing more of the other goods. This drives up the relative demand for human capital, and thereby its relative price. Should something similar be expected when the United States and the EU liberalize trade between them?

The answer is: not for the reasons suggested above. The endowment structure of EU countries and that of the United States is fairly similar. Therefore, trade cannot be explained based on endowment differences. Instead, countries trade because of product differentiation: they produce similar, but differentiated goods. Americans want to drive German cars, drink French wine, and wear Italian suits. Europeans want to drive SUVs produced in the United States, drink Californian wine, and wear American sports gear. The EU and the United States are exporters and importers at the same time in the same sectors; this is impossible in the classical comparative advantage explanations of trade. Thus, there is no basis for Stolper-Samuelson type effects in TTIP.

Nonetheless, trade is likely to affect economic inequality. The reason for this is that trade still creates winners and losers. In modern trade models (Melitz 2003), lower trade costs affect different firms in different ways: the most efficient firms can take advantage of improved access to the foreign market; while the least efficient ones suffer from increased competition at home. Empirical evidence shows very clearly that efficient firms and exporters pay higher wages than inefficient domestic firms. So, when employment grows in efficient firms, but falls in less efficient ones, lower trade costs increase economic inequality if trade costs are initially high, but decrease them if trade costs are initially low. This has been established in theoretical work by Helpman, Itskhoki and Redding (2011); the relevance of the mechanism for Germany has been shown by Baumgarten (2013), but its empirical impor-

tance is rather minor. Therefore the effects of TTIP on economic inequality are likely to be modest.

Q21: Will TTIP harm or benefit the environment?

A: Do not expect much.

There is a rich body of theoretical and empirical literature on the effects of trade on the environment. The most important paper is by Antweiler *et al.* (2001); Frankel (2008) presents a survey on theoretical and empirical research. Theoretical arguments suggest that trade can have positive or negative effects on environmental quality. On the one hand, when trade leads to higher production, and production comes with pollution, there will be more environmental damage. Moreover, as international trade requires the pollution-intensive transport of goods, more trade directly implies higher carbon emissions. On the other hand, if trade makes countries richer, they are more willing to engage in costly pollution avoidance. If environmental regulation differs across countries, trade allows the EU or the United States to specialise in relatively clean goods while importing dirty goods. This pollution haven argument may bring down pollution locally, but increase it globally. Moreover, the well-known 'race to the bottom' hypothesis suggests that lower trade costs incentivise countries to adopt less stringent environmental regulation out of fear of losing international competitiveness, and to adopt less stringent environmental regulations than less open countries. The empirical literature to date on this topic is not conclusive. Overall, trade does not seem to have a negative effect on the quality of the environment at the country level.

Will TTIP prove any different? TTIP may foster the reallocation of polluting energy intensive industries from the EU to the United States, as energy prices are lower in the United States. But this does not necessarily imply higher global emissions, since the emission intensity of production in the United States is not so much different than in the EU. TTIP may also make it easier to coordinate on climate policy, making the emergence of a common market for CO₂ emission permits more likely.

Q22: What effects will TTIP have on the WTO?

A: That depends on many details.

TTIP is not the only big international agreement that is currently being negotiated. The United States is also in talks with 12 Pacific Rim countries about a Transpacific

Partnership Agreement (TPP).²⁵ At the same time, the ten members of the ASEAN²⁶ are negotiating a comprehensive economic partnership (RECEP) treaty with countries (such as China, India or Australia) that already have PTAs with ASEAN. The emergence of such big bilateral and plurilateral agreements is very likely to have an important effect on the multilateral world trade system and the WTO, since a decreasing share of world trade will be happening outside of the MFN discipline.

By the same token, it is possible that new issues arising in international trade (on labour-related and environmental questions, for instance) will be dealt with not by the WTO (through future rounds of multilateral talks, for instance), but within the large plurilateral or bilateral agreements. So, without much doubt, the role of the WTO, both as a legislator and as an arbiter, will become less important. However, TTIP is part of a more general trend, and cannot be held solely responsible for the WTO's loss of relevance.

Moreover, the trend towards large PTAs is itself a reaction to the fact that, due to the depth of the WTO liberalization process, it has been stuck since 1994, while the number of WTO members has gone up, mostly thanks to the addition of emerging economies.²⁷ The failure to conclude the so-called Doha Development Round may be at least partly due to the fact that the WTO membership has become more diverse, both in terms of the current and prospective levels of economic development and in terms of political orientation. While the GATT/WTO system has proven very successful in bringing down trade barriers 'at the border', it seems much less suited to tackling regulatory issues 'behind the border'. Clearly, the mutual recognition of standards requires a large amount of trust in the institutional quality of partner countries, which may not be deep enough in many bilateral relationships. Moreover, it is unlikely that joint standards for all WTO members could be optimal. For some countries such standards will be too stringent, and for others, too lax, given differences in development status. Scepticism as to the capacity and the desirability of the WTO to deliver significant progress in the area of NTBs is therefore justified.

²⁵ The TPP negotiations involve the following countries: Australia, Brunei, Chile, Canada, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States and Vietnam.

²⁶ The Association of South-East Asian Nations (ASEAN) was created in 1967 by Malaysia, the Philippines, Singapore and Thailand and has since been expanded to include Brunei, Burma, Cambodia, Laos and Vietnam.

²⁷ The most prominent new members are China (2001), Taiwan (2002), Saudi Arabia (2005), Ukraine (2008), Russia (2012), Vietnam (2007).

All this certainly does not imply that the WTO will become irrelevant, both as the world trade policeman and as an engine for further multilateral trade liberalization. Firstly, economic theory suggests very clearly that trade wars (by non-cooperative setting of tariffs, or standards) yield bigger negative welfare effects when they take place between large entities than between small ones – see Felbermayr, Jung and Larch (2013) for a recent contribution. Thus, the aggregation of countries into larger entities makes the role of the WTO as an arbiter even more important.²⁸ Secondly, as we have seen above, large PTAs have substantial trade diverting effects. Therefore, the emergence of large trade blocs shapes the incentives of all countries to make concessions in the multilateral process. This concerns countries that presently remain outside of regional megadeals (such as Brazil or India), but also the EU or the United States, which are affected by other regional agreements (such as RCEP). Historical evidence tends to suggest that bilateralism has not hindered progress on the multilateral stage, but may have been complementary to it – see Baldwin and Jaimovich (2012). A recent example is provided by the successful negotiation of the so-called Bali package in December 2013, in which India made crucial concessions concerning its food subsidy programs.

Conclusions: an ivory tower wish list for TTIP negotiators

Based on the analysis presented above, and given the process of on-going negotiations, one may formulate a number of wishes, which mostly relate to avoiding an 'economic NATO' and to creating an open platform for further multilateral cooperation.

Firstly, it is likely that TTIP will lead to trade diversion. This problem is most pronounced for countries with which both EU and the United States already have or are negotiating agreements (e.g. with Canada, Mexico, Japan and so on). It would be highly desirable for the bilateral talks between the United States and the EU to already – without directly involving them – prepare a path for those countries to sign association agreements with the TTIP signatories. For example, this may relate to the handling of rules of origin (cumulation of preferences).

²⁸ This argument is most relevant for customs unions, and neither TTIP, TPP, nor RCEP are designed as such. However, increased regulatory cooperation (e.g. through common standards) may *de facto* establish common external policies relative to third countries.

Secondly, mutual recognition of standards generates much stronger trade diverting effects than the harmonisation of standards. However, in principle, it is possible to conceive a cumulation process for standards: if a third country's product is assessed as conforming to either a US or an EU standard, and TTIP includes a provision on mutual recognition for this product, then that product should be declared as conforming to rules in both the EU and the United States without further assessment.

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Appendix

Why do different studies on TTIP arrive at different conclusions?

The EU Commission has commissioned a study to CEPR (Francois *et al.* 2013). The Ifo study discussed in this article and the CEPR study come to some similar conclusions, the most important of which is that TTIP is likely to have substantial positive welfare and employment effects in Europe and the United States. There are, however, a number of important differences which derive from (i) differences in the scenario definition, and (ii) differences in methodology. This is not the right place to offer a comprehensive comparison of the studies. In the following, we briefly discuss some of the most relevant differences.

1. The Ifo study adopts a *top-down approach* on trade costs. In the initial equilibrium, bilateral trade costs are estimated econometrically such that the model replicates the observed trade structure in expectations. The demand structure, in turn, is parameterized identically across all country pairs. The CEPR study, in contrast, takes a narrower perspective on trade costs. These are tariffs (as measured in the data), NTBs (estimated outside the model), and transport services. The resulting trade cost structure cannot replicate the observed structure of world trade, so that consumer preferences need to be adjusted. This difference is relevant, because the trade costs are much higher in the Ifo study, and the scope for trade cost reductions is therefore much bigger and potential welfare gains are larger.
2. The Ifo study assumes that TTIP changes the estimated trade cost structure for EU-US trade in exactly the same way as other PTAs have changed the trade costs for other country pairs. The trade cost reduction derives from tariff elimination and lower non-tariff barriers, but takes into account all other public and private, direct and indirect trade cost reducing effects of PTAs. The CEPR study eliminates tariffs and lowers the estimated NTBs. Other types of trade costs are not modelled. Moreover, while the Ifo study assumes that NTB reform will benefit only *bilateral* trade between the EU and the United States, the CEPR study assumes that the EU-US agreement will also lower trade costs multilaterally through spill-overs. For this reason, the Ifo study predicts major trade diversion effects, and, based on this, larger welfare effects (positive in EU and the United States, mostly negative elsewhere).

3. The Ifo study assumes trade costs to be *resource consuming*. That is, satisfying foreign standards requires costly investment. The CEPR study assumes that NTBs create rents (i.e. income), so that their economic role resembles that of tariffs and has a strong redistributive component (e.g. rents flow from consumers to producers). This assumption greatly reduces the welfare potential of trade reform.

4. The two studies differ with respect to *aggregation*. The Ifo study models 126 separate countries, but adopts a macroeconomic single-sector perspective. The CEPR study works with 10 regions, but adopts a multi-industry perspective. A more disaggregate geographical perspective allows more precise modelling of trade costs. For example, the Ifo study sees the EU as a collection of 28 countries, whose trade is still affected by trade costs. Disregarding within EU trade frictions leads to an overestimation of the EU size of the EU single market, thereby reducing the potential gains from bilateral integration with the United States. On the other hand, the rich industry structure of the CEPR model captures that the EU's and the US' trade with third parties may happen in different industries than trade between the EU and the United States. This reduces the scope for trade diversion and adverse welfare effects in third countries.