Transatlantic Trade and Investment Partnership (TTIP)

Who benefits from a free trade deal?

Part 1: Macroeconomic Effects

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Global Economic Dynamics

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1. Introduction

This first part of the study is devoted to the macroeconomic effects of a Transatlantic Trade and Investment Partnership (TTIP) between the European Union and the USA. For this purpose, empirical models of the world economy were used to clarify two essential scenarios: (i) the elimination of tariffs in trade between the EU and the USA, and (ii) a liberalization that goes far beyond just eliminating tariffs at a scale that can be measured for comparable and actually existing free-trade agreements. Our approach differs from the traditional way of dealing with subject in that the comprehensive scenario (ii) is defined using measurable experience with similar agreements, not guesses about what is considered politically possible. Our results thus show potentials against which the success of the agreement can be measured ex post facto.

The approach used in this first part of the study is macro-economic in nature, meaning that the analysis uses aggregated data by country. It looks at the changes in world-wide trade flows, real per capita income and unemployment. In so doing, it identifies countries that would gain from TTIP and those that would lose. The second part of the study is microeconomic in nature and examines the disaggregated effects in detail for Germany. For example, estimates of the TTIP effect on individual regions, industries, educational levels and occupational groups are presented.

After a discussion of the methods used and a more detailed description of the scenarios, we examine the TTIP effects on the structure of world trade. We answer the question “Where does trade grow, where does it shrink and by how much?” We then turn our attention to TTIP effects on real per capita income, i.e., per capita Gross Domestic Product (GDP), which enables global welfare effects to be quantified. Finally, we report on the results of a model simulation that allows us to quantify the effects on unemployment rates.

2. Comments on the study method

To obtain reliable numbers for the GDP effect of a transatlantic free-trade agreement on all EU member states essentially requires (a) an appropriate theoretical model framework and (b) reasonable scenarios. For this purpose, we use a computable general equilibrium model that was developed at the ifo Institut to analyze the free-trade agreement.[1] The fundamental innovation of the model is that it combines econometric and simulation-based methods. This enables us to ensure that the trade costs, whose reduction are the ultimate concern of every free-trade agreement, are properly estimated and consistently applied when calculating measurements of welfare. To that end, observed real-world trade flows and empirical proxies for the factors that determine trade costs are used. The strength of the model lies in the fact that its basic scenario is exactly reproduced: This applies essentially to bilateral trade flows between a large number of countries, real income and unemployment rates. In the simulation of the liberalization scenarios, specific elements of the estimated costs of trade are changed and the effects on trade flows, real income and unemployment are then calculated.

The approach differs from commercially available CGE (computable general equilibrium) models frequently used to estimate the effects of trade liberalization. In fact, most existing TTIP studies also use CGE methods.[2] In such studies, trade costs are typically not estimated consistently from model to model. Other modeling differences consist in the country breakdown and the treatment of unemployment. In our approach, we consider all countries for which bilateral trade data is available. There is no regional aggregation or it is only performed afterwards, to better clarify the results. In many model variants, we also assume frictional unemployment, which arises from the explicit modeling of the job search process by employees and employers. This modeling approach was recognized in 2010 with the Nobel Prize and offers the advantage that it reflects the most important characteristics of national labor market institutions quite well.

On this basis, the initial equilibrium for 126 countries has been calibrated in such a way that the model reproduces the bilateral trade flows observed in 2007 (before the economic crisis) between country pairs (our database includes 15,750 such pairs) and all GDP statistics for that year.[3] The model is also exactly "calibrated" for the reference year, and it includes not only the 27 EU member countries but virtually all economically relevant countries in the world.

1 This model is explained in detail in Felbermayr et al. (2013).

2 This applies to the CGE studies on TTIP for Sweden (Kommerskollegium, 2013), Austria (Francois and Pindyuk, 2013), France (Fontagne and Gourdon, 2013), and for the study by the European Commission (Francois et al., 2013). These studies were frequently criticized in the past because the ex ante forecasts regarding trade and welfare effects typically turned out to be substantially too low in the ex post evaluation. Hosny (2013) describes the design of the regular CGE models; Ackermann offers criticism (2006).

3 Unfortunately the modeling of frictional unemployment is only possible for those countries that have comparable data on unemployment rates and for regulating labor markets; see also section 6.

A further advantage of this structural economic method, i.e., one that assumes an explicit economic theory, is that unlike the usual econometric methods, which don't bother to have a grounded theoretical modeling (called reduced form estimates), it offers the possibility of analyzing the consequences of a contrafactual implementation, such as a TTIP agreement, before one actually takes place. This is made possible by the additional structure of the underlying economic model. Reduced form estimation generally allows retroactive analysis, i.e., after implementation, so that economic measures can only be designed afterwards, in order to be able to react to specific partly negative accompanying effects that have already occurred. Finally, structural modeling allows TTIP analysis without having to use a central assumption of almost all reduced form estimates: that the general equilibrium effects can be considered ignorable.[4] That is why for agreements like TTIP, whose real goal is to change the general equilibrium (change the trade flows between all participating partners, raising welfare in the participating countries), it is essential to use structural methods.

Understanding how to model bilateral trade costs is very important for the discussion that follows in this study. The modern literature makes a very clear and important point: Tariffs and other trade-policy barriers, in comparison to natural frictions like the sheer geographical distance between two trading parties, are of relatively small importance.[5] And the quantitative role of tariff barriers in transatlantic trade is really negligible, compared to other trade costs.[6] An exact measurement of existing trade costs is however of great importance in calculating the effects of liberalization scenarios: Felbermayr et al. (2013) show that the welfare gains from trade liberalization are disproportionately higher if the trade costs are already low in the initial equilibrium.

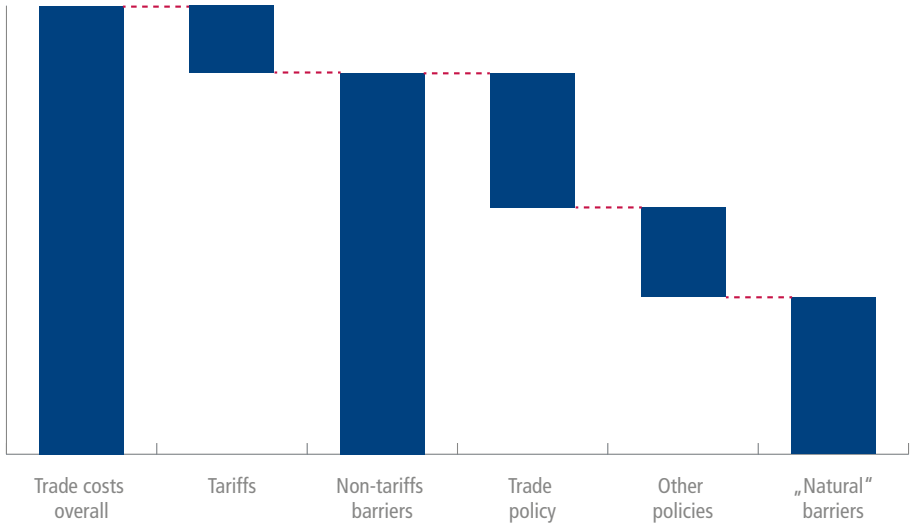
Figure 1 shows schematically how the trade costs between two countries can be allocated to individual categories. First there are the tariffs which, as already mentioned, play only a small role relative to the other trade barriers. The remaining trade costs are then classified under the heading "non-tariff" trade barriers. These include a large number of potentially very varied elements. First there are protectionist trade policy measures, which make access to domestic markets more difficult for foreign suppliers. It includes such classic instruments as import quotas, but also administrative and regulatory hurdles that discriminate against foreign firms. It can also include the necessity to obtain approval for products separately for both markets, done frequently by applying different approval conditions and procedures, different standards to environmental, health or consumer protection policy; different industry standards, packaging regulations and information requirements; regulating access to public procurement or economic policy development programs, such as government export credit insurance; and so on.

4 This assumption is called SUTVA (Stable Unit Treatment Assumption) in economic literature. It is a component of the established reduced form methods, which are applied to policy evaluation as standards.

5 See Baier and Bergstrand (2001).

6 See the studies mentioned in note 2 and Felbermayr et al. (2013).

Figure 1: Modeling trade costs



Source: Schematic representation by ifo Institut

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Besides non-tariff barriers based on trade policy, there are additional trade costs that, while politically induced, have nothing to do with trade policy in the strict sense. For example, instruments of infrastructure, education or labor market policy or industrial policy measures can be used to change trade costs. Some examples are the expansion of transportation options or the prominence of foreign languages in school curricula.

The last cost category in Figure 2 describes the so-called “natural” barriers. These are due to geographic distance, lack (or presence) of a common language, shared colonial past, common legal traditions, shared currency, etc.

Empirically, all trade costs between 126 countries are estimated in such a way that a trade flow equation (gravitation equation) is structurally derived from the simulation model that is used later. By determining trade elasticities, the matrix of bilateral trade costs (126 countries times 126 countries) can be estimated. Together with multilateral trade cost variables and gross domestic production of the countries, this matrix replicates the expectation value of the trade actually observed between all countries..

A detailed representation of the empirical model would overwhelm this study. Instead let us simply mention here that econometric estimation of the gravitation equation has made great progress in recent years, including the ground-breaking work of Anderson and van Wincoop (2003; 2004). They show that the trade costs within other pairs are important for making an accurate estimate of trade costs within a country pair. For example, how much geographical distance restrains trade between two countries also depends on the average distance of these two countries from their other trading partners. An additional problem, for which there are now good solution methods, is the presence of country pairs in which there is no trade. In the older literature, this was a problem. Egger et al. (2011) and Felbermayr et al. (2013) accordingly use non-linear methods for estimating the gravitation equation. These econometric procedures also underlie the estimates in this study. Finally, it is important to consider that trade costs are themselves dependent on trade volumes. This applies especially to the likelihood that a free-trade zone will be created between two specific countries. To obtain accurate estimates anyway, instrument variables have to be used.[7] The estimate then delivers two important results: first, a matrix of trade costs between all country pairs and second, the average effect of a free-trade zone on bilateral trade.

7 When trade costs are themselves driven by trade volumes, they cannot be treated as „exogenous“. This has implications for the econometric strategy; see, for example, the work of Egger et al. (2011).

3. TTIP-Scenarios

How does a free-trade agreement work in general, and a Transatlantic Trade and Investment Partnership (TTIP) in particular? Such agreements have a direct effect on trade costs between the two countries involved because they reduce the tariff barriers and certain non-tariff barriers to trade. Because the scale of the effects depends on the related macro-economic variables on which the amount of total trade costs are dependent, it is important to estimate the underlying trade cost matrix accurately. Indirect effects then result in the general equilibrium through feedback from prices and income. The central issue in this context can be stated this way: ow is the trade cost matrix changed by TTIP?

We consider two scenarios:

- Tariff scenario: In this case, we assume that the trade cost matrix described above is changed so that the trade costs between the USA and European countries are reduced by the extent of the tariffs now being applied in these bilateral relationships. Certain exceptions for special products may remain in force, but on average, a reduction to zero or virtually zero for all goods seems reasonable. The average tariff rate in transatlantic trade amounts to about 3.5%. That is how much trade costs between the EU and USA are reduced in the tariff scenario, while trade costs with other country pairs remain unaffected.

- Comprehensive liberalization scenario: In this case, we adapt the trade cost matrix so that the resulting simulated change in trade flows corresponds to the econometrically measured trade creation from observed free-trade agreements.

The tariff scenario requires no additional description. The comprehensive liberalization scenario, on the other hand, is substantially more complex. The reduction of the stated barriers releases real resources that can be used for useful activities, which result directly in welfare gains for the economies affected. That applies regardless of how the non-tariff barriers are ultimately reduced: by mutual recognition of different standards, by harmonization or by elimination of measures that are purely discriminatory in nature.

In comparison with the comprehensive liberalization scenario, the elimination of tariffs mainly means that the transfer of income from the consumer to the state is reversed. While tariffs, besides having this distribution effect, also cause a loss of welfare, the loss is very low when the tariffs are as low as they are in this case.[8]

8 See Felbermayr, Jung and Larch (2013).

In order to distinguish our approach from other studies, look at Figure 2. This shows through the blank areas in which trade categories the transatlantic agreement will lead to a reduction of trade costs.

First, the import tariffs applied between the EU and USA will disappear, just like in the tariff scenario. How can the change in non-tariff barriers be modeled? There is a problem with this in the scientific literature, because the definition and quantification of non-tariff barriers continues to be disputed.[9] One particular circumstance creates special difficulties: Even when it is possible to clearly distinguish non-tariff barriers from tariff barriers, it remains unclear which components of the non-tariff barriers can in fact be influenced by free-trade agreements. In this context, the literature speaks of "actionability" and seeks to identify those which, in the jungle of the most varied trade policy measures, can be changed in some circumstances. There is no systematic and generally recognized way of doing that. In a second step, there must be a way of clarifying the extent to which a free-trade agreement could lower the non-tariff barriers. There is no recognized method of estimation for this either; the studies use estimates by experts.

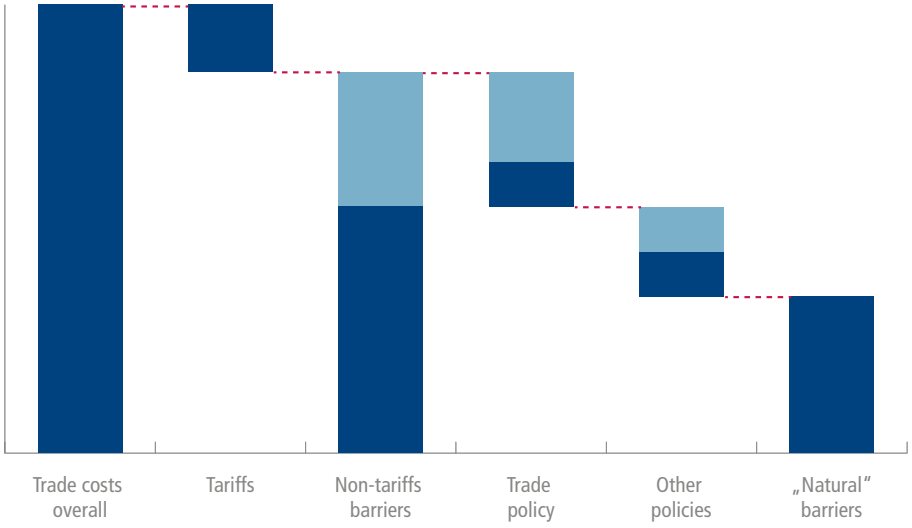
Our approach is different and avoids all speculation. From the gravitation equation that we are already using to quantify the trade cost matrix, we obtain an econometric estimate for the trade creation effects of existing free-trade agreements, such as the European Union or the North American Free-trade agreement (NAFTA). For all sectors and on average for all participating countries, the data show that the existing agreements increase trade in aggregate by about 80%.[10] This number reflects the status quo of 2007, but is stable over time. It reflects the fact that trade agreements are not reached between random pairs of countries or regions. Instead, the probability of having an agreement is higher if there is already a relatively large amount of trade between a country pair.[11] In addition, it considers third-country effects, as well as trade creation that results indirectly from a change in the GDPs of all countries.

9 See Anderson et al. (2008).

10 This value deviates from the one used in the industry analysis. That is due to the choice of a larger aggregation level for macroeconomic consideration (the aggregate value is not the same as the average of the industry values) and is based on a different econometric strategy (solving the "endogeneity problem").

11 It is possible that agreements are only signed if trade stimulation between two countries is expected for reasons that have nothing to do with trade policy (e.g., economic growth). In that case, a positive correlation would exist between the trade volume and the presence of an agreement, but it should not be interpreted as a causal relationship. In this context, it is termed a "spurious" correlation.

Figure 2: Change in trade costs from TTIP



Source: Schematic representation by ifo Institut

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The econometric estimate not only allows accurate parameterization of a base equilibrium for a large number of countries, it also offers a reasonable scenario. The trade creation of 80% by already existing deep agreements just mentioned in our view also represents a realistic order of magnitude for the aggregate effect of a transatlantic free-trade agreement. It can again be concluded that mere elimination of the remaining tariffs between the EU and the USA would never suffice to bring about trade creation of this magnitude. Instead, the figures show that the lion's share of trade creation must come from lowering non-tariff barriers.

This can be understood using a simple example: In the gravitation model, there is a partial analytic multiplier connection between the change in bilateral trade and the change in all variable trade costs, in which the multiplier is the elasticity of trade. If trade then increases by 80% and trade elasticity is 5,[12] then trade costs must have fallen by 80% : 5 = 16%. The tariffs outside the free-trade agreement amount to 3.5%. That means that the non-tariff barriers must have fallen by 16% − 3.5% = 12.5%.

While this example is naturally highly simplified, it nevertheless makes clear that our approach requires no determination of the "actionability" of barriers and no speculation on the scale of cost reductions. Instead, we assume that TTIP will have approximately the same effects on trade costs that other free-trade agreements have had. In that way, those effects that are especially difficult to quantify are also taken into account, reflected under the heading "other policies." Moreover, our scenario definition reflects the fact that the stimulation of trade by reducing trade policy

12 Anderson and van Wincoop (2004) provide an overview of estimates of trade elasticity.

barriers leads to secondary and tertiary effects from greater public and private investment in further improvements in trade infrastructure.

The average trade-creating effect of free-trade agreements in our study is measured at about 80%. This is substantially higher than calculated in other studies.[13] The difference is due mainly to the different scenario definition: Because we base our deep liberalization scenario on the measured effects in real data, our results are higher. Two other differences are also important, however: First, the focus on trade costs allows us to reproduce the status quo of the initial equilibrium with a very terse formulation of the demand side of the model. But because trade cost changes contribute in a non-linear way to changes in trade flows, our model is more reactive than others that achieve the resulting equilibrium by fixing consumption weights specific to each country.[14] Second, our approach makes it possible to actually include 126 countries in the analysis. That means that we don't have to perform any regional aggregations that assume a frictionless exchange of goods. For example, trade within the EU is affected by trade costs in our method, which reflects reality. This also results in a strong reaction by the models to transatlantic trade liberalization.

In all scenarios, we adopt the following thought experiment. We know the world as it is represented in the initial equilibrium in the data. Now we adapt the trade flows in such a way that the trade costs between the EU states and the USA decrease to the extent that the trade gain so induced between the participating countries corresponds to the empirically measured effect of already existing agreements. Because these agreements have existed on average for quite a while, our approach results in the simulated effects of TTIP reflecting the complete expression of all direct and indirect effects.

In the simulation model used, there is a relatively simple connection between the welfare gains of a country from the new agreement, the changes in a country's openness in general and so-called trade elasticity. The model follows current research in doing this.[15] To summarize, it can be said that the greater the trade-creating effect of an agreement, the more real per capita income rises; the greater the trade elasticity, the more the new relative capacity for competing on price will change trade flows but the lower the per capita income gains will be. The level of trade elasticity actually reflects how easily the goods of different countries can be substituted for each other. The easier the substitution, the less "valuable" international trade will be.

13 Cf. note 2.

14 Using such weighting, the traditional models represent the trade flows observed. In our approach, this is achieved by the trade cost matrix.

15 Arkolakis et al. (2012) present a simple formula that can be used to quantify the trade gains and has minimal information requirements.

4. Where does trade grow, where does it shrink and by how much?

TTIP will lead to a noticeable change in global trade structure. We assume in our ambitious scenario that trade between the USA and the EU member states increases on average exactly to the extent we have measured in the data on comparable existing agreements.

The intertwining of countries through trade is an important indicator of cooperation, not only in trade policy but also in many other political areas. For example, a weakening of the trade relationships among EU member states could be considered critical because it could diminish the interest of individual countries in the European unification project.

4.1 Effects on German foreign trade

Table 1 shows the calculated rates of change of bilateral trade volumes and its most important trading partners in Europe and the world. The figures indicate how trade volumes would appear in comparison with actually observed volumes if there had already been an agreement between the EU and USA in 2010. We are thus comparing the factual, observed reality of 2010 with a counterfactual reality in which we assume that the agreement already existed. By doing so we avoid having to propose forecasts of future trade volumes (i.e., quantities and prices), which would be associated with forecasting errors. And we avoid modeling specific phase-in paths, since doing so would also be extremely speculative.

The first line of Table 1 shows that in the tariff scenario, German exports to the USA would rise by 1.13% and imports by 1.65%. That means that Germany's trade surplus of about USD 30 billion would decline slightly. Looking at the deep liberalization scenario instead, exports and imports show very similar adaptations that in each case are more than 90%. We find as a result a strong increase in trade flows between Germany and the USA. This strong growth should be understood in the context of the assumed scenarios. As explained above, it includes both the elimination of tariffs and the reduction of non-tariff barriers that can be directly influenced by policy as well as those which result from the effects of lowering political barriers on other trade-creating variables, such as direct investments.

The Germany-USA example shows quite clearly that an agreement that results only in lowering tariffs cannot trigger any significant trade-creating effects. On the other hand, a comprehensive and deep agreement has much stronger effects.

Table 1: Change in German foreign trade with traditional partner countries

Exporter	Importer	2010* Trade volumes (in USD millions)	Comprehensive liberalization %	Tariff scenario %
GER	USA	83,553	93.54	1.13
USA	GER	51,645	93.56	1.65
GER	GBR	72,052	–40.91	–0.70
GBR	GER	43,583	–40.93	–0.57
GER	FRA	109,223	–23.34	–0.38
FRA	GER	76,518	–23.34	–0.24
GER	ITA	74,245	–29.45	–0.37
ITA	GER	52,687	–29.45	–0.55
GER	JPN	17,487	4.81	2.40
JPN	GER	24,891	4.76	–1.68
GER	CHN	67,728	–12.68	2.19
CHN	GER	92,536	–12.71	–2.94

GER = Germany, GBR = Great Britain, FRA = France, ITA = Italy, JPN = Japan, CHN = China.

Source: ifo Institut

Table 1 also shows very forcefully that Germany's trade with its other trading partners could decline sharply in some areas. The portents of these trade effects are consistently negative in both the tariff and comprehensive liberalization scenarios. In principle, TTIP would significantly alter the trade diversion effects currently in force in the EU. Such alterations occurred in the past because trade among the EU countries themselves is barrier-free, while trade by the EU countries with the USA is subject to both tariff and non-tariff barriers. The leveling of the barriers with the USA thus leads to a decline in trade that came about as a result of preferential treatment of intra-European trade flows. This is most true for Great Britain, which has relatively low natural trade barriers (language, culture) with the USA, so that lowering policy friction leads to strong trade creation and diversion.

Interestingly, TTIP leads to an expansion of Germany's exports to Japan, and does so in both assumed scenarios. This is related to the fact that the competitiveness of German exporters is increased by the availability of cheaper intermediate products from the USA. Moreover, there is a reduction of competitive pressure on the Japanese market because its exports go back to the USA. The effect on Germany's trade with China is negative, however, at least in the deep liberalization scenario. A decline in both exports and imports of about 13% is to be expected in each case.

Next we examine German foreign trade with the GIIPS countries (Greece, Ireland, Italy, Portugal and Spain). This is of interest, given the current crisis in the European Union. The data in Table 2 confirm what was already evident in Table 1: the GIIPS countries are no exception – their trade with Germany will drop due to TTIP. The effects are very small, if you look at the tariff scenario, but are substantial if the more ambitious scenario is assumed.

Table 2: Changes in German foreign trade with the Peripheral EU (GIIPS)

Exporter	Importer	2010* Trade volumes (in USD millions)	Comprehensive liberalization %	Tariff scenario %
GER	GRC	6,655	–29.94	–0.14
GRC	GER	2,322	–29.93	–0.95
GER	IRL	5,195	–34.87	–0.64
IRL	GER	10,662	–34.85	–0.16
GER	ITA	74,245	–29.45	–0.37
ITA	GER	52,687	–29.45	–0.55
GER	PRT	10,306	–29.90	–0.31
PRT	GER	5,385	–29.88	–0.55
GER	ESP	39,590	–33.71	–0.47
ESP	GER	26,142	–33.71	–0.57
GER	GIIPS	135,991	–30.96	–0.39
GIIPS	GER	97,197	–31.22	–0.52

GER = Germany, GRC = Greece, IRL = Ireland, ITA = Italy, PRT = Portugal, ESP = Spain, GIIPS = Greece, Ireland, Italy, Portugal, Spain.

Source: ifo Institut

Finally, we consider the change in Germany's trade with the BRICS countries (Brazil, Russia, India, China, South Africa). As shown in Table 3, the elimination of tariffs between the EU and USA causes Germany's exports to the BRICS generally to rise slightly. The reason lies in the increased price competitiveness of Germany due to cheaper imports of intermediate products from the USA. Imports from the BRICS, on the other hand, decline because the competitive pressure in Germany increases from the intensified presence of American companies. If a deep liberalization scenario is assumed, both exports and imports undergo increased trade diversion: German exports that previously went to the BRICS now go to the USA; and Germany replaces imports from the BRICS with imports from the USA. This occurs even though the trade barriers with the BRICS have not changed nominally. Trade diversion is driven solely by the change in relative trade costs.

Table 3: Change in German foreign trade with the BRICS countries

Exporter	Importer	2010* Trade volumes (in USD millions)	Comprehensive liberalization %	Tariff scenario %
GER	BRA	12,951	–7.58	2.41
BRA	GER	8,844	–7.92	–3.67
GER	RUS	32,512	–7.51	1.64
RUS	GER	20,362	–7.17	–1.20
GER	IND	10,866	–8.96	2.36
IND	GER	7,859	–9.26	–2.30
GER	CHN	67,728	–12.68	2.19
CHN	GER	92,536	–12.71	–2.94
GER	SAF	8,274	–3.96	1.24
SAF	GER	6,719	–3.73	–1.20
GER	BRICS	132,331	–10.06	2.03
BRICS	GER	136,320	–10.93	–2.61

GER = Germany, BRA = Brazil, CHN = China, RUS = Russia, IND = India, SAF = South Africa, BRICS = Brazil, Russia, India, China, South Africa.

Source: ifo Institut

4.2. Effects on EU trade

Next, we look at the change in EU trade with countries in their geographic vicinity. We look especially at the countries of the Maghreb, with which the EU has a free-trade agreement (Euro-Mediterranean Agreement), and the two successor states to the Soviet Union for which we have data (Russia and Belarus).

Table 4 shows that in the tariff scenario, EU exports to the countries bordering on the Mediterranean (Morocco, Tunisia, Algeria and Egypt) or the successor states to the Soviet Union would increase, while imports from these countries would decrease. This in turn reflects the increased competitiveness of European companies. If the comprehensive liberalization scenario is considered, however, traditional trade diversion effects predominate: EU exports to and imports from the Maghreb countries or Eastern Europe decline. Given the massive drop in barriers between the EU and USA in our scenario, the effects are not easily predictable.

Table 4: Changes in EU trade with EU neighboring countries

Exporter	Importer	2010* Trade volumes (in USD millions)	Comprehensive liberalization %	Tariff scenario %
EU	MAR	18,028	–5.14	0.94
MAR	EU	11,775	–5.39	–0.38
EU	TUN	14,818	–4.75	1.33
TUN	EU	13,287	–4.41	–0.82
EU	DZA	21,656	–4.33	4.11
DZA	EU	28,641	–0.98	–0.98
EU	EGY	19,851	–5.81	1.35
EGY	EU	10,584	–7.67	–0.15
EU	RUS	109,586	–7.83	1.57
RUS	EU	195,846	–7.75	–1.15
EU	BLR	8,641	–5.91	2.59
BLR	EU	7,662	–14.34	–0.42

EU = European Union, MAR = Morocco, TUN = Tunisia, DZA = Algeria, EGY = Egypt, RUS = Russia, BLR = Belarus.

Source: ifo Institut

We then show that trade by the GIIPS states with the USA increases sharply in all cases. Table 5 shows that this is especially true with comprehensive liberalization. The growth rates, with the exception of Ireland where transatlantic trade is already highly developed, are on the same scale as for the bilateral relationship of the USA with Germany.

Table 5: Change in trade of GIIPS countries with the USA

Exporter	Importer	2010* Trade volumes (in USD millions)	Comprehensive liberalization %	Tariff scenario %
USA	GRC	1,559	90.43	1.95
GRC	USA	917	90.45	0.60
USA	IRL	8,022	77.03	1.44
IRL	USA	28,424	77.06	1.40
USA	ITA	13,254	91.77	1.71
ITA	USA	28,151	91.75	1.00
USA	PRT	1,068	90.56	1.78
PRT	USA	2,053	90.59	1.01
USA	ESP	11,575	80.18	1.62
ESP	USA	8,724	80.16	0.99

GRC = Greece, IRL = Ireland, ITA = Italy, PRT = Portugal, ESP = Spain.

Source: ifo Institut

Finally, we examine the change in the trade relationships of Great Britain. This is of special interest because Great Britain, unlike other members of the European Union, already has a very high degree of economic integration with the USA, and the new definition of Great Britain's role in the EU is often discussed with reference to its strong relationships with the USA.

Table 6 shows that in the case of a transatlantic agreement, both exports to the USA and imports by Great Britain from the USA would grow sharply. This is especially evident for the comprehensive liberalization scenario. Trade with Canada would be only slightly affected. In comparison, it appears that integration of Great Britain in the EU would be noticeably weaker in some areas. In other words, through the transatlantic agreement, having Great Britain remain in the European Customs Union would be less valuable for both Great Britain and the other EU member states. Given this background, the discussion of Great Britain's exit from the EU could take on additional energy.

Table 6: Change in Great Britain's trading relationships

Exporter	Importer	2010* Trade volumes (in USD millions)	Comprehensive liberalization %	Tariff scenario %
GBR	USA	49,347	60.56	0.98
USA	GBR	42,184	60.61	1.38
GBR	CAN	9,400	–1.45	2.67
CAN	GBR	15,929	–1.41	–0.15
GBR	GER	43,583	–40.93	–0.57
GER	GBR	72,052	–40.91	–0.70
GBR	FRA	26,610	–36.41	–0.52
FRA	GBR	34,002	–36.39	–0.52
GBR	ITA	15,268	–41.47	–0.51
ITA	GBR	23,191	–41.46	–0.82
GBR	ESP	13,710	–45.01	–0.61
ESP	GBR	15,690	–45.00	–0.84
GBR	IRL	21,788	–45.97	–0.78
IRL	GBR	19,420	–45.94	–0.43
GBR	JPN	6,277	–13.05	2.25
JPN	GBR	13,243	–13.07	–1.95
GBR	CHN	9,545	–27.56	2.04
CHN	GBR	48,619	–27.57	–3.21

GBR = Great Britain, CAN = Canada, GER = Germany, FRA = France, ITA = Italy, ESP = Spain, IRL = Ireland, JPN = Japan, CHN = China.

Source: ifo Institut

4.3. Effects in North America

Table 7 examines the changes in trade in North America and between the USA and the BRICS. A few important insights are striking. First, TTIP leads to trade diversion effects within the North American Free Trade Area (NAFTA) between USA, Mexico and Canada. In the comprehensive liberalization scenario, both exports and imports decline for NAFTA partner countries within the region. The two NAFTA countries whose position is not improved by TTIP, Mexico and Canada, intensify their trade. That is an impressive example of trade diversion effects between countries not directly affected in any way by TTIP: The access of these countries especially to the US market becomes less attractive due to increased competition from the EU, leading to a substantial rise in trade between them. What makes this effect so strong is that the trade barriers, as we know, between Mexico and Canada have already been eliminated.

Interestingly, TTIP leads to an expansion of trade between the EU and Canada. Geographic circumstances are decisive for this result. Because of its closeness to the USA, Canada is especially affected by trade diversion effects involving the USA. This effect leads to creating trade with the EU countries that are geographically farther away, so that transport costs are lower, and the change in the relative cost structures leads to replacement of the American market with the EU. This circumstance means that finalization of an agreement between the EU and Canada, currently under negotiation, would strengthen the trade of the countries involved with each other but not eliminate the negative trade diversion effects.

Table 7: Change in trade between USA and Canada

Exporter	Importer	2010* Trade volumes (in USD millions)	Comprehensive liberalization %	Tariff scenario %
EU	CAN	43,565	14.53	2.82
CAN	EU	34,965	10.07	0.00
USA	MEX	142,763	–15.99	–0.82
MEX	USA	221,803	–16.04	1.33
USA	CAN	193,554	–9.32	–0.55
CAN	USA	271,268	–9.32	1.61
MEX	CAN	18,965	83.53	3.10
CAN	MEX	6,692	83.63	3.11
USA	BRA	26,762	–29.45	–0.95
BRA	USA	20,116	–29.72	–2.24
USA	RUS	7,878	–29.40	–1.69
RUS	USA	16,674	–29.16	0.28
USA	IND	15,174	–30.51	–0.99
IND	USA	29,214	–30.75	–0.84
USA	CHN	83,873	–33.35	–1.16
CHN	USA	327,554	–33.38	–1.50
USA	SAF	5,993	–26.69	–2.07
SAF	USA	8,331	–26.53	0.27
USA	BRICS	139,681	–31.78	–1.17
BRICS	USA	401,889	–32.69	–1.38

EU = European Union, CAN = Canada, MEX = Mexico, BRA = Brazil, RUS = Russia, IND = India, CHN = China, SAF = South Africa.

Source: ifo Institut

5. How do real per capita incomes change?

The TTIP effects on trade flows presented thus far essentially result, as has already been pointed out above, from the adaptation of trade costs and the resulting change in production costs, input prices and income positions of the countries.

5.1 Effects in the EU

What are the effects of eliminating the transatlantic trade barriers on real per capita income in the EU? Does TTIP result in greater discrepancies in living conditions in Europe or does it promote convergence? To answer this question, we first look at the unambitious tariff scenario and then describe the effects of deep liberalization.

Tariff scenario

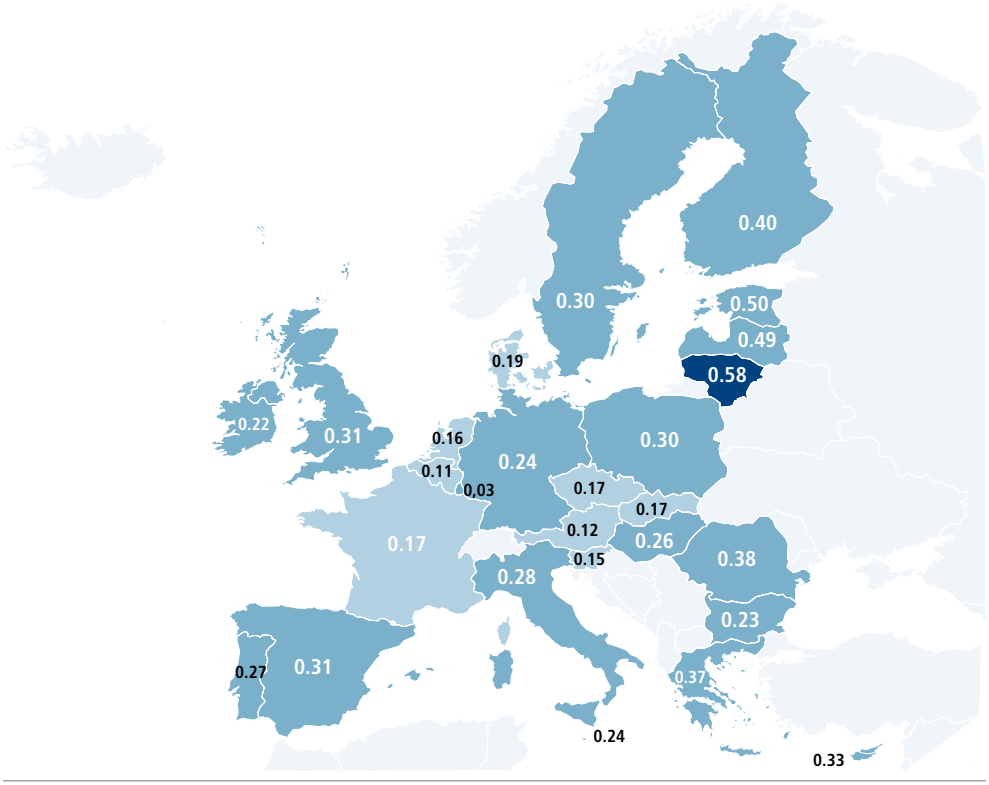
The model simulations now show that a transatlantic free-trade agreement would not contribute to causing greater divergence in living conditions in Europe. In fact, the opposite is more likely. Figure 3 shows the change in real per capita income (which is identical to real GDP per capita) in all EU member countries if tariffs between the EU and the USA are entirely eliminated.

The change in real per capita income ranges between 0.03% (Luxemburg) and 0.58% (Lithuania). For Germany, the value is 0.24%. In the non-weighted EU27 mean, the gain is 0.27% and the standard deviation is 0.13%. These effects are small because the tariffs that still exist between the EU and USA are already low (the weighted average is 2.8%).

The illustration above makes the following points clear: First, all member countries of the EU benefit from trade liberalization. In the tariff scenario, that was not necessarily the case because the EU had to give up tariff revenues. That means, in the tariff scenario, less income is available for distribution.[16] Second, how much economies benefit depends on the real trade structure of the individual countries, their size and their geographical position. Those that export a relatively large amount obtain relatively higher gains. This accounts for the somewhat higher benefits in Great Britain, for example. Higher incomes in these countries again result in increased demand for goods from other countries in the EU. How these effects are distributed in Europe depends essentially on inner European transport routes and thus the geographical location of the countries. Finally, it also turns out that smaller countries tend to gain more than large ones. The example of the Baltic countries is especially telling in this regard. Smaller countries are more involved in the international division of labor and therefore gain more from lower trade costs. The effects illustrated include these aspects.

16 It is assumed that the tariffs revenue of the EU is distributed uniformly to all EU countries. That is not actually the case, but all tariff revenues from trade with the USA account for less than 0.1% of EU GDP so that a substantial distortion of the result is not likely.

Figure 3: Change in real per capita income in the EU27, tariff scenario



Source: ifo Institut

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Figure 4 correlates per capita growth with the level of real per capita GDP for 2011. The cloud diagram shows a negative correlation that is also confirmed by statistical analysis. The red line is a linear regression equation. It can be read as follows: the log of French per capita income is about 10.5. The statistical model forecasts an increase in real per capita GDP for this country of 0.23% (which is higher than the specific calculations for France or 0.17%; i.e., France profits below average). For a country with a 50% lower per capita income than France (such as Poland or Hungary, for example, where the log of per capita income is about 10.0), the statistical model forecasts growth of 0.33%.[17] This shows that the transatlantic agreement would contribute to convergence in Europe: Countries that currently have a lower per capita income (such as Romania) gain more than those that have higher incomes (such as Luxembourg). There is a large degree of scatter but the statistical finding is unambiguous.

17 The coefficient of the log of per capita income for 2011 in the regression equation is −0.21; the relevant standard deviation is −0.05. Thus the correlation is statistically significant at the 1% level. This finding does not depend on the data weighting.

Figure 4: Trade gains and status quo per capita income, tariff scenario

Source: Caculations: ifo Institut

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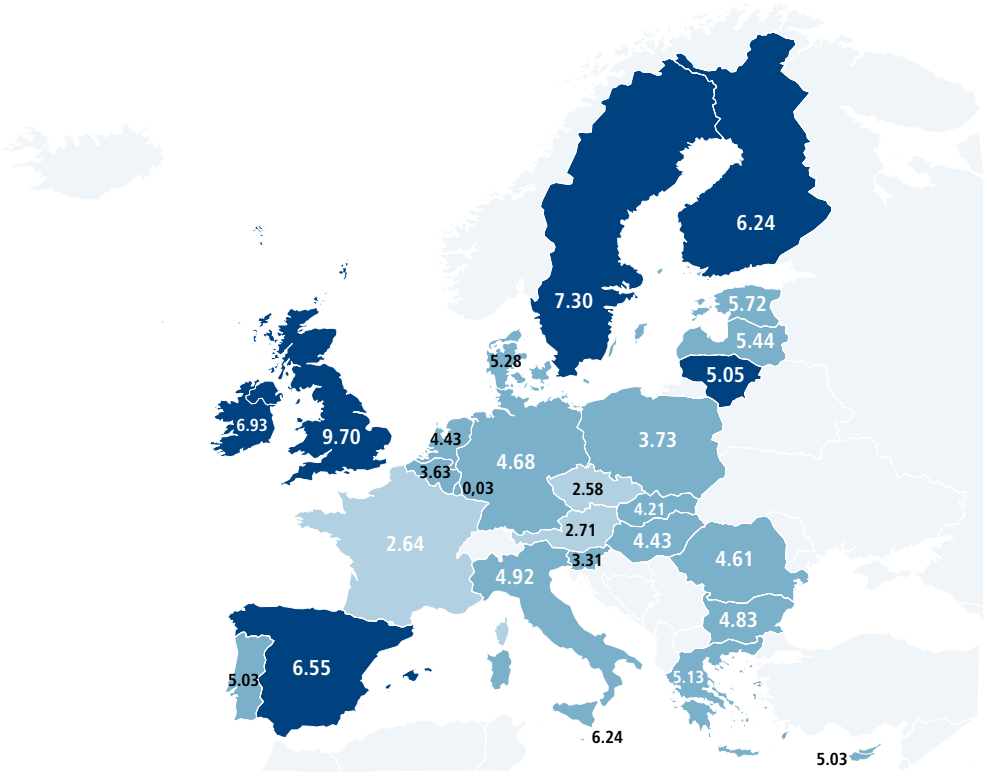
Deep liberalization

If we move from the tariff scenario to an ambitious scenario that besides eliminating tariffs, also includes a reduction of non-tariff barriers, the resulting picture is different. As also explained above, it is important to realize here that the deep scenario, in addition to trade-policy liberalization steps, also includes induced effects (e.g., from the expansion of direct investments or the reduction of economic policy uncertainty).

Figure 5: Change in real per capita income in the EU27, deep liberalization



Source: ifo Institut

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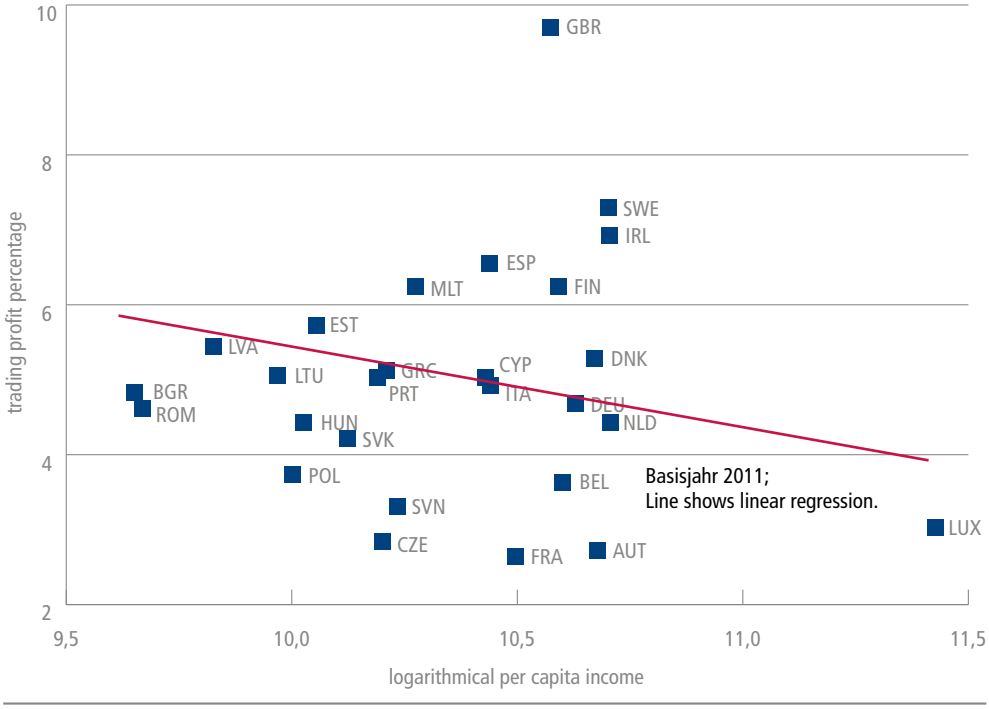
Figure 5 reproduces Figure 1 for the case of a deep agreement. On average, the gains are some 23 times higher than in the tariff scenario. Most striking is the deviation in Luxembourg, which profits a great deal from increased trading by its European trading partners with USA without having large trade flows with America itself. Germany also shows gains that are 20 times higher than in the tariff scenario. The European average gain is 4.95% with a standard deviation of 1.58%. One country that benefits relatively little is France (2.64%). The reason is that France has relatively little trade in goods with the USA. Even so, the gains are in the clearly visible range.

The countries that profit most are generally those that already have high relative trade volumes with the USA. This explains the large gain by Great Britain. The Scandinavian countries and Spain also get above average gains. However, in the latter instance, it is due to the fact that Spain replaces relatively expensive European imports with imports from the USA, which has a welfare-increasing effect.

Figure 5 suggests that above all, the smaller peripheral countries obtain above average gains from trade liberalization. The reason for this is the same as in the tariff scenario. However, with the non-tariff barriers eliminated, the stimulation of inner-European demand from supplier relationships with large countries that obtain relatively strong benefits plays a substantially larger role.

Figure 6 again correlates the projected growth in per capita income with its current level. Again, the correlation is negative. The minus sign is driven entirely by Luxembourg, however. With or without Luxembourg, no statistically significant connection between the two values can be demonstrated.[18]

Figure 6: Trade gains and Status Quo per capita income, deep liberalization



Source: Calculations: ifo Institut.

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18 The regression coefficient of the log of per capita income in 2011 amounts to −0.80 for a standard deviation of the same size.

Conclusion

It can be concluded that the transatlantic free trade initiative does not expand the income gap within Europe. The modest tariff scenario actually shows that the agreement leads to more convergence: i.e., the poorer, often peripheral countries profit more than the richer, central ones. However, in such a scenario, the average gains from the agreement are low. An agreement that also significantly lowers non-tariff barriers leads to much higher welfare gains. Also in this case, there is a negative correlation between the status quo income of EU members and their gains, so that additional convergence results. However, the correlation here is not a reliable one under the usual statistical assumptions.

5.2 Effects on the USA and third countries

One central point of criticism in the debate about any free-trade agreement involves its effect on third countries. If a few countries tear down the trade barriers among them but maintain tariff and non-tariff barriers against countries outside the agreement, there is trade creation that supports welfare among the partners but at the same time, trade with third parties is diverted. In the tariff scenario, it can in theory actually lead to the partner countries obtaining absolutely no benefit from the agreement: The lost tariff income is larger (in monetary terms) than the advantages of improved market access. And typically, those countries that do not participate in the agreement lose. In fact, it is even theoretically possible for real global total income to fall, if the gains obtained by participants in the agreement are smaller than the losses of those who remain outside.

The effects of lower non-tariff barriers are different than those of lower tariffs. There are several reasons for this: Tariffs distribute income – essentially from consumers to producers. Their harmful side effect is how they distort consumption and production decisions. This causes damage to the economy that rises to the square of the tariffs, but when the tariffs are very low (close to zero), they are negligible. Non-tariff barriers do not result in any income distribution; instead they generate direct economic costs. To make products fit for a foreign market, bureaucratic, regulatory and administrative rules have to be respected, delays occur and the market risk rises. These costs are associated with the use of resources but are of very little or no use to the consumer. In this way, even very small non-tariff barriers reduce the purchasing power of consumers and thus their real income.

An additional difference between tariff and non-tariff barriers is important in this connection. Non-tariff barriers assume various forms, but one important way to liberalize them is to unify product standards or allow automatic domestic acceptance of products that are allowed for use abroad. That can also assist third countries: If a product satisfies the standards of one member country in a free trade zone, it may then be allowed for sale in all countries of the zone, even if it comes from a third country. With the adoption of standards, third countries can minimize the trade diversion effects that are harmful to them.

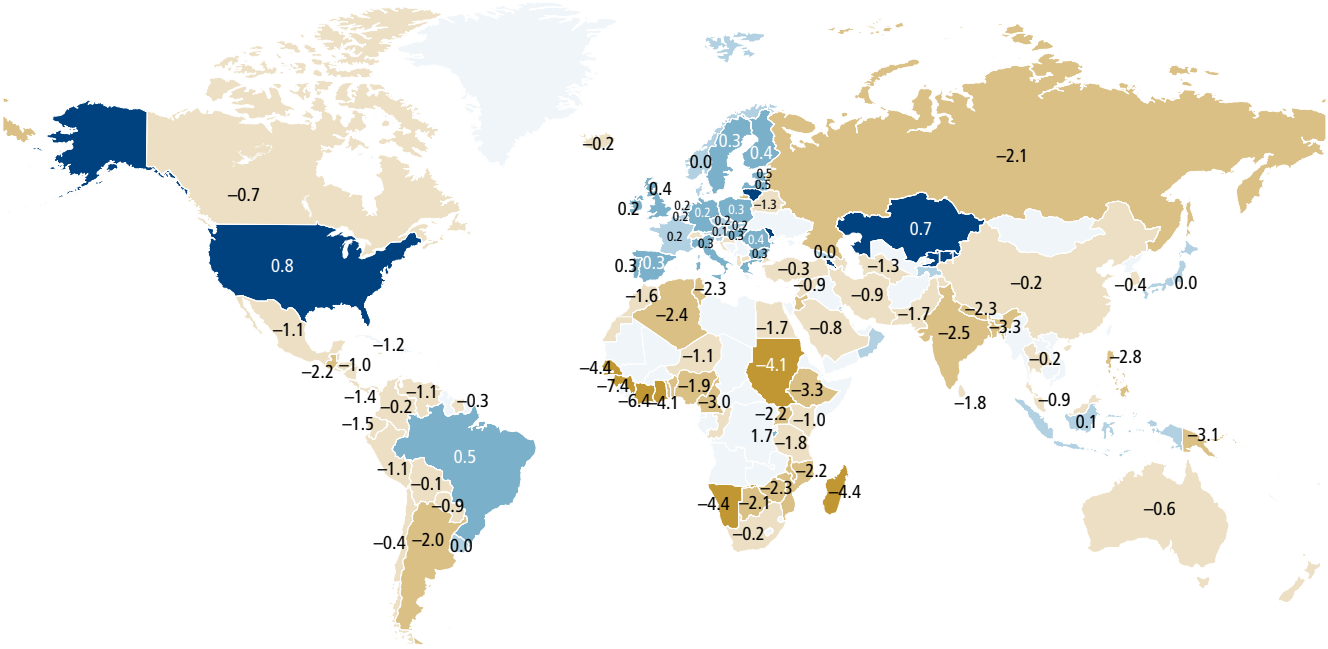
In order to quantify the global effects, we refer to the model used in the previous section. This model was calibrated and simulated for 126 countries, so that it can be used for analyzing the effects. First let us turn to the tariff scenario.

Tariff scenario

Figure 7 shows the change in real per capita income in all countries considered. The model covers virtually all the countries of the world, except for some gaps mainly in Africa. Countries that profit from the transatlantic agreement are shown in blue, while those that lose from it are shown in beige. One country colored dark blue is the USA. There, real per capita income rises by 0.8% just from lowering tariffs. Compared to other countries, the total trade barriers of the USA are relatively low. That is due to language, currency and a general policy of openness to foreign trade, and the result is that tariff cuts can have a strong positive effect.

The figure shows that the winners in the free trade zone are essentially limited to the USA and EU member states. Other than those, there are only isolated countries in which the average real income rises. These are countries that benefit disproportionately from additional exports because of an improved economy in the EU or USA. Examples are Brazil, Kazakhstan and Indonesia, which are important suppliers of raw materials to Europe and the USA. These countries produce goods like natural gas or cotton for which there are very few good substitutes. Interestingly, the gains for Kazakhstan or Brazil are higher than the average real income gains in Europe. That shows that the complicated international interweaving of the flow of goods can also result in surprising effects. Countries like Norway or Japan see no noticeable changes in their per capita income.

Figure 7: Change in global real per capita income, tariff scenario



Source: ifo Institut

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The main losers from eliminating tariffs are the developing countries. They experience dramatic losses in market share from intensified competition on the EU or US markets. Alternative markets with similar market potential are geographically far apart. This is a problem especially for countries in North and West Africa, which traditionally trade intensively with Europe, especially France and Belgium. The list of losers is led by Ivory Coast and Guinea. Their exports to Europe are pushed out by goods from the USA. East Africa comes out a little better, mainly due to its proximity to other large markets like China or Australia/New Zealand. But there too, significant losses can be experienced by countries such as Uganda and Tanzania.

Overall, it shows what was to be feared: If tariffs between the USA and EU fall, the relative barriers to market entry faced by developing countries become on average higher. It is exactly the poorer countries that suffer, some of them to a remarkable extent. Europe and the USA would have to moderate these negative effects through the quick signing of a “Doha light” compromise. The resources for doing so are already available in principle: Through the EU-USA agreement, despite losses in many third countries, the world becomes on average richer by some 0.1%.

Deep liberalization

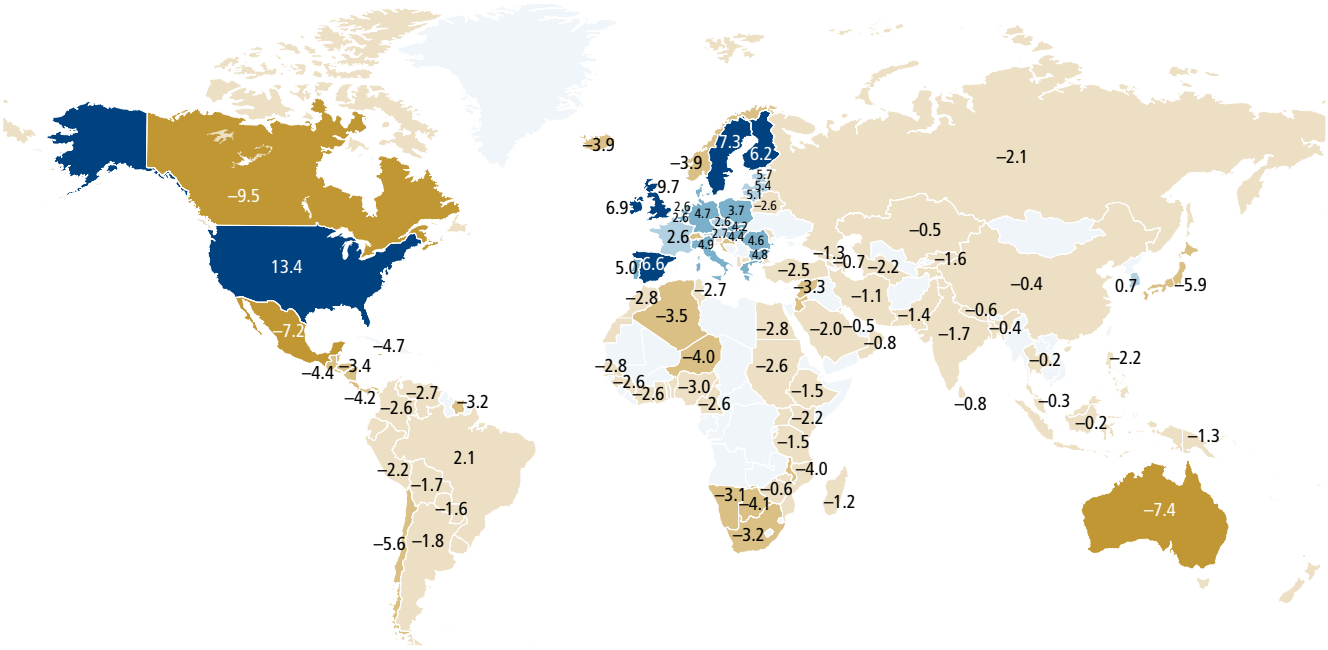
Finally, let us take a look at the effects of deep liberalization between the EU and USA. Its trade-creating effects are, as described in the EU27 example, several orders of magnitude greater than those created only by eliminating tariffs. This necessarily means that the trade diversion effects are also more intense. The trend is for countries that remain outside to lose even more significantly. All the same, it is clear that the stronger recovery in the transatlantic economy can also make the demand effect in third countries even more pronounced.

Figure 8 shows the calculated effects. As in the simulations already discussed, this is an "all other things being equal" effect, i.e., it includes only those effects that can be traced back to the transatlantic agreement. In the case of non-tariff barriers, however, it is very likely that many countries, especially the traditional trading partners of the EU and the USA, will adopt the same standards and regulations. Under certain circumstances, it is even realistic for countries that already have free-trade agreements with the EU or USA to indirectly participate in negotiations between the EU and USA, so that their concerns are taken into account. This does not show up in the calculations, so the negative welfare effects may be exaggerated. They do clearly reflect the trend, however, and indicate where there is a need to act.

It is even more obvious than in the tariff scenario that the traditional trading partners of Europe and the USA are hurt by the agreement. The losses that would be experienced by Canada, Mexico, Japan, Australia, Chile or Norway are substantial in this scenario. These countries are highly motivated to imitate the elimination of non-tariff barriers between the EU and USA or improve their partially existing bilateral agreements with the USA and EU, or to enter into such agreements. There are many signs that exactly such efforts are now underway.

For the world in general, deep liberalization between the EU and USA means a rise in average real income of 3.27%. That puts enough money on the table to compensate the losers. It can be hoped that the agreement increases the willingness of developing and emerging countries to enter into compromises in the Doha Development Agenda. At the same time, the industrial countries should also be ready to make compromises, because a substantial intensification of the economic relationships between the USA and EU would make the necessary resources available.

Figure 8: Change in global real per capita income, deep liberalization



Source: ifo Institut

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6. What happens in the labor markets?

While the previous section of the study illuminated the trade and welfare effects of both scenarios, and the labor market effects were intentionally abstracted, the following section devotes its attention to the decidedly aggregated employment effects of eliminating tariffs as well as of a deep liberalization scenario. For this, the methodology of our structural model of foreign trade must be expanded with an explicit model for the labor markets in the countries affected.

6.1. Search unemployment and foreign trade

The model used so far does not explicitly model the effects on the labor market because it was developed in order to analyze trade flows. In the academic literature about evaluating trade liberalization efforts, there is a long tradition of refraining from explicit modeling of the labor market. One reason may be the long lack of a generally accepted model for labor markets and their underlying institutions and frictions. However, at the latest when Christopher Pissarides, Dale Mortensen and Peter Diamond were honored with the 2010 Nobel Prize in Economic Sciences for their ground-breaking insights in modeling search unemployment, a larger segment of the public finally realized that a generally accepted model has been found. What differentiates such models is that they depart from the assumption applied in classical economics that the wages of workers adapt as long as it takes for all those seeking work to have a job offered by a company.[19] Obviously, this assumption contradicts the empirical fact of the existence of involuntary unemployment. Instead, these models assume that the unemployed first have to look for vacant positions and only find a job with a degree of probability. Likewise, employers must assume costs in order to find an employee. These range from the costs of an ad in a newspaper or on-line platform to the assessment centers, selection interviews and hiring and training costs that new employees generate. A company's unfilled positions are likewise only filled with a degree of probability. These frictions associated with the search lead to search (or frictional) unemployment; even during an economic boom, there will always be a certain number of unemployed who continue to look for a job. Moreover, labor market institutions naturally affect the unemployment rate. If a country has a good employment agency, more unemployed will find jobs and unemployment will be lower. And wage replacement payments such as unemployment benefits have an influence on the unemployment rate. A major advantage of this modeling approach is that all these labor market institutions can be reproduced within the model framework. Moreover, the model explains the simultaneous existence of job openings and unemployed people.

19 For an introduction to these models, see Pissarides (2000).

Recent globalization research has taken advantage of these modeling approaches, in order to introduce them into existing approaches to theoretical modeling of trade flows between countries. Among the pioneers in this area were Davidson and Matusz (1999). The most recent contributions in this field are by Helpman and Itskhoki (2010) as well as Felbermayr et al. (2011). Heid and Larch (2013) have taken up these theoretical studies and made them accessible to empirical quantitative analysis.[20] At the core, this empirical structural model consists of an expansion of the models we used to analyze trade flows for the tariff and TTIP scenarios in the previous sections of the study for explicit modeling of the labor market. The results that follow are based specifically on this methodological approach. Given their extensive similarity, there will be only a short discussion of the adapted methodology in the pages that follow.

The empirical strategy is analogous to the previous one: we set the model using the observed data in such a way that the trade flows observed in the base scenario are replicated in the expected value. The difference is that we now set the model explicitly for the observed unemployment rates. Moreover, we take into account the fact that in different countries, there are different incentives to taking a job, which result from differences in wage replacement payments (the average unemployment benefits, measured as a percentage of the average wage).[21] Then we analyze the effects of the tariff and deep liberalization scenarios. Now, however, we can explicitly investigate the net employment effects of these scenarios, and calculate the firm number of jobs that are created or lost. Moreover, we can also observe the change in real wages.

From this sketch of the methodology it becomes clear that while the analysis framework now allows explicit investigation of the labor market, it is "bought" at the price of a substantially higher requirement for data. We additionally need comparable information on unemployment rates, employment levels and the wage replacement payments. Concretely, we use the labor market data from 2010; the wage replacement rates are however from 2009, because they are compiled only every two years. These are unfortunately available only for a data set of 28 OECD countries.[22] Being limited to these industrialized countries guarantees that the labor markets are comparable, at least to the extent that other factors, such as informal employment or subsistence farming, as are common in Latin America, Africa and large parts of Asia, for example, do not distort the analysis. A representation of the labor market structures of these countries is unfortunately not possible, given the (lack of) available data.

20 The works cited above are not a complete overview of the literature; for that, see Heid and Larch (2013). There is also an exact description of the model framework used.

21 Calculation of wage replacement payments is more complicated than described here. We are using OECD data that calculates an average wage replacement rate from a combination of different worker life situations (family status, number of children, etc.). These figures provide a good approximation of the average level of unemployment benefits for a cross-section of countries; for details see OECD (2010).

22 The countries are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Poland, Portugal, Slovakia, South Korea, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States.

Table 8 shows the unemployment rates used. In the data for 2010, the effects of the continuing financial, government debt and euro crisis are quite evident: Spain had the highest unemployment in the OECD at 20%. Germany, in the European comparison, had a relatively low unemployment rate of 7.46%, while the unemployment rate in the USA, at just below 10%, reached a historical peak.

Table 8: 2010 unemployment rates

Country	2010 unemployment rate in percent
Australia	5.23
Austria	4.39
Belgium	8.29
Canada	8.01
Czech Republic	7.28
Denmark	7.46
Finland	8.40
France	9.36
Germany	7.06
Greece	12.53
Hungary	11.16
Iceland	7.56
Ireland	13.64
Italy	8.42
Japan	5.03
Netherlands	4.45
New Zealand	6.53
Norway	3.61
Poland	9.62
Portugal	10.79
Slovakia	14.37
South Korea	3.72
Spain	20.06
Sweden	8.37
Switzerland	4.54
Turkey	11.88
United Kingdom	7.75
United States	9.63

Source: OECD Labour Force Statistics (2010)

To ensure the comparability of the results with those in the previous section, despite having fewer countries covered, we considered, when parameterizing the model that grosso modo, the same aggregated trade creation effects between the EU and USA are achieved in both scenarios as in the model with the 126 countries without taking labor market frictions into account.

6.2 Two million new jobs

What effect does elimination of the trade barriers in transatlantic trade have on the unemployment rate? How many jobs are created? And how do real wages change? To answer these questions, we consider first the unambitious tariff scenario and afterwards describe the effects of a deep liberalization. At this point we would like to point out that our model has intentionally removed the economy-induced changes in the unemployment rate and only investigates the long-term or accumulated effects of trade liberalization on the unemployment rate. That means that the numbers presented below are to be considered long-term results or equivalent to changes in employment independent of the economic cycle. That means, for example, that a 1 percentage point drop in the unemployment rate reduces the unemployment rate during both an upswing and a downswing of the economy by 1 percent.

Tariff scenario

Table 9 shows the results of eliminating the existing tariffs. The second column shows the percentage change in employment. Inversely, column 3 shows the changes in the unemployment rate. However, this is the change in percentage points. Concretely this means that the tariff elimination would lower the unemployment rate in Germany by 0.11 percentage points. It becomes clear that employment rises in all EU countries as well as the USA. However, the changes are very small and for the EU states range around 0.1 percentage points. An exception is the United Kingdom, which, because of its special closeness to the USA based on language and culture, as mentioned above, profits in particular with a reduction of its unemployment rate by 0.34 percentage points. On the other hand, in the countries that do not gain from tariff reduction, unemployment rises slightly. This can be explained by relative higher trade costs between these countries and the EU and USA. These relatively higher trade costs lead to a smaller trading volume, i.e., less demand for products from these countries, which reduces production in the affected countries. This weakened demand translates directly into a lower employment demand from companies in the affected countries, which leads to increased unemployment. Conversely, the now relatively lower trade costs in the USA and EU mean greater demand for goods from the EU and USA, which translates into new hires and ultimately into a lower unemployment rate.

When we weight the individual changes with the gross domestic product, there is a reduction in the unemployment rates in the 28 countries of 0.11 percentage points.

In a trade model without aggregated employment effects, all adaptations occur in prices and wages. In our model framework, a portion of these effects is diverted into quantities, i.e., employment effects; however even in this model framework, they also result in changes in (real) wages. Real wages in this model framework are also an adequate measurement of welfare. Here we see that in Germany, real wages rise 0.54%, in the USA 0.93%. Here, too, the United Kingdom profits most with a real wage increase of 1.72%. The countries not affected by the tariff reduction must, on the other hand, accept smaller real wage cuts. Overall, however, real wages rise 0.59% in the OECD, so that even considering aggregated unemployment effects, enough profits are achieved in principle to offset the disadvantaged countries through transfer payments, for example.

Even with consideration of the employment effects, it appears that the total effects of only tariff elimination are very slight, and compared to the economic fluctuations of the unemployment rate, should be considered negligible.

Figure 10 finally offers some insight into the effects of the tariff reduction on convergence within the EU. It shows on the x axis the unemployment rates in 2010 and on the y axis the reduction of unemployment rates through tariff reduction. It is immediately clear that in all EU member countries, the unemployment rate sinks, i.e., all countries profit directly from a revival of their employment markets. The straight line drawn is a regression line, and it shows a positive rise.[23] This should be interpreted as follows: the higher the unemployment rate in an EU member country, the greater the reduction of the unemployment rate from tariff reduction. This means that tariff elimination contributes to a convergence of the labor market situation within the EU: The countries with the most precarious labor market situations profit most. The graph shows the exceptional situation of the United Kingdom, which, despite its relatively low unemployment rate, benefits the most.

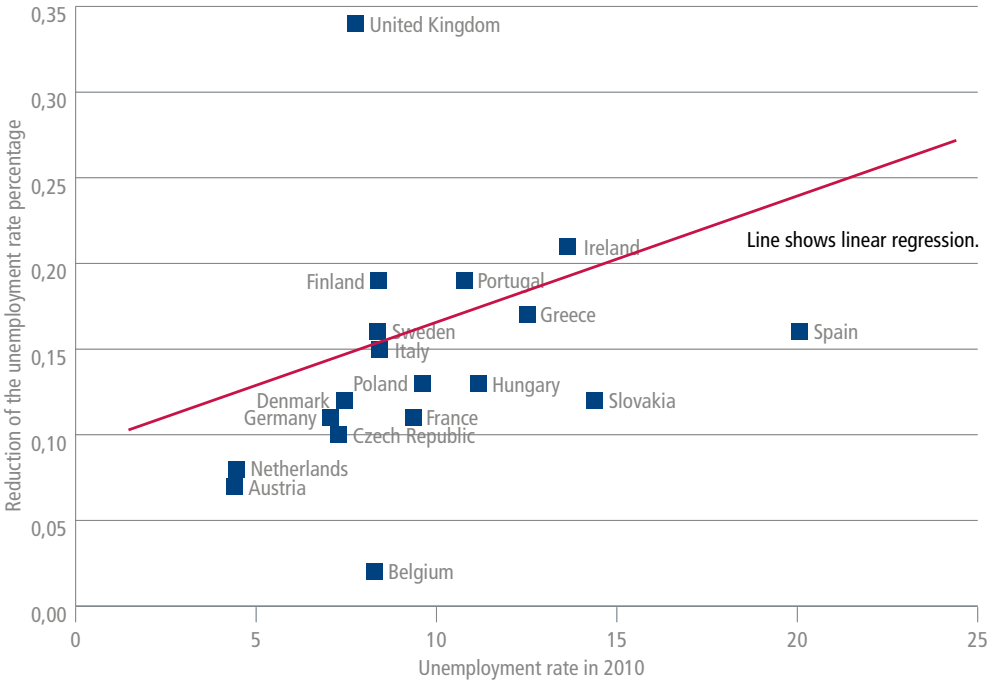
23 The increase coefficent is not significant of 0 different based on the United Kingdom outlier. A regression line without that outlier is at the 5% significance level of 0 different and also shows a clearly positive rise.

Table 9: Change in employment, unemployment rates and real wages, tariff scenario

Country	Percentage rise in employment	Change in unemployment rate in percentage points	Percentage change in real wages
Australia	–0.12	0.11	–0.56
Austria	0.07	–0.07	0.32
Belgium	0.02	–0.02	0.09
Canada	–0.15	0.15	–0.71
Czech Republic	0.11	–0.10	0.53
Denmark	0.13	–0.12	0.63
Finland	0.21	–0.19	0.97
France	0.12	–0.11	0.54
Germany	0.12	–0.11	0.54
Greece	0.20	–0.17	0.93
Hungary	0.15	–0.13	0.70
Iceland	–0.12	0.11	–0.56
Ireland	0.24	–0.21	1.14
Italy	0.16	–0.15	0.72
Japan	–0.03	0.03	–0.14
Netherlands	0.09	–0.08	0.40
New Zealand	–0.08	0.07	–0.37
Norway	–0.12	0.12	–0.55
Poland	0.15	–0.13	0.69
Portugal	0.22	–0.19	1.02
Slovakia	0.14	–0.12	0.66
South Korea	–0.03	0.03	–0.15
Spain	0.20	–0.16	0.92
Sweden	0.18	–0.16	0.85
Switzerland	–0.11	0.10	–0.50
Turkey	–0.11	0.10	–0.51
United Kingdom	0.37	–0.34	1.72
United States	0.20	–0.18	0.93
Average (GDP–weighted)	0.13	–0.11	0.59

Source: Calculations: ifo Institut

Figure 9: Reduction of the unemployment rate and 2010 unemployment rate, tariff scenario



Source: Calculations: ifo Institut

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Deep liberalization

Let us now look at the deep liberalization scenario. Table 10 reports the corresponding results. It is immediately clear that the effects for EU countries are about four times as large as in the tariff reduction scenario. For example, in Germany the unemployment rate drops by 0.43 percentage points, which corresponds to an increase in employment of 0.47%. In the USA, the decline in unemployment is 0.71 percentage points and in the United Kingdom, even 1.27 percentage points.

Countries affected by the bank and government debt crisis also do especially well: Unemployment in Spain drops 0.62 percentage points, in Greece and Portugal by about 0.7 percentage points and in Ireland even by 0.84 percentage points. The effect for Ireland despite the common language with the USA is smaller than in the United Kingdom is due to the relatively marginal position of Ireland in comparison to the United Kingdom.

Even with consideration of the quantitative (or employment) effects, the impact on prices, here real wages, and thus on consumer welfare, is substantially larger: In Germany real wages are 2.19% higher and in the countries severely affected by the crisis just mentioned, at least 3% higher. It is thus apparent that deep liberalization, besides providing higher positive employment effects, offers substantially higher welfare effects than does just eliminating tariffs. However, there are also losers in this scenario within the OECD: It is those countries that are not part of the TTIP agreement. However, even in their case, on average, the real GDP-weighted wage increase is 2.34%, so that there are sufficient profits available for the third countries that don't participate to be able to be compensated for their real wage losses. On average, the OECD unemployment rate falls by 0.45 percentage points.

This is especially remarkable: The implementation of TTIP is thus not a zero-sum game but generates real welfare gains from the elimination of real trade costs, so that (in principle) all countries can benefit from this reduction.

The underlying mechanism is the same as in the tariff scenario: The increase in export demand triggered by the reduction of trade costs leads to more hiring by companies, which directly causes the unemployment rate to fall. At the same time, this causes consumption of goods to rise domestically, based on the higher number of people working, which again causes more demand for imports from other TTIP member countries. These positive spillover effects in the general equilibrium with consideration for trade intertwining between countries reinforce the pure reduction of trade costs.

Figure 11, analogous to Figure 10, provides a clear description of the convergence between EU member countries: The graphs look very similar but the values on the y axis are much higher. It is also evident here that the higher the unemployment rate in an EU member country before TTIP, the lower it will be after implementation of a deep TTIP agreement.[24]

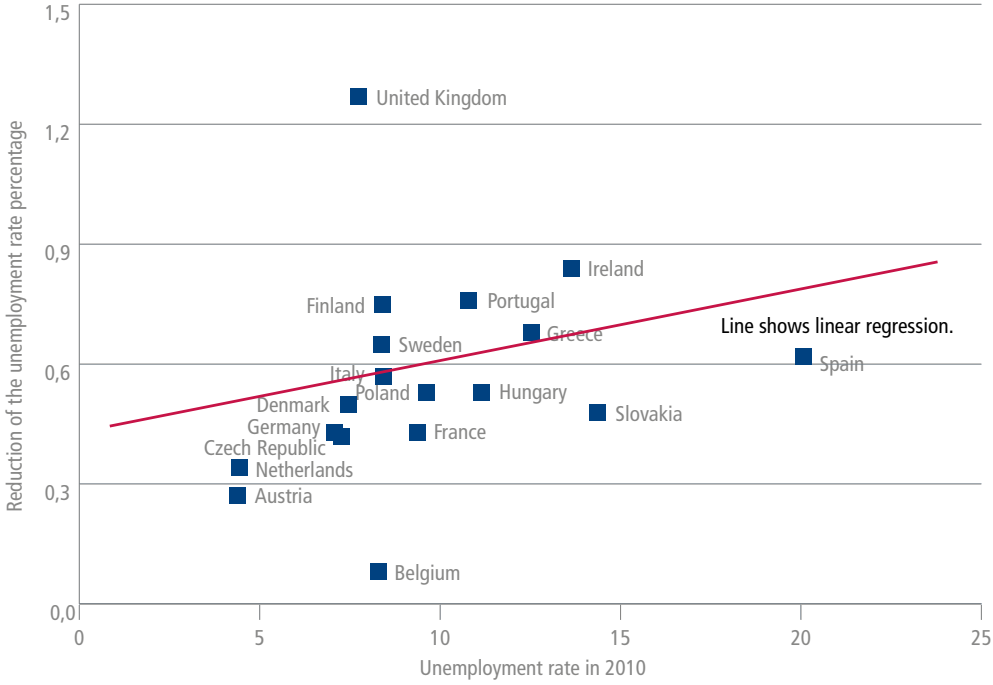
24 The slope coefficient for this graph is likewise not significant from 0 different because of the United Kingdom outlier. A regression line without this outlier is at the 5% significance level of 0 different and also shows a clear positive slope.

Table 10: Change in employment, unemployment rate and real wages, deep liberalization

Country	Percentage rise in employment	Change in unemployment rate in percentage points	Percentage change in real wages
Australia	–0.47	0.44	–2.14
Austria	0.28	–0.27	1.33
Belgium	0.09	–0.08	0.42
Canada	–0.60	0.56	–2.75
Czech Republic	0.46	–0.42	2.14
Denmark	0.54	–0.50	2.54
Finland	0.81	–0.75	3.84
France	0.47	–0.43	2.22
Germany	0.47	–0.43	2.19
Greece	0.78	–0.68	3.68
Hungary	0.60	–0.53	2.81
Iceland	–0.46	0.42	–2.12
Ireland	0.97	–0.84	4.61
Italy	0.62	–0.57	2.90
Japan	–0.11	0.11	–0.53
Netherlands	0.35	–0.34	1.65
New Zealand	–0.30	0.28	–1.40
Norway	–0.46	0.44	–2.12
Poland	0.58	–0.53	2.75
Portugal	0.85	–0.76	4.03
Slovakia	0.56	–0.48	2.63
South Korea	–0.13	0.12	–0.58
Spain	0.78	–0.62	3.65
Sweden	0.72	–0.65	3.37
Switzerland	–0.43	0.41	–1.96
Turkey	–0.42	0.38	–1.94
United Kingdom	1.38	–1.27	6.60
United States	0.78	–0.71	3.68
Average (GDP–weighted)	0.50	–0.45	2.34

Source: Calculations: ifo Institut

Figure 10: Drop in the unemployment rate and the 2010 unemployment rate, deep liberalization



Source: Calculations: ifo Institut.

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Conclusion – 2 million jobs with deep liberalization

Generally, the view expressed in the previous analyses is confirmed: While a pure tariff elimination would have positive welfare and employment effects for the EU and USA, the positive effects of deep liberalization are many times greater. It is also clear that any fears about EU countries drifting farther apart as a result of the liberalization efforts are unfounded; on the contrary, the agreement contributes toward harmonizing the labor market situations and living conditions within the EU. This emphasizes the special significance of a comprehensive liberalization in giving a detectible stimulus to the economies on both sides of the Atlantic.

Finally, in Table 11 we provide an overview of the net additional jobs created in both scenarios in the OECD, i.e., conversion of the changes in the unemployment rate into jobs. A deep liberalization will create about 181,000 new jobs in Germany, and more than a million in the USA. The total amount shows a growth in employment in all OECD countries of more than 2 million jobs; in the less ambitious tariff scenario, about half a million. These numbers make it especially clear that the deep liberalization generates important employment stimuli. It should also be considered in this context that positive spillover effects based on psychological factors (boom mood after

comprehensive liberalization) were not included in our modeling. It is probable that these effects would make the figures even more positive.

Table 11: Number of jobs created in both scenarios

Country	Deep liberalization	Tariff scenario
Australia	–52,332	–13,591
Austria	11,638	2,828
Belgium	4,062	873
Canada	–101,854	–26,176
Czech Republic	22,278	5,527
Denmark	14,623	3,646
Finland	20,066	5,134
France	121,566	29,921
Germany	181,092	44,831
Greece	34,277	8,766
Hungary	22,613	5,691
Iceland	–769	–201
Ireland	18,115	4,549
Italy	140,979	35,538
Japan	–71,833	–19,030
Netherlands	29,535	7,121
New Zealand	–6,606	–1,748
Norway	–11,541	–3,001
Poland	93,333	23,466
Portugal	42,521	10,878
Slovakia	12,995	3,259
South Korea	–29,841	–7,912
Spain	143,098	36,457
Sweden	32,515	8,241
Switzerland	–18,224	–4,640
Turkey	–94,831	–24,625
United Kingdom	400,203	106,134
United States	1,085,501	276,623
Jobs created in the OECD	2,043,178	518,558

Source: Calculations: ifo Institut

7. Summary

In this study we examined the macroeconomic effects of a transatlantic trade and investment partnership (TTIP) between the EU and USA. Two scenarios were examined: (i) the elimination of tariffs in transatlantic trade, (ii) a deep, comprehensive liberalization of trade in which regulatory barriers to market access are also reduced. To do so, an empirical approach was chosen that applies to the agreement of those trade-creating effects that can be measured in comparable, already existing free-trade agreements. By doing so, the direct quantification of non-tariff trade barriers and speculation about their removal as part of the agreement can be avoided.

The most important results can be summarized as follows:

1. Trade between the USA and Germany is not significantly strengthened by eliminating tariffs. Reduction of non-tariff barriers above and beyond tariffs as part of a comprehensive liberalization scenario has much bigger effects. The growth to be expected is in the 90% range.

2. For other EU countries, trade growth of a similar scale can be expected. In all cases it was true that growth from simply eliminating tariffs is negligible.

3. Germany's trade with its traditional trade partners in Europe declines sharply in some areas in the comprehensive scenario (e.g., with France: −23%). This is due to the reversal of the trade diversion caused in the European Customs Union and domestic market. Similar effects exist also for the other EU countries, for example for Great Britain. The trade policy intertwining of EU countries among themselves declines.

4. Germany's trade with the BRICS countries (Brazil, Russia, India, China, South Africa) would drop because of the comprehensive agreement by about 10% relative to the initial equilibrium. Given the massive expansion of transatlantic trade, this is a slight effect. USA trade with the BRICS countries would however decline more sharply (30%).

5. EU trade with neighboring states in North Africa or Eastern Europe would decline by an average of 5% from the comprehensive agreement. This results from the circumstance that the TTIP partially devalues existing preference agreements.

6. A free-trade agreement between the USA and EU has important welfare effects on the countries directly involved and on countries that are only indirectly affected by the agreement. Within the EU as well there are differences cutting across the countries. Within Europe, the Baltic states benefit most from eliminating tariffs in trade with the USA. Relative high gains arise also in Great Britain and in the countries bordering the Mediterranean. Germany can expect an

increase in real per capita income of 0.24%. Located at the other end are France, the Benelux countries and Austria with its neighbors. The average is 0.27%.

7. Reducing non-tariff barriers has clearly greater effects on real per capita incomes in Europe than just eliminating tariffs. It now can be seen that Great Britain would especially benefit from the initiative (growth of 9.70%). The Scandinavian member states, the Baltic countries and Spain see above-average increases. Germany profits at 4.68% a bit less than the average, which is 4.95%. France, with 2.64%, gains relatively little in comparison.

8. Dropping transatlantic tariffs to zero gives the most help to the poorer EU member countries. Member states whose per capita income in 2011 was 50% below that of France could expect welfare gains that are about 0.1% higher than those of France. In the case of reducing the non-tariff barriers, no convergence effect can be statistically proven.

9. The USA gains substantially more than the EU. In the tariff scenario, the real per capita income rises about 0.8%; in a deep liberalization of non-tariff barriers, the gains rise to about 13.4%. These high gains result from the fact of already low trade barriers with the large European countries like Great Britain but also Germany.

10. Liberalization of trade between the EU and USA leads to trade creation between the partners but to evident trade diversion in trade with third countries. With pure tariff elimination, the countries of West Africa, which traditionally trade a lot with Europe, lose up to about 7%. However, there are also winners among the third countries: Brazil, Kazakhstan and Indonesia have higher percentage gains than Europe from positive indirect effects. Welfare rises by about 0.1%.

11. If the non-tariff barriers between EU and USA are liberalized in addition to the tariffs, the per capita income in a global average rises a good 3.27%. The trade diversion effects are, in comparison to the customs scenario, only insignificantly larger, but distributed among third countries in a different way. Now the traditional trading partners of the USA, such as Mexico, Canada and Chile experience substantial losses; likewise Australia, Japan and Israel each lose between 9.5 and 5.5%. These countries therefore have strong incentives to participate in negotiating the liberalization of non-tariff barriers.

12. If search unemployment is considered in the model calculations, it appears possible, at least for data reasons only for the OECD countries, that TTIP leads to a rise in employment and a decline in unemployment in the USA, EU and on average all OECD states. In the tariff scenario, the effects are small; with comprehensive liberalization, they are noticeably larger. In the OECD average, the unemployment rate falls by about 0.5 percentage points.

13. TTIP leads in some countries to job losses. In the ambitious scenario, these amount to up to 100,000 jobs (in Canada). In the OECD average, however, a total of 2 million additional jobs are created. Even in the tariff scenario, the growth in jobs amounts to half a million jobs.

14. Real wages in the directly affected countries rise on average; in the OECD average, through a deep TTIP, they rise by about 2.3%, with the growth in Great Britain, Ireland or USA higher than, for example, in Germany.

15. In countries where the unemployment rate in the initial equilibrium is higher than average, TTIP leads to an above-average decline in unemployment. This applies both to a simple lowering of tariffs as well as to deep liberalization. TTIP therefore also leads to convergence on the labor markets within the OECD.

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Figures and Tables

Figures

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The Global Economic Dynamics (GED) project of the Bertelsmann Foundation is intended to contribute to a better understanding of the growing complexity of economic developments. By using the most up-to-date tools and methods for measuring, forecasting and modeling global economic dynamics, the project seeks to make their economic effects and their political consequences more transparent and understandable.

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