On the Economics of the EU-Japan Free Trade Agreement[1]

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preliminary, update coming soon

Abstract

In this paper, we provide a quantitative analysis of the EU-Japan trade agreement, the biggest bilateral deal that both the EU and Japan have so far concluded. We use a new quantitative trade model calibrated on data for the year 2014. The model is a generalized variant of the Eaton-Kortum (2002), featuring multiple sectors, input-output linkages, services trade and non-tariff barriers. Approximating the expected trade cost savings using estimates for the EU-Korea agreement, the model puts the welfare effects for Japan within four years at about 9 bn. Euro, which is equivalent to 0.23% of GDP in 2014. At the same time the EU members can expect total income gains worth about 11 bn. Euro per year. The countries with the largest gains in absolute numbers are Germany (3.4 bn.), Great Britain (1.6 bn.), France (1.2 bn.), and Netherlands (0.9 bn.). In terms of relative gains, the countries with the largest gains are Ireland (0.19%), Netherlands (0.14%), Luxembourg (0.13%), and Germany (0.11%). Long run gains are likely to be twice as large. We find that trade diversion effects are relatively minor, but that sectoral value added impacts are very heterogeneous, even within the agri-food or manufacturing sectors.

JEL Classification: F15, F17, N74
Keywords: Structural Gravity, Free Trade Agreements, General Equilibrium, Quantitative Trade Models

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1 The EU-Japan Economic Partnership Agreement

1.1 Introduction

In this paper, we provide a quantitative analysis of the trade and welfare effects of the forthcoming EU-Japan Economic partnership Agreement (EU-Japan EPA). This free trade agreement (FTA) is the largest agreement that both the EU and Japan have concluded so far, and it is likely to be of systemic relevance. Its conclusion is of strategic importance for both the EU and Japan in times of growing protectionism and unilateralism.

To this end, we employ a quantitative trade theory model of the type proposed by Eaton and Kortum (2012) and extended by Caliendo and Parro (2015). A key innovation of our proposed approach is to use the recently implemented EU-Korea agreement (entry into force in July 2011) as a benchmark and to use the most recent available data (from 2014) for the implementation of the simulation model.[6] This makes sure that our assumptions on trade cost savings meet a feasibility checks.

The negotiations between the EU and Japan did not materialize out of thin air. To facilitate the trade relationships between the EU and Japan, a number of informal bilateral dialogues have been established: A Cooperation Framework aimed at promoting two-way investment via concrete actions exists since 2004. The EU-Japan Business Round Table - established in 1999 - allows for a dialogue and an exchange of views between EU and Japanese businesses. Since 1979 the European Commission has been encouraging European enterprises to enter the Japanese market and has given them concrete assistance through promotion programmes such as the Executive Training Programme and the EU Gateway Programme.

At the EU-Japan Summit of 28 May 2011, the EU and Japan agreed to work towards a new framework for their bilateral relations and to explore on the desirability to pursue a Free Trade Agreement. In line with the Summit conclusions, a joint scoping exercise was conducted to determine the scope and the level of ambition of a future Free Trade Agreement. The exercise defined a number of non-tariff barriers to trade that are considered by the EU as obstacles in accessing the Japanese market. Following the successful completion of the scoping exercise, in July 2012 the Commission recommended the Council to launch negotiations for a Free Trade Agreement between the EU and Japan. In November 2012 the Council authorized the Commission to start the negotiations. The first round of negotiations took place in Brussels in April 2013. In December 2017, negotiations were concluded, and the ratification process of the FTA is expected to begin soon.

[6] Drawing on existing analysis, the Commission had ordered a Trade Sustainability Impact Assessment for the FTA between the EU and the Republic of Japan (European Commission, 2016). The simulation results in that analysis are, therefore, also based on 2007 baseline data. Moreover, there is no member state level analysis available anywhere so far.

Several quantitative impact assessments with respect to the EU-Japan free trade agreement have been presented over the past years with differing main focus. The EU's Directorate General for Trade has published a quantitative study in 2010 conducted by Sunesen et al. (2010) that assesses the impact of bilateral barriers to trade and investment between the EU and Japan. This first study accounts for both a reduction in tariffs and non-tariff measures with two possible extreme scenarios, a minimum and maximum NTB reduction that constitute the possible range of achievable trade liberalization. Based on a CGE model a liberalization of trade is predicted to result in an increase in EU exports to Japan by 23 percent or 14 bn. Euro if tariffs were abolished, including tariffs in agriculture. The largest gains from tariff dismantling would occur in agricultural and processed foods exports. In case of a maximum liberalization scenario EU exports could increase by almost 50 percent or 29 bn. Euro if the cost of NTBs in Japan were reduced to the defined possible extent. The largest trade expansions are expected to arise in in the chemicals (incl. pharmaceuticals) industry, followed by motor vehicles and medical equipment. A less ambitious only on tariff reduction based agreement could increase Japanese exports to the EU by around 30% which amounts to 25 bn. Euro. The biggest growth in exports is expected to appear in the motor vehicles industry (16 bn. Euro). A comprehensive trade liberalization that includes an ambitious elimination on non-tariff barriers would result in additional exports by 28 bn. Euro. As in the less ambitious scenario again the motor vehicles industry, followed by the chemicals and electronics industry are the biggest gainers. The study concludes that a combination of both bilateral elimination of tariffs and the reduction of non-tariff measures would be beneficial to firms and consumers in both economies and economic welfare will increase by 33 bn. Euro in the EU and 18 bn. Euro in Japan. A third of the benefits for the EU originate from tariff dismantling, the rest are expected from NTB reduction. For Japan, the vast majority of benefits result from NTB reduction.

A second analysis of an EU-Japan free trade agreement is presented by Benz and Yalcin (2015). While the study also employs a CGE model to assess potential gains from bilateral trade liberalization it is the first analysis to quantify economic effects between Japan and the EU accounting for the importance of intra-industry trade and taking appropriate consideration of NTBs. In contrast to related studies the simulations build on a monopolistic competition model extended by a search-matching framework of the labor markets. Clearly, there are differences not only in bilateral trade barriers but also in how efficient the EU and Japanese labor markets work. The new and important aspect of this study is the modelling of the different labor markets in the considered economies.

The simulations of the specific model predict that tariff elimination will result in a 0.07 percent increase of Japanese GDP while the EU's GDP is expected to grow by an additional 0.02 per cent. Growth effects are substantially larger in a comprehensive liberalization including NTB reductions, with Japanese GDP increasing by 0.86 per cent, whereas GDP in the EU will rise by 0.2 per cent. The expected amount of additional employment created from the trade agreement is relatively low. Instead, however, the model

predicts strong firm entry and exit dynamics in both Japan and the EU, meaning that less productive firms are forced out of the market and more productive firms expand. Aggregating these effects, Japan and the EU experience a significant increase in productivity in the tariff plus NTB reduction scenario, around 0.5 per cent for Japan and 0.1 per cent in the EU. Consequently, most of the benefits from an EU-Japan FTA do not come from additional employment but from a higher average firm productivity. This is a core and new result of the Benz and Yalcin analysis.

A third report has been recently published by the EU's DG Trade and authored by European Commission (2016). Their EU-Japan Trade Sustainability Impact Assessment (Trade SIA) was conducted in support of the negotiations of a comprehensive trade and investment agreement between the EU and Japan. The study defines two major aims: 1) to integrate sustainability into trade policy by informing negotiators of the possible social, environmental and economic consequences of a trade agreement; 2) to make information on the potential impact available to all actors. The study expects long-term GDP growth after an EU-Japan FTA amounting to 0.76% for the EU and 0.3% for Japan if a symmetric liberalization policy is applied. Moreover, bilateral exports are estimated to increase by 34% for the EU and by 29% for Japan, while the total export increase is at around 4% for the EU and 6% for Japan. The authors emphasize three important channels through which expected growth in both regions are realized:

The first effect originates from lower trading costs and the resulting higher bilateral exports. Along this adjustments export driven growth is particularly important in food and feed, where bilateral exports from the EU could increase by 294%. Motor vehicles, medical devices, pharmaceuticals/chemicals are also expected to grow above average. The second adjustment channel stems from decreasing prices due to import driven competition which enhances consumer welfare, while the third channel originates from new investments measured in terms of FDI inflows. An important finding of this third study is that particularly, Japan has transformed the economy from an export-led trade model successfully into investment-driven trade. As a consequence affiliate companies in foreign markets are able to participate in local growth developments, such as in the EU.

Table 1 summarizes those industries in the EU and Japan that can expected the largest gains from a bilateral trade liberalization, as modelled and simulated by European Commission (2016).

Common in all existing studies is that trade liberalization between Japan and the EU is expected to result in welfare gains particularly if NTBs are significantly reduced. While the expected overall gains slightly differ across the studies, due to the different model assumptions, interestingly the sectoral winners turn out to be very similar.

Table 1: Top-5 industries in terms of export gains

EU 28 bilateral export gains (share of export increase)	***Japan bilateral export gains (share of export increase)***
Food, feed, processed foods (55%)	Motor vehicles (47%)
Other manufacturing (14%)	Other machineries (21%)
Chemicals (incl. pharmaceuticals) (12%)	Electrical machinery (10%)
Business services (4%)	Chemicals (incl. pharmaceuticals) (8%)
Motor vehicles (3%)	Other transport equipment (7%)

Source: European Commission (2016).

1.2 Main Findings

Our main findings can be summarized as follows:

1. **Diverging foreign market service modes.** The EU and Japan have adopted very different modes of serving foreign markets. Due to historically high levels of protection in the US and in Europe, Japanese firms have opened production sites in foreign markets instead of serving them via exports. So, they circumnavigate tariffs and non-tariff barriers. Moreover, in trade negotiations, due to this model, Japan had little incentives to open its own market. Europe, in contrast, relies much more on exports to serve foreign markets. This, too, is due to the historical development of the EU customs union and single market which has fostered an export-led growth model.

2. **Potential.** Japan is a relatively closed economy. In 2011, only about 14% of its final demand is spent on foreign value added. Compared to other OECD countries, this is low. If it followed average practice, that share should be about 18% in Japan.

3. **The Scenario.** To obtain a realistic quantification of welfare gains from an EU-Japan trade agreement, it is useful to turn to the experience with the EU-Korea agreement which entered into force in 2011. This agreement did boost goods trade quite substantially, mostly by reducing non-tariff trade barriers. Services trade, however, did not grow so much. It makes sense to assume that the EU-Japan agreement should be able to unlock at least the same gains. This scenario defines a lower bound to our estimates because the EU-Korea agreement has been in force only for a few years.

4. **Gains in Japan.** A conservative estimate puts the welfare effects for Japan at about 9 bn. Euro. This is equivalent to 0.23% of GDP in 2014. This is an income gain that materializes every year

after a ramp-up period of about 10 years.

5. **Winners in the EU.** The EU members could expect total income gains worth about 11 bn. Euro per year. The countries with the largest gains in absolute numbers are Germany (3.4 bn.), Great Britain (1.6 bn.), France (1.2 bn.), and Netherlands (0.9 bn.). In terms of relative gains, the countries with the largest gains are Ireland (0.19%), Netherlands (0.14%), Luxembourg (0.13%), and Germany (0.11%).

6. **EU Periphery.** All EU countries are expected to benefit, even if some are almost unaffected. This is the case of several peripheral countries such as Greece, Portugal, or Romania, who would register gains smaller than 0.02%.

7. **Losers.** China, Korea, and Taiwan are expected to suffer from the EU-Japan trade agreement due to trade diversion effects. However, the damage is relatively minor. Across the three countries, it is less than 1.5 bn. Euro. Other third countries, such as Mexico or the US, would gain from the agreement. Again, effects would be small. In total, world income would go up by about 18 bn. Euro. Thus, overall, the rest of the world would lose about 2 bn. Euro.

8. **Brexit.** An agreement between the EU and Japan would be worth substantially less for Japan without Britain taking part. Brexit will reduce the economic gains from the agreement for Japan by about 14%. This lies below Britain's share of 18% in EU GDP, because Brexit would allow Japan to gain market share in the EU to the expense of Britain (which would be fenced out with new trade barriers).

9. **Upper bound estimates.** Our assumption that the expected trade cost reductions due to the EU-Japan agreement would be similar to those measured for the already existing EU-Korea agreement is extremely conservative. Using a uniform NTB reduction in line with estimates in the literature, the income gains from the EU-Japan agreement go up very substantially. Then, German GDP could go up by almost 0.7% and that of Japan by as much as 1.6%.

10. **Sectoral Effects, Europe.** In Europe, the agreement would have quite substantial positive value added effects in the pharmaceutical industry, in the area of food, beverages, and tobacco, and in the motor vehicles sector. Amongst the services sectors, wholesale trade would benefit most. Some losses must be expected in the machinery industry. In the area of services, minor losses could materialize in computer programming or the entertainment industry.

11. **Sectoral Effects, Japan.** In Japan, substantial gains would arise for the computer and electronics sector. Also the motor vehicles and machinery industries would benefit, albeit at a much

smaller scale. Losses could arise in the pharmaceutical sector and in wholesale trade. The agrifood industry would also lose, albeit to a very moderate degree.

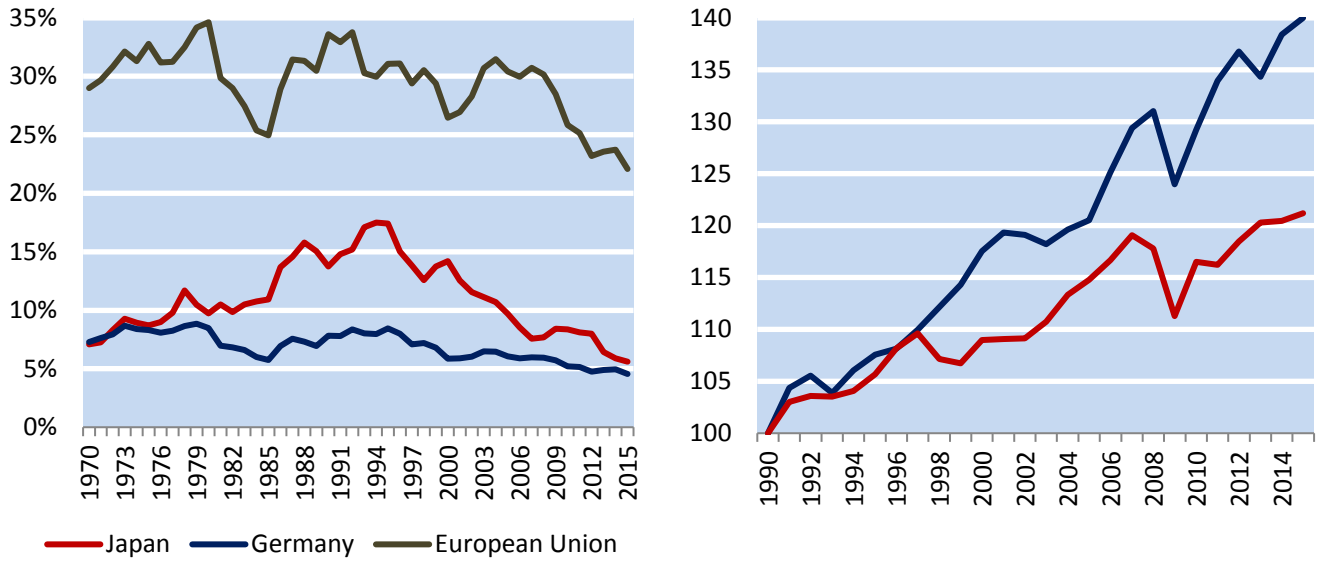
12. **Punchline.** Despite the fact that the EU and Japan pursue very different models of foreign market access, and notwithstanding the reality of relatively low tariffs, even in a very conservative scenario, there are substantial welfare gains to be reached from the agreement. What is more important, however, is the systemic role of a successfully concluded agreement between two of the largest world trading powers: it would send a strong signal supporting a open, global trade order based on rules and cooperation.

The study is structured as follows: In Chapter 2, we start with a short presentation of the Japanese economy. Next, we provide an overview of the EU-Japan economic relationship. Then, in Chapter 3 we show that Japan has a relatively high level of protection against foreign imports in many sectors. We provide on tariff and non-tariff barriers in goods and services sectors. Next, Chapter 4 briefly describes the Ifo simulation model and chapter 5 contains results on three scenarios, for which general equilibrium consistent results on outcomes are provided. Chapter 6 discusses pitfalls and stumbling blocs of the agreement. The final chapter proposes a number of policy conclusions.

2 The rationale for an EU-Japan deal in a nutshell

Measured at current market prices, Japan is the third biggest economy of the world (USD 4,120 bn. as of 2015), after the US and China, and about 25% greater than Germany. Its economy has been growing only sluggishly after the burst of a real estate bubble in 1992; indeed, since 1990, real per capita income measured in purchasing power parities has grown by only about 0.77% per year (Germany: 1.35% p.a.); see Figure 1. As a consequence, Japan's share in the value of world output (and demand, both measured in USD) collapsed from about 15% in 1990s to the value of 5.6% observed today (Germany: 4.6%). Nonetheless, together the EU and Japan account for more than a third of the world's GDP.

Figure 1: Shares in world GDP, current USD (1970-2015) and evolution of real GDP per capita in purchasing power parities, 1990=100, 1990-2015



Source: World Development Indicators, World Bank.

Interestingly, Figure 1 qualifies the widely held view that Japan's growth performance after the burst of the real estate bubble in 1990 was a disaster. To obtain a realistic view of economic development in Japan, one has to take into account that the size of the population has slightly shrunk since then, so that per capita GDP has grown faster. Moreover, it is also important to account for different local price levels in making cross-country comparisons. However, these qualifications notwithstanding, the recent growth history of Japan is clearly disappointing.

Nonetheless, Japan is an extremely interesting but ambivalent market: it is technologically very advanced as a main innovator of automated and robotized manufacturing. It has one of the world's best internet infrastructures. On the other hand, its economy is dominated by small and medium (SME) companies,

and technology adoption in businesses is often small. And the country is still relatively protectionist, in particular when looking at non-tariff barriers; see EU Commission (2016). Moreover, even if China may have surpassed Japan in terms of real GDP in 2012, Japan remains almost equal to the size of the Chinese market measured in consumption, given China's structurally low rates. As investors, Japan and China are also of equal importance, at 8.4 and 8.6% respectively of global FDI outflows.

2.1 EU trade with Japan: aggregate perspective

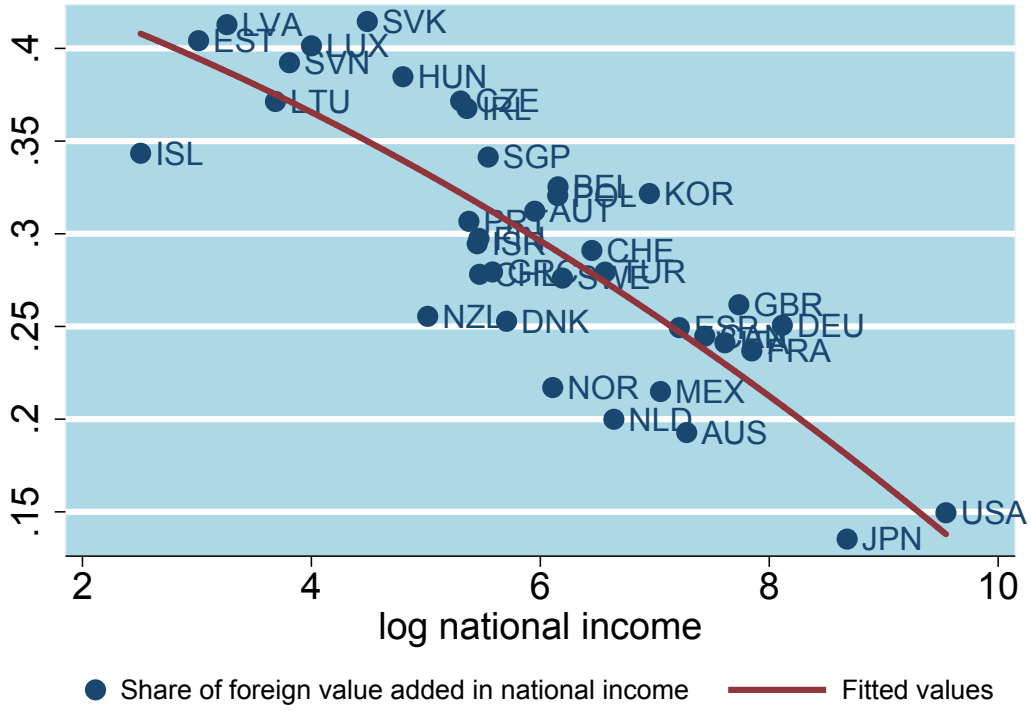
Japan is a relatively closed economy. In 2011, only about 13.5% of its final demand is spent on foreign value added; see Figure 2. Compared to other OECD countries, this is low. For example, in Germany, the share is about 25%; in the USA it is about 15%. Clearly, larger economies tend to serve a larger fraction of domestic demand with domestic production, but, Japan lies below the prediction of a simple quadratic model that regresses the share of foreign value added in demand on the size of the domestic economy. If it followed average practice, that share should be about 18% in Japan.

Japan's external position is characterized by a diminishing surplus on the current account and a persisting minor trade deficit since 2011, although Japan has seen trade surplus for long time after World War II. The Japanese economy now depends more on the income account surplus coming from the activities of Japanese companies abroad. Figure 3 makes this very clear: in 2016, a current account surplus of about 180 bn. USD consisted of net foreign income of more than 160 bn. USD. Compared to this, many Eurozone countries display a very different picture. For example, Germany's current account surplus of 320 bn. USD is almost entirely driven by a trade surplus of about 277 bn. USD; income from foreign investment plays a much smaller role. This reflects a fundamental difference in the two country's business models (besides very low returns to the substantial German net foreign asset position).

Table 2 shows the structure of EU countries from Japan for the year 2014,[7] broken down in goods and services. The yearly total for goods is 56 bn. Euro; for services it is 8 bn. Euro. The share of services in total EU imports from Japan is, therefore, only about 12%. This is substantially lower than the average, which lies around 20% for the year of 2014. The largest importers of goods from Japan are Germany (15 bn. Euro), the Netherlands (9 bn. Euro), Great Britain (8 bn. Euro), and Belgium (7 bn. Euro). The data, however, hide the fact that imports into France, Italy, or Poland (or any other EU member state) often pass through Belgian or Dutch ports and may be booked there as imports. The Trade in Value Added (TiVA) statistics of the OECD support this view, but they are only available up to 2011. Our simulation model does account for the difference between value added flows and gross trade flows and can therefore deal with the issue. Nonetheless, it is striking how concentrated imports from Japan

[7] Comprehensive information on services trade is not available for more recent years.

Figure 2: Share of foreign value in total domestic demand versus domestic income, 2011

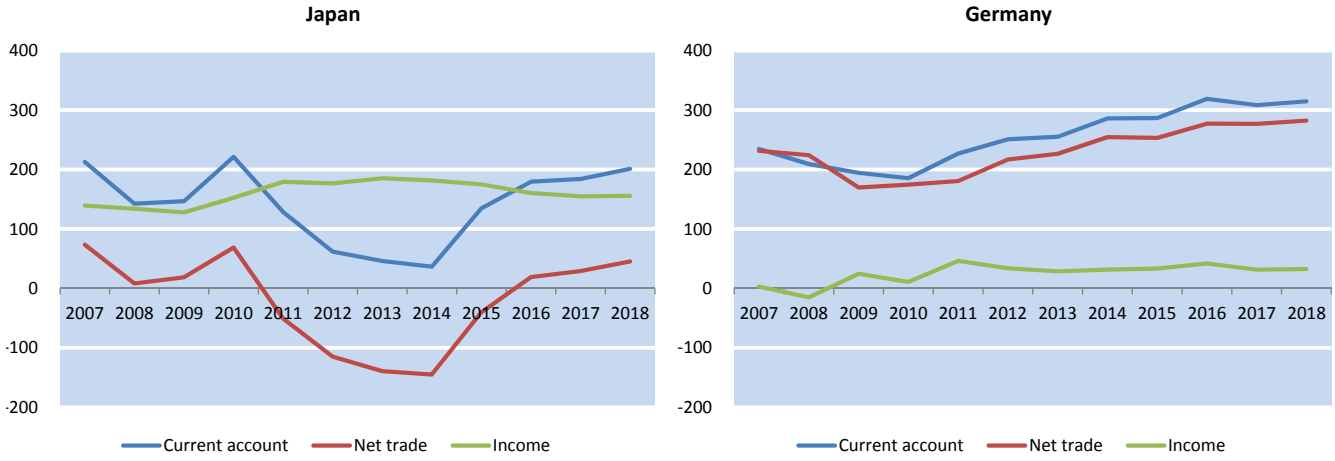


Source: OECD TiVA data; own calculations and illustration. Income variable is in logs of USD bn. The regression line is a quadratic fit with estimated constant 0.937, linear term coefficient 0.006 and quadratic term coefficient -0.004. The R-squared of this equation is 55%.

are on only few EU countries. The top four destinations mentioned above account for almost 70% of all goods imports from Japan.

In the services area, the concentration of imports on only a few EU countries is less pronounced. The four countries (Germany, Great Britain, Netherlands, Belgium) account for 56% of all services imports of Japan into the EU. The most important destination is Great Britain (2.2 bn. Euro); its share in the EU total (27%) is larger than Germany's share in goods trade (26%). Table 2 also reports the share of imports from Japan in the countries' total imports. Two facts stand out. First, Ireland is the country with the largest share of goods imports from Japan (7.6%), followed by Belgium (6.5%), Luxembourg (5.0%), and Germany (4.9%). The other countries fall short from these standards; in some countries the share of imports from Japan is less than 1% (e.g., in Greece, the Baltics, or Bulgaria). This implies that welfare gains from lower tariffs or non-tariff barriers will be unevenly distributed, as lower costs of imports benefit countries with higher import shares from Japan more than proportionately. Second, import shares in the area of services are substantially lower than those for goods. In most countries,

Figure 3: Net trade, income, and the current account: Japan versus Germany



Source: OECD Economic Outlook, November 2016. Own illustration.

the share is below 1%; For the larger EU members such as Great Britain, France, or Germany the share is slightly above 1%. However, the relative importance of Japan in the area of services certainly does not match the relative importance of the country in global GDP.

Table 3 looks at Europe's exports to Japan. In the area of goods, these amounted to about 53 bn. Euro. Hence, Europe has a small trade deficit here of approximately 3 bn. Euro. Regarding services, the situation is opposite. Exports of about 11 bn. Euro exceed imports of 8 bn. Euro by 3 bn. Euro, so that the grand balance is almost in equilibrium for the year of 2014. Figure 4 illustrates this fact more clearly, drawing on quarterly data from 2006 to 2016. It shows that the trade deficit that the EU was traditionally having with Japan has more or less closed, despite fluctuations at the more recent quarters.

In 2014, Germany had a surplus of exports over imports to Japan of about 2.5 bn. Euro; Great Britain, Belgium and Netherlands had deficits. This highlights again the fact that the latter two act as ports of entry for Japanese goods. Interestingly, Italy has substantial exports of goods of more than 5 bn. Euro while its imports amount to less than 3 bn. Euro. EU services exports to Japan behave more similarly to the overall patterns than imports. They account for about 17% of total exports; a value much closer to the grand average than what is observed on the import side. The fact is simply that Japan does not seem to have a comparative advantage in services. The main services exporters from the EU to Japan are Great Britain (22%) and Germany (21%), but France also occupies an important place (13%). Importantly, the composition of services exports is very different across EU countries. In Britain, financial services dominate; in Germany, it is business services, and in France it is tourism.

Table 2: EU imports from Japan (2014)

	Goods			Services		
Country	Mn EUR	Share on EU (%) imports	Share of imports from ROW(%)	Mn EUR	Share on EU (%) imports	Share of imports from ROW(%)
AUT	779	1.4	2.5	95	1.2	0.7
BEL	7355	13.1	6.5	295	3.7	0.8
BGR	84	0.1	0.8	2	0.03	0.1
CYP	38	0.1	2.7	0.3	0.004	0.02
CZE	939	1.7	3.7	15	0.2	0.4
DEU	14520	25.8	4.9	1559	19.4	1.7
DNK	285	0.5	1.3	761	9.5	2.8
ESP	1985	3.5	1.8	196	2.4	0.7
EST	31	0.1	1.2	2	0.02	0.1
FIN	276	0.5	1.5	130	1.6	1.9
FRA	4214	7.5	2.6	1004	12.5	1.4
GBR	7679	13.6	3.2	2157	26.9	1.8
GRC	200	0.4	0.8	95	1.2	0.8
HRV	20	0.0	0.5	3	0.0	0.1
HUN	887	1.6	4.7	25	0.3	0.6
IRL	1437	2.6	7.6	318	4.0	0.6
ITA	2703	4.8	1.8	313	3.9	1.3
LTU	27	0.0	0.3	1	0.0	0.02
LUX	192	0.3	5.0	301	3.7	1.0
LVA	13	0.0	0.5	0	0.01	0.02
MLT	49	0.1	2.6	3	0.04	0.3
NLD	9344	16.6	4.0	513	6.4	0.9
POL	1070	1.9	2.1	94	1.2	0.8
PRT	253	0.4	1.7	6	0.1	0.1
ROU	230	0.4	1.6	9	0.1	0.1
SVK	294	0.5	2.0	2	0.03	0.1
SVN	72	0.1	0.9	2	0.02	0.1
SWE	1292	2.3	3.5	121	1.5	0.5
Total	56268	100		8022	100	

Source: COMEXT (2017), WIOD (2017).

The next two figures study the evolution of EU-Japan trade over the last decade. Using quarterly data, the figures compare the dynamics of trade with Japan to Korea an the Rest of the World. Normalizing all series to the value of 100 in the first quarter of 2011, Figure 5 looks at imports while Figure 6 looks at exports. Including Korea is interesting, because the EU concluded a free trade agreement with this country which went into effect in July 2011. The pictures do suggest that after 2011 trade with Korea

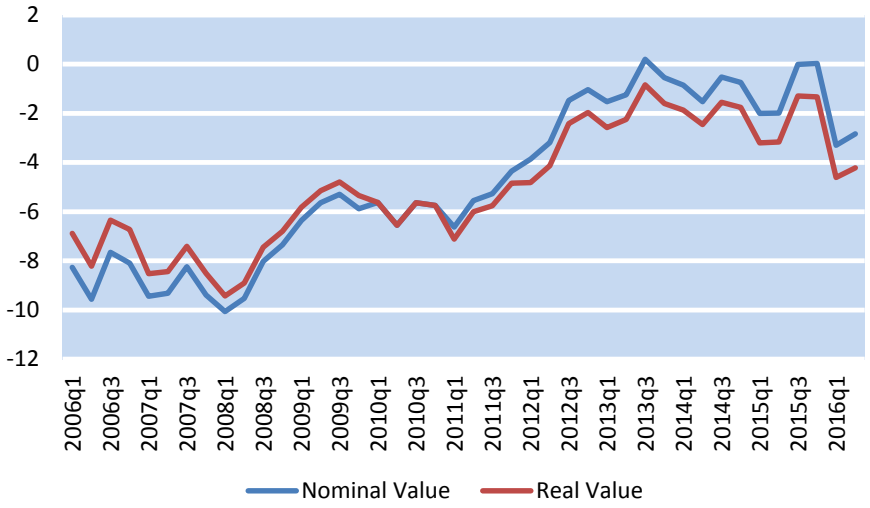
Table 3: EU exports to Japan (2014)

	Goods			Services		
Country	Mn EUR	Share on EU (%) imports	Share of imports from ROW(%)	Mn EUR	Share on EU (%) imports	Share of imports from ROW(%)
AUT	1216	2.3	3.1	95	0.9	0.9
BEL	3058	5.8	3	672	6.2	1.9
BGR	28	0.1	0.3	20	0.2	0.7
CYP	0.8	0.002	0.1	2	0.02	0.2
CZE	769	1.5	3.4	157	1.4	2.2
DEU	17085	32.5	3.7	2263	20.7	2.8
DNK	1515	2.9	5.2	175	1.6	0.8
ESP	2612	5.0	3	314	2.9	1.1
EST	59	0.1	1.8	10	0.1	1
FIN	824	1.6	3.6	97	0.9	1.1
FRA	6818	13	4.1	1392	12.7	1.8
GBR	5240	10	2.7	2404	22	2.5
GRC	44	0.1	0.3	32	0.3	0.5
HRV	35	0.1	0.9	4	0.04	0.3
HUN	404	0.8	2.5	122	1.1	2.4
IRL	1748	3.3	4.4	748	6.8	1.5
ITA	5339	10.1	3.1	535	4.9	1.3
LTU	36	0.1	0.3	3	0.03	0.2
LUX	57	0.1	2.3	150	1.4	0.6
LVA	33	0.1	1	5	0.1	0.4
MLT	105	0.2	10.6	6	0.1	0.4
NLD	3096	5.9	2.6	1208	11.1	2.2
POL	491	0.9	1.3	201	1.8	1.5
PRT	124	0.2	0.9	44	0.4	1.1
ROU	210	0.4	1.4	64	0.6	0.8
SVK	101	0.2	1	27	0.3	0.9
SVN	35	0.1	0.5	11	0.1	0.7
SWE	1517	2.9	3	155.3	1.4	0.9
Total	52613	100		10929	100	

Source: COMEXT (2017), WIOD (2017).

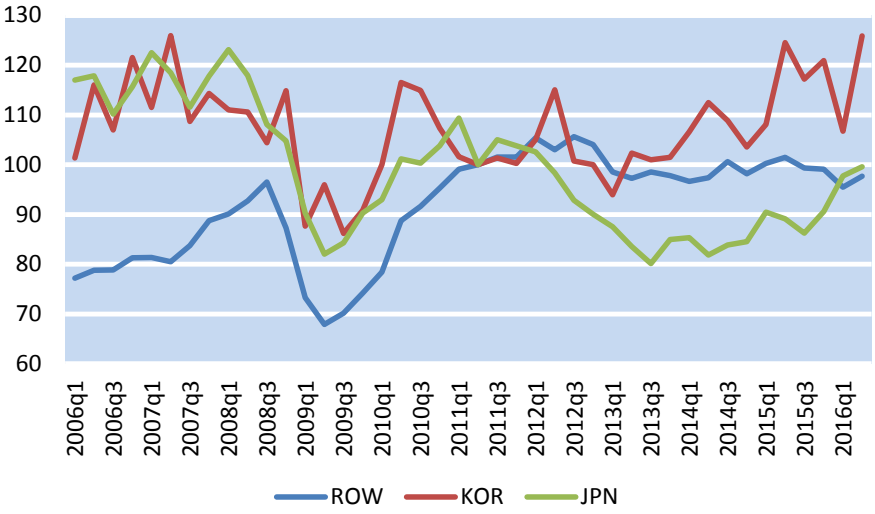
developed more dynamically than trade with Japan. Without providing a formal proof, the illustrations highlight the possibility that the divergence is due to the FTA. It also visualizes the hope that a trade agreement with Japan could trigger a similar development.

Figure 4: EU-Japan trade balance (quarterly, bn EUR)



Source: COMEXT (2017), OECD (2017).

Figure 5: Evolution of EU imports from Japan in comparison with Korea and rest of the world

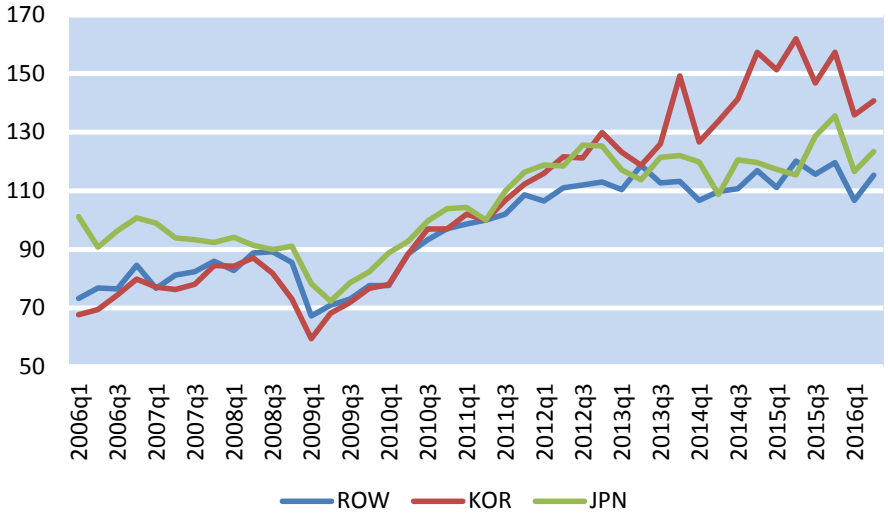


Source: COMEXT (2017), own calculations.

2.2 EU trade with Japan: sectoral perspective

Figure 7 illustrates bilateral trade flows between Japan and the EU for 56 Industries in 2014. Accordingly, across all industries in the three panels (primary industries, manufacturing, and services) bilateral trade

Figure 6: Evolution of EU exports to Japan in comparison with Korea and rest of the world

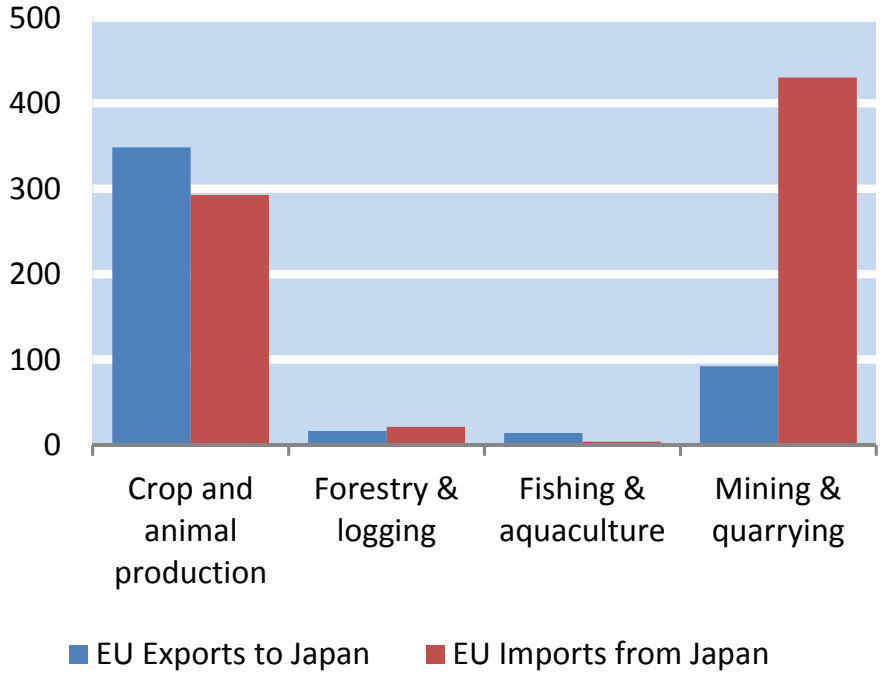


Source: COMEXT (2017), own calculations.

volumes are partly very similar while for some leading industries either the EU or Japan turns out to export or import significantly more than the partner economy. Within the primary sectors a major difference is observed in the mining and quarrying products, in which Japan exports four times more to the EU than it imports. This development is not only a one time effect in 2014 but prevails since the last decade. The other three primary sectors don't show large differences in the bilateral trade volumes, but it becomes obvious that forestry & logging as well as the fishing & aquaculture sectors exhibit relative low trade volume with a potential for larger trade. These sectors are also characterized by relative high protective tariff and non-tariff measures.

Within the manufacturing industries (Figure 8) the EU stands out with three sectors which export by far larger volumes to Japan than vice versa. These are the motor vehicles, machinery and the computer industries in which EU exports to Japan are more than double as large compared to the Japanese imports in the same industries. Japan, on the other hand turns out to own a large advantage in the pharmaceutical industry with an export volume of 5 billion Euros in 2014 while the EU exported products worth 350 million to Japan. A similar asymmetry but less distinct is observed in the chemical industry in which Japanese exports surpass European exports by 1.5 billion Euros. One reason for these strong structural differences across this traditionally export oriented industries can be traced by back to the different business model between Japan and the EU. As illustrated below, Japan serves the European market to a large extent via affiliate Japanese enterprises founded in eastern EU countries, particularly since 2006. Accordingly, it should be not surprising if Japanese direct exports in the motor vehicles,

Figure 7: Bilateral sectoral trade between Japan and EU in 2014 (in Mio Euros): Primary sectors

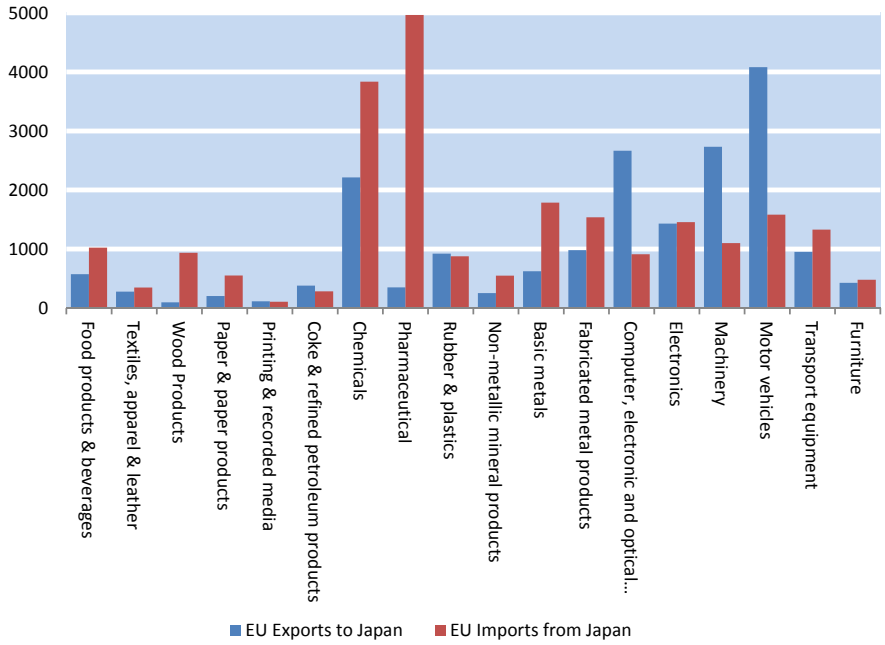


Source: WIOD (2016), own illustration.

machinery and the computer industries will not increase dramatically after the elimination of trade barriers. Japan is most likely to maintain its business model in those industries over next decade given the large foreign direct investments in the respective eastern EU industries.

Figure 9 illustrates bilateral trade flows between Japan and the EU across different service industries. In contrast to the previously discussed industries a large heterogeneity across the service sectors is observed. Accordingly, in some service industries the EU is already successfully active in Japan, such as in the construction, health and machinery services, with an export volume of around 2.5 billion, 760 million, and 670 million Euros in 2014. Japanese exports in these sectors turn out to be negligible so far, while in other industries a reversed pattern is prevailing. E.g. in the whole sale services, water transport, and technical activities Japan achieves trade volumes between 2.3 billion and 1 billion Euros while EU exports in the same industries remain on a relative low level. Implicitly, along the new trade agreement there is a large potential to balance the observed asymmetries across the different service sectors while at the same time there are several service industries in which both Japan and the EU can increase bilateral trade by eliminating non-tariff barriers and market access regulations, which are the only trade restricting measures in services compared to the primary and secondary industries.

Figure 8: Bilateral sectoral trade between Japan and EU in 2014 (in Mio Euros): Manufacturing industries



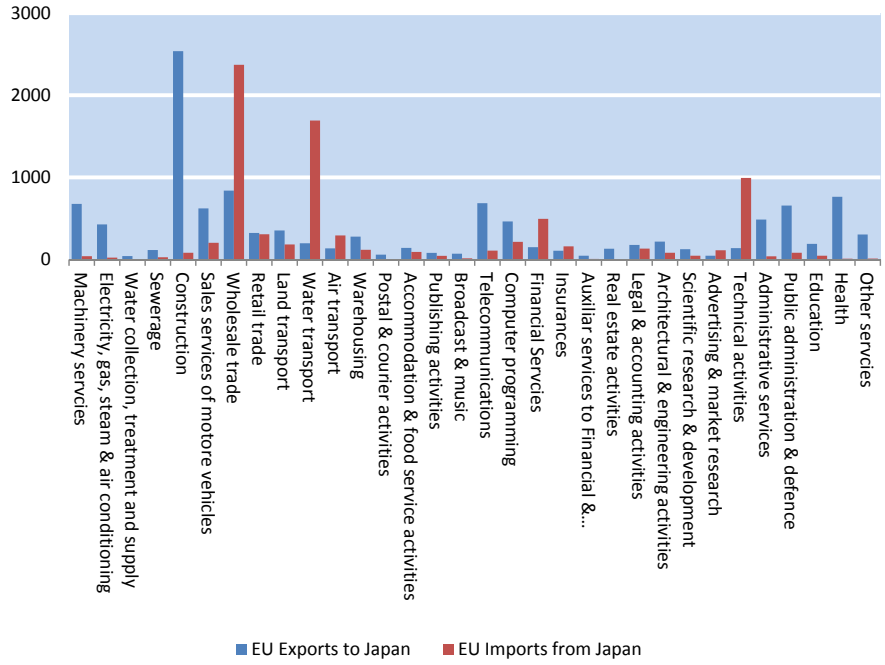
Source: WIOD (2016), own illustration.

2.3 Foreign Direct Investment

Figures 10 and 11 show how foreign direct investment (FDI) from Japan into Europe compares to Japanese imports into Europe, and how FDI from Europe into Japan compares to European exports to Japan. The comparison is interesting and relevant because it highlights once again the different business models of the two entities. Japanese FDI into Europe has increased very dynamically from 2006 to today, while Japanese exports to Europe have not grown at all. This suggests that Japanese firms have increasingly decided to serve European consumers via local production. In contrast, European FDI in Japan has moved up and down over the period 2006 to today without any discernible trend. Exports, however, have been more dynamic.

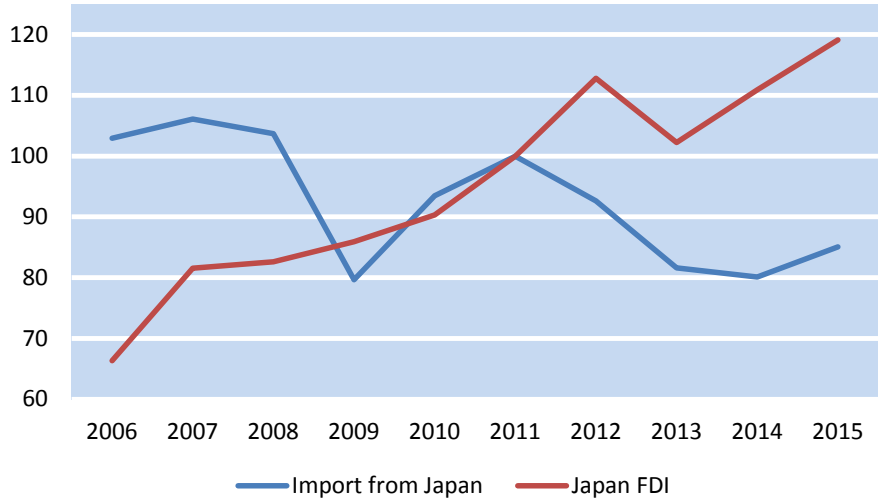
Figure 12 looks more closely at the composition of Japanese FDI in the world. Very clearly, China and the US dominate the picture, both in terms of employees of Japanese affiliates and in terms of local sales of those affiliates. However, within Europe, Great Britain stands out as the country attracting most FDI.

Figure 9: Bilateral sectoral trade between Japan and EU in 2014 (in Mio Euros): Service sectors



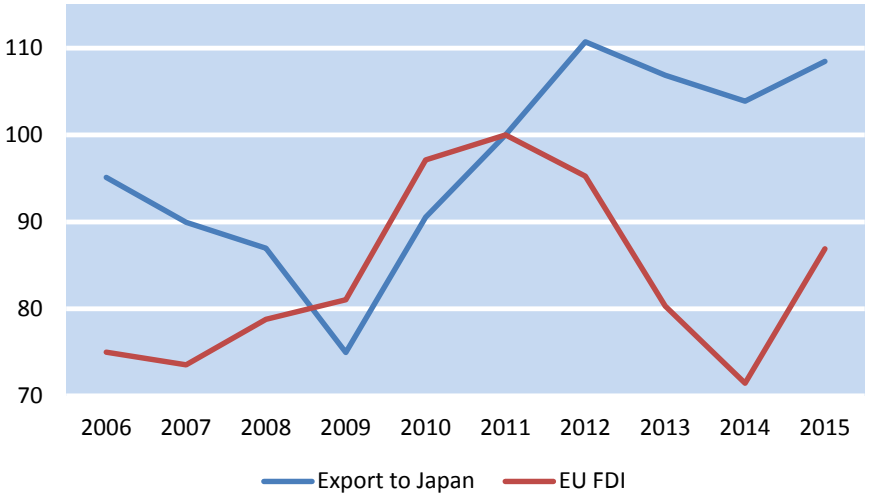
Source: WIOD (2016), own illustration.

Figure 10: Comparison of imports from Japan and Japanese FDI stock in Europe



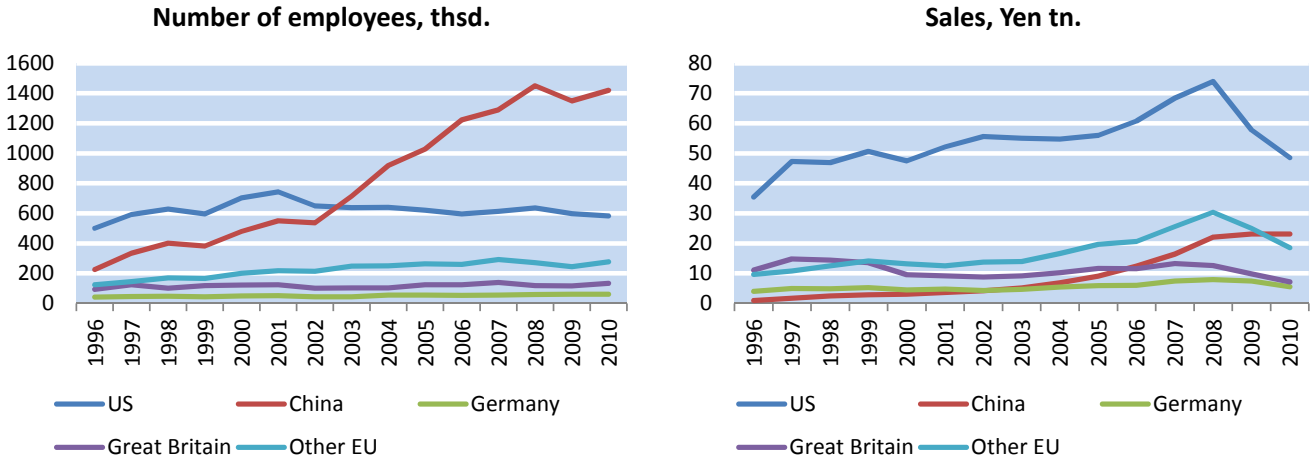
Source: COMEXT (2017), Eurostat (2017), own calculations.

Figure 11: Comparison of exports to Japan and European FDI stock in Japan



Source: COMEXT (2017), Eurostat (2017), own calculations.

Figure 12: Number of employees and sales of Japanese affiliates overseas



Source: METI. Own illustration.

3 Trade Policy Issues in Japan

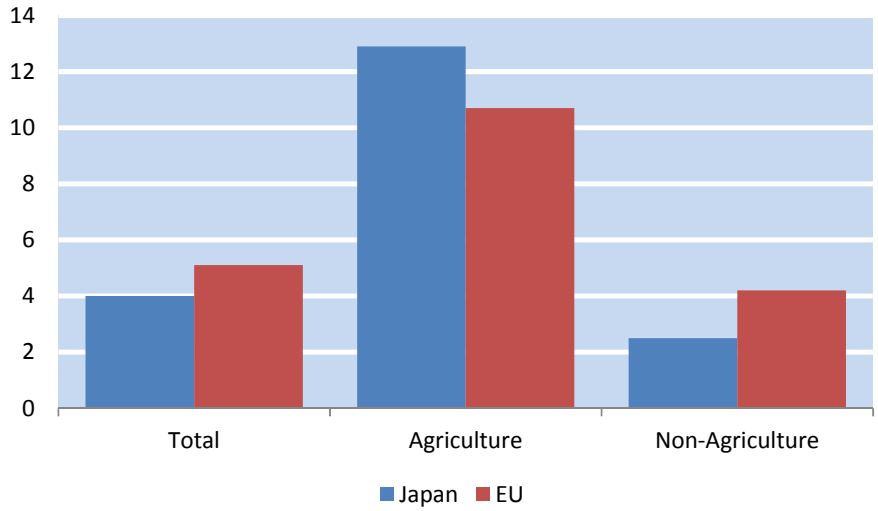
Current Japanese reforms addressed as Abenomics (refering to the economic policies advocated by Shinzo Abe) have changed some economic structure. During the structural reform by "Abenomics", several trade policies have been revised. This puts more stress on improving trade balance through enhancing productivity of Japanese firms. The focus of Japan's trade policies under Abenomics involves various types of free trade agreements such as TPP and EPAs. Furthermore, Japan takes strategic approaches to emerging markets. Japanese government helps firms export more Japanese manufacturing and agricultural products, sustains supplies of natural resources and promotes inward FDI. There are several government bodies responsible for trade policies in Japan. The Ministry of Foreign Affairs (MOFA) and the Ministry of Economy, Trade and Industry (METI) are responsible for general trade policies. Furthermore, some other ministries are responsible for specific policies, the Cabinet Office, the Ministry of Finance, the Ministry of Agriculture, Forestry and Fisheries (MAFF), the Ministry of the Environment and the Ministry of Land (MLIT), Infrastructure, Transport and Tourism. In addition to these government ministries, several government agencies are largely related to trade policies such as the Bank of Japan and the Japan External Trade Organization (JETRO). JETRO is a responsible agency for trade promotion, both exports and imports, the activation of inward/outward FDI.

3.1 Tariff Protection

A large array of traded products between Japan and the EU is subject to import duties (tariffs) which comply with the World Trade Organization's (WTO) regulations. At the same time, in both regions around one quarter of products are not subject to import duties. Across all goods that are protected by tariffs around 85% of the bound duties turn out to be below 10%-points. Except for a handful of traded goods with tariff peaks, the remaining product lines reach import duties of around 30 per cent in the EU and 35 per cent in Japan. Peak tariff rates reach 60 per cent in Japan and 75 per cent in the EU. Figure 13 illustrates that average applied MFN tariffs over all protected goods were below 5 percentage points. However, distinguishing between agriculture and non-agriculture goods illustrates that average MFN tariffs, particularly in the former sector, reach average protection levels above 10% both in the EU and Japan.

Figure 14 summarizes the prevailing applied tariff rates for EU industries for which trade data is available. Accordingly, average tariffs do not only differ between agricultural and non-agricultural sectors but also significantly across manufacturing industries. Weighted tariffs reach on average around 10% in case of chemical products. Moreover, in the traditionally export oriented industries machinery, electronics, and non-metallic mineral products average tariff rates amount up to 8 percentage points representing

Figure 13: Simple average applied MFN tariffs (%)

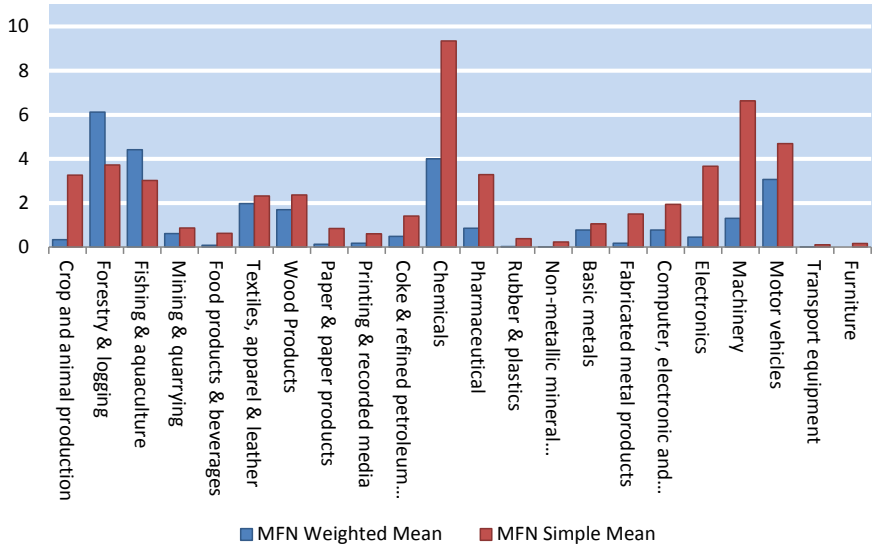


Source: WTO Tariff Profiles; own illustration.

a relative large range for potential costs savings by tariff elimination. The graph also illustrates that in some industries simple and weighted tariffs substantially differ. Two sources can drive these statistical patterns. Either some products are protected with very high prohibitive tariffs resulting in no trade and hence weighted tariffs are biased downwards, or some goods with low tariffs are strongly traded resulting in lower weighted tariffs.

Figure 15 illustrates the equivalent Japanese tariff distribution across the same industries as depicted for the EU. While Japan also shows a strong tariff variation across the listed industries, interestingly tariff rates in most of the industries turn out to be on average lower than in the respective European industry. Particularly, the difference between weighted applied MFN tariffs between the EU and Japan turn out to be substantially different. Tariffs for machinery products e.g. are on average at around 7.5% in the EU and 6.6% in Japan. However, if one accounts for the trade volumes for each tariff line in the sector, weighted average tariffs in the EU remain at around 7%, while in Japan the respective tariffs drop down to below 2%. Hence, for a large share of EU exports to Japan with relative high tariffs rates, we don't observe large export volumes. One reason for this structural difference in the weighted applied tariffs between the EU and Japan could rest in the mentioned business model of Japanese affiliates enterprises located in the EU. It is possible for Japan to circumvent relative high tariffs e.g. in the machinery sector because a certain share of Japanese products are produced within the EU, while at the same time European companies serve the Japanese market with the full range of products in the machinery industry predominantly via trade. One expectation resulting from this tariff pattern is that reciprocal tariff liberalization between the EU and Japan will most likely be relatively more beneficial

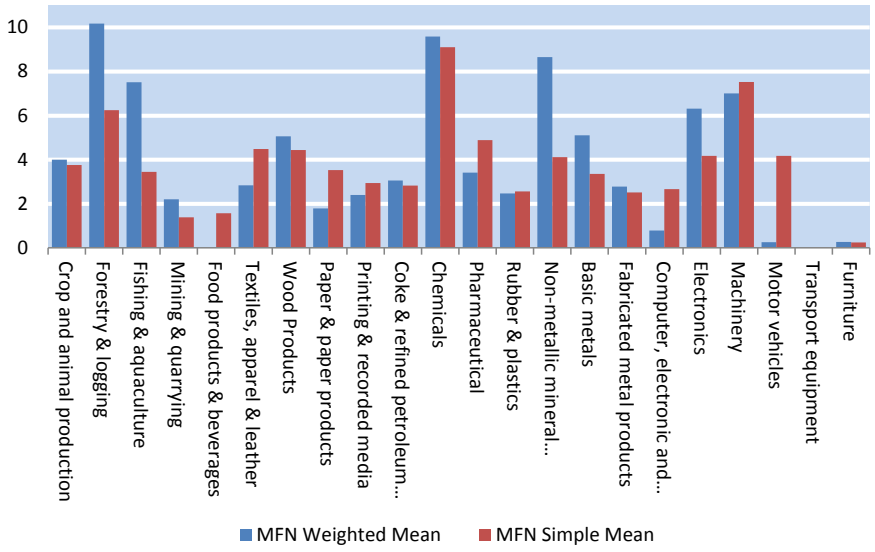
Figure 14: EU import tariffs (%)



Source: WTO Tariff Profiles; own illustration.

for EU exporters if compared with expected Japanese exports.

Figure 15: Japanese import tariffs (%)



Source: WTO Tariff Profiles; own illustration.

Overall, these simple statistics demonstrate that for a critical number of traded products tariffs still

represent a sizeable barrier and their elimination is relevant for additional welfare gains. At the same time it is worth to emphasize, that in comparison to other countries the average tariff rates between the EU and Japan are on average relative low (e.g., China has a simple average MFN-bound rate of 10 per cent). It is therefore unlikely that elimination only of these relatively low tariffs will lead to strong trade and output effects in the aggregate.

3.2 Agriculture in Japan

The main agricultural products produced in Japan are rice, fruits, and vegetables. In particular, rice has been a main agricultural product for a long time and accounts for approximately 25% of agricultural production. Total planted area is 1.64 million ha in 2012 and per-area production is 533kg per 10a in 2011. Many other agricultural products largely depend on imports in Japan. As shown in Figure 15, tariff rates on agricultural products are much higher than any other products. However, tariffs on agricultural products have a large variation. Over 25 percent of products are duty free while a maximum tariff (ad valorem equivalent) is more than 300%. 17.4% of agricultural tariff lines are non-ad valorem. Importantly, the agriculture sector continues to receive substantial government supports. For instance, agricultural sector has a relatively higher average MFN tariff rates than other sectors. More than high tariff rates, many government policies are taken in agricultural products such as quotas, income support and production controls. These kinds of government supports result in higher market price, protecting domestic producers. According to the OECD, the producer support estimate (PSE), which is the annual monetary value of gross transfers from consumers and tax payers to support agricultural producers, occupies 43.1% in the gross farm receipt in 2015, which is about twice as high as the OECD average (http://www.oecd.org/tad/agricultural-policies/producerandconsumersupportestimatesdatabase.htm). In agricultural trade, subsidies have experienced some changes. After the Uruguay Round, domestic agricultural subsidies have reduced several times while there has been little change in trade policies such as tariffs, the special safeguard, and tariff quotas. Agriculture in Japan is remaked by small scale, i.e. small fragmented lands engaged by small family-base and aged farmers. High rates of tariffs lead to make domestic prices much higher than world prices. One representative example for agricultural subsidies is direct payment scheme. Since 2000 a direct payment scheme in mountainous villages of rural areas has been introduced to give incentives to farmers to continue production and prevent from abandonment of rice fields. This is related to environmental and ecological issues. Payment rates are determined by the slope of the land and the type of production from 21,000 Yen per 0.1 ha for paddy fields with high inclination to 1,500 Yen per 0.1 ha for pasture. In 2008, this scheme covered 665,000 ha and 640,000 farmers in 2008. Most other forms of market price regulations support have been removed while administered prices and controls still

apply to very specific agricultural products. State trading products are applied to rice, wheat, barley and designated dairy products. The gate price system is applied to pork meat. The gate price is set at 524 yen per kg. Anyone who imports to Japan below the gate price is required to pay not only the 4.3% pork duty but also the differential between the import price and the gate price. This system is designed to protect high price of pork meat in Japan. Turning from imports to exports, export promotion is current key policy. MAFF developed the Strategy to Promote Agriculture, Forestry, Fisheries Products and Foods in August 2013. The strategy involves the target of exporting agricultural products of 1 Yen trillion. In June 2014, this export promotion strategy was accepted by the Cabinet of Prime Minister Abe as "the Japan Revitalization Strategy".

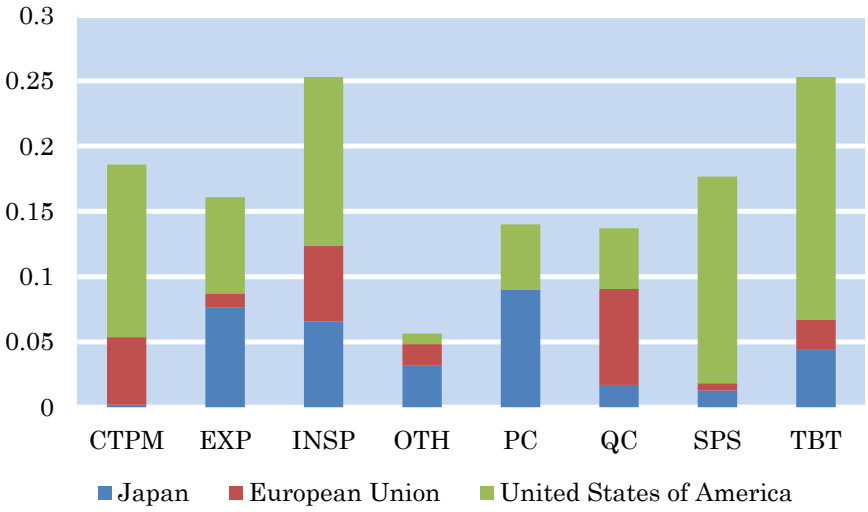
3.3 Non-tariff measures

In non-tariff measures, Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBT) requirements in Japan are much stricter than international standards. The cost of satisfying its quality and safety standards can be substantially high. Using the UNCTAD data source on Non-tariff measures (TRAINS), Figure 17 shows that the share of NTBs in Japan, EU and the United States differ globally. NTBs are simply counted by the number, which does not take into account the quality and magnitude of NTBs. According to the Figure, the United States exhibit a dominant share in contingent trade protective measures (CTPM), export-related measures (EXP), TBT and SPS. TBT and SPS in Japan are much lower than in the United States, but higher than European Union. Overall, except CTPM and quality control measures (QC), Japanese NTBs are higher than EU ones.

In more details on NTBs, there are some NTBs in Japan that affect EU. SPS is applied to plants sent from EU since June 2015. This treatment originally stems from Ministerial Ordinance for Enforcement of the Plant Protection Act. Current revisions update the quarantine and non-quarantine pest lists and the table of combinations of pest, plant and area, which is subject to inspection at growing place in exporting country, import prohibition, and special phytosanitary measures in exporting country. CTPM is applied to Spain since September 2008. This is an anti-dumping measure on Electrolytic Manganese Dioxide from Spain. QC is applied to some import products from Switzerland since March 2015. Tariff rate quotas apply to Switzerland on certain imported items. This treatment is based on Cabinet Order on the tariff rate quota system based on the Economic Partnership Agreement.

The TBT enquiry points are: (i) the Standards Information Service in MOFA which handles enquiries in drugs, cosmetics, medical devices, foodstuffs, food additives, telecommunication facilities, motor vehicles, ships, aircraft and railway equipment and (ii) the Standards Information Service in JETRO which handles enquiries in electric equipment, gas appliances, measurement scales, foodstuffs, and food

Figure 16: Non-tariff measures: an overview



Source: UNCTAD. CTPM: Contingent Trade Protection Measures, EXP: Export Related Measures, INSP: Border Inspections, OTH: Other measures, PC: Price Controls, QC: Quality Control Measures, SPS: Sanitary and Phytosanitary Measures, TBT: Technical Barriers to Trade.

additives.

To ensure compliance with the TBT Agreement, Japan has been aligning JIS to international standards. The proportion of those JIS which are harmonized with international standards (ISO and IEC standards) was 97% (2014). The Ministry of Agriculture, Forestry and Fisheries, the Ministry of Health, Labor and Welfare, and the Food Safety Commission are responsible for Japan's SPS measures. The laws governing the establishment of SPS measures include the Food Sanitation Law, the Quarantine Law, the Plant Protection Law, and the Act on Domestic Animal Infectious Diseases Control.

Japan currently imposes import prohibitions on beef and poultry from various countries to prevent the spread of some animal diseases such as BSE and avian flu inside Japan.

The import ban involves technical consultations and the implementation of risk assessment, and consultation with relevant domestic industries, consumers, and exporting countries. However, since December 2005, Japan has partially allowed beef imports from the United States and Canada under the condition that specified risk material is removed from all cattle and beef products are from cattle of 20 months of age or younger.

3.4 Barriers in Services

The service sector keeps the largest share of Japanese GDP and labor market. The service sector accounted for nearly 73% of GDP and 72% of total employment in 2014. Labor productivity and its growth in service sector tend to be lower than in manufacturing in most developed countries. In particular, Japan's labor productivity in the service sector is the lowest in OECD countries. Furthermore the difference between manufacturing and services is much larger than in any other developed countries. Furthermore, total factor productivity growth in most services sectors is also lower than manufacturing. One of the reasons comes from the fact that the service sector in Japan has been highly protected from foreign firms. This heavy protection has been afforded by restrictive internal regulations by the Japanese government, which includes market entry, licensing, regulations on foreign ownership and the high business cost. On the other hand, the Japanese government takes positive attitude toward the liberalization of trade in services. The basic stance is the achievement of the comprehensive liberalization of trade in services. Japan continues to insist on the importance of transparency and clarity of the commitments. The service sectors in Japan have seen various market conditions and policies. Here we take some representative service sectors: bank, telecommunication, maritime transport, and air transport sectors. The financial sector in Japan is relatively open to foreign countries. Many government regulations on financial services in Japan have remained unchanged. The banking sector is tightly regulated by the Financial Services Agency (FSA) under the Banking Law. Under the law, all banks need to be licensed to conduct business in Japan. Foreign banks can provide banking services through branches and subsidiaries (incorporated in Japan). Under the Banking Law, deposit insurance does not apply to branches of foreign banks not incorporated in Japan. Nationally licensed subsidiaries of foreign banks are subject to the same prudential requirements as domestic banks. Telecommunication sector is dominated by a very limited number of companies such as NTT, which was originally a governmental company until the mid 1980s. Foreign ownership in NTT is limited to 33%. There has been no big change to Japan's telecommunications regulations and legislation. The Ministry of Internal Affairs and Communications continues to be the regulatory authority responsible based on the Telecommunications Business Law. Japan highly depends on maritime transport, because Japanese trade is mainly shipped by sea. The sector is highly regulated by the Ports and Harbour Bureau of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) and the Maritime Bureau. The sector is legally regulated by the Ship Law, the Marine Transportation Law, and the Coastal Shipping Law. Foreign investment in the maritime transport sector is subject to the prior notification requirement. The Japanese air transport sector (e.g. JAL and ANA) is legally regulated by the Civil Aeronautics Law and the many bilateral air agreements that Japan has signed. Administration of airline entry into the market, pricing, route allocations, and safety regulations are in charge of the Civil Aviation Bureau of the MLIT. Foreign ownership is restricted to 33% of voting rights under the Foreign Exchange and Foreign Trade Laws.

3.5 Public Procurement

Another issue is concerning government procurement. While the EU market is open to Japanese railway providers, the EU cannot equally access the Japanese market. Only 2% of the Japanese railway market is open to foreigners. However, careful assessment of these numbers is required. The issue comes from big differences in legal and economic basis between Japan and EU. For example, Japanese railway companies are privatized (e.g. JR East, JR Central, JR West)in 1987. On the other hand EU railways are predominantly belonging to the public sector. Furthermore, Japanese railways are almost limited to carry passengers, while the EU has still large portion of freights.

4 The Ifo Trade Model

In this chapter, we describe the Ifo Trade Model of Aichele et al. (2014). Additionally, we define likely scenarios for an EU-Japan FTA pertaining especially to the extent of the expected reductions of NTBs.

4.1 The Ifo Trade Model: Methodology

The Ifo Trade Model, which is described in depth in Aichele et al. (2014), is a static, general equilibrium trade model.[8] It encompasses 44 countries and regions and 57 goods and services sectors. In the model, international trade flows are hampered by tariff and non-tariff barriers to trade. Sectors are connected nationally as well as internationally through input-output linkages. Thus, the Ifo Trade Model captures international value chains at a rich level of sectoral detail.

The model can be parameterized with simple econometric equations that result from the equilibrium conditions of the model. Two sector-specific parameters are of paramount importance: the elasticity that describes how tariff changes impact trade flows and the potential for reductions in NTBs. While there are established methods to estimate trade elasticities, there are substantial uncertainties surrounding the modeling and estimation of NTBs. In this report, the modeling philosophy consists in using the experience with existing FTAs to econometrically estimate their effect on sectoral trade flows using so called gravity models. Once, causal effects of FTAs on sectoral trade flows are known, estimated trade elasticities and observed tariffs can be used to back out how large the reduction in costs other than tariffs must have been. Below we show evidence obtained from a regression model in terms of ad valorem tariff equivalents. Generally, existing FTAs – both shallow and deep ones – have managed to reduce NTBs significantly in the manufacturing sectors; the evidence is mixed in agri-food. In services, there is robust evidence for cost reductions, but the effects are rather small in size.

These cost reductions are used as the basis of scenarios for a possible EU-Japan FTA. Note that this strategy yields potentials, not forecasts. Whether negotiators are able to realize what has been possible in existing agreements depends on political circumstances.

While the method highlights feasible reforms (feasible, because they have been achieved in other trade relationships), it is absolutely possible that specific agreements go beyond what existing deals have done. In the EU-Japan case it is conceivable that both sides' major interest in services trade leads them to achieve more than what other agreements have been able to do. In that sense, we might underestimate the potentials for certain areas.

[8] The basis for this model was laid down in Caliendo and Parro (2015). Their work extends the workhorse trade model of Eaton and Kortum (2002). The model is thus rooted in the "New Quantitative Trade Theory"; see Costinot and Rodríguez-Clare (2014) for a description of this class of models.

In the analysis, we use data from Duer et al. (2014) to distinguish FTAs according to their depth, i.e. how far-reaching the provisions on non-tariff aspects are. Because measuring the depth of FTAs is again complicated and fraught with measurement error, we simply categorize the universe of FTAs into deep ones (such as EU-Korea, NAFTA, etc.) and shallow ones (such as EU-Morocco, or many older FTAs amongst developing countries). This allows us to assess the trade and welfare effects of different depths of trade liberalization. With this information at hand, we can simulate different levels of NTM reductions of an EU-Japan FTA.

The trade policy scenarios—described in more detail in the next subsection—are based on the following thought experiment: in the world as we observe it in 2014, if the EU and Japan had an FTA, i.e. eliminated all bilateral tariffs and reduced NTMs, how would trade, sectoral production structures and real income look like in this alternative world? To create the scenarios, we assume that the extent of NTM reductions for the EU-Japan FTA would be similar to the ones observed in past (shallow or deep) FTAs.

The Ifo Trade Model is a general equilibrium model which simultaneously quantifies the effects of trade policy scenarios on sectoral trade flows, value added, employment, wages, tariff income, GDP, prices, and other variables of all countries involved. Thus, trade diversion effects are fully accounted for. For example, an EU-Japan FTA could lead to a redirection of European textiles imports away from sources such as Bangladesh towards Japan. Moreover, the agreement may divert Japanese imports away from countries where imports are still dutiable to the EU where duties are eliminated; this would affect tariff revenue. These diversion effects are the root cause for the fact that the welfare effects of FTAs are generally ambiguous for the parties engaged in negotiating them and negative for the countries remaining outside of the agreement. The model allows for a very rich pattern of domestic and international sourcing patterns. This means that an expansion of economic activity in one country (in the Japan textiles sector, say) can lead to increased exports of third countries (of Egyptian cotton to Japan). This counteracts the trade diversion effects.

The model provides static level effects on real income and trade. Potential dynamic effects of trade liberalization, e.g. on the innovation activities of firms, are not taken into account. In other words, we provide a lower bound for the potential effects of an EU-Japan FTA. However, this does not imply that the static effects would result instantaneously after the FTA has entered into force. This is particularly relevant for NTMs: the increased regulatory cooperation between the EU and Japan will be slowly phased in. Evidence from existing FTAs shows that this phasing-in process usually takes between 10 and 12 years (see e.g. Jung, 2012).

Another caveat worth mentioning is that the Ifo Trade Model, like almost all other CGE models, does not explicitly include rules of origin. This means that the model may generate too little trade diversion,

since goods originating from third countries may enjoy preferential treatment when used as inputs in the parties' production systems. However, at the level of sectoral aggregation used in the model, the share of third party value added in exports is beyond the critical thresholds of 50% in almost all cases.

4.2 Scenario Description

We present three main scenarios:

1. A tariffs-only agreement (with special focus on agriculture and food);
2. A deep and comprehensive agreement with complete tariff elimination in all sectors and a reduction of the costs of non-tariff measures modelled to the example of the EU-Korea agreement of 2011.
3. A deep and comprehensive agreement with complete tariff elimination in all sectors and a reduction of the costs of non-tariff measures modelled to the econometric effects estimated for the average free trade agreement (using the classification of Duer et al., 2014).

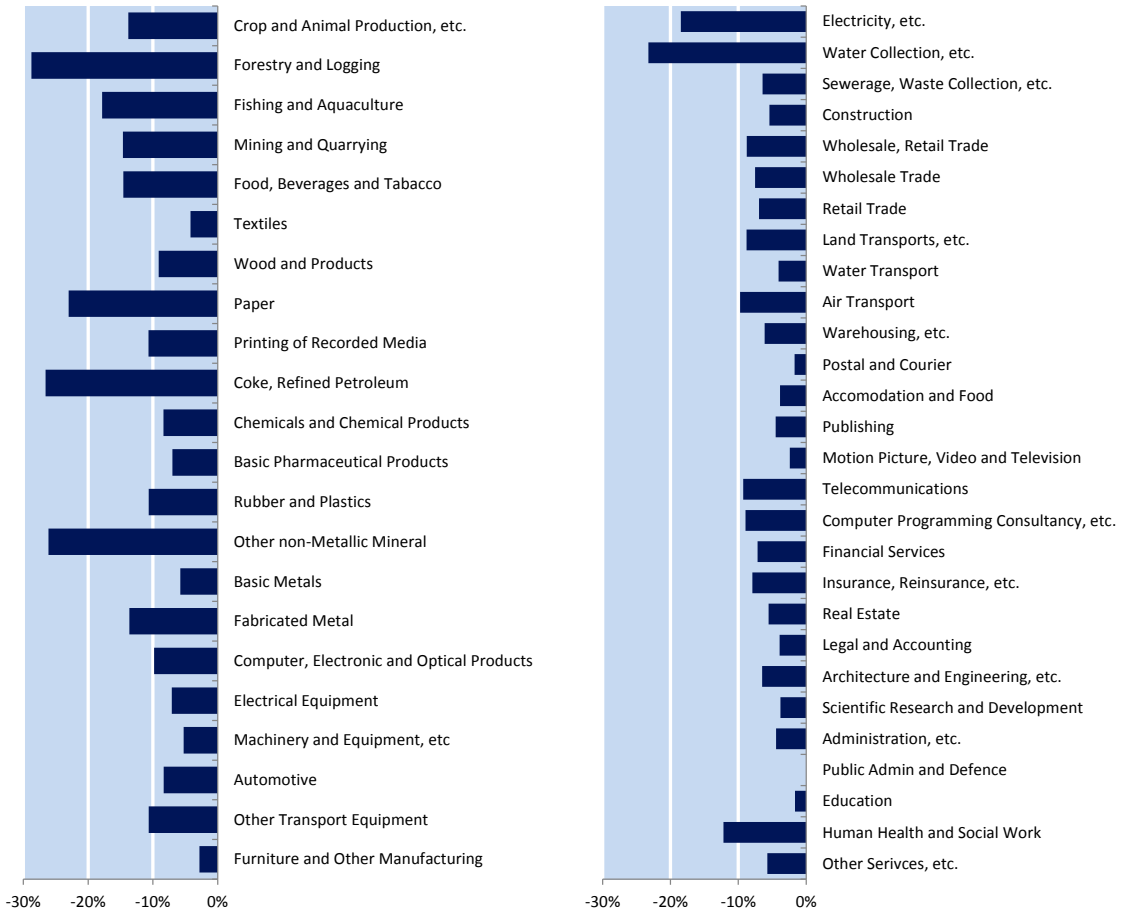
Additionally, we compute scenarios which account for the probable exit of the United Kingdom from the EU (the Brexit). This requires a further step in constructing a hypothetical baseline, in which the Brexit has already occurred, and to compare the results from an EU-Japan FTA (without and with a separate UK-Japan agreement) with this baseline. Since the terms of the Brexit are still unknown, we assume that trade costs between Britain and the EU member states go up by 26.5% uniformly across all sectors. This is the trade cost change implied by the estimates reported in Head and Mayer (2014) in their meta analysis of trade policy effects.[9]

For each scenario, we provide general equilibrium consistent results on outcomes such as

- Changes in bilateral and multilateral trade flows and openness variables (both % of baseline and bn. Euros);
- Changes in sectoral output and value added statistics (both % of baseline and bn. Euros);
- Changes in sectoral employment (both % of baseline and number of workers) and displacement index;
- Changes in real per capita income (both % of baseline and number of workers).

[9]More precisely, the estimate of EU membership obtained from structural gravity modeling is 0.19 on average across many studies. Applying the formula $[1 - \exp(0.19)]^{-1} - 1 = 0.265$ we find the required value.

Figure 17: Scenario definition: Assumed NTB reductions (in %)



Source: Results of sector-level gravity regressions of bilateral trade flows (including domestic flows) between 43 countries contained in the WIOD data set on tariff levels, indicator variables for various free trade agreements, exporter and year as well as importer and year fixed effects, and bilateral fixed effects. Method: Poisson Pseudo Maximum Likelihood. Gravity estimates have been transformed into *ad valorem* tariff equivalents using the trade elasticities estimated in the same equations.

These variables are produced for all EU member states, Japan, and selected third countries. Data is illustrated in the study and/or provided to the client in electronic form.

Note that the EU and Turkey have formed a customs union. So, if the EU sets tariffs towards Japan to zero, Turkey has to follow and unilaterally set its tariffs towards Japan to zero as well, without receiving tariff reductions on the Japanese market. We take this into account in our simulations.

The baseline data, to which our model is calibrated, refer to the year of 2014. The data needed for the model are quite considerable. Amongst other things, we need information on sectoral value added, production, and domestic and foreign input-output linkages for each of our 44 countries in a uniform

and harmonized format. Unfortunately, the most recent collection of such data available refers to the year of 2014 and is not available for more countries (however, the countries included cover about 95% of world GDP). We refrain from updating these data to 2016 or beyond using interpolation and forecasting methods, as this would inevitably result in additional uncertainty. Therefore, our comparative statics exercise compares the status quo of 2014 with a hypothetical situation, in which an EU-Japan FTA had existed in 2014. This approach does not preclude us from evaluating the effects with data from 2016 in order to account for the change in scale of the world economy. The underlying assumption, is that the structure of the global economy (the description of technology and demand) has not significantly changed since 2014.

5 Expected Effects of an EU-Japan FTA: Simulation Results

We are now ready to turn to the results of our model simulations. We look at macroeconomic effects, such as the effects on per capita income, then turn to the analysis of sectoral value added and employment impacts, and finally end with a description of the simulated trade changes. We discuss the role of Brexit and the importance of third country effects. As our default, we will treat the EU-Japan agreement as similar to the EU-Korea one. This strategy allows us to pinpoint the potentials of an agreement and to illustrate the structure of the mechanisms at play. We also present results for other scenarios, both to study the robustness of our findings and to assess alternative quantitative outcomes.

An agreement between the EU and Japan would lower trade costs: tariffs would be reduced or eliminated, and the costs of NTMs decreased. Lower trade costs allow countries to specialize more strongly on those sectors in which they have a comparative advantage. These specialization gains come in the form of higher real incomes and allow consumers to reach higher levels of utility. Consumers benefit from lower prices on imports. But governments lose tariff income, and this effect has to be taken into account. In particular, if tariffs are already low, eliminating them leads to a redistribution of income from governments to consumers. However, aggregate welfare gains are small. Tariff income is relatively unimportant for both the EU and Japan; however, tariff elimination does have substantial budgetary consequences. If the agreement brings trade cost savings from reforming non-tariff trade barriers, there are no direct budgetary consequences. Moreover, welfare effects are more substantial, because lower costs of NTMs mean that fewer resources are wasted.

This implies that, when two regions lower trade barriers in a multilateral world, effects on aggregate welfare are not clear ex ante. The reason is that lower tariffs may incite a country to shift imports away from the country where they are produced most efficiently to a less efficient partner, whose efficiency disadvantage is overturned by the preferential elimination of the tariff. These trade diversion effects have to be contrasted to the benefits of trade creation effects with the preferential partner. This ambiguity makes model simulations necessary.

5.1 Effects on Incomes and Aggregate Openness

We start by showing the simulated effects of the EU-Japan FTA on real GDP in 43 countries in alphabetical order in Table 4 (we do not report results for rest of the world). Figure 18 shows the same data, concentrating on Europe. Note that the reported figures can be interpreted as changes in real

per capita GDP, since the modeling assumption is to hold the size of the population constant.[10]

The left-half of Table 4 reports the results of a tariffs-only liberalization (Scenario I); the right-half refers to the more comprehensive Scenario II, where sectoral non-tariff barriers are reduced in line with the measured reductions for the EU-Korea trade agreement. Looking at Scenario I first, it is obvious that a tariffs-only liberalization has negligible welfare gains for all countries in our sample. In a number of EU countries (Bulgaria, Cyprus, Great Britain, Greece, Croatia, and Latvia) and in Japan the welfare gains would even be slightly negative. The reason is that eliminating tariffs can deteriorate the terms-of-trade (i.e., increase the average price of imports compared to the average price of exports), and this can harm countries. This is the converse of the optimal tariff argument; see Felbermayr et al. (2013b) for a modern treatment. For the opposite reason, outsiders can actually gain from tariff liberalization between the EU and Japan. Moreover, it is important to remember that the elimination of tariffs always involves a loss of tariff revenue for governments (here, we assume that all tariff income remains with the EU member states; in reality, 75% goes to the central EU budget but is rebated back to members). Most trade partners, with the only noticeable exception of the USA, lose slightly from the tariff elimination. Globally, gains outweigh losses, though, by about 400 mn. Euro.

Moving to the more ambitious Scenario II, in percentage terms, the countries that are most positively affected by the FTA would be Japan (0.23%), Ireland (0.19%), Netherlands (0.14%), Luxembourg (0.13%), Germany, Belgium, Hungary and Malta (0.11% each). In terms of per capita income gains this would be equivalent to 68, 107, 55, 121, 43, 39, 12, and 22 Euro, respectively. The five countries with the largest absolute welfare gains are Japan (8.6 bn. Euro), Germany (3.4 bn. Euro), Great Britain (1.6 bn. Euro), France (1.6 bn. Euro), and Netherlands (0.9 bn. Euro).

Encouragingly, overall gains from the Japan-EU agreement would all be positive. This is not an automatic model outcome; it is perfectly possible that the agreement changes relative world prices such that, even after the elimination of trade barriers, a country could end up worse off than before. However, in the present context, this does not happen. Less encouragingly, the gains from the EU-Japan agreement are strongly concentrated on Germany. Out of the 10.7 bn. Euro total gains accruing to the EU in total, Germany would appropriate 32%; this exceeds by far Germany's share in the EU's GDP (which is about 20%). The country with the second largest absolute gains, Great Britain, would take 15% of the total; this is already lower by more than two percentage point than the country's share in EU GDP; for France and Italy the situation looks even less rosy. As a matter of fact, Germany is better positioned to benefit from the EU-Japan free trade agreement. This is simply due to the fact that Germany would be able to increase exports in high value added industries; see below. Note that the model does not

[10] This does not mean that we assume population to remain constant over the implementation phase of the FTA, but simply that we do not think that fertility and mortality rates or net migration are causally affected by the FTA so that the FTA has no effect on population.

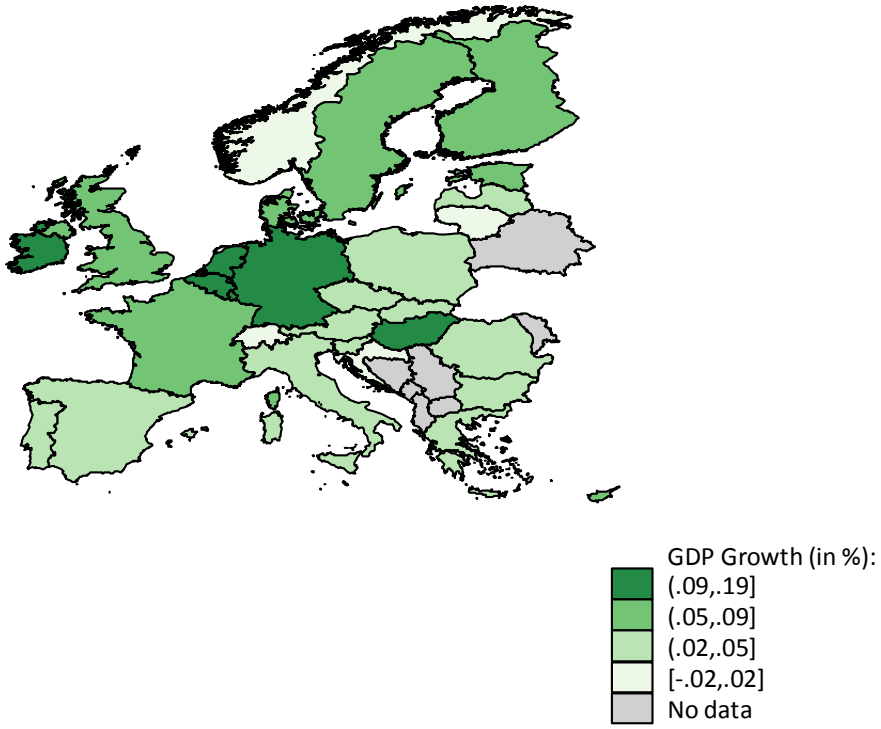
Table 4: Change in real GDP, in % and mn. EUR

	Tariffs only			Tariffs plus NTB		
	In %	in EUR per capita	In mn EUR	In %	in EUR per capita	In mn EUR
AUS	0.00	0.2	6	0.00	0.5	11
AUT	0.01	2.5	22	0.05	21.7	185
BEL	0.00	1.2	14	0.11	38.9	435
BGR	0.00	-0.1	-1	0.02	1.5	11
BRA	0.00	0.2	32	0.00	0.2	31
CAN	0.00	-1.2	-43	0.00	0.0	1
CHE	0.00	-1.6	-13	-0.02	-11.5	-93
CHN	0.00	-0.1	-113	-0.01	-0.9	-1220
CYP	0.00	-0.9	-1	0.08	16.7	14
CZE	0.01	1.2	13	0.05	8.3	87
DEU	0.01	4.3	351	0.11	42.6	3438
DNK	0.00	1.6	9	0.07	34.8	196
ESP	0.01	1.3	59	0.04	10.3	479
EST	0.01	1.0	1	0.09	14.1	19
FIN	0.01	3.5	19	0.06	24.0	131
FRA	0.01	2.3	148	0.06	18.3	1209
GBR	0.00	-0.1	-9	0.06	25.2	1619
GRC	0.00	-0.8	-8	0.02	3.2	35
HRV	0.00	-0.1	-1	0.01	1.2	5
HUN	0.01	1.4	14	0.11	11.7	115
IDN	0.00	0.0	-11	0.00	-0.1	-34
IND	0.00	0.0	25	0.00	0.0	14
IRL	0.02	10.2	47	0.19	107.0	493
ITA	0.01	1.7	105	0.04	11.7	711
JPN	-0.02	-6.5	-831	0.23	67.9	8636
KOR	-0.01	-1.3	-65	-0.02	-4.5	-226
LTU	0.00	0.2	1	0.01	1.4	4
LUX	0.00	4.4	2	0.13	120.8	66
LVA	0.00	-0.1	0	0.02	2.9	6
MEX	0.01	0.5	62	0.00	0.0	6
MLT	0.01	2.6	1	0.11	22.1	9
NLD	0.01	3.2	54	0.14	55.3	930
NOR	0.00	0.2	1	0.00	-2.7	-14
POL	0.01	0.8	30	0.05	6.0	226
PRT	0.00	0.6	6	0.02	2.8	29
ROU	0.00	0.3	5	0.02	1.4	28
RUS	0.00	0.1	9	0.00	0.2	32
SVK	0.01	1.0	5	0.02	3.0	16
SVN	0.00	0.8	2	0.02	3.5	7
SWE	0.01	2.5	24	0.06	25.9	250
TUR	0.00	-0.1	-8	0.00	-0.2	-19
TWN	0.00	-0.4	-10	-0.03	-5.8	-135
USA	0.00	1.4	448	0.00	1.9	607
All	**0.00**	**0.1**	**402**	**0.03**	**4.0**	**18351**

Source: Own simulations based on Ifo Trade Model.

allow Germany to expand its trade surplus. Rather, it is frozen to the 2014 level.

Figure 18: Change in real GDP across Europe, in % (Scenario II)



Source: Own simulations based on Ifo Trade Model, own illustration.Scenario II assumes a full elimination of tariffs plus a reduction of non-tariff barriers as implied by the trade cost reduction effects found in the EU-Korea agreement.

Overall, the income gains from the agreement look relatively minor, both in percentage terms and in absolute values. There are three mainly EU-Japan-specific and one more general reasons for this:

1. Japan is a far away country with a very different culture. Therefore, trade costs (such as transportation costs, communication costs, translation costs, etc.) are high and status quo trade volumes between the EU and Japan are relatively low. A reduction of non-tariff trade costs, applied to a relatively low baseline trade flow, yields relatively little welfare gains; see Felbermayr et al. (2013a).

2. As discussed above, Japan has a very different way of serving foreign markets compared to most EU countries. Rather than to produce at home and to export, its firms serve foreign markets via local production. Through this strategy, Japanese firms have insulated themselves from trade costs; however, as a consequence, lowering trade costs is of relatively little advantage to them. So, Japanese exports do not rise too much in absolute and in percentage terms. Imports, bound

by the model to exports in order to keep trade surpluses constant at their 2014 level, cannot increase very strongly, neither. This keeps welfare gains down.

3. Both, the EU and Japan are fairly advanced economies with similar patterns of comparative advantage; in particular, they are manufacturing hot-spots. However, this has direct implications for the gains from trade integration: countries with similar technological structures would have similar domestic prices in the presence of trade barriers so that their removal incites only relatively small trade flows and corresponding welfare gains.

4. The more general reason for the relatively low welfare gains lies in the calibration used using in this project. Due to a very conservative parameterization, welfare gains are low. Moreover, the model features only static gains; the dynamic gains from trade are not modeled. They can be very substantial; see Felbermayr and Gröschl (2013) for empirical evidence.

5.2 Upper Bound Estimates

We based our analysis on the assumption that, in the EU-Japan trade agreement, reductions of non-tariff trade barriers should be similar to those observed in gravity analysis for the EU-Korea agreement which has been in force since 2011. This is a very conservative assumption, because the EU-Korea agreement probably has not had the time yet to fully develop its effects. Moreover, since Korea is substantially smaller than Japan, it is conceivable that the EU was less willing to make concessions in the case of Japan. Similarly, to the extent that trade negotiations involve a tit-for-tat logic, Japan, too, could be more willing to grant preferential advantages to the EU. If this is true, our estimates would be too small.

Indeed, the results in Table 5 indicate that our baseline scenario might be a very conservative one. If we assume that trade costs fall in a similar quantity as in he average trade agreement observed in the analysis by Head and Mayer (2014), we get substantially larger welfare effects. Note, however, that the scenario does not involve sector-level detail, but instead assumes a uniform reduction in NTBs (as in the literature). In this case, welfare gains in Germany would be close to 0.7%; this is by a factor seven larger than in our baseline. Welfare gains in Japan would be boosted in a similar fashion. As a downside, losses in third countries such as China or Taiwan would be magnified, too.

The robustness check teaches a lesson which is well-known from other trade policy analyses: It matters greatly for the income effects of free trade agreements how big a trade liberalization effort one is willing to assume. Gains increase more than proportionately; see Felbermayr et al. (2013a) for formal proofs of this assertion. Encouragingly, while the size of effects depend on the exact definition of the scenario,

Table 5: Change in real GDP across Europe, in % (Scenario III)

	Scenario III: uniform NTB reduction	memo item: Scenario II			Scenario III: uniform NTB reduction	memo item: Scenario II
AUT	0.337	0.054		AUS	0.025	0.001
BEL	0.689	0.106		BRA	0.005	0.002
BGR	0.164	0.024		CAN	-0.005	0.000
CYP	0.463	0.081		CHE	-0.114	-0.015
CZE	0.305	0.052		CHN	-0.084	-0.012
DEU	0.680	0.113		IDN	-0.017	-0.004
DNK	0.534	0.074		IND	-0.005	0.001
ESP	0.240	0.044		JPN	1.632	0.232
EST	0.492	0.091		KOR	-0.124	-0.018
FIN	0.417	0.063		MEX	-0.012	0.001
FRA	0.362	0.055		NOR	-0.055	-0.004
GBR	0.448	0.063		RUS	0.024	0.003
GRC	0.116	0.020		TUR	-0.042	-0.003
HRV	0.060	0.012		TWN	-0.177	-0.025
HUN	0.572	0.105		USA	0.013	0.004
IRL	1.442	0.193				
ITA	0.245	0.043				
LTU	0.069	0.011				
LUX	1.233	0.127				
LVA	0.117	0.024				
MLT	0.584	0.107				
NLD	0.976	0.138				
POL	0.319	0.053				
PRT	0.110	0.016				
ROU	0.085	0.017				
SVK	0.108	0.020				
SVN	0.068	0.019				
SWE	0.384	0.056				

Source: Own simulations based on Ifo Trade Model, own illustration. Scenario III assumes a full elimination of tariffs plus a reduction of non-tariff barriers as implied by the estimates presented in Head and Mayer (2014)

the qualitative patterns predicted (such as signs) are very robust. Hence, it is wise not to overinterpret the exact numbers obtained from the simulation exercise but to focus on the underlying mechanics and the qualitative picture.

In the following parts of the paper, we return to our more cautious lower bound estimates defined by he experience of the EU-Korea agreement.

5.3 The Role of the Brexit

Great Britain is bound to leave the European Union following the negative referendum on June 23rd 2016. After triggering Art. 50 of the Treaty on the European Union (TEU), which defines the modality of exiting the Union, the UK and the remaining European countries (EU27) have two years to negotiate both the separation of the two entities from each other and a new free trade agreement. In a white paper, the British prime minister Theresa May has made it very clear that the UK is set to leave the European customs union and the single market.[11] The UK wants to pursue its own external trade policy, it wants to free itself from the jurisdiction of the European Court of Justice, and it wants to regain control on the flow of immigrants from the EU. These objectives mean that the future relationship of the EU with the UK will be very different to the present one. For example, the trade agreements negotiated by the EU with third countries cannot apply to the UK anymore if the UK is no longer in the customs union. Also, withdrawing from the Single Market means that new trade barriers will emerge, for instance, as the mutual recognition of market access permits of financial products expires.

A model often cited is the EU-Canada Deep and Comprehensive Free Trade Agreement (DCFTA), CETA, or an older agreement the EU has with South Korea (EU-Korea). At this stage, it is unclear what shape the future relationship between the UK and EU27 will take, but the probability that, two years after triggering Article 50, only a transitory arrangement can be agreed upon, is high. In this section, we model a tough Brexit; i.e., the EU and the UK reintroduce tariff barriers, and non-tariff barriers reemerge to the level observed with other WTO members. The Brexit would also imply that a future agreement between the EU and Japan would not apply to Britain.

Table 6 shows how real GDP would change due to an EU-Japan FTA if Britain were not part of the EU. This is what the second column in the table shows. The third to fifth columns compare the EU27 (with the UK outside of the EU) case to the EU28 (with the UK as a member of the EU) one. The simulation exercise suggests that, for the EU as a whole, concluding an agreement with Japan with or without Britain makes little difference. Across member states, however, there is some heterogeneity. For Spain, France, or Italy, the EU-Japan agreement would be marginally more valuable with the UK on board, while for Germany or the Netherlands the opposite is true. The reason for this pattern lies in the different degrees of complementarity between member states' structures of comparative advantage with Britain's. For Germany, Brexit would be positive for the welfare effects of EU-Japan, mostly because the

[11] $https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/589191/The_United_Kingdoms_exit_from_and_partnership_with_the_EU_Web.pdf$

UK car industry would be denied preferential access to the Japanese market, and this slightly benefits German car makers. Other countries, in contrast, export to Japan through the UK (e.g., because they provide crucial inputs), and the maintenance of trade barriers between the UK and Japan harms them. Across the EU27 member states, the agreement with Japan actually becomes more valuable by some 124 mn. Euro.

For Japan, Brexit makes the agreement with the EU less valuable. As shown in Table 6, the welfare gains would fall by more than 1 bn. Euro. This is a reduction of 14% relative to the case where Britain remained in the EU. The share of Britain in total EU GDP is 18%, so one could have expected a more sizeable reduction in the total gains to Japan. The reason for this is simple: with Britain outside of the EU, and new trade barriers between the EU27 countries and the UK, competition on the EU27 market is smaller, the aggregate price level is higher, and Japanese firms find it easier to sell their goods and services. This effect, however, is a second-order effect. The withdrawal of Britain from the EU does make the deal substantially less attractive for Japan.

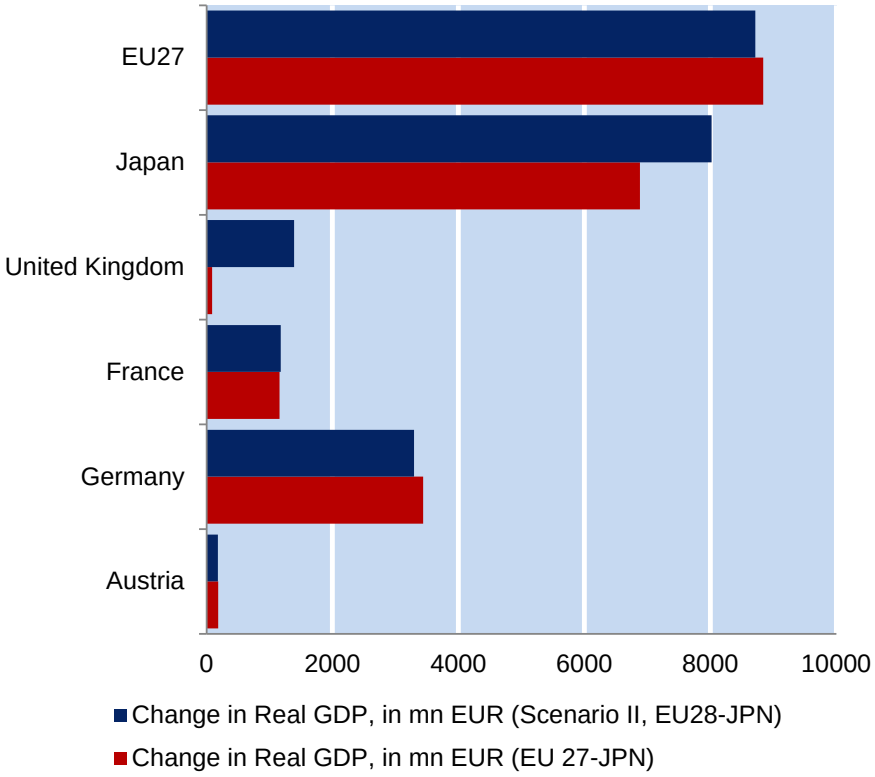
Figure 19 provides a graphical illustration for selected countries.

Table 6: Effects of Brexit on real GDP effects of EU-JPN agreement

	EU27-JPN, in %	Comparison to EU28-JPN FTA		
		Δ GDP gain, %-Points	Δ GDP gain, mn. EUR	Δ, in %
AUT	0.06	0.00	6.7	4%
BEL	0.11	0.00	17.6	4%
BGR	0.02	0.00	-0.9	-9%
CYP	0.08	0.00	0.0	0%
CZE	0.06	0.01	12.1	15%
DEU	0.12	0.00	144.8	4%
DNK	0.07	0.00	-0.1	0%
ESP	0.04	-0.01	-56.3	-12%
EST	0.09	0.00	0.0	0%
FIN	0.06	0.00	-2.7	-2%
FRA	0.05	0.00	-19.0	-2%
GBR	0.00	-0.06	-1301.1	-94%
GRC	0.01	-0.01	-11.0	-31%
HRV	0.01	0.00	-0.7	-14%
HUN	0.11	0.00	2.8	3%
IRL	0.20	0.01	18.6	5%
ITA	0.04	0.00	-48.8	-7%
JPN	**0.20**	**-0.03**	**-1136.9**	**-14%**
LTU	0.01	0.00	0.3	6%
LUX	0.14	0.01	6.0	10%
LVA	0.02	0.00	0.0	-1%
MLT	0.10	-0.01	-0.4	-5%
NLD	0.14	0.01	34.6	4%
POL	0.06	0.00	9.9	5%
PRT	0.01	0.00	-5.4	-20%
ROU	0.02	0.00	1.3	5%
SVK	0.02	0.00	-0.1	0%
SVN	0.02	0.00	0.1	1%
SWE	0.06	0.00	14.2	6%
EU27		**0.00**	**123.7**	

Source: Own simulations based on Ifo Trade Model, own illustration.

Figure 19: Comparison of changes in real GDP of Scenario II (EU28-JPN) and Scenario III (EU27-JPN), in mn. EUR

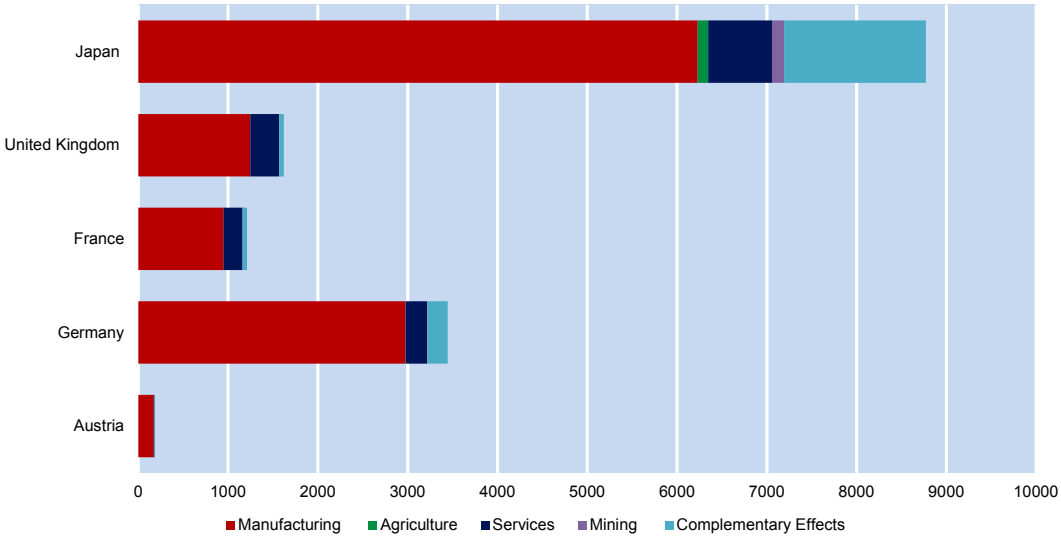


Source: Own simulations based on Ifo Trade Model, own illustration.

5.4 Effects on Sectoral Value Added

Next, we look at broad sectoral impacts. For this purpose, we concentrate on Scenario II (tariffs plus NTB-reductions, EU28). Figure 20 starts with a decomposition of aggregate income gains for some selected countries. We separately quantify the gains from trade from trade liberalization in the manufacturing, agricultural, services, and mining sectors. Because of complementarities between the sectors, a scenario where all sectors are liberalized yields larger gains than when each of the broad sectors is liberalized at a time.

Figure 20: Sectoral distribution of change in real GDP, in mn. EUR



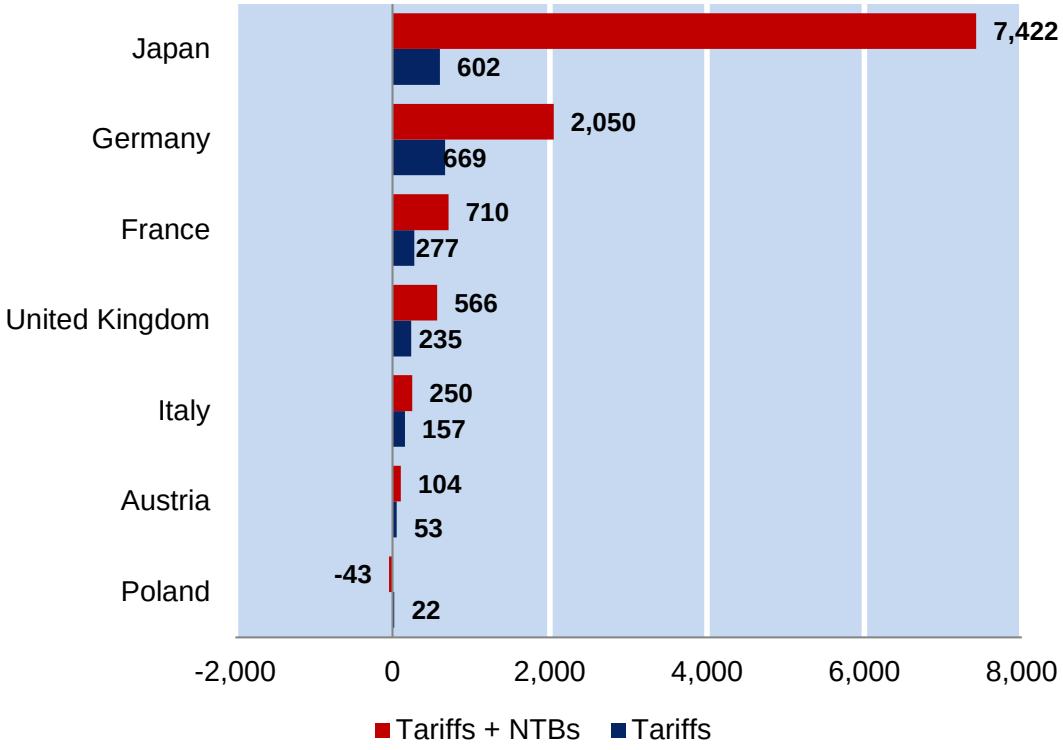
Source: Own simulations based on Ifo Trade Model, own illustration.

For all countries, the manufacturing sector largely dominates the picture. This is because tariff cuts are limited to that sector and estimated NTB-reductions are most sizeable. For Japan, 72% of overall gains are attributable to manufacturing; in all other countries displayed, he share of manufacturing is even larger. It is highest in Austria (93%); in Germany it is 87%; in Great Britain it is somewhat lower at 77%. Agriculture contributes almost nothing to the overall gains; only in Japan are we able to quantify anything worth mentioning. However, even there, the contribution to the overall gains is only 1.4%. Similarly, the mining sector does not play any major role, neither. Japan, which relies heavily on imports of raw materials, could see a minor share of the aggregate gains coming from this sector; for the European countries, mining is totally irrelevant.

The services sector contributes 20% to the overall gains in Great Britain; in France, the share is 17%. In the former case, the financial sector is key for this result; in the latter, the dominant services sector

is tourism. Quite interestingly, complementarity effects are quite important for Japan. Liberalizing all sectors together, most notably services and manufacturing, generates an additional gain of almost 2 bn. Euro on top of the sum of the sectoral effects. This is expected: in modern production networks, there are multiple linkages between sectors: better access to services imports improves the competitiveness of manufacturing exports and so on.

Figure 21: Change in sectoral value added, manufacturing sector, in mn. USD

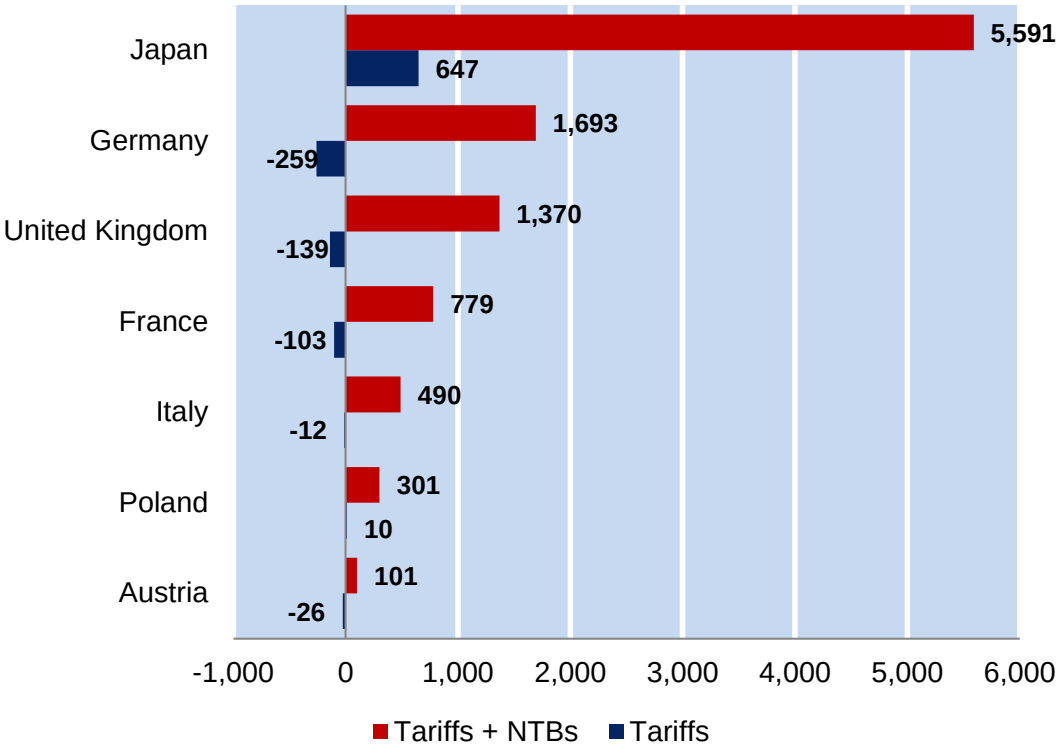


Source: Own simulations based on Ifo Trade Model, own illustration.

The next Figures (Figures 21 to 23) shed closer light on the manufacturing, services, and agricultural sectors. Starting with the manufacturing sector, Figure 21 highlights that tariffs still matter, at least when looking at sectoral outcomes. For the European countries, tariff elimination in Japan would account for about at least one third of the total increase in manufacturing sectoral value added. In Germany, for example, tariffs unlock additional value of about 670 mn. Euro. In contrast, for Japan, tariffs matter less for manufacturing value added effects. The reason for this asymmetry simply lies in the fact that tariffs tend to be higher in Japan than in Europe. Interestingly, Figure 21 makes clear that negative sectoral value added changes can occur; in this case, to Poland.

Figure 22 turns to the services sector. This sector, of course, is not subject to tariffs. So, in the tariffs-only scenario, all changes in value added must arise from general equilibrium effects. In Japan,

Figure 22: Change in sectoral value added, services sector, in mn. USD

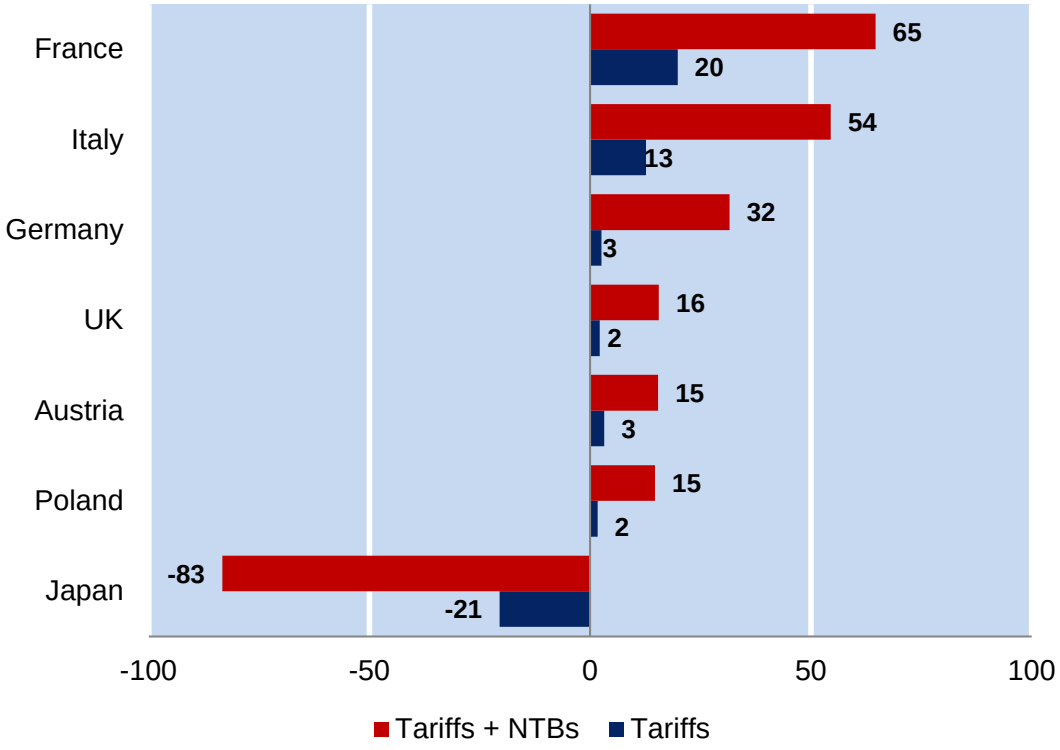


Source: Own simulations based on Ifo Trade Model, own illustration.

tariff liberalization adds about 650 mn. Euro to sectoral value added. This is because increased goods exports lead to additional demand for inputs from the services sector. In most EU countries, tariff liberalization alone would reduce value added in the services sector. Here, another effect dominates: as manufacturing exports grow, resources are drawn out of the services sector and this leaves overall sectoral value added lower than in the baseline situation.

Finally, agricultural value added is expected to fall in Japan as Figure 23 shows. The effects are minor, in both scenarios, but they are clearly negative. European countries, in contrast, would benefit from higher agrifood exports to Japan and this shows off in value added gains. Not surprisingly, Europe's farming super power France would benefit most; Italy follows very closely. Interestingly, small Austria would see its agricultural value added go up by almost as much as Great Britain's.

Figure 23: Change in sectoral value added, agricultural sector, in mn. USD



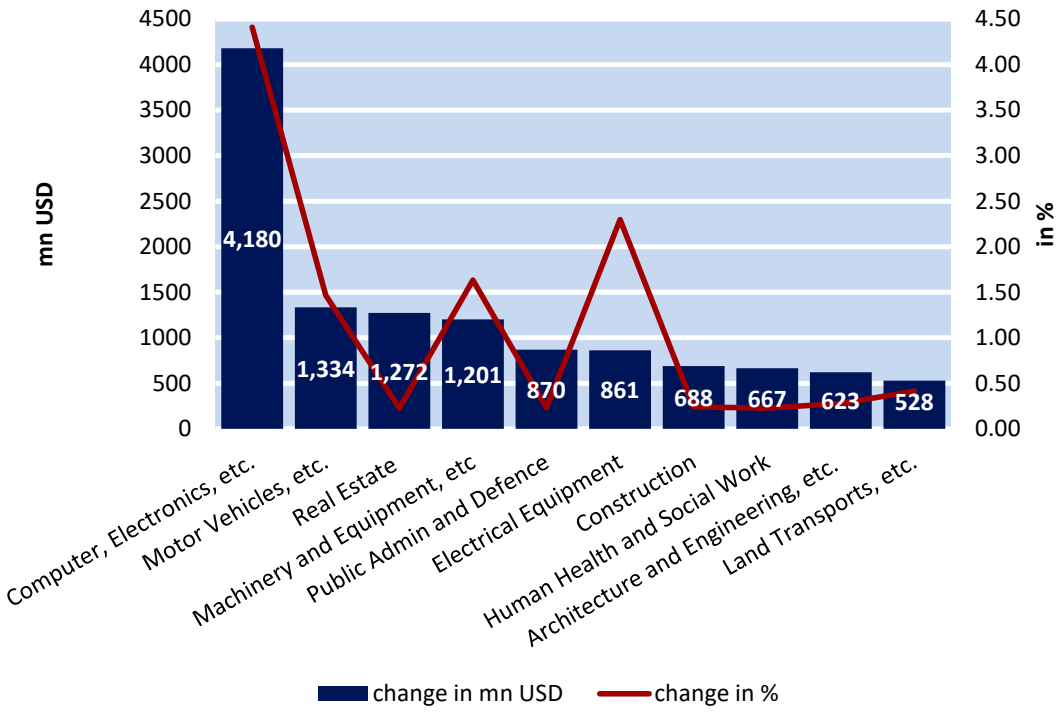
Source: Own simulations based on Ifo Trade Model, own illustration.

5.5 Detailed Sectoral Value Added Impacts in Japan

Here we show the ten sectors (out of the 57 sectors in our data) in Japan that are most strongly positively and negatively affected by a trade agreement with the EU. We focus on Scenario II. Figure 24 reports that the gains from the agreement would be very strongly concentrated in the Japanese computer and electronics sector. That sector alone would reap about half of the aggregate welfare gains generated by the EU-Japan deal in Japan, namely about 4.1 bn. Euro. This amounts to an increase in sectoral value added of about 4.5% relative to the status quo. The motor vehicles sector comes second, with value added gains of about 1.3 bn. Euro or 1.5% relative to baseline. The third sector is the real estate industry; this is an area almost entirely unaffected directly by the agreement. However, as incomes grow, that sector is lifted up, too. Value added is expected to increase by about 1.3%, or, in growth rates, about 0.2%. Not surprisingly, this sector grows at about the rate of the total Japanese economy; other services sectors – with the big exception of construction – behave similarly. Two more manufacturing sectors are noteworthy: the machinery and equipment sector which could reap gains of about 1.2 bn. Euro, and the electrical equipment sector which stands out with a comparable

large rate of change (2.5%) in value added due to the agreement.

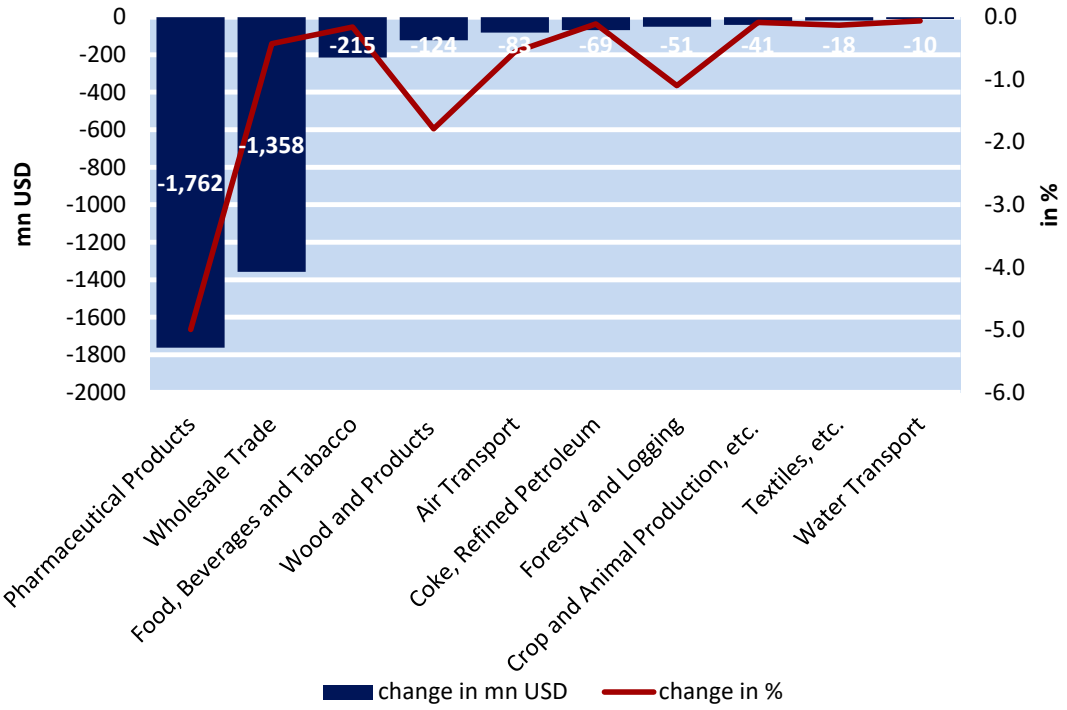
Figure 24: Change in sectoral value added of Japan's 10 fastest growing sectors (due to FTA), in % and mn. USD



Source: Own simulations based on Ifo Trade Model, own illustration.

Turning to the ten most strongly negatively affected sectors, Figure 25. Interestingly, it is not the agricultural or foods industries which stand out as largest losers. Instead, the pharmaceutical industry registers the largest negative effects, reaching about 1.7 bn. Euro (5% of baseline value added). This is due to the fact that the Japanese pharmaceuticals sector is still relatively strongly protected and EU competitors are strong. The second losing sector is wholesale trade. This sector could lose about 1.4 bn. Euro in value added. The reason for this effect lies in the labor intensive production mode of this sector. As wages increase (even slightly) due to the agreement, that sector is squeezed by strong EU competitors. However, in growth rates, the effect is very minor. The agricultural sectors come only later, on places 3, 4, 7 and 8. The wood and wood products sector would be the most strongly affected sector, both in terms of absolute losses and in growth rates. The cereals sector – including rice – is not amongst the top ten losers. The reason is that Europe only has a very minor rice production, so that competitive pressure in Japan would not go up due to the FTA.

Figure 25: Change in sectoral value added of Japan's 10 largest losing sectors (due to FTA), in % and mn. USD



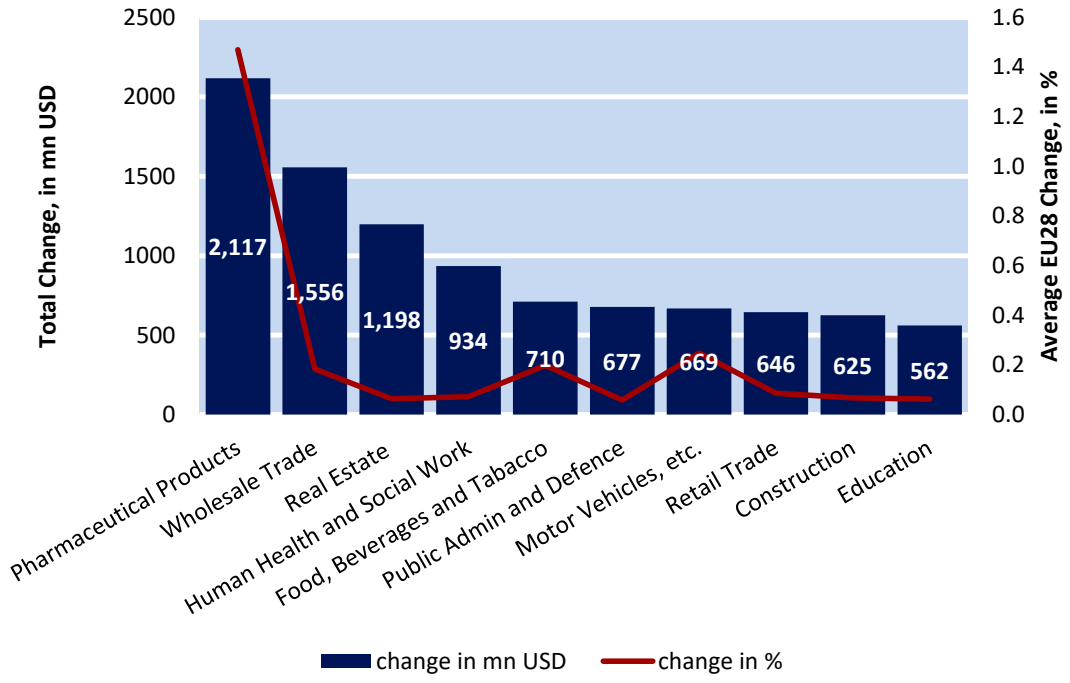
Source: Own simulations based on Ifo Trade Model, own illustration.

5.6 Detailed Sectoral Value Added Impacts in EU 28

Next, we turn to the detailed sectoral analysis for Europe (including Great Britain). Again, focusing on Scenario II, we find that pharmaceutical products top the list in terms of both absolute and relative losses. That sector could increase its value added by about 2.1 bn. Euro or approximately 1.5%. This is just the mirror image of what Figure 25 reported for Japan. A similar observation is in place regarding the wholesale trade sector. Interestingly, however, amongst the top 10 winning sectors in the EU28, we find only three manufacturing sectors. This is due to the relatively high degree of competitiveness of Japan in manufacturing. The food industry and motor vehicles reach value added gains of 0.7 bn. Euro each; this is a value added gain of about 0.25% in each sector.

Figure 27 looks at the ten largest losing sectors in EU28. Overall, losses are small, even if we focus on the most affected sectors. The one with the largest effects would be the machinery and equipment sector, where Japan has very competitive firms. Total losses in the EU would ramp up to 0.8 bn. Euro, or 0.2% of sectoral baseline value added. Among the manufacturing sectors, electrical equipment

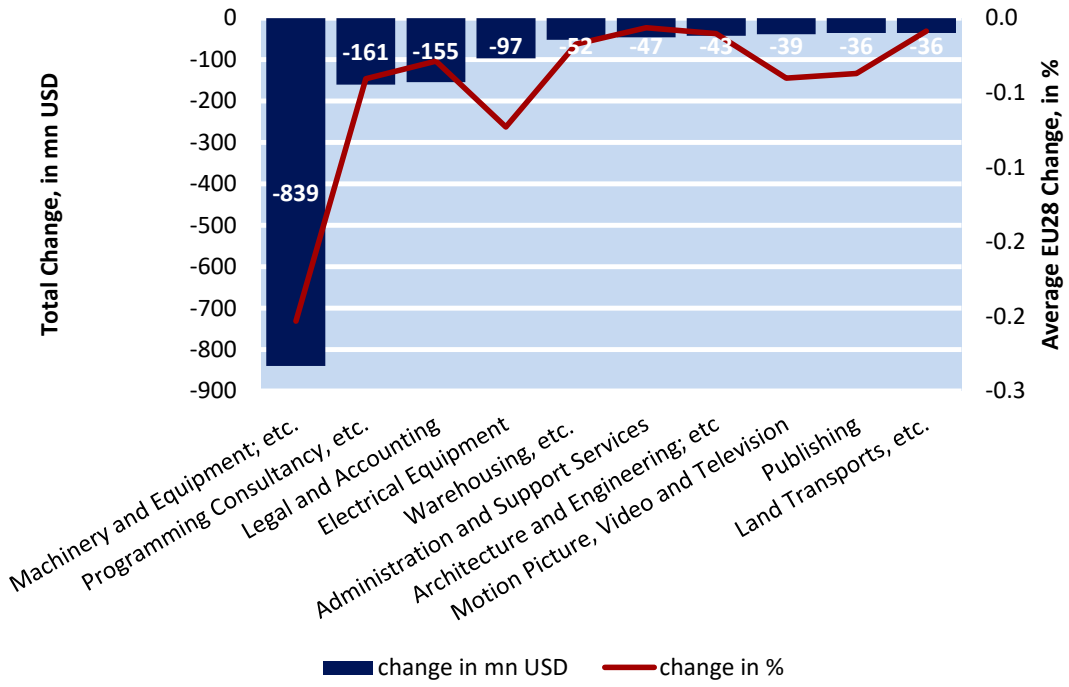
Figure 26: Change in sectoral value added of EU's 10 largest sectors, in % and mn. USD



Source: Own simulations based on Ifo Trade Model, own illustration.

also could register a loss; however, in terms of absolute and relative magnitudes, the loss would be minor. Small losses could also appear in the computer programming consultancy and in the legal and accounting sectors.

Figure 27: Change in sectoral value added of EU's 10 largest losing sectors (due to FTA), in % and mn. USD



Source: Own simulations based on Ifo Trade Model, own illustration.

5.7 Trade Effects of an EU-Japan FTA

Finally, we present some information on the trade effects of an EU-Japan FTA. We start with the exports of goods and services of the EU to Japan. Table 7 shows that most EU countries would experience very substantial gains in export volumes to Japan, even if one looks at the tariffs-only scenario. Germany's exports would go up by 17%; increases in exports of Slovakia and Bulgaria would be even more substantial, albeit from a very low level. However, countries with a smaller comparative advantage in manufacturing benefit less from tariff elimination. British exports would grow only by some 10%; exports of Luxembourg would grow by a paltry 1%. Because the level of exports with Japan is relatively minor, and due to the existence of trade diversion effects, the increase in total exports over GDP (a measure of openness which is related to the increase in income attributable to the agreement) is relatively low, too.

Things look different when we consider the more ambitious scenario, in which non-tariff barriers are reduced alongside tariffs. Here, bilateral trade of EU member states with Japan grows much more, in each case by more than 45%. The variance across countries is again large. According to our estimates, the gains would be most spectacular for Spain (+88%). Accordingly, openness goes up by more, too.

Table 7: Change in exports and on export/GDP ratio, in % and %-Points

	Tariffs Only (Scenario I) (in %)	Tariffs Changes plus NTB (Scenario II) (in %)
AUT	3.6	55.0
AUT	14.5	59.1
BEL	11.4	75.1
BGR	20.6	73.9
CYP	0.0	67.3
CZE	14.7	62.9
DEU	16.6	72.4
DNK	6.3	42.3
ESP	12.8	88.2
EST	13.3	55.4
FIN	9.5	47.9
FRA	13.2	62.5
GBR	9.5	64.5
GRC	4.4	79.9
HRV	16.8	45.4
HUN	17.5	69.0
IRL	7.3	49.5
ITA	16.1	59.6
LTU	13.3	36.9
LUX	1.1	55.9
LVA	15.1	48.5
MLT	5.1	52.6
NLD	11.8	59.4
POL	11.3	56.8
PRT	17.1	54.8
ROU	15.8	52.2
SVK	22.7	76.1
SVN	16.0	64.7
SWE	15.2	66.7

Source: Own simulations based on Ifo Trade Model.

However, the increase is at most as large as 1%-point (in the case of Germany). In many countries, particularly in those in the EU periphery, openness barely goes up at all. This picture fits the earlier finding where welfare gains from the EU-Japan agreement were concentrated at central EU countries.

Finally, we turn at imports. Overall, effects are smaller than when looking at EU exports. However, it

Table 8: Change in imports and on import/GDP ratio, in % and %-Points

	Tariffs Only (Scenario I) (in %)	Tariffs Changes plus NTB (Scenario II) (in %)
AUT	3.6	55.0
BEL	3.9	56.2
BGR	4.3	60.9
CYP	7.4	55.4
CZE	3.3	54.6
DEU	2.8	59.7
DNK	2.8	51.2
ESP	3.1	54.4
EST	2.5	47.8
FIN	2.4	57.5
FRA	4.1	57.2
GBR	2.3	60.4
GRC	6.4	66.1
HRV	6.4	59.3
HUN	2.1	52.9
IRL	1.1	55.8
ITA	6.6	59.7
LTU	5.2	50.0
LUX	2.5	50.1
LVA	4.1	42.7
MLT	3.1	48.2
NLD	3.0	57.6
POL	1.7	53.3
PRT	5.3	51.9
ROU	5.8	58.6
SVK	3.4	64.6
SVN	3.3	51.9
SWE	2.0	52.6

Source: Own simulations based on Ifo Trade Model.

is still true that the trade gains are an order of magnitude larger in Scenario II than in Scenario I (tariffs only).

6 The Political Economy of Trade Policy in Japan

One important aspect in Japan is the political relevance of interest groups in the agricultural sector which may play a crucial role in the ongoing FTA negotiations. This sections gives a short overview of relevant political economy aspects with a focus on specific policy groups. The LDP has kept long government party positions since 1955 except for a few years. The LDP has two big supporters, JA and Keidanren (Japan Business Federation). Agricultural farmers outside of urban areas have been a strong supporter to the LDP for last several decades in Japan. One of the biggest factors for the LDP keeping the position of government parties for most of the period since 1955 is in their votes to the LDP in the Diet elections. In other words, the LDP has used agricultural policies and farm organizations, JA, to extend control over voting behaviors in the rural electorate.

The LDP can keep in political power in the Diet using the variation in the district magnitude of electoral districts. Rural districts have more elected legislators per voter. Thus more politicians are keen to agricultural interest. Agricultural interests held over the government with their political power. Thus the politicians are keen to agricultural protection. These politicians are called norin zoku and they can put huge pressure on MAFF and make a large influence on agricultural policies. JA is a kind of the vote-getting machine for them.

However, recent decades have seen some changes in JA and farmers' voting behaviors together with electoral reforms. The political pressure of farmers and JA gradually has weakened. In the 2003 election, Prime Minister Koizumi Junichiro proposed structural reforms, which are represented as the privatization of post offices. In response, many agricultural voters were reluctant to vote for the LDP in the 2003 election. In the 2007 Upper House election and the 2009 Lower House election, the Democratic Party of Japan (DPJ) proposed direct compensation program for agricultural farmers. Thus many farmers rejected JA recommendations linked with the LDP and voted for DPJ candidates. As a result of the elections, the DPJ successfully got the government party position in 2009, but the DPJ lost its position in 2012. The LDP came back to the government party position and Prime Minister Abe has got the current position. Thus we can say that JA is not simply vote-getting machine anymore. Furthermore, the LDP reduces the cooperative relationship gradually. In the 2013 Upper House election, for example, Prime Minister Abe proposed that Japan join the TPP in spite of strong objection by JA and finally got a big win. JA strongly opposes TPP, because trade liberalization results in the collapse of Japanese agriculture by a large amount of cheap imports in agricultural products. Tariff rates in Japanese agricultural products are still very high with a large variance across products. In particular, rice, which is a main agricultural product in Japan, is very high tariff rates. Thus trade liberalization would largely do damage rice farmers.

Keidanren is another big supporter to the LDP. Keidanren is the pressure group representing Japanese manufacturing and business interest and has a long history of providing substantial political donations to the LDP with some temporary stops . In terms of TPP, Keidanren takes a positive attitude and promote Abe's trade policies. Manufacturing sectors are already low tariff rates these days and keep substantially high and advanced technology, involving large comparative advantage to foreign countries. Compared with Japan, other TPP member countries impose higher tariff rates. Thus Keidanren suggests that trade liberalization leads to lower tariff rates in TPP member countries and would promote Japanese manufacturing exports, which will benefit to the Japanese economy. The growing influence of Keidanren counteracts JA's objection. Keidanren has considered TPP to be beneficial.

TPP and EU-Japan FTA involve many similar and different aspects. Unlike TPP member countries, EU member countries have smaller rice production and many manufacturing sectors. As shown in Figure 10, tariff rates are in similar patterns. EU and Japan's tariff rates on manufacturing are already low. So, we suggest that Japan might see much less drastic change in industrial structure and international trade than TPP. This causes less political conflicts for the agreement across political interest groups in Japan. In addition to trade, investment agreements and NTBs might be more influential. Unlike TPP members, Japan and EU already have a large number of horizontal FDI in manufacturing and services, which will be promoted by EU-Japan FTA.

7 Policy Recommendations

The ongoing negotiations between Japan and the EU over a free trade agreement are taking place during a time in which global economic integration is increasingly questioned or are even reversed. With TTIP on hold and TTP no longer pursued by the USA, a successful trade deal between two leading economic powers such as Japan and the EU would be a strong political message; economic integration between countries is still achievable and it does come along with welfare benefits for participating parties. This report has employed advanced quantitative methods to shed light on economic effects which can be expected from a bilateral trade accord between the EU and Japan. While a less ambitious trade liberalization only based on tariff elimination is predicted to yield very low welfare benefits, economic gains turn out to be substantial if the negotiating parties pursue a comprehensive free trade agreement that would reduce non-tariff barriers across various sectors which are to a large extent still protected by these sort of trade barriers.

A conservative estimate modeled to the experience of the EU-Korea trade agreement puts the welfare effects for Japan at about 9 bn. Euro, which is equivalent to 0.23% of GDP in 2014. At the same time the EU members can expect total income gains worth about 11 bn. Euro per year. The countries with the largest gains in absolute numbers are Germany (3.4 bn.), Great Britain (1.6 bn.), France (1.2 bn.), and Netherlands (0.9 bn.). In terms of relative gains, the countries with the largest gains are Ireland (0.19%), Netherlands (0.14%), Luxembourg (0.13%), and Germany (0.11%). Derived income gains are expected to materialize every year after a ramp-up period of about 10 years after the FTA comes into force. Applying a different scenario, informed by the average trade effects of a large set of existing trade agreements, welfare gains several times larger as our lowest bound estimates.

It is important to emphasize that aggregate gains are expected to be heterogeneously distributed across different industries within the EU and Japan and also across the two countries. One major reason for differences in expected output across the considered industries can be found in the strong asymmetries between existing trade barriers in Japan and the EU. Applied tariffs e.g. in the Japanese pharmaceutical industry are on average almost four times larger compared to European once. Hence, an elimination of tariff increases competition in some Japanese industries significantly stronger than in the respective European industries. Secondly, Japan has developed a foreign market business model which also differs from the EU and other Western countries. Since 2006 Japanese enterprises have increasingly created affiliate companies in the EU and use these plants to serve foreign markets. Hence, a reduction in trade costs will not necessarily lead to a strong rise in Japanese exports, particularly if an industry exhibits high FDI positions in the EU indicating that Japanese production plants serve EU countries from within the union.

Our simulations predict that in Europe, the agreement would have positive value added effects in the pharmaceutical industry, in the area of food, beverages, and tobacco, and in the motor vehicles sector. Amongst the services sectors, wholesale trade would benefit most. At the same time some losses can be expected in the machinery industry. In the area of services, minor losses are likely to appear in computer programming or the entertainment industry. For Japan, substantial gains are expected in the computer and electronics sector. Also the motor vehicles and machinery industries would benefit, albeit at a much smaller scale. Losses are very likely to arise in the pharmaceutical sector and in wholesale trade. Additionally, the agrifood industry can also lose some market shares, albeit to a very moderate degree.

Besides the sectoral analysis the simulations also illustrate that all EU countries are expected to benefit from a trade liberalization, even if some member states are almost unaffected. This is the case of several peripheral countries such as Greece, Portugal, or Romania, who would register gains below in the most conservative (baseline) scenario 0.02%; modeling the EU-Japan deal to the average existing agreement, those countries would benefit more handsomely, with gains around 0.1%.

While both the EU and Japan can expect aggregate welfare gains, at the same time the increasing trade relations between the two regions has negative trade diversion effects with respect to other third parties. Our analysis illustrates that China, Korea, and Taiwan are expected to suffer from the EU-Japan trade agreement, however, the reduction in income is relatively small. Across the these three countries, it is less than 1.5 bn. Euro in the most conservative scenario. Other third countries, such as Mexico or the US, would gain from the bilateral agreement. Again, expected income effects turn out to be small. In total, world income is expected to increase by about 18 bn. Euro.

Given the recent developments within the EU, in which the UK has decided to leave the union, the study additionally accounts for possible effects with a Brexit scenario. Accordingly, an agreement between the EU and Japan would be worth substantially less for Japan without the UK being part. Brexit is likely to reduce the economic gains from the agreement for Japan by about 14%. This lies below Britain's share of 18% in EU GDP, because Brexit would allow Japan to gain market shares in the EU to the expense of UK.

Hence, despite the fact that the EU and Japan pursue very different models of foreign market access, and notwithstanding the reality of relatively low tariffs, even in a very conservative scenario, there are substantial welfare gains to be reached from the agreement. What is more important, however, is the systemic role of a successfully concluded agreement between two of the largest world trading powers: it would send a strong signal supporting a open, global trade order based on rules and cooperation.

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