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Article

The EU-Japan EPA: A Case for Non-tariff Measures

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The EU-Japan EPA: A Case for Non-tariff Measures¹

INTRODUCTION: THE GLOBAL TRADE ORDER IN TRANSITION

Global trade has seen major backlashes, both in economic as well as in political terms. The process of recovery of trade volumes after the global economic and financial crisis varied considerably by world regions. Trade flows of the European Union had recovered by 2011, but weakened again after 2014. Japan's trade volumes even dropped to almost crisis levels in 2015. Policy discussions have consequently focused on deep and comprehensive free trade agreements. However, the context for international trade policy changed in early 2017, when the US administration withdrew from the Trans-Pacific Partnership (TPP) agreement and put the Transatlantic Trade and Investment Partnership (TTIP) negotiations on ice. The EU (as part of TTIP) and Japan (as part of TPP) are negotiating parties affronted by the United States, whose trade negotiations for a bilateral trade deal seem to have revived with the increased unpredictability of the US external policy (Frenkel and Walter 2017).

One and a half years after reaching an agreement in principle on the main elements of the Economic Partnership Agreement (EPA), the agreement entered into force. The text was finalized in December 2017, signed at the EU-Japan summit in Tokyo in July 2018, and entered into force on the 1 February 2019. The benchmark for the analysis of the EU-Japan EPA is the Free Trade Agreement (FTA) established with South Korea in 2011 (EU 2011) due to its geographical proximity to Japan and a comparable economic level of development.² Some comparisons are also drawn with the Comprehensive Economic and Trade Agreement (CETA) between the EU and Canada, which provisionally entered into force in September 2017.

In this study, we review EU-Japan trade structures and components of the EPA, and subsequently employ a structural gravity model including a proxy for non-tariff measures (NTMs) to estimate potential

gains from the EU-Japan EPA. The overall effects for a scenario including tariff cuts and improvements in non-tariff measures are positive albeit small. For Japan, the effect on real value added is estimated at 0.009 percent, while within the EU it ranges from 0.003 percent to 0.028 percent.

The paper is structured as follows. The following section is dedicated to the components of the EPA. The third section presents descriptive statistics of trade relations and policies between the EU and Japan. In the fourth section we present estimates of medium-term effects on the real gross domestic product for EU member states and Japan based on a structural gravity model. The final section concludes.

THE DESIGN OF THE EU-JAPAN EPA

What makes the EU-Japan EPA stand out is the particular focus on agriculture, which is often exempted from negotiations and an area where tariffs still play a crucial role in international trade. The European Commission states that by implementing the EPA over time³ 85 percent of EU agri-food products will be able to enter Japan entirely duty-free (see also below). The EPA with Japan is also the first trade agreement of the European Union that explicitly includes the commitment to the Paris climate agreement and a chapter on 'Corporate governance', highlighting the importance of well-functioning markets and sound financial systems. Table 1 compares the 23 chapters of the EU-Japan EPA with the EU-South Korea FTA, which was provisionally applied starting from 2011 and fully entered into force in 2015, and with the CETA agreement between the EU and Canada, which provisionally entered into force in September 2017.

Most of the world's deepest agreements have been established by the EU on one part. Out of 296 agreements covered by the Trade Agreement Heterogeneity Database (TAHD) set up by Kohl et al. (2017), only 188 agreements cover the agricultural sector, 163 include sanitary and phytosanitary measures (SPS), and 138 discuss technical barriers to trade (TBTs). Much less frequently, trade agreements deal with services trade (86), investment (85), environmental (66) and labor issues (43). The EU agreement with Japan covers these sensitive policy areas:

- i. *Environment and labor*: Chapter 16 of the EU-Japan EPA is dedicated to trade and sustainable development, emphasizing that environmental and labor standards should not be implemented in a discriminatory manner and never be lowered to increase competitiveness. It reaffirms the importance of standards put forth by the International Labor Organization (ILO) and the commitment to multilateral environmental agreements such as the UN Framework Convention on Climate

¹ The paper is based on the report *The EU-Japan Economic Partnership Agreement and Its Relevance for the Austrian Economy*, commissioned by the Austrian Ministry of Digital and Economic Affairs. The authors thank Alexandra Bykova, Mahdi Ghodsi, and David Zenz for valuable statistical support.

² GDP per capita at purchasing power parities in 2016 was USD 37,740 for South Korea and USD 41,275 for Japan. Both countries feature among the top 20 countries of the world according to the Human Development Index of the United Nations, which considers the level of education and health in an economy in addition to GDP, with an index of 0.901 for South Korea and 0.903 for Japan.

³ Schedules for tariff line reductions published by the European Commission are outlined for a period of 21 years.



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Table 1
Topics Covered by EU Trade Agreements with Japan, Canada and South Korea

	Chapters in the EPA with Japan	CETA with Canada	FTA with South Korea
Chapter 1:	General provisions	Ch. 1	Ch. 1
Chapter 2:	Trade in goods	Ch. 2	Ch. 2
Chapter 3:	Rules of origin and origin procedures	+	+
Chapter 4:	Customs matters and trade facilitation	Ch. 6	Ch. 6
Chapter 5:	Trade remedies	Ch. 3	Ch. 3
Chapter 6:	Sanitary and phytosanitary measures	Ch. 5	Ch. 5
Chapter 7:	Technical barriers to trade	Ch. 4	Ch. 4
Chapter 8:	Trade in services, investment liberalization and e-commerce	Ch. 9, 16	Ch. 7
Chapter 9:	Capital movements, payments and transfers and temporary safeguard measures	+	Ch. 8
Chapter 10:	Government procurement	Ch. 19	Ch. 9
Chapter 11:	Competition policy	+	Ch. 11
Chapter 12:	Subsidies	Ch. 7	Ch. 11
Chapter 13:	State-owned enterprises, enterprises granted special rights or privileges and designated monopolies	Ch. 18	Ch. 11
Chapter 14:	Intellectual property	Ch. 20	Ch. 10
Chapter 15:	Corporate governance	+	+
Chapter 16:	Trade and sustainable development	Ch. 22, 24	Ch. 13
Chapter 17:	Transparency	Ch. 27	Ch. 12
Chapter 18:	Good regulatory practices and regulatory cooperation	Ch. 21	+
Chapter 19:	Cooperation in the field of agriculture	+	+
Chapter 20:	Small and medium-sized enterprises	+	+
Chapter 21:	Dispute settlement	Ch. 29	Ch. 14
Chapter 22:	Institutional provisions	Ch. 26	Ch. 15
Chapter 23:	Final provisions	Ch. 30	Ch. 15

Note: Information collected based on texts of the agreements. A '+' indicates that this chapter is new in the EPA with Japan compared to the respective trade agreements with Canada and South Korea.

Source: FTA with South Korea: Official Journal of the European Union, L 127, 14 May 2011; EPA with Japan: <http://trade.ec.europa.eu/doclib/press/index.cfm?id=1684>; CETA with Canada: <http://ec.europa.eu/trade/policy/in-focus/ceta/ceta-chapter-by-chapter/>.

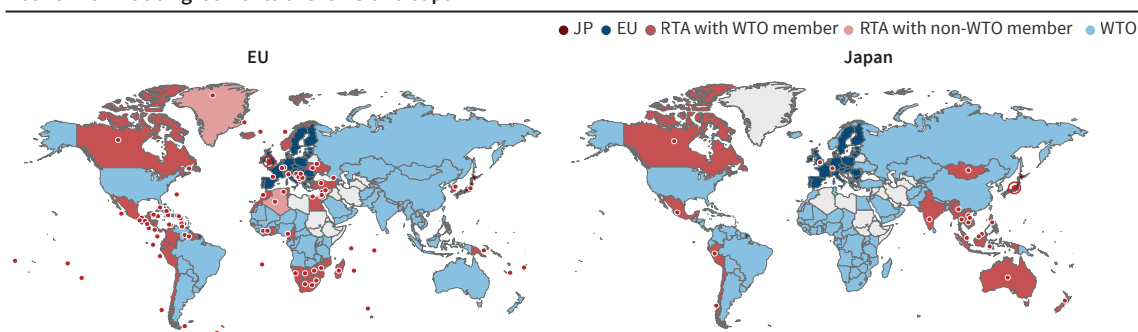
- Change (1992) and – for the first time in an EU trade agreement – the Paris Agreement (2015).⁴
- ii. *Services trade*: specific sub-sections of the EU-Japan EPA deal with the regulatory framework of postal and courier services, telecommunication, financial and maritime transport services as well as e-commerce.
- iii. *Investment*: the agreements with Japan and South Korea both incorporate services and investment liberalization in one chapter, aiming at increasing investment without including investment protection mechanisms. Negotiations with Japan

on these matters take place in parallel. In this respect, CETA is deeper, though more resource-intensive to implement as the inclusion of investment protection changes the type of agreement to a mixed agreement requiring the ratification by all national parliaments in the EU before it can fully enter into force. However, reviewing the evolution of EU foreign direct investment (FDI) suggests that the FTA with South Korea was having a great impact on investment stocks and incomes generated (EC 2017), even without having an investment protection regulation in place.⁵

⁴ The latter is in contrast to the United States, with President Trump announcing the US withdrawal from the agreement in June 2017.

⁵ An illustrative example of Austria's FDI outward stocks and FDI income generated in Japan and South Korea for the period 2000-2017 is available in Grüber et al. (2018).

Figure 1
Network of Trade Agreements of the EU and Japan



Note: Parties of trade agreements in red, WTO members in blue, neither members of a regional trade agreement nor WTO members in grey. Each dot represents a partner country or region (such as the EU), accentuating agreements with small (island) economies. Source: WTO Regional Trade Agreements Database.

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The size of the effects of trade agreements depends on the content and scope of the agreements, but also on how many trade agreements with other partners have been previously established (Figure 1). The number of newly established trade agreements strongly increased after the establishment of the WTO in 1995, mainly being bilateral, intercontinental agreements (Dür et al. 2014).

South Korea and the EU established a vast network of trade agreements globally. The number of agreements of South Korea is even exceeding the amount of EU trade agreements. However, none of them comes close in depth to the common market of the European Union. Hence trade diversion effects resulting from the bilateral agreement with South Korea were less likely to negatively affect EU markets, while other countries, including Japan, might have experienced losses after the deal.

Canada and Japan, in comparison, formalized their trade ties only very locally. Canada focuses on the American continent and has only recently established stronger transatlantic relations, while Japan mainly established trade agreements with countries in South Asia and Oceania. In the case of the EU-Japan EPA, trade diversion effects with gains for the EU and Japan, and potential trade losses for the United States and South Korea are a realistic scenario.

EU-JAPAN TRADE RELATIONS AND POLICY

Japan ranks second after China among the EU's trading partners in Asia. The EU's balance of trade in goods with Japan is negative, but the positive balance of trade in services exceeds the deficit in goods trade. There are indications of a trade diversion effect of the EU FTA with South Korea, as trade flows with South Korea recovered strongly after 2010, while trade with Japan, in particular imports from Japan, decreased (Figure 2). However, trade flows between the EU and South Korea – the EU's ninth largest export destination for goods – amount to only about two thirds of flows between the EU and Japan.

EU exports to Japan are more diversified than imports (Figure 3). The three biggest sectors are transportation (18 percent), machinery and electronic equipment (18 percent) and chemicals (23 percent). Compared to other trading partners, export shares of machinery are lower (Canada 24 percent, South Korea 26 percent, total 23 percent) but higher for chemicals (Canada 17 percent, South Korea 13 percent, total 13 percent). The sectors transport (26 percent) and machinery and electronics (39 percent) also dominate EU imports from Japan.

Vehicles received much attention in FTA negotiations. When the FTA with South Korea entered into force, tariffs were eliminated by both parties for vehicle parts; after three years for medium-sized and large cars; and finally, after five years for small cars. Negotiations on vehicles with Japan focused on non-tariff measures. The parties agreed to apply the same international standards on product safety and environmental sustainability, rendering extra testing procedures unnecessary and pushing EU-Japan cooperation in international standard-setting fora. In case one of the parties does not adhere to the agreed standards, the EPA includes a separate dispute settlement mechanism for vehicles and a safeguard clause allowing for the reintroduction of tariffs.

The greatest potential for tariff cuts on both sides is in the agricultural sector (Figure 4). South Korean tariffs on agricultural products originating from the EU dropped from around 30 percent before the FTA to roughly 5 percent in 2014. The initial South Korean tariff rates were about five times higher than those imposed by Japan on EU products, which stand at about 6 percent today.

South Korea seems to be particularly protective of vegetable products, with various different treatments in the FTA:

- *Zero tariffs + NTMs*: for many vegetable products high tariff rates, e.g., egg-plant (HS 0709300000) at 27 percent were set to zero on the day of the entry into force of the FTA. In order to achieve tariff reductions, the parties also agreed on NTMs,

Figure 2
Goods Trade between the EU and Japan/South Korea over Time

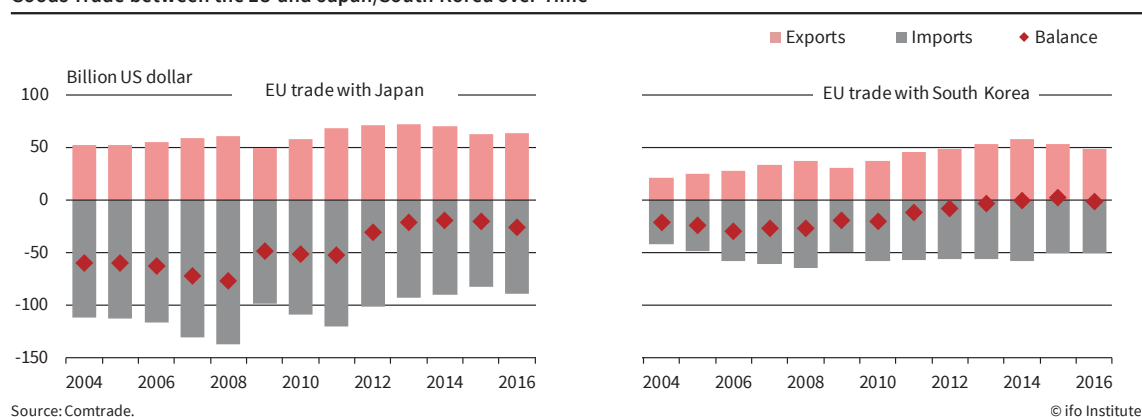
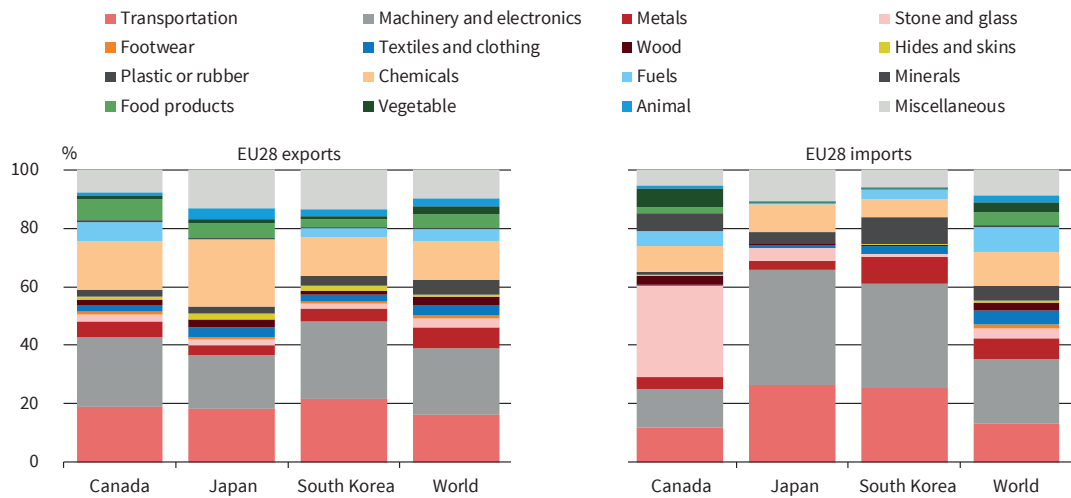


Figure 3
Product Composition of EU28 Trade in 2016



Source: Comtrade.

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e.g. for specific ginseng root extract powder (HS 1211202210) the tariff of 754.3 percent should be eliminated within 15 years, with Annex 3 specifying levels of import volumes, which – if exceeded – trigger higher tariffs. Starting with a tariff of 176 percent for milk powder, tariff measures have been replaced by NTMs through tariff-rate quotas.⁶

- *Tariff reduction schedules:*⁷ some of the highest tariffs can be found for vegetable roots (887.4 percent; HS 0714101000), which should be eliminated within 15 years. Tariffs on particular species of

⁶ Paragraph 6 of Annex 2-A-1 of the FTA outlines the time schedule over 16 years for increases in the quantity of milk products (in metric tonnes) originating from the EU that shall enter South Korea duty-free.

⁷ For the full schedule of tariff reductions - see EU (2011).

beans were eliminated within five years starting at a level of 607.5 percent.

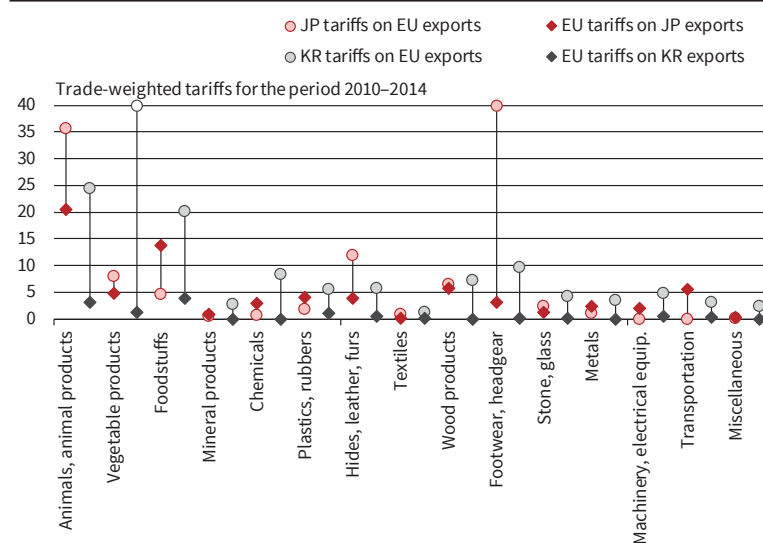
- *Some tariffs remain high*, e.g., for peeled garlic (HS 0703201000) with a rate of 360 percent or WON 1,800/kg (whichever is greater).

Tariffs imposed by Japan on EU products are already in the range of South Korean tariffs *after* the implementation of the FTA. Exceptions are footwear and headgear, with an average tariff of around 50 percent, and animals and animal products with roughly 35 percent. Some examples with currently high tariffs include margarine (excluding liquid margarine; HS 1517100000) with a tariff of 29.8 percent, which should be eliminated stepwise over five years from

the 6th year onwards. Some of the highest tariffs concern products containing sugar: Caramel (HS 170290300) is currently taxed with a 50 percent-tariff or 25 yen/kg, but shall enter the Japanese market duty-free starting from the 11th year of the EPA's application. For glucose syrup (HS 1702302100), currently targeted with a tariff of 85.7 percent or 60.90 yen/kg (whichever is greater), a tariff rate quota was agreed upon, increasing the aggregate quota quantity from 1,780 metric tons in the first year to 5,340 metric tons for the 12th year and thereafter.

EU tariffs on imports from South Korea are at a very low level. For imports from Japan, however, the potential for

Figure 4
Japanese and South Korean Tariffs on EU Exports and Vice Versa by Product Groups



Notes: Average tariffs on vegetable products applied by South Korea are driven by single product outliers, but dropped from 267% (2010-2012) to 174% (2013-2015). Japanese average tariffs on footwear and headgear reduced from 58% (2010-2012) to 42% (2013-2015).

Source: UNCTAD TRAINS; wiiw calculations.

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tariff reductions is still given for animals and animal products, foodstuffs, timber and wood products and products of the transportation sector. For all other product categories, tariffs are lower than 5 percent (Figure 4). Very few products imported from Japan face tariffs higher than 20 percent. These include some types of vehicles for the transport of goods,⁸ starting with a tariff of 22 percent, which should be eliminated within seven years. Together with the agreement on international car safety standards, facilitating vehicle approval, these tariff cuts might have a strong impact on trade between the EU and Japan in vehicles and car parts. Likewise, some fish are facing a 22 percent-tariff,⁹ which should be abolished after 15 years. For many edible vegetables, roots, fruits and nuts, the EU agreed to eliminate all ad valorem components of the customs duties on the day of entry into force of the EPA, while keeping specific duty components in place. For other products, mixed duties stay in place but are reduced over time. For instance, the base rate for cocoa powder containing 5–65 percent by weight of sucrose or glucose currently is 8.0 percent plus EUR 25.20/100 kg. Over a period of 15 years, it shall be reduced to 6.0 percent, plus EUR 18.90/100 kg.

The discussion on tariff reductions is in line with the general trend that non-tariff measures (NTMs) tend to replace tariffs at the heart of trade negotiations. These are more difficult to grasp due to their diverse nature and complex impacts on quantities, prices and the quality of traded goods. In particular, NTMs should not be considered as pure ‘trade costs’ like tariffs. Some NTMs actually boost trade, e.g., due to harmonization of standards, increased product quality or consumer trust (Bratt 2014; Ghodsi et al. 2016; Grübler and Stehrer 2018).

The two most important categories of NTMs¹⁰ in the context of the EU-Japan EPA are technical barriers to trade (TBTs) and sanitary and phytosanitary measures (SPS), for

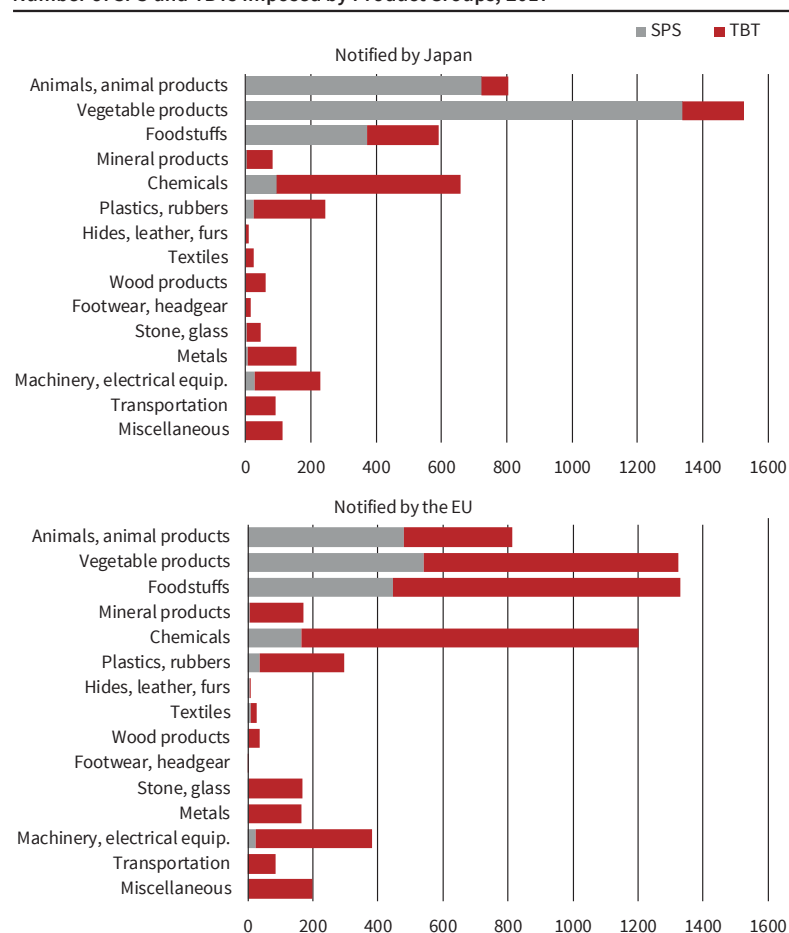
which we draw information from the Integrated Trade Intelligence Portal (I-TIP).¹¹ SPS and TBTs account for about 45 percent and 35 percent, respectively, of Japanese notifications and for 24 percent and 64 percent, respectively, of notifications by the EU. Both primarily concern goods of the agricultural and food industries, as well as chemical products (Figure 5).

SPS aim at protecting human, animal and plant life. Two bilateral SPS measures of the EU against Japan were notified to the WTO, requiring testing of food and feed imports originating from certain regions of Japan following the accident at the Fukushima nuclear power station.¹² No bilateral measures were imposed by Japan against the EU. Technical barriers to trade relate to product standards, such as requirements for product safety, packaging, or labelling. They primarily concern manufactured goods. While SPS may be emergency measures targeting specific trading partners, TBTs are regulations applying to all trading partners. The effects may, however, differ depending on the similarity of regulations between trading partners.

¹¹ I-TIP Goods Database of the WTO: <http://i-tip.wto.org/goods/default.aspx?language=en>.

¹² WTO documents G/SPS/N/EEC/397 (1 April 2011) and G/SPS/N/EU/15 (11 April 2012). Official Journal of the European Union OJ L80, 26 March 2011.

Figure 5
Number of SPS and TBTs Imposed by Product Groups, 2017



Source: WTO I-TIP database; iiw calculations.

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⁸ HS codes 87043291, 87043299, 87043131, 87043139, 87042391, 87042399, 87042291, 87042299, 87042131, 87042139.

⁹ For example, albacore or long-finned tuna (HS 03023190), skipjack or stripe-bellied bonito (HS 03023390), southern bluefin tuna (HS 03023690) and Pacific bluefin tuna (HS 03034599).

¹⁰ There are many different types of NTMs; for a detailed discussion - see Ghodsi et al. (2017).

ASSESSING THE IMPACT OF THE EPA

In an earlier study on the EU-South Korea FTA, Decreux et al. (2010) estimated a GDP effect for the EU of 0.08 percent and for South Korea of up to 0.84 percent, using estimated ad valorem equivalents of NTMs. They find that trade protection by NTMs exceeded tariff protection and that NTM protection by South Korea was higher than in the EU, particularly for textiles, machinery and foremost cars. In fact, exports of motor vehicles to South Korea increased by more than 200 percent and imports by about 50 percent within the first four years of the FTA's implementation, with the preference utilization rate within the EU ranging between 6 percent and 91 percent (EC 2016a). However, some negative effects of NTMs persist, e.g., SPS measures related to authorization procedures impeding EU beef and pork exports.

An assessment of barriers to trade between the EU and Japan carried out by Sunesen et al. (2009) found by means of surveys that NTMs increased the cost of exporting to Japan by 10 percent to 30 percent. A follow-up study by Francois et al. (2011) formed the basis for NTM-reducing scenarios in the European Commission's impact assessment report on EU-Japan trade relations (2012). It strongly argues for a reduction of NTMs. In an ambitious scenario of a 50 percent-NTM reduction the Commission expected GDP gains by the year 2020 of 0.8–1.9 percent for the EU and of 0.7 percent for Japan. The trade sustainability impact assessment of the EU-Japan EPA (EC 2016b) concludes that the economic effects of the agreement with Japan might be of similar magnitude as the TTIP agreement with the United States, given Japan's higher complementarity to the EU economy and higher levels of tariff and NTM protection.

The Structural Gravity Model

With the introduction of multilateral resistance terms, accounting for the fact that trade flows between two countries do also depend on their trade networks with other economies (Anderson and van Wincoop 2003), the gravity model has advanced to the workhorse for international trade analysis. Recent methodological advances have been summarized by Yotov et al. (2016). Following their recommendations, we employ a Poisson pseudo-maximum likelihood (PPML) estimation procedure, include intranational trade flows and use heteroskedasticity-robust standard errors.

Our approach adds to the existing literature in two respects: first, it uses a unique input-output database, incorporating Western Balkan economies (Reiter and Stehrer 2018). Second, non-tariff measures (NTMs) are modelled based on rich NTM notifications data (Ghodsi et al. 2017). The specification

of the gravity equation we apply takes the following form:

$$(1) X_{ijt} = \exp[\pi_{it} + \chi_{jt} + \mu_{ij} + \beta_1 \text{FTA}_{ijt} + \beta_2 \text{NTM}_{ijt} + \beta_\tau \tilde{\tau}_{ijt}] \times \epsilon_{ij}$$

X_{ijt} are bilateral gross exports from exporter i to importer j at time t . π_{it} , χ_{jt} are exporter- and importer-time fixed effects accounting for multilateral resistances. μ_{ij} constitute country-pair fixed effects controlling for possible endogeneity in trade policy (Baier and Bergstrand 2007). FTA_{ijt} captures four different types of free trade agreements, while NTM_{ijt} covers different NTM types.

The 'wiiw Integrated Europe Input-Output Database' is an input-output database that comprises trade flows (including value added exports) of 50 countries¹³ and 32 industries for the years 2005 to 2014 (Reiter and Stehrer 2018) and is constructed following the methodology of the World Input-Output Database WIOD (Timmer et al. 2016). It provides consistent information on intra-country flows, allows for estimation by industry, as well as for final demand and intermediate input trade flows, distinguishing effects on gross aggregate trade flows as well as trade in value added.

The 'wiiw NTM Database' draws on NTM data collected by the WTO, and provided via the Integrated Trade Intelligence Portal (I-TIP). It has been enhanced by using several computational techniques to fill in missing product codes of the Harmonised System (HS) to make the information usable for econometric analysis (Ghodsi et al. 2017). In addition to the two most frequently applied NTMs (SPS and TBTs) we include antidumping measures (ADP) and other NTMs (such as quantitative restrictions) as control variables. In this contribution, we use the trade coverage ratio of NTMs as defined in Bora et al. (2002) to aggregate the NTM data up to national (or industry) level:

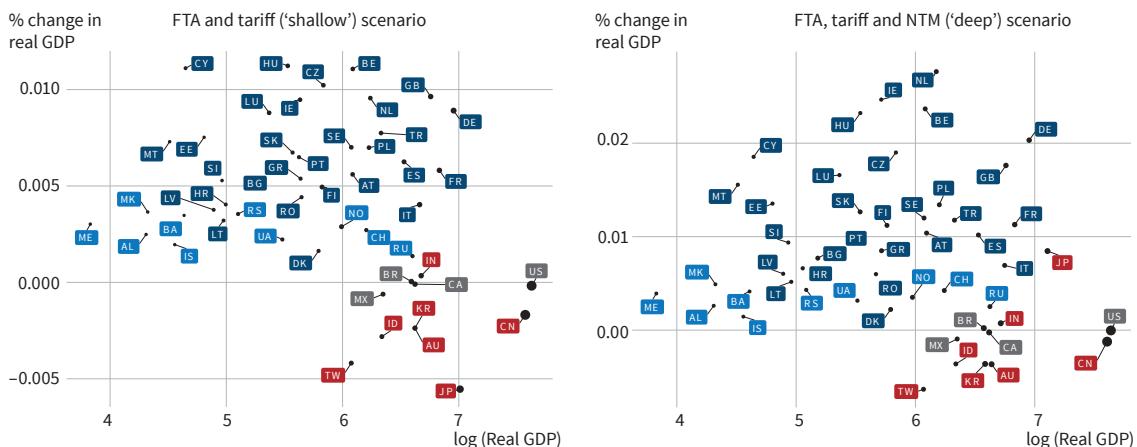
$$(2) \text{Cov}_{ijt} = \frac{\sum_k D_{ijkt} V_{ijkt}}{\sum_k V_{ijkt}}$$

where D_{ijkt} is a dummy indicating that there is an NTM imposed by importing country j on exports of country i at time t , affecting product k . Similarly, V_{ijkt} is the corresponding trade flow.

Trade agreement data are provided by Egger and Larch (2008), which allow distinguishing between four types of regional trade agreements: Free trade agreements (FTA) follow GATT Article XXIV. Stabilization and Association Agreements (SAA) capture the effect of trade integration of the Western Balkan countries with the EU. Similarly, the 'EFTA' dummy represents agreements that the Western Balkan economies adopted with the countries of the European Free Trade Association. Finally, customs unions are controlled for with the 'CU' dummy.

¹³ All European countries except Kosovo, Belarus and Moldova, plus several major non-European economies.

Figure 6
Real GDP Impact of the EU-Japan EPA



Notes: Countries (ISO-2 codes) shaded in dark blue are EU 28 Member States, countries in light blue are European non-EU countries included in the database, red and grey countries are non-European countries in Asia, Oceania and America, respectively. Source: wiiw calculation. © ifo Institute

Tariff rates obtained from UNCTAD’s Trade Analysis Information System (TRAINS) are aggregated from the HS 6-digit level to the 32 industries level by weighting the tariff line with the corresponding trade flow, well aware of the issue that high tariffs may result in low trade-weighted tariff measures. However, as the trade economics literature still lacks a first-best method for aggregating tariffs and the resulting estimates for the three methods proposed in Bouët et al. (2004) are very close to each other, we stick to trade-weighted aggregates.

Estimation Results

First, the model is estimated at the national level (Table 2), returning positive effects of all trade integration variables.¹⁴ Furthermore, the tariff variable shows a strong significant and, as expected, negative impact. NTMs, however, exhibit a mixed picture. We find on average negative effects for SPS and the group of other NTMs, but positive effects for TBTs.¹⁵

¹⁴ A coefficient of 0.085 for an FTA means that bilateral trade flows with an FTA are about $(e^{0.085}-1)*100 \approx 9$ percent higher than without one.
¹⁵ The coefficient on the control variable for antidumping measures is also positive, though counterintuitive given the nature of the policy tool. As Japan is using ADP exceptionally seldom for an industrialised economy, and furthermore SPS and TBTs are at the core of

Our country sample consists mainly of industrialized economies with a large share of trade in higher-tech products. Firms in these countries find it probably easier to comply with foreign standards and quality requirements than firms of developing economies. It is thus not unlikely that TBTs on average favor trade between industrialized countries, while penalizing firms from countries applying other standards, or facing higher adaptation costs. In the case of the EU-Japan EPA, positive TBT effects should, for example, be expected from establishing the same international standards on product safety for motor vehicles, applying the international textiles labelling system or the international standard on quality management systems for medical devices.

The regression has been performed for three industry aggregates: (i) agriculture and mining; (ii) total manufacturing; and (iii) services; further, manufacturing trade has been split into low-technology, medium-low-technology, medium-high-technology and high-technology products.¹⁶

A ‘shallow’ agreement scenario between EU countries and Japan is modelled as an FTA, where tariffs are set to zero. In line with the results of Felbermayr et al. (2017a) the estimates indicate that Japan and non-European countries would slightly lose from such an agreement, while small gains are obtained for European countries.

A ‘deep’ agreement scenario additionally considers

the EPA with the EU, we do not bother too much about the economic interpretation of the coefficient. Nevertheless, we want to point out the probable endogeneity bias resulting in the positive coefficient, as high exports trigger ADP investigations, which cannot be easily overcome by using time-lags.

¹⁶ According to the OECD Structural Analysis Database (STAN): oe.cd/stan.

Table 2
Regression Results (Total Economy Level)

Variables affecting bilateral exports	Coefficient	Std. error	Pr(> z)
FTA	0.085***	0.0010	0.000
SAA	0.229***	0.0050	0.000
EFTA	0.214***	0.0170	0.000
CU	0.053***	0.0030	0.000
Weighted tariff	-0.003***	0.0000	0.000
log(SPS coverage)	-0.253***	0.0040	0.000
log(TBT coverage)	0.135***	0.0020	0.000
log(ADP coverage)	0.150***	0.0090	0.000
log(Other NTM coverage)	-0.016***	0.0010	0.000

Source: wiiw calculations.

Table 3

Industry-specific Effects on Real Value Added (FTA, Tariff and NTM Scenario)

ISO 2	Country	Agriculture	Manufacturing				
			Total manufacturing	Low-tech	Medium-low-tech	Medium-high-tech	High-tech
JP	Japan	0.015	0.296	-0.016	0.102	0.623	-0.024
AT	Austria	0.000	0.053	0.004	0.005	0.016	0.011
BE	Belgium	-0.003	0.082	0.003	0.035	0.105	-0.014
BG	Bulgaria	0.000	0.000	0.005	-0.010	-0.049	0.010
CY	Cyprus	0.000	0.010	0.004	0.000	-0.053	0.005
CZ	Czech Rep.	0.008	0.050	0.004	0.036	-0.028	0.027
DE	Germany	0.004	0.115	0.005	0.023	0.130	0.020
DK	Denmark	0.010	0.112	0.001	0.036	0.017	-0.001
ES	Spain	-0.002	0.026	0.005	-0.002	-0.007	0.000
EE	Estonia	-0.001	0.112	0.005	0.007	0.129	0.016
FI	Finland	-0.002	0.079	0.001	0.001	0.074	0.008
FR	France	0.003	0.062	0.006	0.022	0.071	-0.010
GB UK	Britain	0.002	0.083	0.003	0.021	0.101	0.009
GR EL	Greece	0.000	0.011	0.004	-0.009	-0.067	0.002
HR	Croatia	0.001	0.019	0.003	-0.008	-0.066	-0.003
HU	Hungary	0.003	0.090	0.005	0.066	0.066	0.026
IE	Ireland	0.001	0.215	0.004	0.076	0.179	0.009
IT	Italy	0.001	0.040	0.006	0.001	0.020	-0.009
LT	Lithuania	0.000	-0.007	0.001	-0.005	-0.064	0.007
LU	Luxembourg	0.000	0.013	0.002	0.019	-0.052	0.009
LV	Latvia	-0.002	0.034	0.005	-0.024	-0.037	0.005
MT	Malta	0.190	0.329	-0.025	0.082	0.153	0.042
NL	Netherlands	0.007	0.087	0.003	0.036	0.118	-0.051
PL	Poland	0.000	0.013	0.003	-0.005	-0.033	0.012
PT	Portugal	-0.001	0.011	0.006	0.000	-0.037	0.008
RO	Romania	-0.003	-0.012	0.002	-0.012	-0.078	0.003
SK	Slovakia	0.000	0.014	0.003	-0.002	-0.030	0.014
SI	Slovenia	0.001	0.000	0.005	-0.017	-0.063	0.002
SE	Sweden	-0.002	0.100	0.004	0.022	0.073	0.017

Source: wiw calculations.

NTMs in two ways: NTMs with negative impacts (from the regressions above) are being brought down to 0. In addition, a positive effect of technical barriers to trade is boosted by doubling the NTM coverage rates of the bilateral trade flows. In this case Japan is expected to gain from the EU-Japan EPA, whereas the remaining non-European countries still face some, albeit small, losses. The positive effects for the European countries on average double compared to the tariffs-only scenario (Figure 6).¹⁷

Note that these structural gravity models do not take into account quality changes in the traded products, which could further increase the gains from trade. Furthermore, these effects do not materialize immediately as (i) tariff reductions and changes in NTMs are scheduled over a long period of up to 20 years; and (ii) it takes time for the structural changes and adjustments to take place in the affected economies, which is estimated to stretch over a period of 10–12 years (Head and Mayer 2014).

¹⁷ Compared to Felbermayr et al. (2017a), effects implied by our estimation results are significantly lower, which can be attributed to methodological differences, in particular, how NTMs enter the estimation procedure. Whereas we use NTM proxies in the form of coverage ratios, Felbermayr et al. (2017a) assume a large reduction in trade costs (Felbermayr et al. 2017b). In Felbermayr et al. (2017a) the effect of the tariff only scenario is 0.01 percent and for tariffs plus NTMs 0.05 percent (Table 4). Assuming that trade costs fall as observed in average trade agreements (Head and Mayer 2014) the effects are substantially larger.

Effects in the agricultural industries on real value added are generally small for the EU28 countries, though relatively large for Japan with 0.015 percent (Table 3), mostly resulting from a strong export growth effect. Gains from the EPA in manufacturing mostly occur in the medium-high and high-tech industries, which also account for the bulk of trade between the EU and Japan. Japan wins the most (0.62 percent of real value added in medium-high-tech manufacturing and 0.10 percent in medium-low-tech manufacturing), compared to EU countries such as Germany, Britain, or the Netherlands with gains of around 0.10 percent in the medium-high-tech industries. However, a number of countries might face losses in the medium-high-tech industries; these are mostly Central and Eastern European economies of the EU due to relatively strong price pressure and low increases in exports.

CONCLUSIONS

The EU-Japan Economic Partnership Agreement (EPA) is relevant for at least two reasons: first, it is strategically and politically important in times of rising protectionism (accelerated by the US administration) as a signal sent by the EU and Japan to support rule-based trading principles. In addition, it strengthens internationally approved standards and

goals such as the Paris climate agreement. Second, it is important as a comprehensive trade deal with the EU's second largest trading partner in Asia.

Current Japanese tariffs are already comparable to tariff levels of South Korea after the implementation of the EU FTA with South Korea. However, gains from tariff cuts are still to be expected, particularly for agricultural products. Non-tariff measures might play an even greater role. The existing literature points towards both trade-hampering and trade-promoting effects.

We apply a structural gravity model incorporating general equilibrium effects, using a proxy for NTMs calculated from the WTO I-TIP database. Allowing for positive NTM effects (e.g., resulting from lower compliance costs by applying the same international standard) positive effects for EU member states range between 0.003 percent for Denmark and 0.028 percent for the Netherlands, and suggests a welfare gain for Japan of about 0.009 percent of GDP, materializing over time subject to the schedules of changes in tariffs and non-tariff measures.

Within the manufacturing sector, the largest gains are expected in the medium-high and high-tech industries. However, these positive effects are not observable for all countries. The model results suggest small losses in terms of real value added in these industries for some EU member states of Central and Eastern Europe. Somewhat surprisingly, the effects on the agricultural industries are rather modest despite the larger tariff reductions in this area. Some tariffs, e.g., as high as 114.2 percent for sugar products, or milk products with tariffs of more than 25 percent plus additional tariffs per kilogram, might be considered prohibitive. Empirical models do not allow to estimate or underestimate effects for products for which no or only very low levels of previous trade flows were observed.

The agricultural sector is illustrative of the interplay between tariffs and non-tariff measures, which is as of today only little understood and not yet implemented in empirical models: in order to achieve tariff cuts, negotiating parties often agree on non-tariff measures such as safeguard clauses, or tariff-rate quotas. These measures, though trade-restricting in nature, therefore allow for tariff reductions, or agreements on common standards, and hence are ultimately trade-promoting. Understanding, modelling and quantifying these in fact trade-promoting effects of apparently trade-restricting non-tariff measures will be an important task for future research.

REFERENCES

Anderson, J. E. and E. van Wincoop (2003), "Gravity with Gravitas: A Solution to the Border Puzzle", *American Economic Review* 93, 1701-1725.

Baier, S. L. and J. H. Bergstrand (2007), "Do Free Trade Agreements Actually Increase Members' International Trade?", *Journal of International Economics* 71, 729-755.

Bouët, A., Y. Decreux, L. Fontagné, S. Jean and D. Laborde (2004), "A Consistent, Ad-Valorem Equivalent Measure of Applied Protection Across the World: The MacMap-HS6 Database", *CEPII Working Paper* 2004-22.

Bratt, M. (2014), "Estimating the Bilateral Impact of Non-tariff Measures (NTMs)", *Working Paper WPS 14-01-1*, Université de Genève.

Decreux, Y., C. Milner and N. Péridy (2010), *The Economic Impact of the Free Trade Agreement (FTA) between the European Union and Korea: Final Report*, Report for the European Commission (TRADE/07/A2: Korea II), CEPII/ATLASS.

Dür, A., L. Baccini and M. Elsig (2014), "The Design of International Trade Agreements: Introducing a New Dataset", *The Review of International Organizations* 9, 353-375.

European Commission (EC, 2012), *Impact Assessment Report on EU-Japan Trade Relations; SWD(2012) 209 final*, Brussels.

European Commission (EC, 2016a), *Annual Report on the Implementation of the EU-Korea Free Trade Agreement, COM(2016) 268 final*, Brussels.

European Commission (EC, 2016b), *Trade Sustainability Impact Assessment of the Free Trade Agreement between the European Union and Japan*, Brussels.

European Commission (EC, 2017), *Evaluation of the Implementation of the Free Trade Agreement between the EU and Its Member States and the Republic of Korea; Interim Technical Report Part 1: Synthesis Report*, prepared by Civic Consulting and the ifo Institute, June.

European Union (EU, 2011), "Free Trade Agreement between the European Union and Its Member States, of the One Part, and the Republic of Korea, of the Other Part", *Official Journal of the European Union* 54, 14 May 2011, L 127, <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2011:127:FULL&from=EN>.

Felbermayr, G., F. Kimura, T. Okubo, M. Steininger and E. Yalcin (2017a), *On the Economics of an EU-Japan Free Trade Agreement*, GED Study, Bertelsmann Stiftung.

Felbermayr, G., J. Gröschl and I. Heiland (2017b), *The European Union in Turmoil: A General Equilibrium Analysis of Trade and Welfare Effects*, ifo Institute, mimeo.

Francois, J., M. Manchin and H. Norberg (2011), *Economic Impact Assessment of an FTA between the EU and Japan*, http://trade.ec.europa.eu/doclib/docs/2017/july/tradoc_155782.pdf.

Frenkel, M. and B. Walter (2017), "The EU-Japan Economic Partnership Agreement: Relevance, Content and Policy Implications", *Intereconomics* 52, 358-363.

Ghodsí, M., J. Gröbler and R. Stehrer (2016), "Estimating Importer-Specific Ad Valorem Equivalents of Non-Tariff Measures", *wiiw Working Paper* 129, The Vienna Institute for International Economic Studies.

Ghodsí, M., J. Gröbler, O. Reiter and R. Stehrer (2017), *The Evolution of Non-Tariff Measures and Their Diverse Effects on Trade*, wiiw Research Report 419, The Vienna Institute for International Economic Studies.

Gröbler, J., O. Reiter and R. Stehrer (2018), *The EU-Japan Economic Partnership Agreement and its Relevance for the Austrian Economy*, wiiw Research Report 434, The Vienna Institute for International Economic Studies (wiiw).

Gröbler, J. and R. Stehrer (2018), "Non-tariff Measures Becoming Ever More Important, But Also Trickier to Evaluate", in E. Gnan and R. Kronberger, eds., *Schwerpunkt Außenwirtschaft 2017/2018: Protektionismus: Ursachen, Erscheinungsformen, ökonomische Effekte*, Facultas, Vienna, 227-245.

Head, K. and T. Mayer (2014), "Gravity Equations: Workhorse, Toolkit and Cookbook", in G. Gopinath et al., eds., *Handbook of International Economics IV*, Elsevier, Oxford, 131-195.

Kohl T., S. Brakman and H. Garretsen (2016), "Do Trade Agreements Stimulate International Trade Differently? Evidence from 296 Trade Agreements", *The World Economy* 39, 97-131.

Reiter, O. and R. Stehrer (2018), "Trade Policies and Integration in the Wider Europe", *wiiw Working Paper* 148, The Vienna Institute for International Economic Studies.

Sunesen, E. R., J. F. Francois and M. H. Thelle (2009), *Assessment of Barriers to Trade and Investment between the EU and Japan: Final Report*, Copenhagen Economics, Copenhagen.

Timmer, M. P., B. Los, R. Stehrer and G. J. de Vries (2016), "An Anatomy of the Global Trade Slowdown Based on the WIOD 2016 Release", *GGDC Research Memorandum* 162, University of Groningen.

WTO, ITC, UNCTAD (2017), *World Tariff Profile*, https://www.wto.org/english/tratop_e/tariffs_e/tariffs_e.htm.

Yotov, Y. V., R. Piermartini, J. A. Monteiro and M. Larch (2016), *An Advanced Guide to Trade Policy Analysis: The Structural Gravity Model*, United Nations (UN) and World Trade Organization (WTO), New York.