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The Effects of EU–Japan Economic Partnership Agreement for Poland’s Economy

Introduction

On December 8, 2017 the negotiations on the EU–Japan Economic Partnership Agreement (EPA) were finalised. A few months later, in April next year, the text of the Agreement was made public. On July 17, 2018, during the EU–Japan summit in Tokyo, the President of the European Commission Jean-Claude Juncker, together with the President of the European Council Donald Tusk and Prime Minister of Japan Shinzo Abe, have signed the EPA. The agreement went into force on February 1, 2019 after ratification by the European and Japanese parliaments.

The EPA is the biggest bilateral trade partnership ever negotiated by the European Union. It will create huge market opportunities for Europe as well as Japan by removing the vast majority of customs duties and eliminating many non-tariff barriers, including several in agricultural sector.

From the perspective of Poland, strengthening relations with Japan may be beneficial. Firstly, they may intensify trade with all benefits resulting from more open economy. Secondly, they may create opportunities in reducing the current disparity among economic partners of Poland (e.g. Germany). Thirdly, the positive spill-over effects for Poland may occur due to the high innovativeness of

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Japanese economy. Moreover, these benefits would increase when the further treaty on investment protection is agreed.

The aim of the paper is to indicate and assess the possible effects of EU–Japan Economic Partnership Agreement for Poland. The impact of the bilateral elimination of customs duties on Poland’s economy is investigated by implementing the Computable General Equilibrium model. The effects of the EPA are analysed with regards to total exports and imports of Poland, selected sectors and Poland’s economy in general, compared to the EU member states, as well as Germany and Japan in particular. Other studies devoted to the analysis of the effects of the EPA are either concentrated on the results for the EU as a whole (Sunesen et al. 2010, Francois et al. 2011, European Commission 2016, 2018) or on selected sectors in individual member states (Ambroziak 2017, Ifo Institute 2017).

The EPA is analysed both in the context of EU trans-regional relations with Asia and Pacific countries, and in the context of the role and rank of the USA in their relations with allies and globally. The EPA is examined in the broad context of conditions for concluding and implementing the agreement. Such an approach is also presented by Gamble (2016).

1. Literature review

The EU–Japan Economic Partnership Agreement has been assessed in some research papers and institutional reports. Most of them use the CGE model as a basic tool for investigating the EPA results. However, different researchers use different assumptions and have access to various datasets, therefore the results are not always comparable.

One of the first studies of the effects of the EU–Japan EPA was conducted by the EU’s Directorate General for Trade in 2010 (Sunesen et al. 2010). The methodology, based on CGE model, takes into account a reduction in tariffs and non-tariff measures (NTMs). A liberalization of trade is predicted to result in an increase in EU exports to Japan by 23% or EUR 14 billion if tariffs were abolished (incl. tariffs in agriculture). This study shows that the largest gains from tariff dismantling would occur in agricultural and processed foods exports. Japanese exports to the EU could increase by around 30%, which amounts to EUR 25 billion. The biggest growth in exports is expected to appear in the motor vehicles industry (EUR 16 billion). In the case of a maximum liberalization scenario (when NTMs in Japan are reduced to the fullest possible extent), EU exports could increase by almost 50% or EUR 29 billion. The largest trade expansions are expected to arise in chemicals (including pharmaceuticals), followed by motor vehicles and medical equipment. For Japan this scenario would result in additional exports of EUR 28 billion. 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 would increase by EUR 33 billion in the EU and EUR 18 billion in Japan.

Another study on the EU–Japan EPA effects was presented by Francois et al. (2011) who also examined both tariff liberalization and liberalization of NTMs. The authors consider 8 scenarios of trade liberalization. Under a 100% reduction of tariffs and 20% reduction of NTMs scenario, the biggest expansions in the EU output are expected in electrical machinery, and in Japan – in motor vehicles, other machinery, electrical machinery and other transport equipment. The authors conclude that reductions of non-tariff barriers are an important issue in defining scope for reducing barriers to commerce between the two economies. In contrast to earlier studies on Japan–EU trade liberalization, they also examined possible impacts on CO₂ emissions.

Benz and Yalcin (2015) have also employed a CGE model to assess potential gains from bilateral trade liberalization, but this has also been the first study that took into account the importance of intra-industry trade and quantified labor market effects. The differences, not only in bilateral trade barriers but also in the efficiency of labor markets in the EU and Japan, were incorporated in the model. The results show that the additional employment created thanks to the trade agreement will be relatively low. The simulations of the specific model predict that tariff elimination will result in a 0.07% increase in Japanese GDP while the EU’s GDP is expected to grow by an additional 0.02%. Growth effects are substantially larger in a comprehensive liberalization including NTMs reductions, with Japanese GDP increasing by 0.86%, and the EU’s GDP rising by 0.2%.

The assessment of the predicted results of the EPA was first made by the European Commission in 2016 (European Commission 2016). The study includes assessment of social, environmental and economic consequences of the agreement. The results show that the expected long-term GDP growth is 0.76% per year for the EU and 0.3% for Japan if a symmetric liberalization policy is applied. Bilateral exports are estimated to increase by 34% for the EU and by 29% for Japan, while the total exports increase is at around 4% for the EU and 6% for Japan.

The positive impact of trade liberalization on welfare seems to be common to all existing studies. It was particularly indicated if NTMs are significantly reduced. While the expected overall gains differ across the studies (due to the different model assumptions), the sectoral winners turn out to be very similar. However, most of the studies are focused on the effects for the EU in general. It would be more valuable to learn about this impact in each single state. The study conducted by Ifo Institute (2017) addressed this problem and it provided some aggregate information on the effects of the EPA on the individual EU member states. The estimations were based on the Ifo Trade Model. According to this model all EU countries are expected to benefit, even if some to a lesser extent. This is the case of several peripheral countries such as Greece, Portugal or Romania, which would record gains lower than 0.02%. The expected GDP growth in Poland is 0.01%.

Ambroziak (2017) assessed the potential impact of the EPA on trade in agri-food products in Poland. The study showed that the entry into force of the EPA may be an opportunity for Polish producers to increase food exports to Japan.

The most recent report by the European Commission's Directorate-General for Trade, published in 2018 (European Commission 2018), is based on the provisions set up by the EU and Japan in the EPA. According to the simulations, by 2035 (when EPA is fully implemented) the EU's GDP will increase by almost EUR 34 billion more (or extra 0.14%) and Japanese economy will grow by EUR 29 billion more (or 0.6%) when compared to the situation with no agreement. This will be accompanied by an increase of the EU exports to Japan by about EUR 13 billion (13%) and of Japanese exports to the EU by about EUR 23 billion (23%). The relative positive impact is larger for Japan, which may be attributed to the smaller size of this economy and the fact that Japan is a relatively smaller trade partner for the EU.

Much uncertainty still exists about the effects of the EPA on Poland's economy. The novelty of this research study is based on the fact that it concentrates on Poland's economy (contrary to other studies usually focusing on the whole EU), and the possible effects are analyzed in detailed sectoral breakdown (not only agriculture). The aim of this paper is to explore Poland's economy perspective of the EPA in terms of changes in GDP, production output, trade, and social welfare as a result of elimination of the custom duties in line with the EPA. Another noteworthy advantage of this analysis is the newest data; the study used data available in the latest GTAP database (version 9), which is the most recent one.

2. Global perspective of the EPA and its subject matter

The importance of the EPA on a global scale is definitely crucial. First of all, it is the largest trade agreement concluded by the EU. From a global perspective, EPA is expected to be the most important trade agreement concluded in the 21st century. The deal itself (and cooperation of parties) might stop the wave of populism, nationalism, unilateralism and protectionism that threatens peace and international order. Such a broad perspective and the scale of expectations mean that the verification of the EPA impact will take place over a period of more than a decade.

Due to the potential long-term impact of the EPA on global economic and political relations, the EPA study should take into account the international order – the rules on which it is founded and the risks to its duration. Both the EU and Japan have clearly declared that they want the international order to be based on multilateral cooperation institutionalized by strong and sustainable organizations. The countries want the implementation of norms, which set the framework for free, fair and rules-based trade.

The EPA is considered as an example of a *third wave* RTA (Regional Trade Agreement) and the 'new' EU's RTA (on evolution of the EU trade agreements see Madner 2017). The key characteristic of this wave is that they often include bilateral deals between parties located in different continents. They also cover other areas than only trade in goods (Tevini 2018). They often include such areas

as protection of employees’ and consumers’ rights, sustainable development or investments. We can say that EPA is a limited version of the *third wave* RTA, because it does not cover the basic issues that are important for investors, including settlement of investor-state disputes.

The matter of relations between the EU and its member states and Japan has been divided for the purposes of creating the treaty regulation into three subdomains (Cremona 2006):

- 1) liberalization of trade in goods and services and other issues typical of *third wave* RTA (Economic Partnership Agreement – EPA);
- 2) investments – legal standards for investment protection and settlement of investment disputes (Investment Protection Agreement – IPA, which is being negotiated);
- 3) strategic partnership (Strategic Partnership Agreement – SPA, which is provisionally applied and waits for ratification).

The EPA, as regulating matters in the area of exclusive EU competence, is a bilateral agreement (not subject to ratification by the member states). The other two will be *mixed agreements*, i.e. a kind of bilateral agreements, for which one of the contracting parties will be both the EU and its member states, and as such they will be subject to ratification also by the member states. Since the first mixed agreement concluded in 1961 – the EEC–Greece Association Agreement – such agreements have been the subject of general analysis (Heliskoski 2001, Rosas 1998, van der Loo and Wessel 2017, van der Loo 2018) and case studies. The choice of a correct legal basis, the exclusive or shared competence, was analysed in Case C-13/07. The vertical division of external competences and global approach of the external action of the European Union were examined by Neframi (2014). The legal issues that have emerged in connection to the provisional application of the EU’s mixed trade and investment agreements are clarified by Suse and Wouters (2018).

The EPA, as announced by the parties, is the first step towards the creation of a legal framework for the ‘transoceanic bridge’ between Europe and Japan, as an expression of a strategic alliance between Europe and Asia. It anticipates the global situation and reacts to the aggressive policies of China and Russia. A rapid construction of this alliance was also necessary since the U.S. government conducts a unilateral policy bringing significant uncertainty to international relations. This bridge may also become a part of the structure connecting strategic partners on both sides of the Atlantic and Pacific. The EU–Japan cooperation is a political response to the idea of Prime Minister of Japan Shinzo Abe who described Japan and its regional partners (Australia, India, and the U.S. state of Hawaii) as “Asia’s democratic security diamond” (Abe 2012). The essence of the Japanese initiative was the invitation of France and the United Kingdom to cooperate in this partnership (Hayashi and Onchi 2017). The reactions of European allies to the Japanese proposal to deepen cooperation by going beyond the sphere of economic relations and trying to institutionalize the ties in the area of security and defence policy are unambiguously positive. In response to American

neo-isolationism (Schneider-Petsinger 2019), the EU and Japan opted for the institutionalization of pluralism.¹

3. Methodology

The standard tool used in empirical studies for assessing the economic impact of liberalization of trade (elimination or reduction of customs duties) is Computable General Equilibrium (CGE) framework. The idea of general equilibrium dates back to Leon Walras (1834–1910). It takes into account the fact that markets interact with each other, and therefore markets and their components are interdependent. For example, demand for anyone good depends on the prices of all other goods and on income, which in turn depends on wages, profits and rent, etc. The CGE approach allows for accounting the complexity of the markets (contrary to other approaches which require many simplifications). However, this can be done at the expense of simplification of the characterization of economic behavior.

The CGE models express all economic relationships in mathematical terms and allow to predict changes of different variables resulting from a change in economic policies. The models estimate the effects of trade and other policy innovations taking into account the major relations between sectors as well as between the domestic and international production of goods and services. The efficiency gains from trade liberalization can be captured, as the reallocation of the factors of production (capital, labor and land) across sectors and between countries (domestic and foreign) is tracked. The way the models are constructed allows to compare the impact of hypothetical changes in trade policy on costs, prices or income to a certain ‘baseline’ (i.e. the scenario with no policy changes). One should be aware, however, that the results should be treated only as indications of the magnitude of the expected impact of trade agreements. The CGE models do not capture the potential expansion of trade in new products and services or any welfare gains from the access to a greater variety of final products.

The operational tool for the general equilibrium set-up in this research is GTAP (Global Trade Analysis Project) model and its latest database (version 9).

GTAP is a multi-region, multi-sector, computable general equilibrium model. The basic assumptions of this model are as follows: (a) constant economies of scale, (b) perfect competition, (c) Armington’s assumption that national goods and imports are imperfect substitutions, and (d) separate consideration of the value of goods and transport costs in the calculations. The theoretical framework of the GTAP model was presented by Hertel (1997) and updated later by Corong et al. (2017).

Version 9 of the GTAP database captures world economic activity in 57 different sectors and 140 countries. Constructing the GTAP database requires inte-

¹ A similar character – an alternative reply, but in the economic sphere – was signing on March 8, 2018 by 11 countries of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The CPTPP includes exchange of goods and services, labor and environment standards, and public procurement. In comparison with the TPP, the text of which consisted of 30 chapters covering everything from labor standards to intellectual property rights, the CPTPP is narrower (22 provisions of the TPP were suspended), but it proves the ability of the parties to cooperate (more in: *What on Earth...* 2018).

grating and reconciling more than a hundred input-output tables contributed by GTAP network members across the world and international data sets contributed by several international organizations. The underlying equation system of the GTAP includes two different kinds of equations. One part covers the accounting relationships which ensure that receipts and expenditures of every agent in the economy are balanced. The other part of the equation system consists of behavioral equations which are based on microeconomic theory. These equations specify the behavior of optimizing agents in the economy, such as demand functions. The GTAP model also gives users a wide range of closure options, including unemployment, tax revenue replacement and fixed trade balance closures, and a selection of partial equilibrium closures (which facilitate comparison of results to studies based on partial equilibrium assumptions). All these characteristics of the GTAP model substantiate its choice as an analytical tool in the study.

There are many examples that GTAP model is widely recognized and frequently used for international trade policy analysis by academia and policy makers all over the world. One of such examples was the research conducted by Tongzon (2001) who assessed the trade implications of China’s WTO membership for developing ASEAN countries, analyzing tariff reduction commitments. Siriwardana and Yang (2008) concentrated more on a particular RTA of China, and they made a quantitative analysis of the economic effects of the Australia–China Free Trade Agreement. Another interesting model was introduced by Antimiani, Conforti and Salvatici (2008). They introduced the GTAP model in order to compare the degree of openness to trade of three developed markets – the European Union, Japan and the United States – with that of three middle-income countries, namely Brazil, India, and China.

For a deep recognition of the impact of the EPA agreement for Poland, the following countries were selected for the study: Japan, Poland, Germany (because it is Poland’s main trading partner), the old EU member states (EU member states before May 1, 2004 [excl. Germany], as “EU”), the new EU member states (EU member states after May 1, 2004 [excl. Poland], as “EUnew”), and the rest of the world (RoW).

The authors proposed the aggregation of industries into 28 branches in some calculations.² Since the preliminary calculations results revealed that the impact of trade liberalization on agricultural products varies for some product groups, the authors have divided agriculture into two subsectors: (i) grains and crops and (ii) meat and animal products. The next important modification of the model concerns rice, which was excluded from liberalization in the EPA. Because trade barriers for that product will remain significant, the authors have omitted rice in the calculations.

The EPA effects calculations were made on the basis of three scenarios. The first one assumes a bilateral reduction of customs duties by 25%. In the second scenario, the reduction of tariff barriers by 50% was assumed. As the implementation of the tariff reduction is spread over several years and differs from one tariff line to another, a simplifying approximation of the intermediate steps with

² Some of the indicated sectors have been omitted in the results tables.

scenarios of 25% and 50% was adopted. The third scenario refers to the total elimination of customs duties in trade between the EU and Japan. The analysis is focused on the 100% scenario, due to the target of almost duty-free access to the markets of the parties in the case of industrial goods and only slightly more inhibited access to agricultural markets.

Among a variety of different solution methods, the Gragg multi-step solution procedure was applied. The simplest single-step solution (Johansen method) treats the model as a linear system, linearized around the initial solution. This approach is the quickest and simplest computationally and could be a good approximation for small shocks. However, since the GTAP model is a non-linear system, and simulated shocks in this study are not small, the errors are super-proportional to the size of the shock. This results in the inconsistency of the linearization method (Johansen single-step solution method) that will not lead to accurate results.

The Gragg method is a more appropriate choice in this sense. It is a variation of the Euler method. Briefly, the Euler multi-step procedure automatically divides the exogenous shock into a number of equal components. Thus, the results obtained by multi-step procedure are more proper for formulating conclusions than outcomes of the calculation with a single-step procedure.

Nevertheless, there are some limitations of the proposed research method. The first one concerns the model – it is a standard GTAP model, which is a comparative static model. Thus, it is hard to capture some dynamic effects of trade liberalization; the simulations conducted in this paper may not reflect the real outcome. Secondly, the model used in this paper concerns tariff barrier reduction effects. An important element of the EPA that also needs quantification is the reduction in Technical Barriers to Trade (TBTs) and Sanitary and Phytosanitary Standards (SPSs), which are non-tariff measures (NTMs). These trade policy instrument effects might be a subject of future study.

4. The EPA's regulations concerning liberalization of trade in goods

The EU and Japan already have relatively liberal custom regimes (see Table 1), but looking into details, there are still areas which proved to be controversial during the negotiations. Japan's offensive interest was getting more liberal access to automotive and electronic sectors in the EU. The EU was highly interested in the reduction of Japan's import barriers in agricultural products. These mutual demands were met; the outcome of negotiations is that both parties agreed to provide almost free bilateral access to their markets.

Japan will eventually (after 15 years of entry of the agreement into force) fully liberalise 97% of its tariff lines (86% immediately at the entry into force), while the EU will liberalise 99% of its tariff lines (96% at the entry into force). Japan agreed to eventually eliminate duties on the EU agri-food products in case of around 85% tariff lines. In terms of the value of imports, at the end of the staging period 99% of Japan's imports from the EU will be duty free (91% at the

Table 1
Structure of MFN tariffs in the EU and Japan in 2016

Tariffs	EU	Japan
Bound tariff lines (% of all tariff lines)	100.0	98.2
Simple average rate (%)	6.3	6.1
– WTO agricultural products	14.1	16.3
– WTO non-agricultural products	4.3	3.6
Duty-free tariff lines (% of all tariff lines)	25.0	40.1
Simple average rate of dutiable lines only (%)	8.5	10.2
Number of lines	9,294	9,071

Source: based on WTO 2017a, 2017b.

entry into force) and almost 100% of the EU’s imports from Japan will be duty free (but only 75% at the entry into force). The remaining 1% of non-liberalised imports in case of Japan is to be partly liberalised through quotas and tariff reductions (in agriculture). There is one exclusion on both sides, which is rice and seaweeds (*EU–Japan EPA... 2017*).

Apart from the elimination of tariffs, the non-tariff measures in relation to industrial and agricultural goods will be reduced or eliminated, and the common rules for determining the origin of goods, technical barriers to trade, sanitary and phytosanitary measures will be introduced. The obligations of the parties were based on the so-called negative list. It means that since the agreement went into force, all tariff lines, which are not specifically listed in the EU and Japan schedules, are exempt from customs duties.

As already mentioned, the EU’s vital interests were related to a better access to Japan’s agricultural market. Some of the most important achievements in this regard of the EPA include:

- reduction and simplification of the tariff scheme for pork;
- tariff reduction for bovine meat (from 38.5% to 9% at the end of staging period – 15 years);
- significant market access improvements for cheese and dairy products (gradual full liberalization of tariffs for hard cheeses – from current 28.9%; and duty-free quota established for fresh cheeses);
- cancellation of 15% tariff on wine and alcoholic beverages on the date of entry into force;
- free access for various food and processed agricultural products (after staging periods), such as pasta, chocolates, cocoa-powder, confectionary, etc.;
- recognition of over 200 geographical indications protecting food products from the EU (but with none from Poland, except two products included on wine and alcoholic beverages list, i.e. Polish Vodka and “Żubrówka”³).

³ Herbal vodka includes an extract from bison grass.

The EPA provides for full liberalization in all industrial sectors, including those where the EU has important export interests, such as chemicals, pharmaceuticals, motor vehicles, transport equipment, plastics, cosmetics, textiles and clothing. In most cases, liberalization of the access to the Japanese market took place on the day of entry into force of the agreement.

From the perspective of Japan, the elimination of tariffs on industrial products imported by the EU was at least equally important. These goods are main exports of Japan to the EU, and the level of protection of the EU market is relatively high. Particularly intense negotiations concerned the automotive industry. Ultimately, duties on passenger cars exported from Japan to the EU will be eliminated within 7 years (from current 10%). A faster liberalization is expected in case of car parts. The EU will also gradually eliminate tariffs on electronics and chemical products.

Despite the fact that liberalization of trade relations is an important element of the EPA, the key issue during the negotiations was to reduce non-tariff barriers in Japan (Hanson 2010). Especially important are Japanese obligations regarding the automotive industry. The EPA ensures that Japan and the EU fully comply with the same international standards (UNECE) in the area of product safety and environmental protection. Most UNECE regulations will apply from the entry into force of the EPA. The commitments include passenger cars and commercial vehicles, as well as motorcycles. Ultimately, cars produced in the EU will meet the same requirements in Japan as in the EU, which will allow avoiding re-testing and re-certification in the event of their exports. Japan will also approve several food supplements, will adopt international standards for textiles labelling and for the notification in the field of pharmaceuticals, medical devices and cosmetics (Hilpert 2017).

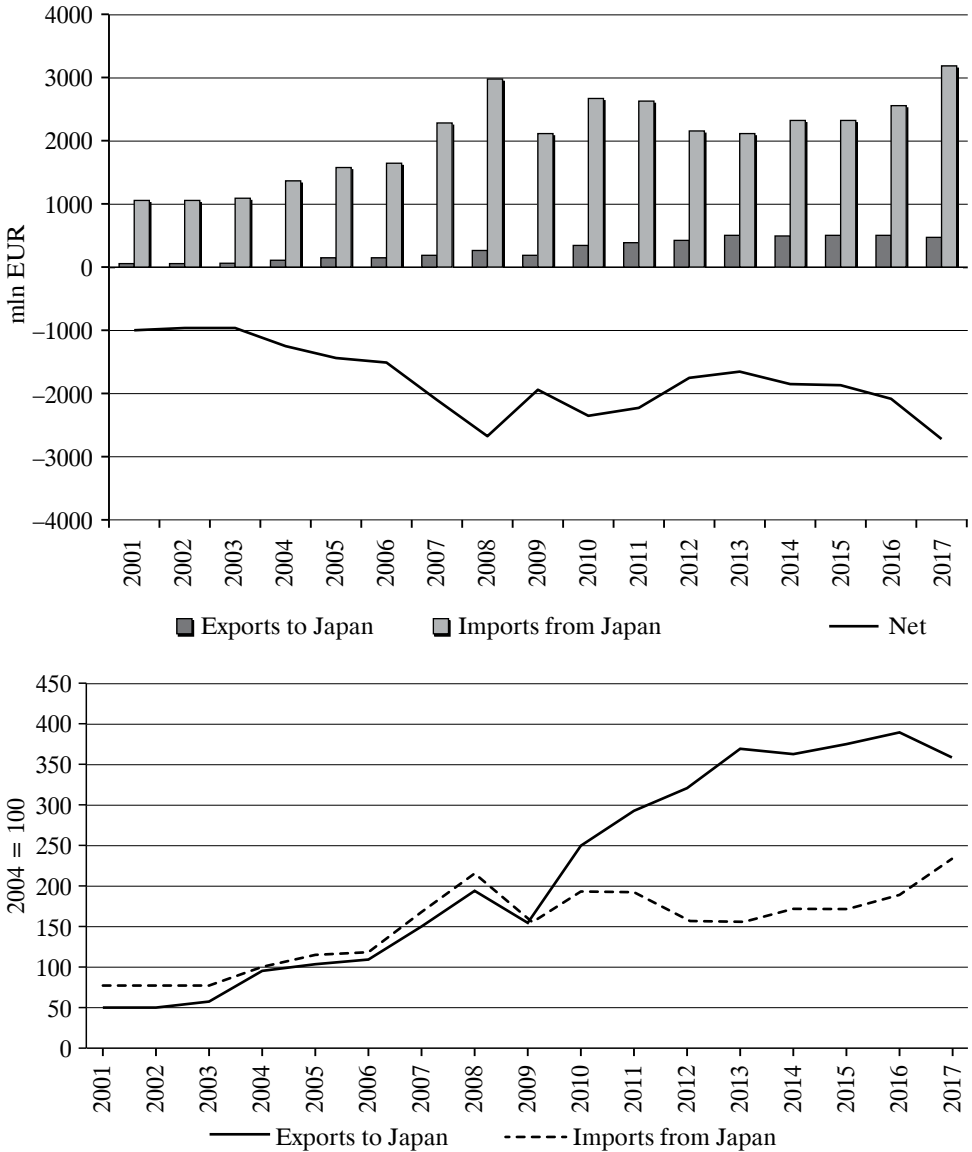
5. Current trade relations between Japan and Poland

Poland occupies a distant, 36th position among Japan's export partners (with a share of 0.26%) and 48th position in the import of goods from Japan (with a share of 0.19%). The importance of Japan in Poland's trade, especially in imports, is much higher. Japan is 18th largest importer from Poland (1.52% share) and 39th exporter (0.3% share). Such a result may mean that the Japanese market is very difficult for Polish exporters of goods.

Poland has a deficit in trade with Japan, which has been increasing especially after Poland joined the EU in 2004, then it started to shrink between 2008 and 2013, and now it is increasing again, reaching EUR 23.7 billion in 2017.⁴ Exports

⁴ Our analysis was based on data from the Trade Map developed by the International Trade Centre UNCTAD/WTO (ITC): imports by country of origin. This data differs, sometimes significantly, from data published by Eurostat, which captures imports by country of consignment. For example, in 2017 according to the country of consignment (Eurostat) the value of Poland's imports from Japan amounted to EUR 1,298 million, while according to the country of origin (ITC Trade Map) it was EUR 3,200 million. That means that most supplies from Japan were shipped to Poland through other countries (e.g. ports in Rotterdam or Antwerp). Another striking fact is that number one product imported by Japan from Poland are cigarettes, whereas in Poland's top exports reported here they are not included in top 10 products.

Figure 1
Poland’s trade in goods with Japan, 2001–2017 and its growth

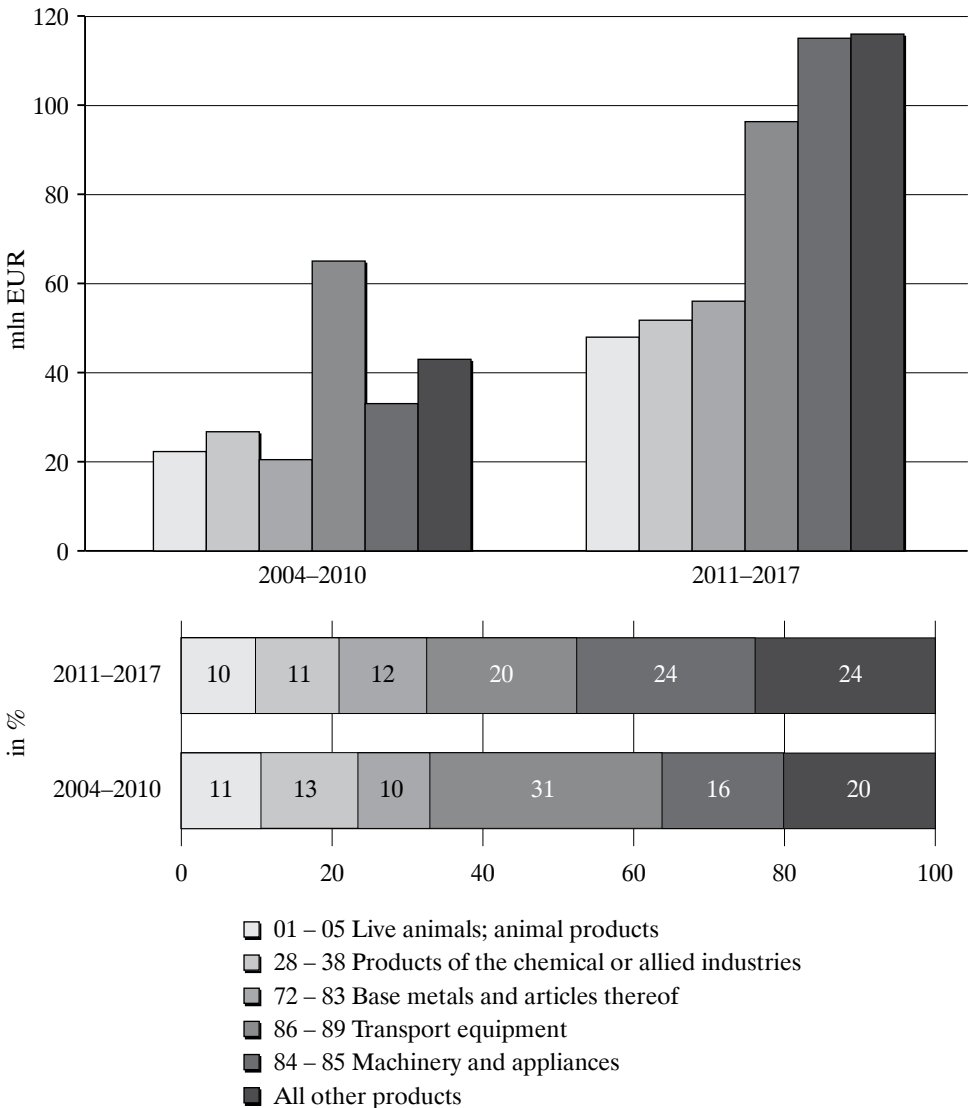


Source: own calculations based on International Trade Centre Trade Map, www.trademap.org (access 10.01.2019).

to Japan, even though low in absolute terms (EUR 494 million in 2017), note a sustained increase since 2001, while imports (EUR 3,200 million in 2017) experienced sizeable fluctuations. Since 2009, Polish export to Japan grows faster than import. In 2017 the value of exports was 3.6 times higher than in 2004, while imports were 2.3 times higher (Figure 1).

Poland's export to Japan is dominated by machinery and transport equipment. Together they account for almost half of Poland's exports to Japan (EUR 212 million). The share of transport equipment in the Polish exports to Japan has considerably decreased, while the share of machinery in exports increased (Figure 2). Other important sections in exports to Japan are base metals, chemical products and animal products. All agricultural products and processed food exported from Poland to Japan accounted for over 12% of total exports.

Figure 2
The structure of Poland's exports to Japan in 2004–2017



Source: own calculations based on International Trade Centre Trade Map, www.trademap.org (access 10.01.2019).

More disaggregated data, based on a 6-digit HS level, collected in Table 2, indicate that:

- Poland’s most important products exported to Japan are small cars, with over 13% share in total exports to Japan.
- Turbojets, turbopropellers and other gas turbines together account for almost 11% of Polish exports to Japan.
- Safety razor blades have over 6% share in Poland’s exports to Japan, which is also second (after Russia) export market for Poland, and Poland is the third foreign supplier of this product to Japan, with almost 30% share in Japan’s imports of blades from all countries.
- Artificial graphite, contrary to most other products, was more important in Poland’s export to Japan in 2004 than in 2017. Its present share in exports is 5.7%. Almost entire Polish export of this product (95%) is sold in Japan. Poland’s share in Japan’s imports of artificial graphite from the world is also substantial, i.e. 18% (Poland is second, after China, most important supplier of this product to Japan). At present, it is the only product among the top ten exported to Japan which faces import tariff, which amounts to 2.5%.
- Ceramic wares for chemical or other technical uses have almost 4% share in Polish exports to Japan.
- Gear boxes and parts for motor vehicles were much more important in exports to Japan in 2004 than in 2017, both in absolute and relative terms. The reason for such a change might be the location of Japanese car manufacturers in Poland and the region.
- Feathers’ share in Poland’s exports to Japan (the only agricultural product at this level of aggregation) also decreased in time, but Poland is still an important supplying country of this product in Japan.
- The rubber pneumatic tyres close the list of ten most significant products exported from Poland to Japan, with 1.8% share in total exports.

Since Poland’s export of agricultural and food products to Japan is relatively large, and the EPA improves access to its agricultural market, Polish exports of these products in the last three years (in 2015–2017, yearly averages in order to avoid the impact of annual fluctuations) is investigated in more detail.

Among the agricultural products listed in Table 3, the EPA affects the following products: frozen fillets of Pacific salmon, facing 3.5% ad valorem tariff before the EPA, have free access in the first year of the EPA implementation; smoked Pacific salmon gets free access in the first year (the duty before the EPA was 10.5%); apple juice, facing ad valorem duty of 34% or 23 yen/kg before the EPA, benefits from gradual liberalization with getting free access in the eleventh year; frozen bovine boneless meat moves from 38.5% duty to 9% in the 16th year; frozen edible bovine tongues – ad valorem tariff decreases gradually from 12.8% to 0% in the 11th year; tariff on chocolates decreases from 10% to 0% in the 11th year (EPA Agreement, 2018).

Poland’s import from Japan is more concentrated. Machinery accounts for 41% of imports from Japan, and transport equipment is responsible for 19%

Table 2
Top ten products exported from Poland to Japan in 2004 and 2017 (in EUR and %)

HS code	Product description	Poland's exports to Japan (thousand euro)		Japan's imports from world (million euro)		Poland's exports to the world (million euro)	
		2004	2017	2004	2017	2004	2017
	All products	137,387	494,334	366,002	594,753	59,315	195,900
870322	Motor cars and other motor vehicles (cylinder capacity > 1.000 cm ³ but <= 1.500 cm ³)	34	52,816	212	1,754	1,630	3,375
841191	Parts of turbojets or turbopropellers	0	38,037	1,208	3,200	85	1,853
821220	Safety razor blades of base metal	0	30,735	64	103	17	384
380110	Artificial graphite	9,021	28,361	44	158	10	30
690919	Ceramic wares for chemical or other technical uses	0	18,435	48	217	1	339
841181	Gas turbines of a power <= 5.000 kW	0	14,653	54	96	2	377
870840	Gear boxes and parts thereof	24,068	14,510	144	1,098	158	439
870321	Motor cars and other motor vehicles (cylinder capacity <= 1.000 cm ³)	14	12,403	23	253	78	523
050510	Feathers used for stuffing and down	7,762	9,395	154	133	30	55
401110	New pneumatic tyres, of rubber	58	9,119	349	720	363	1,116
	All other products	96,430	265,870	364	587	57	187
HS code	Product description	Share of product in Poland's exports to Japan (in %)		Share of Poland in Japan's imports from world (in %)		Share of Japan in Poland's exports to the world (in %)	
		2004	2017	2004	2017	2004	2017
	All products	100.00	100.00	0.04	0.1	0.2	0.3
870322	Motor cars and other motor vehicles (cylinder capacity > 1.000 cm ³ but <= 1.500 cm ³)	0.02	10.7	0.02	3.0	0.0	1.6
841191	Parts of turbojets or turbopropellers	0.0	7.7	0.0	1.2	0.0	2.1
821220	Safety razor blades of base metal	0.0	6.2	0.0	30.0	0.0	8.0

380110	Artificial graphite	6.6	5.7	20.6	18.0	89.0	95.1
690919	Ceramic wares for chemical or other technical uses	0.0	3.7	0.0	8.5	0.0	5.4
841181	Gas turbines of a power <= 5,000 kW	0.0	2.9	0.0	15.3	0.0	3.9
870840	Gear boxes and parts thereof	17.5	2.9	16.8	1.3	15.2	3.3
870321	Motor cars and other motor vehicles (cylinder capacity <= 1,000 cm ³)	0.01	2.5	0.1	4.9	0.02	2.4
050510	Feathers used for stuffing and down	5.6	1.9	5.0	7.1	26.2	16.9
401110	New pneumatic tyres, of rubber	0.04	1.8	0.02	1.3	0.02	0.8
	All other products	70.2	53.8	0.03	0.1	0.2	0.1

Note: products are selected and sorted by their position in exports in 2017.

Source: own calculations based on International Trade Centre Trade Map, www.trademap.org (access 15.01.2019).

Table 3
Top ten agricultural products exported from Poland to Japan in 2015–2017 (yearly average value in thousand EUR and %)

HS code	Product description	Poland's exports to Japan (thousand euro)	Share of product to agricultural exports to Japan (in %)	Share of product in Poland's agricultural exports to Japan (in %)	Share of Japan in Poland's exports to world (in %)
	Agricultural products	37,333	100.0		0.1
05051010	Raw feathers used for stuffing and down	6,672	17.9		43.1
03048100	Frozen filets of Pacific salmon	2,523	6.8		1.6
20097919	Apple juice	2,509	6.7		1.0
05051090	Feathers used for stuffing and down	2,373	6.4		6.6
02023090	Frozen bovine boneless meat	2,112	5.7		1.2
02062100	Frozen edible bovine tongues	1,325	3.5		42.2
03054100	Smoked Pacific salmon	1,180	3.2		0.2
18069019	Chocolate and chocolate products	912	2.4		0.7
04021019	Milk and cream in solid forms	813	2.2		0.5
02050080	Frozen meat of horses, asses, mules or hinnies	801	2.1		97.8
	All other agricultural products	16,114	43.2		0.07

Source: own calculations based on International Trade Centre Trade Map, www.trademap.org (access 15.01.2019).

Table 4
Top ten products imported by Poland from Japan in 2004 and 2017 (in EUR and %)

HS code	Product description	Poland's imports from Japan (thousand euro)		Japan's exports to the world (million euro)		Poland's imports from the world (million euro)	
		2004	2017	2004	2017	2004	2017
	All products	1,375,710	3,200,488	454,845	617,981	70,872	192,953
870323	Motor cars and other motor vehicles	75,520	488,470	24,634	42,554	768	2,423
950450	Video game consoles and machines (excluding operated by means of payment)	0	400,737	0	1,324	0	1,242
902790	Microtomes	996	107,443	667	1,777	21	172
382200	Diagnostic or laboratory reagents on a backing	2,275	82,271	163	501	97	299
841490	Parts of air or vacuum pumps, air or other gas compressors	4,327	67,160	779	1,581	46	271
850760	Lithium-ion accumulators	0	64,829	0	2,276	0	212
844399	Parts and accessories of printers, copying machines and facsimile machines, n.e.s.	0	63,291	0	7,310	0	368
870332	Motor cars and other motor vehicles	13,744	57,715	4,355	2,818	906	2,284
390690	Acrylic polymers	7,884	52,344	514	1,202	149	379
840690	Parts of steam and other vapour turbines, n.e.s.	0	52,142	468	801	33	88
	All other products	1,270,964	1,764,086	423,265	555,836	68,853	185,217

HS code	Product description	Share of product in Poland's imports from Japan (in %)		Share of Poland in Japan's exports to the world (in %)		Share of Japan in Poland's imports from world (in %)	
		2004	2017	2004	2017	2004	2017
	All products	100.0	100.0	0.3	0.5	1.9	1.7
870323	Motor cars and other motor vehicles	5.5	15.3	0.3	1.2	9.8	20.2
950450	Video game consoles and machines (excluding operated by means of payment)	0.0	12.5	–	30.3	–	32.3
902790	Microtomes	0.1	3.4	0.2	6.1	4.7	62.6
382200	Diagnostic or laboratory reagents on a backing	0.2	2.6	1.4	16.4	2.4	27.6
841490	Parts of air or vacuum pumps, air or other gas compressors, fans and ventilating	0.3	2.1	0.6	4.3	9.5	24.8
850760	Lithium-ion accumulators	0.0	2.0	–	2.8	–	30.6
844399	Parts and accessories of printers, copying machines and facsimile machines, n.e.s.	0.0	2.0	–	0.9	–	17.2
870332	Motor cars and other motor vehicles	1.0	1.8	0.3	2.0	1.5	2.5
390690	Acrylic polymers	0.6	1.6	1.5	4.4	5.3	13.8
840690	Parts of steam and other vapour turbines, n.e.s.	0.0	1.6	0.0	6.5	0.0	59.3
870323	All other products	92.4	55.1	0.3	0.3	1.8	0.9

Note: products are selected and sorted by their position in imports in 2017.

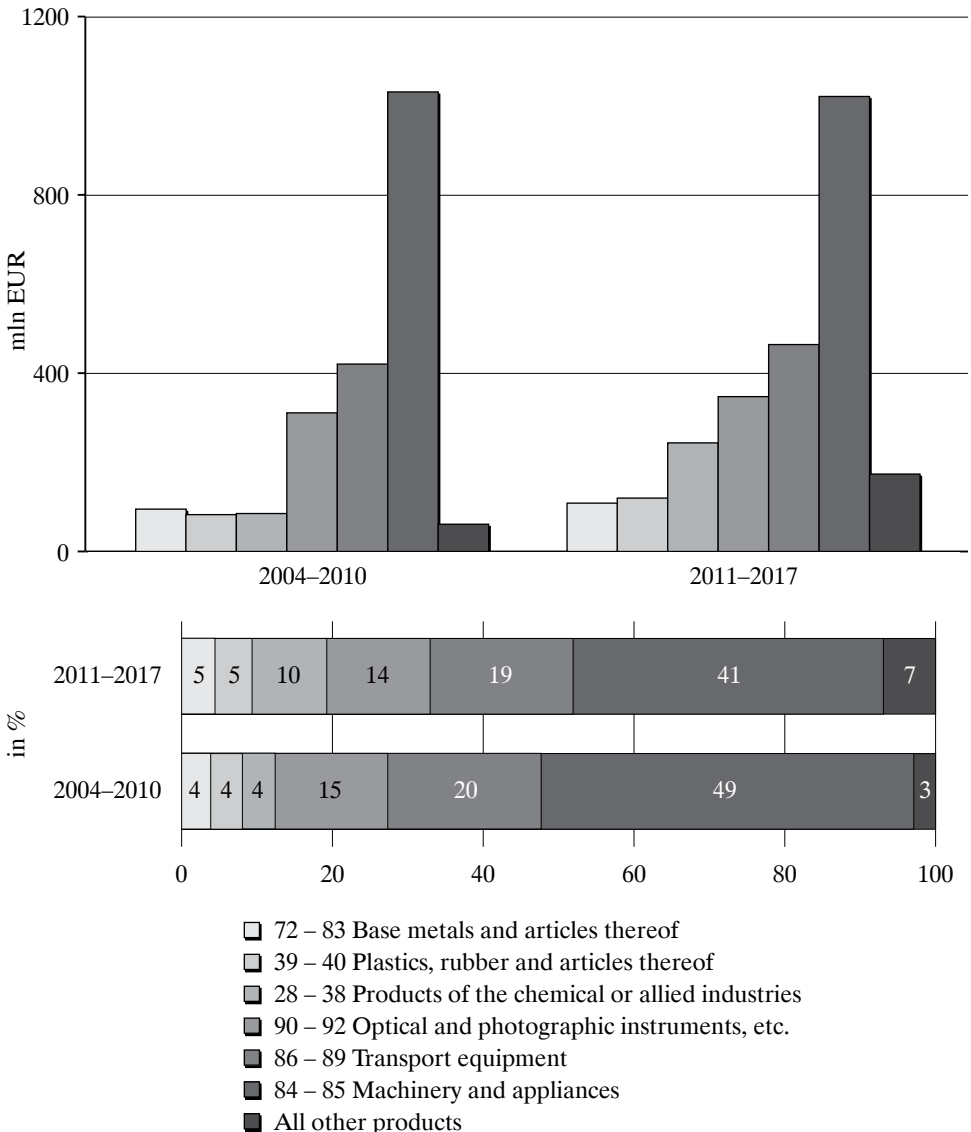
Source: own calculations based on International Trade Centre Trade Map, www.trademap.org (access 10.01.2019).

of such imports. Other important import sections are optical and photographic instruments, chemical products, plastics and base metals (Figure 3). Poland practically does not import food from Japan.

The analysis of data aggregated on 6-level HS codes, together with the current tariffs based on the World Tariff Profile and the schedule of tariff commitments under the EPA, indicates that major changes in terms of the access to Poland's

Figure 3

The structure of Poland's imports from Japan in 2004–2017 (EUR million and %)



Source: own calculations based on International Trade Centre Trade Map, www.trademap.org (access 10.07.2018).

(and the entire EU) market occur in case of motor cars and vehicles. The 10% ad valorem tariff imposed on cars imported from Japan before the EPA will disappear in the eighth year since the EPA is implemented. Benefits will also be realized by importers of other products, which were subject to duties before the EPA. These are: microtomes (1.3% tariff), lithium-ion accumulators (around 2% tariff), acrylic polymers (6.5% tariff), parts of steam and other vapour turbines (2.7% tariff). Japan is a major source of these products imported by Poland (Table 4). Since they are usually used in production processes in Poland, an improved market access should be beneficial for Polish producers.

6. The projected effects of the EPA

In the following sub-sections we present the results of our analysis of the impact of bilateral elimination of duties on Poland’s GDP, production of various goods, foreign trade (with all partners, but particularly with Japan), and social welfare.

6.1. Gross Domestic Product

Due to the fact that Japan’s share in total Poland’s trade is rather small, we do not expect significant impact of tariff elimination on GDP in Poland. The results of these calculations are shown in Table 5.

A decline of Poland’s real GDP by 0.0215% (USD 111.09 million) is estimated. The results of our calculations indicate that the beneficial effect of the

Table 5
GDP change in Poland and other countries or regions
(in %, USD million in parentheses)

Country/region	Real GDP			GDP deflator		
	Scenario			Scenario		
	25%	50%	100%	25%	50%	100%
Poland	-0.0014 [-7.28]	-0.0048 [-24.69]	-0.0215 [-111.09]	-0.0117	-0.0124	0.0472
Japan	0.0104 [615.00]	0.0209 [1,234.50]	0.0247 [1,456.00]	0.0820	0.1535	0.1798
Germany	0.0012 [42.75]	0.0022 [78.75]	0.0033 [120.00]	-0.0141	-0.0272	-0.0477
EU	0.0003 [41.00]	-0.0005 [-59.00]	-0.0081 [-1,022.00]	0.0029	0.0156	0.0897
EUnew	-0.0017 [-15.31]	-0.0047 [-43.24]	-0.0154 [-142.63]	-0.0109	-0.0148	0.0034
RoW	-0.0004 [-188.00]	-0.0008 [-384.00]	-0.0017 [-800.00]	-0.0129	-0.0281	-0.0639

Source: own calculations in CGE GTAP.

elimination of tariffs will occur in Japan (an increase in GDP by 0.0247%) and Germany (the increase by 0.0033%). These results show also the importance of price dynamics in individual economies. A negative effect of the EPA for GDP in Poland might be a result of diverting trade flows – Japan may take Poland's place as the exporter of goods to the EU market. Such a shift may take place in the product group 'motor vehicles, parts and accessories'. Poland is one of the largest exporters of products belonging to this group to Germany, but Japan is also a producer and exporter of these products. When tariffs are reduced, Japan's competitive position in the EU market may rise. Thus, Poland might lose its market share in such countries as Germany, Slovakia, and France.⁵

6.2. Total output

As a consequence of tariffs reductions, which affect trade volume, changes in the total production (output) in Poland's economy are expected. The model calculations indicate that the largest increase will take place in the output of meat and animal products (increase by 3.31% under the 100% scenario) while the largest decrease will appear in the production of motor vehicles (decrease by 0.95%). Taking into account relatively large share of agriculture in Poland's economy (especially in terms of employment) and a large share of agricultural exports (mainly meat and animal products) in Polish exports to Japan, this change is very positive.⁶ The decrease in production of motor vehicles may indicate that a part of local production might be substituted by imports and Poland's export production may be substituted by the one originating in Japan.

The estimated changes in the demand for production factors due to the EPA are illustrated by Table 7. (Due to the space limit we present here the results for 100% scenario only). The following factors of production were selected: land (N), low-skilled labor (LS), high-skilled labor (HS), and capital (K). Under all scenarios, there will be a decline in the demand for land and for low-skilled workforce and almost no changes in the demand for high-skilled labor or capital. However, under the 100% scenario, the demand for high-skilled labor and capital will slightly increase.

While it is not surprising that production is expected to increase in sectors such as meat and animal products or processed food, the decline in the demand for land and low-skilled labor in Poland is somewhat unexpected. Detailed analysis shows that despite the increase in the demand for land and labor in the meat and animal production, other sectors will experience a decrease in the demand for these factors of production, which results in an overall decrease in the aggregated demand for them. On the other hand, the demand for high-skilled labor and capi-

⁵ This effect can be magnified by planned in the EPA reduction of NTMs, which are currently particularly harmful in this sector.

⁶ It is worth to mention that Poland used to be even larger exporter of pig meat to Japan. For example, in 2012 frozen pig meat was the second largest product imported from Poland by Japan. However, at the beginning of 2014, the African swine fever (ASF) emerged in Poland and since then Japan does not import pig meat from Poland anymore.

Table 6
Changes in total production in Poland, by sectors (in %)

Sector	Scenario		
	25%	50%	100%
Grains and crops	0.01	0.02	0.06
Meat and animal products	0.28	0.82	3.31
Forestry and fishing	0.01	0.03	0.02
Processed food	0.04	0.09	0.31
Extraction	0.00	0.00	-0.04
Leather	0.04	0.06	0.02
Wood	0.02	0.01	-0.12
Paper	0.01	0.02	0.01
Textiles	0.00	-0.02	-0.19
Fuels	0.00	0.01	0.00
Chemicals	-0.02	-0.06	-0.26
Minerals	0.01	0.00	-0.06
Metals	-0.01	-0.06	-0.33
Metal products	-0.02	-0.07	-0.29
Motor vehicles	-0.17	-0.38	-0.95
Transport equipment	-0.03	-0.08	-0.37
Electronics	-0.04	-0.11	-0.45
Machinery and equipment	-0.04	-0.11	-0.44
Other manufacturing products	0.00	-0.02	-0.13

Source: own calculations in CGE GTAP.

Table 7
Changes in the demand for production factors in Poland and other countries or regions, scenario 100% (in %)

Country/region	Scenario 100%			
	N	LS	HS	K
Poland	-2.70	-0.09	0.04	0.05
Japan	6.67	0.18	0.19	0.22
Germany	-0.67	0.05	0.05	0.04
EU	-2.84	0.13	0.20	0.17
EUnew	-0.67	0.02	-0.06	0.03
RoW	0.23	-0.06	-0.07	-0.07

Symbols: N – land, LS – low-skilled labor force, HS – high-skilled labor force, K – capital.

Source: own calculations in CGE GTAP.

tal is going to increase. We positively assess such changes that indicate an increase in the level of advancement of Poland's economy.

6.3. International trade

Due to the mutual elimination of customs duties between Japan and the European Union, there will be potential changes in the value of Poland's global exports and imports in individual sectors. Poland's global exports in 21 out of 27 sectors may decline. The largest decline will occur in grains and crops (-2.67%), and motor vehicles (-1.05%). Among those sectors which are going to experience an increase in exports, the largest rise is expected in meat and animal products (18.14%). The highest increases in imports will occur in agricultural products (grains and crops by 1.37%; meat and animal products by 1.91%). In sectors where a decrease in imports is expected, negligible changes (less than 1%) will occur – see Table 8.

Table 8
Changes in Poland's global foreign trade, by sectors (in %)

Sector	Exports			Imports		
	Scenario			Scenario		
	25%	50%	100%	25%	50%	100%
Grains and crops	-0.22	-0.67	-2.67	0.11	0.34	1.37
Meat and animal products	1.51	4.50	18.14	0.14	0.44	1.91
Forestry and fishing	0.02	0.05	0.10	0.05	0.13	0.46
Processed food	0.05	0.08	0.07	0.08	0.24	0.99
Extraction	0.00	-0.01	-0.06	0.00	0.00	-0.01
Leather	0.14	0.28	0.51	-0.01	-0.02	0.00
Wood	0.03	0.03	-0.13	0.00	-0.01	-0.01
Paper	0.03	0.04	-0.06	-0.01	-0.01	0.03
Textiles	0.02	0.00	-0.24	-0.01	-0.01	-0.03
Fuels	0.00	-0.01	-0.03	0.00	0.00	0.01
Chemicals	-0.03	-0.09	-0.38	0.00	-0.01	-0.02
Minerals	0.05	0.08	0.00	-0.01	-0.01	0.03
Metals	0.00	-0.04	-0.33	-0.03	-0.09	-0.28
Metal products	0.00	-0.04	-0.33	-0.02	-0.05	-0.09
Motor vehicles	-0.19	-0.41	-1.05	0.00	0.01	0.05
Transport equipment	-0.03	-0.10	-0.53	0.01	0.03	0.11
Electronics	-0.05	-0.13	-0.55	-0.01	-0.03	-0.11
Machinery and equipment	-0.04	-0.13	-0.56	0.01	0.01	0.04
Other manufacturing products	0.01	-0.03	-0.32	0.00	0.01	0.09

Source: own calculations in CGE GTAP.

Table 9
Total change in the value of exports of Poland and other countries or regions
(in USD million)

Country/region	Scenario		
	25%	50%	100%
Poland	22.58	51.52	135.31
Japan	759.19	2,120.13	998.13
Germany	154.88	304.88	541.13
EU	295.50	555.00	766.50
EUnew	-64.75	-169.13	-524.38
RoW	315.00	672.00	1,636.00

Source: own calculations in CGE GTAP.

Table 10
Changes in Poland’s trade with Japan, by sectors (in %)

Sector	Exports to Japan			Imports from Japan		
	Scenario			Scenario		
	25%	50%	100%	25%	50%	100%
Grains and crops	3.74	7.20	11.74	3.79	8.27	23.18
Meat and animal products	98.91	296.24	1,201.99	0.42	1.81	13.11
Forestry and fishing	1.61	3.21	6.29	1.99	4.12	9.02
Processed food	26.93	62.95	178.07	12.42	27.15	67.78
Extraction	0.06	0.11	0.27	-0.40	-0.81	-1.48
Leather	39.19	93.17	261.08	14.59	34.47	111.08
Wood	2.07	4.13	8.05	3.29	6.77	14.64
Paper	0.22	0.38	0.33	-0.35	-0.64	-0.72
Textiles	16.74	36.51	87.23	9.70	20.64	47.68
Fuels	1.60	3.23	6.69	0.58	1.16	2.37
Chemicals	1.82	3.63	7.05	3.67	7.55	16.34
Minerals	2.23	4.48	8.85	2.93	6.01	12.97
Metals	1.81	3.63	7.25	0.37	0.76	1.87
Metal products	0.37	0.68	0.91	5.02	10.37	22.70
Motor vehicles	0.46	0.92	1.67	8.40	17.67	39.67
Transport equipment	0.34	0.63	0.83	4.89	10.10	22.11
Electronics	0.30	0.55	0.69	5.19	10.72	23.44
Machinery and equipment	0.43	0.81	1.16	3.17	6.50	14.20
Other manufacturing products	1.68	3.30	5.92	2.58	5.31	12.13

Source: own calculations in CGE GTAP.

The expected change in the total volume of trade suggests a trade diversion effect as a result of the EPA. However, Polish export to Japan will not decline in any sector (Table 10). The largest difference in the direction of changes is observed in textiles. The total Polish export of these products will decrease by -0.24% while Polish export to Japan will rise by 87.23% . A similar effect, although much weaker, appears, inter alia, in case of grains and crops, wood, chemicals, and metal products. Similar situation is observed in eight sectors in imports, with textiles, electronics, and metal products experiencing the largest difference. While Polish imports from Japan in these sectors is expected to increase, their total imports from the world would decrease.

The EPA will cause Poland's exports to increase by USD 135.31 million (Table 9). Based on the results obtained, it is worth noting that the total value of exports of the new EU member states (excl. Poland) will decrease as a result of full opening of markets by USD 524.38 million.

However, it should be noted that this is the cumulative net value of changes. This result reflects an increase in exports with a positive sign, or its decrease with a negative sign. In order to get a full picture of the potential dynamics of Polish exports to Japan, it is worth looking at the changes in exports values in particular industries, presented in Table 10.

The greatest increase in Poland's exports to Japan is expected in meat and animal products ($1,201.99\%$), leather products (261.08%), processed food (178.07%), as well as textile products and clothing (87.23%). On the other hand, the biggest rise in imports would take place in leather products (111.08%), food (67.78%), motor vehicles (39.67%), and grains and crops (23.18%).

6.4. Social welfare effects

The impact of the bilateral elimination of duties on social welfare was assessed by the so-called equivalent change (in the EV model – Equivalent Variation). This is one of the measures of the change in social well-being caused by price changes. An equivalent change addresses the question of how much should the consumer's income change at 'old' prices so that her/his welfare situation remains the same after the price change. For example, it tells how much money can be taken from (or given to) the consumer to leave him in the same welfare position after the rise (or fall) in prices. In other words, the EV shows change in consumer income, which corresponds to the change in the level of his utility as a result of the increase or decrease in prices. For example, a price increase reduces the consumer's utility. In this case, the equivalent change can be interpreted as a minimum amount by which the consumer's income should be raised before the price increases, so that he is in the same welfare position.

The GTAP uses an equivalent change because the effects of various economic policy options are examined and cause different price changes compared to the initial price vector. In these simulations, we seek an answer to the question how the income would change in response to changes of prices resulting from the

shock (in this case, reduction of customs duties). The equivalent change (values in million USD) indicates how the income of consumers would change if there are price changes caused by the reduction of customs duties in the EU–Japan trade.

The elimination of import tariffs in EU–Japan trade will cause in Poland a decline in social welfare, calculated as an equivalent change. This decrease would reach USD 52.95 million. This is not a particularly significant change, because, for example, in Germany, the welfare decline will be ten times higher (Table 11).

Social effects can also be analyzed by investigating changes in household incomes (Table 12). In the 100% tariff reduction scenario, households’ income in Poland will increase by about 0.03%. It will be much less than in Japan (0.2%). Interestingly, the EU new member states as well as Germany would record a decline in households’ income after the reduction of custom duties.

Surprisingly, the estimations revealed negative effects of trade liberalization on households’ income in some countries or regions. Germany, the EU new-member states and the rest of the world group may record a decrease in households’ income. These findings are contrary to the traditional belief that trade liberalization would generally lead to a welfare improvement. The decline in households’

Table 11
Equivalent change in Poland and other countries or regions (in USD million)

Country/region	Scenario		
	25%	50%	100%
Poland	-18.74	-35.65	-52.95
Japan	1,361.98	2,687.93	3,370.22
Germany	-67.89	-170.91	-541.06
EU	291.21	674.20	1,818.87
EUnew	-42.41	-87.52	-204.07
RoW	-1,037.28	-2,268.45	-5,183.76

Source: own calculations in CGE GTAP.

Table 12
Change in households’ income (in %)

Country/region	Scenario		
	25%	50%	100%
Poland	-0.0128	-0.0162	0.0304
Japan	0.0955	0.1795	0.2029
Germany	-0.0125	-0.0244	-0.0435
EU	0.0040	0.0168	0.0863
EUnew	-0.0126	-0.0192	-0.0105
RoW	-0.0139	-0.0303	-0.0686

Source: own calculations in CGE GTAP.

income may probably be due to the unfavorable change in the competitiveness of some domestic goods, which are losing markets as a result of competing goods imported from Japan. Thus, Germany or the new EU member states could see a fall in sales of domestic goods in their own and foreign markets (particularly in the EU) due to the wider availability of Japanese goods. This may negatively influence households' income. Such effects can also appear in case of other countries ("rest of the world").

6.5. Market price indicators

As a result of the bilateral elimination of customs duties and changes in the demand and supply, there will also be price adjustments. Table 13 presents expected changes in the prices of consumer goods in Poland.

Table 13
Changes in the prices of consumer goods in Poland, by sector (in%)

Sector	Domestic price			Market price of composite import		
	Scenario			Scenario		
	25%	50%	100%	25%	50%	100%
Grains and crops	0.05	0.17	0.73	0.01	0.03	0.18
Meat and animal products	0.04	0.13	0.61	0.01	0.04	0.19
Forestry and fishing	0.00	0.01	0.06	-0.01	-0.01	-0.02
Processed food	0.00	0.01	0.11	-0.01	-0.01	0.02
Extraction	-0.01	-0.01	-0.02	-0.01	-0.01	-0.01
Leather	-0.01	-0.01	0.04	-0.01	-0.01	-0.01
Wood	-0.01	-0.01	0.03	-0.01	-0.01	0.00
Paper	-0.01	-0.01	0.03	0.00	0.00	0.02
Textiles	-0.01	-0.01	0.03	-0.01	-0.02	-0.03
Fuels	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Chemicals	-0.01	-0.01	0.02	-0.01	-0.02	-0.03
Minerals	-0.01	-0.01	0.02	-0.01	-0.01	-0.01
Metals	-0.01	-0.01	0.02	-0.01	-0.01	0.00
Metal products	-0.01	-0.01	0.02	-0.01	-0.02	-0.03
Motor vehicles	-0.02	-0.04	-0.05	-0.08	-0.17	-0.36
Transport equipment	-0.01	-0.01	0.01	-0.02	-0.04	-0.07
Electronics	-0.01	-0.02	0.00	-0.01	-0.03	-0.05
Machinery and equipment	-0.01	-0.01	0.02	-0.02	-0.04	-0.07
Other manufacturing products	-0.01	-0.01	0.03	-0.01	-0.02	-0.02

Source: own calculations in CGE GTAP.

The largest price increase is expected in domestic prices of products in the following sectors: grains and crops – an increase of 0.73% under the 100% scenario, meat and animal products – an increase of 0.61%. On the other hand, the biggest drop in prices is estimated for motor vehicles – a decrease of 0.05% (for domestic products) and 0.36% (for imported motor vehicles).

The terms of trade indicator was used for assessing changes in the relation of export to import prices (Table 14). Full liberalization of EU–Japan trade will improve Poland’s terms of trade by 0.0314%. This means that Poland will be able to exchange goods more favorably than before. It is worth to pay attention to the value of the analyzed indicator in the remaining scenarios. Before the full liberalization of custom duties take place, changes in export and import prices will be unfavorable for Poland.

Table 14
Changes of terms of trade in Poland and other countries or regions

Country/region	Scenario		
	25%	50%	100%
Poland	-0.0041	-0.0027	0.0314
Japan	0.0781	0.1521	0.2311
Germany	-0.008	-0.018	-0.0469
EU	0.0054	0.0157	0.0605
EUnew	-0.0041	-0.0065	-0.0084
RoW	-0.0068	-0.0149	-0.0341

Source: own calculations in CGE GTAP.

6.6. Effects for revenues from customs duties

Customs revenue is one of the items constituting “traditional own resources” (TOR) in the EU budget.⁷ Member states do not retain total customs duties in their budgets. In accordance with the European law, 75% of customs revenue goes to the EU budget, and 25% remains in the state budget of the country where the goods first entered the EU market. These 25% are supposed to cover real costs of the administrative procedures. Obviously, they may vary in different periods (for example, the creation of infrastructure raises the costs incurred). In 2016, customs revenue to the EU budget (100%) amounted to EUR 24.9 billion, of which from Poland – EUR 722.5 million (DG Budget Data 2019). Thus, in the end, the revenue from customs duties remaining in the EU budget accounts for about EUR 18.7 billion, while the customs duties remaining in Poland amount to approx. EUR 180.6 million.

⁷ TOR reached ca 14% of the total EU budget revenue in 2016.

Considering the current level of bilateral trade and tariffs between the EU and Japan, the EU budget income loss resulting from tariff liberalization will be relatively low.⁸ According to the EC estimates, when the agreement enters into force, the effect of the EPA will be the loss of customs revenue to the EU budget in the amount of EUR 970 million. After full implementation of the EPA, the annual loss of duties will amount to EUR 2.084 billion (COM/2018/192 final). This estimate does not take into account the probable increase in imports of products subject to a gradual reduction of duties that will partially offset the loss of revenue resulting from the full implementation of tariff preferences negotiated under the EPA and the initial level of granted tariff quotas. Summing up, the EU members will lose customs revenues in the amount of 25% of uncollected duties that would otherwise have remained in the domestic budgets (about EUR 240 million in the first year and more after 15 years). At the same time, they will not bear the actual costs associated with customs collection. Due to the customs revenues decrease in the EU budget incomes, the EU member states will probably need to contribute more to the EU budget.

The authors are not in a position to forecast a loss of customs revenue disaggregated by country, as it would require an unreasonable number of assumptions. For example, currently no one can predict the location of logistic centers – hubs where the increased volume of imported goods will be cleared.

Conclusions

This paper presents the newest EU–Japan trade agreement in a broader perspective of its interactions with other aspects of economies, not only trade, and in a network of relations with other countries, not only EU and Japan. The main focus is on the economic effects for Poland, but these cannot be separated from the effects that may occur in other EU member states (both new and old), in Japan, and in the rest of the world.

The EPA has a potential to be regarded as the most important trade agreement in the 21st century. The importance of the EPA on a global scale is determined by its scope. The contracting parties (the EU, its member states, and Japan) expressed their conviction that the legal ties created by the three agreements (EPA, IPA and SPA) will serve their common strategic objectives. These include sustainable development, security, and stability. The conclusion of agreements is a clear sign of trust and a community of values between them. This is of great importance at a time turbulence caused by changes of the U.S. policy both in the Asia–Pacific region and worldwide. The agreements and relations between the parties based on them will strengthen the position of the parties and the “West” as a whole in their relations with their strategic rivals, weaken the threat

⁸ Average weighted tariff on imported non-agricultural goods in EU is low (2.61% in 2017). Source: *Market Access Map*, <http://www.macmap.org/CountryAnalysis/AverageTariff.aspx> (access 07.07.2018).

of destabilisation in the Pacific region, and fill the gap created by the reduction of the U.S. presence in that region. The implementation of the agreements will have a spill-over effect (known from European and transatlantic integration).

The EPA is also important for Polish–Japanese relations. For many years Poland has not been in Japan’s orbit of interest. The cancellation of Polish debts by the London and Paris clubs in response to the Polish bailout in the last decade of the 20th century was unacceptable in Japanese culture. Poland’s accession to the EU resulted in the development of economic ties between Poland and Japan (trade, investment, etc.). However, potential possibilities of economic cooperation are not fully utilized. The EPA brings a chance to redesign this partnership.

From the perspective of Poland – its economy and society – liberalized trade as a result of the EPA is beneficial in many aspects. Poland’s global export can increase by USD 135.31 million, even if it will decline in many sectors. However, this analysis indicates that none of the sectors will be affected by a decline in exports to Japan. It is worth pointing out that the production and export of meat and animal products from Poland to Japan may grow at a particularly high rate. However, it may take place only if Japan terminates sanitary or technical barriers to meat imports. For this to happen, Poland must bring an end to African swine fever (ASF). A positive result of the EPA is also the forecasted much higher increase in the demand for high-skilled labor and capital as compared with the demand for low-skilled labor and land in Poland. Given the direction of changes in global economy towards more knowledge-based economies, this is a positive development.

On the other hand, in some areas possible negative results were identified, such as decrease of Poland’s real GDP and a decline of its global exports in some sectors. These might be a result of diverting trade flows. The unfavorable potential structure of exports from Poland to Japan will also result in a negative effect on social welfare. This can occur because of two effects indicated by the model: an increase in the prices of consumer goods available in the domestic market (in some sectors, e.g. grains and crops, meat and animal products, and processed food), and an increase in the prices of some imported goods. But the dynamics of changes in import prices is low, which combined with the increase in terms of trade means that the total households’ income will slightly increase as a result of the EPA.

The results of the study need to be interpreted with caution. First of all, GTAP is a static model, therefore it is hard to capture some dynamic effects of trade liberalization. Second, in order to capture all possible effects of trade liberalization, the NTMs should also be taken into account and implemented in the model. Other factors covered by the agreement and not analyzed in this study are issues of foreign investments and services. These could be the subject of future study.

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THE EFFECTS OF EU–JAPAN ECONOMIC PARTNERSHIP AGREEMENT FOR POLAND'S ECONOMY

Abstract

The article analyzes the impact of the EU–Japan Economic Partnership Agreement (EPA) on Poland's economy. The authors investigate the effects of a bilateral elimination of customs duties on the economy using the Computable General Equilibrium framework and the GTAP database. The impact of the bilateral elimination of customs duties on GDP, production, trade and social welfare in Poland is examined and compared with other countries and regions. According to the research results, the EPA will bring positive impact on many aspects of Polish economy, but the effects in some other areas may be negative. Positive production and trade results are expected in some sectors, such as meat and animal products, leather and processed food, but some other sectors, such as motor vehicles and transport equipment, electronics and machinery, may experience a drop in output and export volumes. Total export value gains for Poland are estimated to be about USD 135 million, but in most sectors production will decrease, which may cause a loss in the real GDP.

Keywords: economic integration, international trade, EPA, regional trade agreements, trade liberalization, European Union, Japan, Poland

JEL: F15, F17

EFEKTY UMOWY O PARTNERSTWIE GOSPODARCZYM MIĘDZY UE A JAPONIĄ DLA GOSPODARKI POLSKI

Streszczenie

Artykuł analizuje wpływ umowy o partnerstwie gospodarczym między UE a Japonią na gospodarkę Polski. Autorzy badają wpływ obustronnej eliminacji cel na gospodarkę za pomocą modelu równowagi ogólnej i bazy danych GTAP. Wpływ obustronnego zniesienia cel na PKB, produkcję, handel zagraniczny i dobrobyt społeczny w Polsce jest analizowany i porównywany z innymi krajami i regionami. Zgodnie z wynikami badania, porozumienie UE–Japonia będzie miało korzystny wpływ na rozwój polskiej gospodarki w wielu dziedzinach, ale bynajmniej nie wszystkich. Pozytywnych efektów produkcyjnych i handlowych można się spodziewać w takich branżach jak produkcja mięsa i jego przetworów, innych produktów żywnościowych oraz wyrobów skórzanych, ale w takich branżach jak pojazdy mechaniczne i sprzęt transportowy, elektronika oraz przemysł maszynowy może dojść do spadku produkcji i eksportu. Łączna wartość polskiego eksportu ma wzrosnąć o około 135 mln dolarów, ale w większości gałęzi gospodarki produkcja się zmniejszy, co może spowodować pewien ubytek realnego PKB.

Słowa kluczowe: integracja gospodarcza, handel międzynarodowy, umowa o partnerstwie gospodarczym, regionalne umowy handlowe, liberalizacja handlu, Unia Europejska, Japonia, Polska

JEL: F15, F17

ЗНАЧЕНИЕ ДОГОВОРА ОБ ЭКОНОМИЧЕСКОМ ПАРТНЕРСТВЕ МЕЖДУ ЕС И ЯПОНИЕЙ ДЛЯ ЭКОНОМИКИ ПОЛЬШИ

Резюме

В статье анализируется влияние договора об экономическом партнерстве между ЕС и Японией на экономику Польши. Авторы исследуют влияние двухсторонней ликвидации пошлин на экономику с помощью модели общего равновесия и базы данных GTAP. Влияние обоюдного упразднения пошлин на ВВП, производство, внешнюю торговлю и благосостояние общества в Польше анализируется и сопоставляется с другими странами и регионами. Согласно результатам исследования, соглашение ЕС–Япония будет иметь положительное влияние на развитие польской экономики во многих областях. Но отнюдь не во всех. Положительных производственных и торговых эффектов можно ожидать в таких отраслях как производство мяса и продуктов его переработки, других продовольственных продуктов, а также кожаных изделий. В других отраслях, таких как механические транспортные средства, транспортное оборудование, электроника, машиностроение, это может привести к сокращению производства и экспорта. Совокупная стоимость польского экспорта должна повыситься примерно на 135 млн. долларов США, но в большинстве отраслей экономики производство сократится, что может вызвать некоторое уменьшение реального ВВП.

Ключевые слова: экономическая интеграция, международная торговля,

договор об экономическом партнерстве, региональные торговые договоры, либерализация торговли, Евросоюз, Япония, Польша

JEL: F15, F17