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Article

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Analysis of the Impact of the CETA Trade Agreement between the EU and Canada on the Slovak Economy[1]

Gabriela DOVAĽOVÁ – Boris HOŠOFF* – Richard KALIŠ** – Martin LÁBAJ* – Erika STRACOVÁ***

Abstract

This paper is focused on the impact arising from the conclusion of the Comprehensive Economic and Trade Agreement (CETA) between the European Union and Canada on the Slovak economy, with an emphasis on the automotive industry, machinery industry and electronics industry. Its aim is to estimate the direct as well as indirect effects generated by changes in international trade on Slovakia's value added, exports and employment, using the multi-regional input-output model. Based on different variants of development, it is expected that the average impact of CETA on the Slovak economy, as a result of the removal of the tariff barriers, will amount to 0.013% GDP, while the impact on job creation was estimated at 0.012% of the total employment. Removing the tariff barriers should lead to an increase in exports to Canada on average by 8%, in the event of a strong reaction to a price drop even by 18%.

Keywords: *CETA, Slovakia, Canada, international trade*

JEL Classification: C67, F14, F17

Introduction

Canada has a relatively long history of cooperation with the EU member states, which encouraged the idea of creating a free trade area. After long negotiations, the Comprehensive Economic and Trade Agreement between the EU

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and Canada (CETA) partially came into force in September 2017. This agreement should contribute to creating new opportunities for firms as well as to strengthening economic relations. However, it will enter into force fully only after ratification in the national parliaments of all EU member states. For this reason, this topic is being increasingly discussed, although in specialised literature, there is only a relatively limited number of articles and studies dealing with the assessment of the impact of CETA on the economies or sectors of individual member states.

Only marginal attention has been paid to this topic in the conditions of the Slovak economy, as the research institutions have not dealt with these issues extensively. For this reason, we based our analyses of the impacts of CETA on selected sectors in Slovakia mostly on foreign literature, specifically on studies assessing the impacts of this trade agreement on the EU, Canada and the Czech Republic.

An extensive study of the authors Kirkpatrick et al. (2011) described expected EU-wide impacts in the economic, social and environmental areas. From a long-term point of view, the authors expect a positive impact of the agreement for both parties to the partnership in terms of wealth, real GDP (CETA should contribute to an increase of economic growth in the EU by approximately 0.1 to 0.2 percentage points and in Canada by 0.18 to 0.36 percentage points), and exports, but also the positive development of wages.

According to the authors, the reason for such an optimistic impact lies especially in the liberalisation of services and relaxation of tariff and non-tariff barriers e.g. in agriculture or manufacturing, where an increase of total production is expected mainly in the textile and automotive industries. CETA also includes an important aspect that deals with the mutual promotion and protection of investments. In the social sphere, it is expected that the European ILO standards will be implemented in the field of collective bargaining and rights of trade unions (Kirkpatrick et al., 2011).

In the conditions of the Czech Republic and as a result of the relatively low significance of trade relations between the Czech Republic and Canada, only a small, though not negative, impact on the national economy is expected. Based on the forecast, the Czech economy should grow by 0.0052 or by 0.0072 percentage points as a result of concluding the bilateral agreement. Wages should increase especially for the skilled labour force and a more significant increase is expected on the export rather than on the import side. The savings for Czech exporters after removing the tariff and non-tariff barriers are estimated at about CZK 200 million (around EUR 7.5 million). The growth of Czech exports is

expected especially in electronics industry, the automotive industry and the chemical industry (Kocourek and Šimanová, 2016).

The Canadian governmental study estimates positive impacts on the Canadian economy. In the long term, the growth of Canadian gross domestic product is expected at 0.4%. The overall positive impact of the bilateral agreement from Canada's point of view is partially lowered by the fact that an increase in exports to the EU should be compensated by a decrease in exports to the USA. The study forecasts a negative impact on some manufacturing industries (e.g. textile and machinery industry production). In contrast, a positive impact and a moderate increase could be recorded in transport and sectors connected with non-metallic metals, wheat production and the automotive industry (Office of the Parliamentary Budget Officer Canada, 2017).

In this paper, the possible impacts of CETA on the economy of the Slovak Republic is analysed with a focus on the automotive industry, machinery industry and electronics industry. We assume that the removal of tariff and non-tariff barriers in international trade between the EU and Canada will have a twofold effect on the Slovak economy. On the one hand, there will be the direct effect caused by changes in bilateral trade between Slovakia and Canada, and on the other hand the indirect effect caused by changes in international trade between other EU countries and Canada.

The indirect effects on the Slovak economy should manifest themselves through an increase of growth in EU countries (especially in Germany, which is our most important export partner). For this reason, the aim of the authors was to estimate the direct as well as indirect effects generated by changes in international trade on value added, exports and employment in Slovakia, using the multi-regional input-output model.

Results of the analysis suggest that concluding the CETA agreement between the EU and Canada will have a relatively low but still positive impact on the Slovak economy. The adoption of this agreement should have a positive effect on the net international trade exchange between Slovakia and Canada, especially thanks to the expected positive effects in the automotive industry.

The paper is structured as follows: First, we focus on the methodology and the utilised data. The subsequent part includes an analysis of trade flows (including tariff and non-tariff barriers) between the Slovak Republic and Canada with an emphasis on the automotive industry, machinery industry and electronics industry. This part also includes an analysis of the impact the adoption of this trade agreement will have on small and medium-sized enterprises. In the last part, the direct and indirect effects of CETA on international trade, value added and employment in Slovakia are presented and discussed.

1. Methodology

The analysis of trade flows is based on data arranged according to the categories of the harmonised system (HS). For the purposes of this research, individual categories were sorted as follows: automotive industry – category 87; electronics industry – category 85 and 90; and machinery industry – category 84, 86, 88, 89, 91 and 92. The data used were provided especially by the Statistical Office of the Slovak Republic and the Financial Administration of the Slovak Republic, complemented by data from the databases of Eurostat, the World Bank, United Nations Conference on Trade and Development (UNCTAD) and the International Trade Centre (ITC).

The basic source of data for the model estimates of the impact of CETA on the economy of Slovakia is the World Input-Output Database,[2] which includes the World Input-Output Tables (WIOT), socio-economic accounts and environmental accounts. The reason our research is based on this database is that it captures the complex flows of intermediates and final products among countries for the years 2000 to 2014 with a detailed classification into industries. In total, the database includes data for 43 countries, including all EU member states and Canada, as well as the rest of the world. The data are in current prices, in USD millions, while the individual economies are classified into 56 industries corresponding to the International Standard Industrial Classification (ISIC Rev. 4). The input--output tables also include data about value added. The examined industries were divided as follows: manufacture of electronics and electronic equipment (electronics industry) (C26, C27), manufacture of fabricated metal products, and machinery and equipment (machinery industry) (C25, C28 and C30) and manufacture of motor vehicles (automotive industry) (C29). Employment data for the Slovak economy comes from the Statistical Office of the Slovak Republic.

1.1. Multi-regional Input-output Model

For our analysis of direct and indirect effects of CETA on selected indicators, the multi-regional input-output model (MIOM) is used.[3] The international input--output tables form the basis for the construction of MIOM. These tables show detailed data about production flows, value added creation and the final use of goods and services across industries and countries. One of MIOM's advantages is that it can capture complex linkages among industries and countries, which arise from the use of intermediates in individual industries and from international

[2] The World Input-Output Database is freely available on: <http://www.wiod.org/home>. A detailed description of how the database was created can be found e.g. in Timmer (2012), Dietzenbacher et al. (2013), Timmer et al. (2015).

trade in intermediate goods. This model makes it possible to detect not only direct but also indirect effects.

MIOM is an extended version of an open static input-output model for one economy. The key advantage of this model as opposed to other macroeconomic models is the fact that it enables us to analyse structural linkages in economy. While in the case of aggregate models we examine the total production in an economy in the form of one product, the Leontief model is based on the assumption that the output of the production process includes different goods and services intended either for further processing or for final use. A modern description and detailed explanation of the model can be found e.g. in the monograph Miller and Blair (2009). In this monograph, the basic elements of multi-regional input-output models are explained in detail and it is these that we use for the deduction and estimation of MIOM in this study. In this paper, we use the version of international input-output tables composed using the so called model D for industry x industry (Miller and Blair, 2009; Dietzenbacher et al., 2013). The international input-output tables have three basic sections: intermediate consumption table, value added table and final use table. For the purposes of deducing and constructing the model, it is suitable to record the international input-output table in the form of matrices and vectors. Let us mark the intermediate consumption matrix by the letter $\mathbf{Z}$, the final demand matrix by the letter $\mathbf{Y}$, the total production vector by $\mathbf{x}$, value added vector by $\mathbf{p}$ and the employment vector by $\mathbf{e}$. Matrix $\mathbf{Z}$ captures the flows of intermediates among individual industries *i* (*i = 1...N, where N equals the number of industries*) and countries *k (k = 1...K, where K equals the number of countries in the international input--output table).* Its individual elements thus have the following form:

$$\mathbf{Z} = \left\{ z_{ij}^{pu} \right\} = \begin{bmatrix} \mathbf{Z}^{11} & \cdots & \mathbf{Z}^{1K} \\ \vdots & \ddots & \vdots \\ \mathbf{Z}^{K1} & \cdots & \mathbf{Z}^{KK} \end{bmatrix} \tag{1}$$

Each element in the intermediate consumption matrix indicates the production of industry *i* from the country of origin *p* intended for intermediate consumption in industry *j* in the target country *u*. The main diagonal of sub-matrices

[3] This approach can be seen as a special case of a much broader class of computable general equilibrium (CGE) models. The assumptions of MIOM are more restrictive but the elaboration of the model is much simpler, and the interpretation of results is more transparent. GTAP (Global Trade Analysis Project) models are commonly used for the analysis of impacts of international policy measures. MIOM shares the assumption of fixed proportion production function (Leontief production function) with respect to the use of intermediate commodities with this model. To come closer to GTAP estimates, in some scenarios we use GTAP export and import elasticities to translate the changes in tariffs to changes in exogenously given international trade.

indicates the flows of domestic intermediates among industries in the national economy. All other sub-matrices include elements that are a part of trade in intermediates on a world scale. Similarly, the matrix of final use $\mathbf{Y}$ includes information about where the final products produced by industries in individual countries are used. These are consumed by one of the components of final demand either in the national economy or abroad. These are the direct exports and imports of final products for final use. This matrix also includes for instance the exports of cars from Slovakia for final use in Canada. Total production matrix $\mathbf{x} = \{x_i^k\}$ includes information about the production of industry *i* in country *k*. For the deduction of MIOM, we use the input coefficients matrix $\mathbf{A}$, which is calculated by dividing each element of the intermediate consumption matrix by the corresponding production of industries in individual countries.

$$\mathbf{A} = \mathbf{Z}\hat{\mathbf{x}}^{-1} \tag{2}$$

Here, the circumflex above the letter denotes the diagonalization of the relevant vector. The input coefficients matrix includes the so called technical coefficients in the sub-matrices on the main diagonal, i.e. where *k* = *k*, and trade coefficients in the remaining sub-matrices. Its elements indicate the production of industry *i* in country *p* necessary for the production of one unit of production in industry *j* in country *u*. These are the direct linkages between industries and countries, which result in producing one unit of production. Using the total production vector, final demand vector and intermediate consumption matrix, it is possible to construct a system of balance equations and then use it to deduce the international input-output model. The individual steps are described in detail e.g. in Miller and Blair (2009). After the deduction, MIOM has the following form:

$$\mathbf{x} = \left(\mathbf{I} - \mathbf{A}\right)^{-1}\mathbf{y} = \mathbf{L}\mathbf{y} \tag{3}$$

where matrix $\mathbf{L}$ denotes the so called Leontief inverse matrix, which is the basis of the model, and it includes complex linkages among industries and countries. Its individual elements indicate the production in industry *i* and country *p* needed to meet one unit of final demand in country *u* for the goods and services of industry *j*. As opposed to the input coefficients matrix, they express the relationship to one unit of final demand and include the direct and also indirect production necessary to meet it.

The extension of the model by value added and employment vectors allows us to analyse the effects of final demand and its changes on these variables. The row vector of value added $\mathbf{p}'$ includes data from the international input-output tables about the value added created in industry *i* in country *k*.

$$\mathbf{p}' = \left[\mathbf{p}'^1 \quad \dots \quad \mathbf{p}'^K\right] = \left[p_1^1 \quad \dots \quad p_n^1 \quad \dots \quad p_1^K \quad \dots \quad p_n^K\right] \tag{4}$$

By dividing the individual elements of the value added vector by the corresponding production of the industry, we get the so called direct value added coefficients $\mathbf{p}_c$, which show the value added produced by individual industries to one unit of production, formally $\mathbf{p}_c = \mathbf{p}'\hat{\mathbf{x}}^{-1}$. The main element needed to connect final use to the generated value added on individual levels of production in different parts of the world is the Leontief inverse matrix constructed for more countries. By multiplying the diagonalized vector of direct value added coefficients by the Leontief inverse matrix we get the matrix of cumulative value added coefficients. Its elements capture global value chains connected to the final use of individual commodities in individual countries of the world. Formally, this calculation can be written as follows:

$$\mathbf{P} = \hat{\mathbf{p}}_c \mathbf{L} = \begin{bmatrix} \hat{\mathbf{p}}_c^1 & \cdots & \mathbf{0} \\ \vdots & \ddots & \vdots \\ \mathbf{0} & \cdots & \hat{\mathbf{p}}_c^K \end{bmatrix} \times \begin{bmatrix} \mathbf{L}^{11} & \cdots & \mathbf{L}^{1K} \\ \vdots & \ddots & \vdots \\ \mathbf{L}^{K1} & \cdots & \mathbf{L}^{KK} \end{bmatrix} \tag{5}$$

By multiplying matrix $\mathbf{P}$ by the final demand vector, we calculate its effects on value added generated in individual countries and in corresponding industries. When examining the effects on the Slovak economy, it is necessary to select the relevant elements of this matrix indicating the value added created in individual industries of the Slovak economy. It is possible to analyse the effects of final demand on employment in a similar way.

1.2. Description of the Scenarios Used for Modelling the Impacts of CETA

For our estimations of the impact of CETA on the Slovak economy, we take into account several scenarios of development of variables, which are entered into the model as exogenous variables. The scenarios are based on the results of the studies mentioned in the introduction. Exogenous variables entered into the model are as follows:

1) change in the volume of the gross domestic product in EU member states,
2) change in the volume of the gross domestic product in Canada,
3) an increase in the total exports of the EU,
4) an increase in the total exports of Canada,
5) an increase in the total exports of the Slovak Republic.

For the estimation of changes in points 1 – 4, we use the study of Kirkpatrick et al. (2011) in two variants, namely Scenario A and Scenario D.[4] Scenario A assumes a limited liberalisation in agriculture and processed agricultural products, the result of which is a 95% overall liberalisation of trade in goods in terms of tariff measures and a less ambitious liberalisation of services. This means that

chosen agricultural products are not liberalised, while industrial products are fully liberalised. For services, the coefficient of the decrease in costs modelled in the supporting background study is reduced by the coefficient 0.6. In Scenario D, goods are 100% liberalised, and also a more ambitious liberalisation of services is assumed, while the decrease in costs for services estimated in the background study remains unchanged. Kirkpatrick et al. (2011) also mention the results of two more scenarios but the estimates of their effects are in the interval between the two chosen scenarios (Table 1).

T a b l e 1

Overview of Exogenously Given Changes Resulting from CETA Based on Kirkpatrick et al. (2011) (in %)

	Scenario A	**Scenario D**
Change in the volume of GDP – EU-27	0.02	0.03
Change in the volume of GDP – Canada	0.18	0.36
Increase in the total exports of the EU	0.05	0.07
Increase in the total exports of Canada	0.54	1.56

Source: Kirkpatrick et al. (2011).

In the case of point 5, we assume (i) a constant increase in the volume of exports from Slovakia to Canada on the same level as the average of the EU-27, i.e. 0.05%, or (ii) an increase allowing for a change in customs duties, i.e. in prices of the most important exported commodities. In this case, it is necessary to know the elasticities, i.e. the sensitivity of changes in exports and imports to a change in customs duties. Here, we use three studies that directly calculate the elasticities:

a) Ingersoll et al. (2004) – elasticities estimated using the GTAP model,
b) Ingersoll et al. (2004) – elasticities estimated using the USITC model,
c) Gallaway, McDaniel and Rivera (2002) – short-term elasticities, econometric estimate.

T a b l e 2

Overview of the Elasticities Used

	GTAP	**USITC**	**Gallaway***
Machinery industry	2.8	2.2	0.71
Electronics industry	2.8	2.6	1.19
Automotive industry	5.2	2.7	0.0094

Note: * Calculated based on converters and aggregated using weightings of the most important export commodities from Slovakia to Canada in corresponding industries.

Source: Ingersoll et al. (2004); Gallaway, McDaniel and Rivera (2002).

[4] Although the negotiations between EU and Canada on CETA are already closed, we consider the variation in the scenarios as a good approximation of the variability of the overall economic effects of CETA. The second source of variability is later introduced by different assumptions on international trade elasticities.

Moreover, we also calculated weighted averages of duty rates for the examined industries on the basis of bilateral trade between Slovakia and Canada. Taking all the above-mentioned changes into consideration, we get to 10 scenarios listed in the Table 3.

T a b l e 3

Overview of the Scenarios Used for Forecasting the Impacts of CETA

	Variant (1 – 4)	**Change in the volume of Slovakia's GDP (5)**	**Elasticity of the change in exports (a – c)**
1	Scenario A, estimate of indirect effects	Without a direct change in the exports of final products from Slovakia to Canada	–
2	Scenario A, limited liberalisation	Increase in exports on the level of the EU-27 average by 0.05%	–
3		Depending on elasticities	Gallaway, short-term elasticities
4		Depending on elasticities	USITC
5		Depending on elasticities	GTAP
6	Scenario D, estimate of indirect effects	Without a direct change in the exports of final products from Slovakia to Canada	–
7	Scenario D, total liberalisation	Increase in exports on the level of the EU-27 average by 0.07%	–
8		Depending on elasticities	Gallaway, short-term elasticities
9		Depending on elasticities	USITC
10		Depending on elasticities	GTAP

Source: Authors.

The effects of changes in the final demand arising from the individual scenarios described above are aggregated into vector $\mathbf{y}^{\mathbf{ex}}$.

The impacts of the changes on value added and employment are then calculated based on these relationships:

$$\begin{aligned} \mathbf{p}^{gen} &= \hat{\mathbf{p}}_c \mathbf{L} \mathbf{y}^{ex} \\ \mathbf{e}^{gen} &= \hat{\mathbf{e}}_c \mathbf{L} \mathbf{y}^{ex} \end{aligned} \tag{6}$$

where $\mathbf{p}^{\mathbf{gen}}$ stands for the effects on value added and $\mathbf{e}^{\mathbf{gen}}$ stands for the effect of changes on employment. Moreover, the model enables us to see the effects of changes in final demand on overall changes in international trade, i.e. including the indirect effects arising from the trade in intermediates. This allows us to analyse the changes in exports from Slovakia to Canada in individual scenarios, as well as the effects on the net exports from Slovakia to Canada both in total as well as for individual industries.

2. Analysis of Trade Flows

In the long-term, the Slovak Republic is one of the most open economies of the European Union. The export activities of Slovakia are oriented on the so called third markets only minimally. The main long-term trading partners of Slovakia are European countries. In 2016, as much as 90.4% of Slovakia's total exports was directed to Europe, while imports from Europe reached 64.5%. From a long-term point of view, Canada is the target country for only a relatively very low percentage of Slovakia's total exports (0.4% in 2016). Canada does not represent an important import partner for Slovakia either; in 2016 the share of import to Slovakia from Canada was only 0.1%.

In the breakdown of the total exports from the Slovak Republic to Canada, the automotive industry, which is a key industry for the Slovak economy, clearly dominates (Graph 1A). In the examined period, the share of automotive industry on the total exports of Slovakia to this country was as much as 73%. Slovakia is one of the leading producers of cars in Central Europe.[5] Concluding a free trade agreement with Canada could mean an opportunity for the car-producing companies active in the territory of Slovakia for a greater diversification of export markets.

In the structure of Slovakia's total exports to Canada, the industries that come next are machinery industry (11%) and electronics industry (4%). Companies that will benefit from the agreement will predominantly be those working in these three industries. However, it must be said that a great part of production in the automotive industry, machinery industry and electronics industry is concentrated in the region of Western Slovakia, which means that there is a very high likelihood that the potential benefits arising from CETA will not be spread evenly across Slovakia.

From the perspective of imports from Canada to Slovakia in the examined period, the mining industry was the dominant one and its share on the total imports from Canada was 39% (Graph 1B). This fact is not surprising because the mining industry in Canada is very well developed thanks to their large reserves of mineral raw materials (especially oil, natural gas, metals, gold, etc.). The removing of tariff and non-tariff barriers for Slovak importers from Canada could thus help reduce the costs of enterprises for inputs needed for the production of final products. In the given period, the share of imports of the automotive industry, electronics industry and machinery industry reached 35% of the total imports

[5] For comparison, in 2016, the global production of cars amounted to 94.9 million vehicles, out of which 18.8 million was produced in EU 27, 2.3 million in Canada and 1.04 million in Slovakia (OICA, 2017).

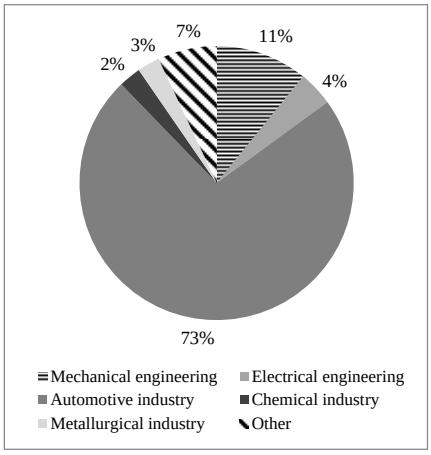
from Canada. Canada is one of the countries from which Slovakia imports to a relatively small extent. In 2016, Canada's share on Slovakia's total imports in the three industries examined in detail amounted only to 0.03% in the case of the automotive industry and electronics industry and to 0.33% in the case of machinery industry.

Thus, the automotive industry does not dominate from the perspective of the overall structure of Slovakia's imports from Canada. In recent years, a gradual decrease in the dependence of the Canadian economy on the automotive industry can be observed. This sector was negatively affected especially by the economic and financial crisis, which brought along the bankruptcy of several big producers in this industry. Another issue from the viewpoint of the Canadian automotive industry is the increase in competition by Mexico, which even managed to overtake Canada in the production of motor vehicles (Durocher and Dupuis, 2017). The problems of the Canadian automotive industry can also be seen from the fact that the last time that Canada recorded a balance of trade surplus in the automotive industry was in 2006.

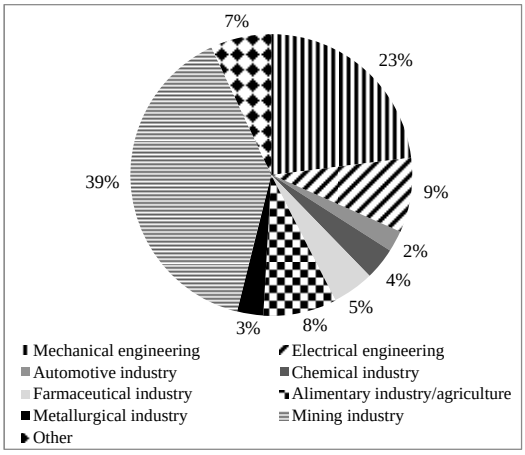
G r a p h 1

Importance of the Automotive Industry, Machinery Industry and Electronics Industry, Years 2014 – 2016

A. The structure of Slovakia's total exports to Canada



B. The structure of Slovakia's total imports from Canada



Source: Composed using the data from the Statistical Office of the Slovak Republic.

The fact that, especially, exports from Slovakia to Canada are relatively narrowly concentrated to a few product categories is also confirmed by UNCTAD (2017b) data. Their analysis shows that the exports from Slovakia to Canada are focused on a small number of products especially from the automotive industry,

while here, the Herfindahl-Hirschman index[6] reaches values highly above the average compared with other OECD countries. On the other hand, the degree of concentration of our imports from Canada is comparable to that of other OECD member states and does not differ too much from the average. This, however, is the case with our exports, which have significant importance in terms of the effects of CETA. Direct benefits and positive influences as a result of removing the tariff and non-tariff barriers to trade will apply to more categories of products and firms in Canada, while in Slovakia, only a few exporters will benefit from them. It also needs to be said though, that this could also free up room for companies that did not take part in trade and investments with Canada so far, which could help with the geographic and industry diversification of our export.

International trade in goods between Slovakia and Canada (i.e. the sum of exports and imports) reached EUR 368 million in 2016, which roughly equals twice the value in 2012; in the past five years, Slovakia has managed to maintain a balance of trade surplus with Canada. In 2016, the annual balance of trade surplus with Canada amounted to about EUR 198 million (Table 4). This surplus was caused especially by higher growth dynamics in the volume of exports in comparison with the respective import dynamics. While the total exports to Canada experienced a year-on-year increase of 71% (from EUR 165 million in 2015 to EUR 283 million in 2016), the year-on-year change of exports only reached 9% (an increase from EUR 78 million to EUR 85 million). To compare, in the same year, Slovakia had the highest balance of trade surplus with its biggest trade partner Germany which amounted to EUR 4.2 billion.[7] Production from the automotive industry is not inconsiderable in connection with the balance of trade surplus with Canada, and this applies also to the development of supporting industries and various services.

The development of international trade in the automotive industry between Slovakia and Canada has been characterised by a balance of trade surplus from the side of Slovakia for a long time, while in 2016, exports in this industry were more than one hundred times higher than imports. However, Slovakia's exports to Canada in the automotive industry amounted to only 1% of industry total exports, so there is room to increase this share.

In the last five years, the development of international trade with Canada in machinery industry has been relatively dynamic, while export from Slovakia to Canada more than tripled between the years 2012 and 2016. In the last three

[6] This index is normalised for getting values from 0 to 1 (maximum concentration), and it shows to what extent the trade is concentrated in a few categories or is divided more homogeneously among a larger number of products.

[7] In 2016, the goods imported from Germany were worth EUR 11.1 billion, while exports amounted to EUR 15.3 billion.

years, the balance of trade with Canada reversed, and Slovakia recorded a balance of trade surplus in machinery industry. In 2016, the total exports in this industry amounted to about 1.3 times the industry total imports from Canada to Slovakia. In 2016, only 0.4% of the total exports of machinery industry from Slovakia went to Canada. Within machinery industry, Slovakia recorded a negative trade balance with Canada in two categories: HS88 – aircraft, spacecraft and parts thereof, and HS89 – ships, boats and other floating structures. This is not surprising, because Canada is the third biggest producer of civil aircraft in the world, while as much as 80% of the production is for export. Slovakia recorded a slightly negative balance of trade with Canada in machinery industry also in category HS92 – musical instruments, parts and accessories.

In the last five years, Slovakia recorded a balance of trade deficit with Canada in electronics industry three times, namely in the years 2012, 2013 and 2015. The category that contributed to balance of trade deficit in this industry was HS90, which includes optical, photographic, cinematographic and measuring devices and apparatus, including their parts and accessories. In the long term, Slovakia has been recording a balance of trade deficit with Canada in this category.

However, the exports of electronics industry to Canada have recorded an increasing trend in the last five years. In 2016, the volume of goods of electronics industry exported to Canada was almost six times as high as in 2012. In contrast, the imports from Canada to Slovakia in electronics industry have been relatively stable (with the exception of 2015). However, it is still true that in the last year of the examined period, the share of exports of electronics industry to Canada was only 0.08% of Slovakia's total exports in this industry.

T a b l e 4

Balance of Trade of the Slovak Republic with Canada in Automotive Industry, Machinery Industry and Electronics Industry, Years 2012 – 2016 (in EUR thousand)

	2012	**2013**	**2014**	**2015**	**2016**
Total imports	52.467	95.798	50.136	78.429	85.173
Total exports	138.387	150.712	145.988	165.523	283.019
Total trade balance	85.920	54.914	95.852	87.094	197.846
Slovakia's total imports, automotive industry	1.642	1.587	1.205	1.162	2.869
Slovakia's total exports, automotive industry	105.819	106.714	109.305	119.032	206.294
Trade balance – automotive industry	104.177	105.127	108.100	117.870	203.425
Slovakia's total imports, machinery industry	14.537	17.285	4.482	16.400	28.474
Slovakia's total exports, machinery industry	11.668	14.964	8.484	17.369	38.736
Trade balance – machinery industry	–2.869	–2.321	4.002	969	10.262
Slovakia's total imports, electronics industry	4.361	4.669	4.772	8.664	4.896
Slovakia's total exports, electronics industry	2.178	4.329	5.781	6.067	12.338
Trade balance – electronics industry	–2.183	–340	1.009	–2.597	7.442

Source: Composed using data from the Statistical Office of the Slovak Republic.

It is expected that removing the tariff and non-tariff barriers should bring some benefit especially to small and medium-sized enterprises. However, this group of enterprises does not utilize their potential to the fullest. This is also confirmed by the SBA (2018) data, which show that although the biggest number of exporters in 2015 was in this group of enterprises, their share of the total value of export (excluding foreign subjects) was only 29.1%.

In 2016, small and medium-sized enterprises accounted for 66% and 69% of the total number of firms active in our territory exporting to Canada in machinery industry and electronics industry respectively (Table 5). As far as our export to Canada in the automotive industry is concerned, the number of small and medium-sized enterprises active in this field was roughly equal to the number of large companies. In this industry, the direct benefits arising from CETA will be divided among a small number of firms (in 2016, the number of exporters to Canada in the automotive industry was as low as 11 enterprises). However, it should also be added here that only less than one per cent of the total number of exporting firms in Slovakia (irrespective of the industry) is oriented towards the Canadian market.

Large enterprises had only a relatively small share on the total number of entities exporting to Canada in the examined industries. The adoption of the Comprehensive Economic and Trade Agreement (CETA), which will provide for the conditions of free trade between the EU and Canada and form the basis for the gradual removal of tariff and non-tariff barriers to trade, can thus help to partially increase the competitiveness of Slovak small and medium-sized enterprises in the Canadian market, as under present barriers to international trade, they can hardly compete with established large companies or transnational corporations active in this market.

The adoption of CETA is not only important from the point of view of exports but also imports, i.e. from the viewpoint of Slovak customers and consumers that use goods imported from Canada in the production process or for final consumption. The elimination of customs duties and non-tariff barriers to trade can thus increase the competitiveness of Slovak importers and producers as well as being a benefit for consumers. In 2016, small and medium-sized enterprises made up the majority of firms importing from Canada, namely around 80% of the total number of importing firms from Canada in all examined industries.

According to the European Commission,[8] small and medium-sized enterprises will benefit from CETA mainly for the following reasons: elimination of customs duties, increasing opportunities for European firms in public procurements in Canada, savings of costs needed to achieve compliance with technical norms,

[8] <http://ec.europa.eu/trade/policy/in-focus/ceta/ceta-explained/>.

standards and necessary procedures for conformity assessment, or a strengthening of copyright protection and the protection of selected traditional (especially food) products produced in the EU only within a given specific region.

T a b l e 5

Number of Firms Exporting to Canada, Number of Firms Importing from Canada in Automotive Industry, Machinery Industry and Electronics Industry by Size
(number of employees)

	Number of exporting firms			**Number of importing firms**		
Number of workers	2014	2015	2016	2014	2015	2016
	Automotive industry					
0 – 9	C	C	3	19	8	14
10 – 49	0	C	0	9	13	23
50 – 249	C	C	0	8	13	4
250+	5	7	4	C	4	6
Not specified	C	C	4	C	3	4
Total	10	13	11	40	31	51
	Machinery industry					
0 – 9	11	9	13	65	54	85
10 – 49	10	9	5	44	44	85
50 – 249	18	16	21	45	37	53
250+	12	13	13	25	29	32
Not specified	7	8	7	10	15	19
Total	58	55	59	189	179	274
	Electronics industry					
0 – 9	17	17	16	104	90	118
10 – 49	9	14	6	67	73	106
50 – 249	19	26	24	51	58	74
250+	12	16	12	25	32	39
Not specified	7	9	9	14	21	32
Total	64	82	67	261	274	369

Note: C – confidential.

Source: Composed using data from the Statistical Office of the Slovak Republic.

2.1. Tariff and Non-tariff Barriers

The compatibility of regulatory measures and frameworks as well as a mutual recognition of conformity are important prerequisites for increased convergence, competitiveness and innovations. Moreover, it is necessary to maintain a high level of transparency and information of all relevant economic entities (firms as well as consumers). The adoption of CETA will thus decrease the existing information asymmetry, which can help with searching for alternatives or identifying and preventing possible risks. Such an exchange of information and recognition of conformity will eliminate duplicate testing and will release resources for acquiring potentially new knowledge and innovations. Thus, it will be possible to solve the problems that the regulatory measures are directed at more consistently

and effectively. A more efficient use of financial resources and an alignment of regulatory frameworks and rules will also enable addressing important local, national but also international challenges (e.g. reducing CO_2 emissions).

The issue of market access is dealt with in the whole of the second chapter of CETA, which includes steps on how customs duties, taxes or other import charges imposed on the goods traded between the EU and Canada will be lowered. A vast majority of these limitations will be eliminated alongside CETA's entry into force, the others will be eliminated gradually, while each of the contracting parties undertakes not to treat the goods imported from the partner country less favourably than those produced at home.

The structure and amount of customs duties in the examined product groups (HS84 and HS92) differs between Canada and the Slovak Republic rather significantly, which makes it clear that by eliminating them, the effects on the two sides of the Atlantic will differ in size, and these effects will not only depend on the volume of trade but also on the elimination of administrative and tariff load. This is considerably higher on the side of the EU and in relation to Canadian firms. This means that a greater number of customs tariffs for a greater number of goods will be eliminated on the side of the EU than in the case of Canada. After eliminating the customs duties, Canada will gain a greater benefit than Slovakia because Canada's exports are more diversified and its potential increase can be a source of benefit for more segments than in Slovakia.

By removing tariff barriers, Slovakia should lose the income from customs duties to the state budget of the Slovak Republic. As can be seen in Table 6, the data of the Financial Administration of the Slovak Republic shows that in 2016, the value of customs duties for goods from the automotive industry, machinery industry and electronics industry with Canada as the declared country of origin reached around EUR 616,000 which only accounts for roughly 0.5% of the total collected customs duties in Slovakia connected with imports from all third countries. It needs to be emphasised though that only 20% of the collected customs duties become part of Slovakia's state budget, and 80% of the funds goes to the EU budget, because since Slovakia acceded to the EU, it partakes in the creation of their own resources of the EU budget. Thus, the elimination of customs duties should not pose a very significant issue for the Slovak budget.

The elimination of the non-tariff barriers to trade could have greater positive effects for the European firms in comparison with tariff barriers on the side of Canada. The elimination of non-tariff barriers is probably more topical today than it was before the financial crisis and the Great Recession. These events contributed to an increase in protectionism and non-tariff barriers to trade, and the number of these barriers in the world economy is now higher than before. The

most common non-tariff barriers are technical barriers to trade, which account for more than half of all non-tariff barriers. In 2017, a greater number of these barriers was implemented on the side of Canada than that of the European Union, so larger positive effects of their elimination may be expected for European and Slovak firms. Data of the World Bank clearly show that the savings arising from shortening the period and reducing the red tape needed for fulfilling the necessary conditions for carrying out cross-border trade would be greater on the side of the EU or Slovakia than that of Canada.

T a b l e 6

The Paid Customs Duties Relating to Goods in Automotive Industry, Machinery Industry and Electronics Industry with Canada as the Declared Country of Origin for the Years 2012 – 2016 (in EUR)

Canada – customs duties					
	2012	2013	2014	2015	2016
Automotive industry	44,922	35,642	36,161	16,487	62,552
Electronics industry	58,888	55,381	56,043	90,540	30,714
Machinery industry	149,810	247,854	43,923	400,654	522,973
Total (automotive industry, electrical and machinery industry)	253,619	338,878	136,127	507,681	616,239
Total (chapters 1 – 99)	783,457	810,272	620,927	1,014,453	1,106,904
Third countries total – customs duties					
Automotive industry	9,294,708	7,591,720	6,473,288	8,042,616	7,218,777
Electronics industry	33,802,398	26,033,703	31,218,579	32,399,956	34,303,305
Machinery industry	9,390,241	7,980,807	9,922,056	13,238,674	12,315,160
Total (automotive industry, electrical and machinery industry)	52,487,347	41,606,230	47,613,923	53,681,245	53,837,243
Total (chapters 1 – 99)	116,943,913	106,937,062	124,941,182	119,567,136	121,672,303

Source: Composed using the data from the Financial Administration of the Slovak Republic.

T a b l e 7

Distribution of Non-tariff Barriers to Trade by Industry

HS	**TBT**		**SPS**		**INSP**		**QC**		**PC**		**EXP**		**Other**	
	CAN	EU	CAN	EU	CAN	EU	CAN	EU	CAN	EU	CAN	EU	CAN	EU
Automotive industry														
87	56	20			1	1	1		4		7			1
Electronics industry														
85	54	99		2	1				4		14			1
90	42	65			1	1			4		11			1
Machinery industry														
84	64	128	1	2	1	1	1		7		10			1
86	3	9			1						1			1
88	20	4			1				2		5			
89	41	11			1				2		4			
91	28	22	1		1				4		3			
92	3	18	1		1				1		2			

Note: TBT – technical barriers to trade; SPS – sanitary and phytosanitary measures; INSP – pre-shipment inspection; QC – quality control measures; PC – price control measures; EXP – measures connected to export.

Source: Authors; UNCTAD (2017a).

It follows from the global database of non-tariff barriers to trade UNCTAD – TRAINS that in May 2017, trade between the Slovak Republic and Canada was influenced by the existence of a total of 686 non-tariff barriers (especially in the form of technical barriers to trade), while the vast majority also applied to all other EU member states and only 32 non-tariff barriers had the form of bilateral measures between Canada and Slovakia (Table 7).

The most important technical barriers to trade on the side of Canada in the field of electronics industry and machinery industry include requirements for the authorisation or inspection before putting on sale or goods labelling requirements. Requirements for certification, testing, origin of the material and parts, product quality and output (e.g. emission standards) are important in the case of the automotive industry.

In this field of machinery industry, Slovakia was influenced from Canada mainly in the area of technical barriers to trade, which are the subject of the fourth chapter of CETA (European Commission, 2017). In this chapter, the contracting parties undertake to cooperate more closely on the preparation, adaptation and application of technical regulations in the field of quality and output testing, product certification, norms, metrology, but also in the field of supervision and monitoring. However, it is also true that this commitment is voluntary and can never force the contracting parties to lower their standards.

3. Results of the Application of the Multi-regional Input-output Model

The effects of CETA on value added, employment and international trade of Slovakia have been estimated on the basis of changes resulting from this agreement in comparison with the baseline scenario before its adoption. The direct effects of CETA relate to the exports of intermediates and final products to Canada. The indirect effects are generated by the exports of intermediates to other countries, which export them to Canada after processing. For the purposes of estimating the impact of CETA on the Slovak economy, several scenarios were created. In some of them, we observe the indirect effects of CETA on the Slovak economy, which will influence it through changes in economic growth and international trade between the EU and Canada. In the remaining scenarios, the direct impacts on the changes in bilateral trade between Slovakia and Canada are taken into account. The advantage of creating a greater number of scenarios of development is that it provides an overview of the variation of possible impacts, depending on the different reactions of economic entities to altered tariff measures.

3.1. Indirect Effects of CETA on the Economy of the Slovak Republic and Selected Industries

The previous part makes it clear that scenarios 1 and 6 are specific to a certain extent because they only reflect changes in the Slovak economy, induced indirectly. The term "indirect effects" refers to those changes that are not induced by changes in the balance of trade between Canada and Slovakia. Depending on the variant (scenario A or D), we differentiate two scenarios (1 and 6), while we focus on the impacts on value added and employment in the whole economy, as well as separately for the three chosen manufacturing industries (Table 8). We are interested in the effects on Slovakia's exports to Canada and net exports in the same structure.

T a b l e 8

Indirect Effects on Value Added and Employment in Selected Scenarios

	Effects on value added				**Effects on employment**			
	USD million		Change in %		Number of jobs		Change in %	
Scenario number	1	6	1	6	1	6	1	6
National economy total	4.06	6.23	0.005	0.007	91	140	0.0042	0.0064
Electronics industry	0.14	0.22	0.008	0.012	4	6	0.0003	0.0005
Machinery industry	0.50	0.77	0.011	0.017	13	19	0.0004	0.0007
Automotive industry	0.26	0.39	0.007	0.011	5	7	0.0004	0.0006

Source: WIOD.org; authors' calculations.

The low end estimate of indirect effects (scenario 1) assumes an increase of the gross value added in the whole economy of the Slovak Republic by approximately USD 4 million, while the high end estimate (scenario 6) is around 50% higher, with an estimated increase of USD 6.23 million. The same relative change between scenarios can be observed also separately for selected manufacturing industries with the highest absolute and relative impact on the machinery production industry. As Slovakia's exports to Canada have traditionally been based on exporting final products, especially cars, it is this industry that is expected to grow. In Scenarios 1 and 6, we assume indirect effects, i.e. no effect of growth in the mentioned final products from Slovakia to Canada is assumed. In this regard, the automotive industry is disadvantaged at the expense of those industries that export relatively more intermediates. By its indirect and limited character, the percentage increase of value added of 0.005%, or 0.007% in the optimistic variant, represents the lowest estimate from all the projected scenarios. The scenarios that do not assume a direct change in the volume of trade in final goods between Slovakia and Canada assume an employment increase in Slovakia of 91 to 140 employees as a result of the change in the volume of domestic demand and trade

between Canada and the 27 EU member states, caused by adopting the agreement (Table 8). The structure of impacts in individual industries is then very similar to the structure of impacts on value added. Effects on employment in strategic sectors of the Slovak industry account for less than 24% of the total effect on employment. This relatively low number is connected with high labour productivity in the examined industries.

T a b l e 9

Indirect Effects on Exports and Net Exports to Canada in Selected Scenarios

	Effects on Slovakia's exports to Canada				**Effects on net exports to Canada**			
	USD million		Change in %		USD million		Change in %	
Scenario number	1	6	1	6	1	6	1	6
National economy total	0.16	0.37	0.054	0.125	0.14	0.35	0.122	0.294
Electronics industry	0.02	0.05	0.175	0.412	0.02	0.05	0.301	0.711
Machinery industry	0.02	0.04	0.106	0.244	0.02	0.04	0.134	0.31
Automotive industry	0.02	0.06	0.014	0.036	0.0139	0.0365	0.02	0.06

Source: WIOD.org; authors' calculations.

The expected increase of Slovakia's gross exports as a result of indirect effects of CETA is in the interval of USD 160,000 and USD 370,000. In the case of net exports, the expected increase is USD 140,000 to USD 350,000 (Table 9). In both scenarios, there is a significant trade balance surplus. As far as the structure of selected industries is concerned, the most significant effect in terms of relative increase can be observed in electronics industry, where an increase of 0.18% to 0.41% is expected. In the case of net exports, a more significant relative increase is expected in machinery industry, reaching 0.3% and up to 0.7%, which is well above the average of other industries.

3.2. Total Effects of CETA on the Economy of the Slovak Republic and Selected Industries

As opposed to the previous part, the direct effects of the international agreement are induced by an additional change of volume in the Slovak-Canadian trade balance, while the indirect effects described in points 1 – 4 in the previous chapter are maintained. Depending on this change, we differentiate several scenarios and their impacts.

Value added is the most important component of gross domestic product. However, as opposed to the gross domestic product, it is also reported on the level of individual industries. Changes in value added have a significant influence on total changes in the gross domestic product and if there is no change in the indirect taxation and subsidies, they are equal to them.

T a b l e 10

Effects of CETA on the Creation of Value Added of Slovakia and Selected Industries

	Effect on value added in the whole national economy		**Effect on value added in electronics industry**		**Effect on value added in machinery industry**		**Effect on value added in automotive industry**	
Scenario number	USD million	Change in %	USD million	Change in %	USD million	Change in %	USD million	Change in %
2	6.92	0.008	0.27	0.015	0.80	0.018	0.68	0.019
3	6.76	0.007	0.15	0.009	0.81	0.018	1.72	0.049
4	11.67	0.013	0.18	0.010	1.39	0.031	4.46	0.128
5	18.63	0.020	0.20	0.011	2.20	0.050	8.36	0.239
7	10.23	0.011	0.40	0.022	1.19	0.027	0.98	0.028
8	8.96	0.010	0.23	0.013	1.08	0.024	1.86	0.053
9	13.87	0.015	0.25	0.014	1.65	0.037	4.60	0.131
10	21.31	0.023	0.30	0.017	2.71	0.061	8.59	0.246
Average	12.29	0.013	0.25	0.014	1.48	0.034	3.91	0.112
Standard deviation	5.33	0.006	0.08	0.004	0.68	0.015	3.17	0.091
Minimum	6.76	0.007	0.15	0.009	0.80	0.018	0.68	0.019
Maximum	21.31	0.023	0.40	0.022	2.71	0.061	8.59	0.246

Source: WIOD.org; authors' calculations.

After taking more possibilities of Slovakia's exports to Canada into account, it seems that the most optimistic scenario (i.e. the scenario with the highest positive impacts on Slovak economy) is number 10. In the case of elastic changes after eliminating customs duties, and of the optimistic variant D (the development of the GDP of the EU and Canada), we assume a 0.023% increase of Slovakia's GDP, in absolute terms USD 21.31 million. The focal point of this optimistic scenario is the automotive industry's sensitivity to changes in tariffs (a price change of 1% will be reflected in a 5% increase of exports). In the event of a complete reduction of the present-day tariffs for the export of cars to Canada and after factoring in the high sensitivity of the industry to this change, we assume an increase in the exports of cars to Canada of almost 30%, which will be reflected in an increase in the creation of value added of the selected industry by 0.246%. The low end estimate of the impact of CETA on the Slovak economy is represented in scenario 3 (Table 10). The short term elasticities from Gallaway, McDaniel and Rivera (2002) assume an almost completely non-elastic relationship between tariff decrease and exports of final products of the car-producing industry. In combination with a partial liberalisation of customs duties, the total impact on the GDP of Slovakia reaches USD 6.76 million, which represents roughly 0.007% of GDP. Also in the event of low elasticity, the share of the automotive sector on the total change is 25% with an increase in the creation of value added by USD 1.72 million. The average of the total impact of the examined scenarios on the national economy is USD 12.3 million with a standard deviation of USD 5.33 million. This increase corresponds to approximately

0.013% of GDP with the majority contribution by the manufacturing industry, mainly the car-production sector. The difference between the most optimistic and the most pessimistic scenario of the impacts of the international trade agreement is roughly USD 14.5 million, depending on the level of tariff liberalisation and sensitivity of the Slovak exports to this decrease in tariffs of the exported commodities.

T a b l e 11

Effects of CETA on Slovakia's Exports to Canada

	Effect on Slovakia's total exports to Canada		**Effect on the exports of electronics industry to Canada**		**Effect on the exports of machinery industry to Canada**		**Effect on the exports of automotive industry to Canada**	
Scenario number	USD million	Change in %	USD million	Change in %	USD million	Change in %	USD million	Change in %
2	0.26	0.090	0.02	0.181	0.02	0.128	0.11	0.061
3	9.71	3.326	0.03	0.214	0.02	0.134	9.45	5.304
4	27.37	9.376	0.03	0.261	0.04	0.193	27.09	15.21
5	52.44	17.963	0.03	0.267	0.04	0.217	52.16	29.28
7	0.51	0.176	0.05	0.42	0.05	0.275	0.18	0.103
8	9.96	3.413	0.06	0.451	0.05	0.272	9.49	5.327
9	27.62	9.463	0.06	0.498	0.06	0.331	27.13	15.232
10	54.00	18.498	0.16	1.301	0.66	3.570	52.81	29.648
Average	22.73	7.788	0.06	0.449	0.12	0.64	22.30	12.521
Standard deviation	21.50	7.366	0.04	0.363	0.22	1.186	21.31	11.965
Minimum	0.26	0.090	0.02	0.181	0.02	0.128	0.11	0.061
Maximum	54.00	18.498	0.16	1.301	0.66	3.570	52.81	29.648

Source: WIOD.org; authors' calculations.

The exports of final products are an exogenous variable in the utilised input--output analysis. For this reason, it is necessary to estimate the direct export in a different way and it is not an output of the model itself. However, the indirect effects of the increase in the volume of exports to Canada on the economy of Slovakia are also of interest. The high sensitivity to the selected scenario is also documented by the standard deviation, which almost reaches the average value of exports from the eight projected scenarios. In all variants, the dominant sector is the automotive industry. In the most optimistic projection, the current exports of cars to Canada are expected to increase by the already mentioned 30%, which represents almost USD 53 million. The reason is a high assumed elasticity and a 100% liberalisation of duty rates. In this variant, the increase in the exports of the automotive industry would account for 98% of the total increase in exports. The high dependence of exports from elasticity is, to a certain extent, taken into account in scenarios 2 and 7, which assume a constant increase of the volume of exports by 0.05% (Table 11). These scenarios can also be regarded as the most

pessimistic ones in the context of impacts on Slovakia's exports to Canada. In the second and the seventh scenario, the effect of indirect linkages in the economy is clearly visible. If a direct constant increase in the value of exports to Canada by 0.05% is assumed, the total increase in the exports to Canada will be 0.09% in the case of partial liberalisation and more than 0.17% in the case of complete liberalisation.

T a b l e 12

Effects of CETA on Slovakia's Net Exports to Canada

	Effect on net exports to Canada		**Effect on net exports to Canada in electronics industry**		**Effect on net exports to Canada in machinery industry**		**Effect on net exports to Canada in automotive industry**	
Scenario number	USD million	Change in %	USD million	Change in %	USD million	Change in %	USD million	Change in %
2	0.16	0.136	0.02	0.277	0.01	0.086	0.11	0.061
3	9.52	8.059	0.02	0.259	0.01	0.046	9.44	5.315
4	27.13	22.962	0.01	0.207	–0.02	–0.139	27.08	15.243
5	52.16	44.155	0.01	0.196	–0.03	–0.217	52.14	29.344
7	0.24	0.204	0.04	0.636	0.02	0.13	0.18	0.102
8	9.50	8.043	0.05	0.668	0.03	0.221	9.48	5.338
9	27.11	22.946	0.04	0.617	0.01	0.037	27.12	15.266
10	53.36	45.165	0.13	1.853	0.50	3.491	52.79	29.713
Average	22.40	18.959	0.04	0.589	0.07	0.457	22.29	12.548
Standard deviation	21.40	18.117	0.04	0.55	0.18	1.234	21.31	11.991
Minimum	0.16	0.136	0.01	0.196	–0.03	–0.217	0.11	0.061
Maximum	53.36	45.165	0.13	1.853	0.50	3.491	52.79	29.713

Source: WIOD.org; authors' calculations.

An almost identical development can be observed in the case of net exports. Scenarios 2 and 7 independent from elasticities estimated in the background studies are the pessimistic projections. A high standard deviation roughly equal to the average is proof of the relationship between expected impacts and estimated elasticity. An almost total dependence between the development of net exports of the automotive industry and total net exports confirms the dominant position of the selected industry in the exports of final commodities from Slovakia to Canada. It is important to realise that in the context of net exports, total net exports can be lower than the value of net exports for a selected industry (cf. scenario 9). This situation is caused by Slovakia's balance of trade deficit with Canada in certain industries. An example of this can be found in machinery industry in scenarios 4 and 5, where a net decrease of the exports of Slovak products to Canada and a worsening of the balance of trade in that industry is expected (Table 12).

Traditionally, the effects on employment are the subject of the most frequently asked questions in economic policy issues. This is no different in the case of international trade and international agreements. The following table shows an overview of the selected scenarios described in detail in the previous part. These scenarios also assume a certain change in the volume of Slovakia's direct exports of final products to Canada. The implementation of the agreement and the liberalisation of duty rates connected with the increase in the volume of exports should create 148 to 457 jobs in Slovakia. The distribution of scenarios is in line with the results described above, i.e. higher elasticities in accordance with an increase in the exports of cars contribute to a more positive development of the assessed indicator.

T a b l e 13

Effects on Employment in Slovakia

	Effects on employment in the whole economy		**Effects on employment in electronics industry**		**Effects on employment in machinery industry**		**Effects on employment in automotive industry**	
Scenario number	Jobs	Change in %	Jobs	Change in %	Jobs	Change in %	Jobs	Change in %
2	157	0.007	7	0.0006	21	0.0007	13	0.001
3	148	0.007	4	0.0003	20	0.0007	32	0.0026
4	250	0.011	5	0.0004	34	0.0012	84	0.0068
5	396	0.018	6	0.0004	53	0.002	157	0.0127
7	232	0.011	11	0.0008	30	0.0011	18	0.0015
8	198	0.009	7	0.0005	27	0.001	35	0.0028
9	300	0.014	7	0.0005	41	0.0015	87	0.007
10	457	0.021	9	0.0006	67	0.0024	162	0.013
Average	267	0.012	7	0.0005	37	0.0013	74	0.0059
Standard deviation	111	0.005	2	0.0002	16	0.0006	60	0.0048
Minimum	148	0.007	4	0.0003	20	0.0007	13	0.0010
Maximum	457	0.021	11	0.0008	67	0.0024	162	0.013

Source: WIOD.org; authors' calculations.

While in the case of value added and even more so in the case of exports, the automotive industry accounted for almost all of the total impact, in the case of employment, new jobs will be created across the whole economy. This fact is caused by high labour productivity in the examined manufacturing industries. Scenario 2, which is independent from the estimates of the elasticity parameter, can serve as an example. A constant increase in the volume of exports by 0.05% would bring almost 157 new jobs, out of which only 13 would be created in the strategic automotive industry dominant in exports. In the optimistic variants 7 and 10, the high labour productivity is balanced comparatively by a higher elasticity of the industry to the changes in duty rates. By taking all scenarios into account, it can be expected that, on average, the total employment will increase by more than 267 jobs in Slovakia (Table 13). However, this only accounts for approximately 0.01% of the current total employment.

Conclusion

From the point of view of international trade, it is especially intra-EU trade that is important for Slovakia. In the long term, Canada is the target country for only a relatively very low percentage of Slovakia's total exports (0.4% in 2016). Canada does not represent an important trading partner for Slovakia from the viewpoint of imports either (0.1%). In Slovakia's exports to Canada, the dominating sector is, without question, the automotive industry (73% of Slovakia's total exports to Canada), while cars, i.e. final products, make up the most significant part of the total exports. The automotive industry is then followed by machinery industry (11%) and electronics industry (4%). Intermediates dominate in Slovakia's imports from Canada in the automotive industry, which is connected to the fact that the production of structures and components accounts for more than half of the total volume of production in the automotive industry in Canada. From the perspective of Slovakia's total imports from Canada, the most dominant sector is the mining industry (39%). The removing of tariff and non-tariff barriers for Slovak importers could thus help reduce the costs of enterprises for inputs needed for the production of final products.

Only less than one per cent of the total number of exporting firms in Slovakia (irrespective of the industry) export to Canada. As far as Slovakia's export to Canada in the automotive industry is concerned, the number of small and medium-sized enterprises active in this field was roughly equal to large companies. Direct benefits arising from the elimination of tariff and non-tariff barriers after adopting CETA in this industry will be divided among a relatively small number of firms (in 2016, the number of exporters to Canada in the automotive industry was as low as 11 enterprises). The development of the automotive industry in Slovakia is at present largely dependent on foreign demand in the markets of our most important trade partners. From this perspective, concluding a free trade agreement with Canada could mean an opportunity for the car-producing companies active in the territory of Slovakia for a greater diversification of export markets. However, a great deal of the production in automotive industry, but also machinery industry and electronics industry is concentrated in the region of Western Slovakia, which means that the potential benefits arising from concluding the CETA agreement would not be spread evenly across Slovakia.

However, it is the small and medium-sized enterprises that make up the vast majority of the total number of firms exporting to Canada in electronics industry and machinery industry, and it is these firms that should benefit from adopting CETA the most. From the point of view of imports, it is again the small and medium-sized enterprises that should have the greatest benefit. The gradual removal of tariff and non-tariff barriers to trade can help to partially increase the competitiveness

of Slovak small and medium-sized enterprises in the Canadian market, as under present barriers to international trade, they can hardly compete with established large companies or transnational corporations.

No significant impact on the state budget of the Slovak Republic is expected as a result of the removal of customs duties on most of the traded goods and services either. This is also documented by the fact that the value of customs duties for goods from the automotive industry, electronics industry and machinery industry with Canada as the declared country of origin only accounted for roughly 0.5% of the total selected customs duties in Slovakia connected with imports from all third countries.

In general, it can be stated that CETA should have a relatively low but still positive impact on the Slovak economy. Based on different variants of development, it is expected that the average impact of CETA on the Slovak economy, as a result of removing tariff barriers, will amount to 0.013% of GDP. It can also be expected that there will be a relatively low but still positive impact on job creation, which was estimated only at 0.012% of the total employment. Removing the tariff barriers should lead to an increase in exports to Canada on average by 8%, in the event of a strong reaction to a price drop even by 18%.

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