



HODNOTENIE POĽSKO-SLOVENSKÝCH OBCHODNÝCH VZŤAHOV V OBDOBÍ ROKOV 2010-2015

THE EVALUATION OF POLISH-SLOVAK TRADE RELATIONS BETWEEN 2010 AND 2015

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Postupné otvorenie poľskej ekonomiky viedlo k narastú intenzity jej medzinárodných obchodných vzťahov. Gravitačné vplyvy Európskej únie sú dôležitou črtou geografického vzorca poľského zahraničného obchodu. Napriek tomu, že Slovensko sa nachádza tak blízko k Poľsku, jeho význam ako obchodného partnera Poľska nie je obrovský. Hlavným cieľom článku je analyzovať vývoj obchodných vzťahov Poľska so Slovenskom v rokoch 2010 až 2015. Analýza zohľadňuje objem, dynamiku a komoditnú štruktúru poľského obchodu so Slovenskom. S pomocou implementácie Balassoveho indikátora odkrytých komparatívnych výhod (RCA) a Grubelovho-Lloydoveho indexu vnútroodvetvového obchodu (IIT) bola preskúmaná konkurencieschopnosť poľského tovaru na slovenskom trhu.

Kľúčové slová: Poľsko, Slovensko, medzinárodný obchod, odkryté komparatívne výhody, vnútroodvetvový obchod

Gradual opening of the Polish economy has resulted in rising intensity of its international trade relations. Gravitation of the European Union is an important feature of geographical pattern of Poland's foreign trade. Although Slovakia is located so close to Poland, its significance as Poland's trade

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partner is not enormous. The main aim of the article is to analyse the evolution of Poland's trade relations with Slovakia from 2010 to 2015. The analysis embraced value, dynamics and commodity pattern of Poland's trade with Slovakia. Competitiveness of the Polish goods on the Slovak market was studied with the implementation of B.Balassa's revealed comparative advantage indicator (RCA) and H.G.Grubel-P.J.Lloyd's intra-industry trade indicator (IIT).

Key words: Poland, Slovakia, international trade, revealed comparative advantage, intra-industry trade

JEL: F14, F15

1 INTRODUCTION

Openness of an economy is reflected in its international trade relations (Budnikowski 2003, Krugman & Obstfeld, 2007). Engagement in regional economic integration processes results in higher specialisation, trade creation and trade diversion effects (Gradzewicz & Hagemeyer & Żółkiewski 2011, Milleville 2009, Moussis 2015). Economic transition and gradual opening of Poland and Slovakia have resulted in considerable structural changes of the two economies. Integration into the European Union (EU) structures was one of the primary objectives of both Poland's and Slovakia's transformation (Kołodziejczyk 2016, Poláčková 1994). The accession to the European Union in 2004 created favorable conditions for the development of economic cooperation (Borowiec 2011). Poland and Slovakia became members of single European market, which intensified the economic relations with other EU member states (Małuszyńska 2009). The depth of EU integration seems to be particularly significant here. One should note that there are crucial differences between the advantages resulting from integration on the level of free trade area or customs union and the ones stemming from single market or economic and monetary union. Free trade area or customs union does embrace integration of markets of goods only. They are considered an important determinant for intensification of traditional, inter-industry division of labor. When it comes to single European Market which includes four freedoms, i.e. free movement of goods, free movement of services, free movement of people (both labor and economic activity) as well as free movement of capital, it is regarded as a good starting point for the creation and intensification of intra-industry specialization. Single European market activates four freedoms and this is how it includes all phases of social economic process in an open economy – not only the exchange, but also production and consumption (consumer preferences get more and more alike in an international scale). Economic and monetary union, as an even deeper integration, does bring further stimulus for intensification of trade – common currency is seen as a sign of higher level of trade liberalization.

Therefore, it seems important to note that Slovakia adopted euro and joined the 3rd stage of Economic and Monetary Union in 2009, while Poland still operates outside euro zone (Sulmicki 2009). That means that Slovakia has been subject to common monetary policy and exchange rate policy of European Central Bank since 2009. On the other hand, Poland is still entitled to deal with its own monetary policy and exchange rate policy. When it comes to Poland's exchange rate policy, one should observe that since April 2000 the exchange rate of Polish Zloty is a flexible one, it is not subject to any limitations. What's more, Poland has not entered Exchange Rate Mechanism II (ERM II), yet. Therefore, Polish Zloty to Euro exchange rate is not stabilized within ERM II (NBP, 2017). Since 2009 extremely low interest rates have been characteristic for both European Central Bank monetary policy and monetary policy conducted by National Bank of Poland – historically low levels of interest rates were noted (EBC 2016; EBC 2015).

The fact that Slovakia has belonged to euro zone since 2009 and Poland is still outside euro zone creates an important determinant for Poland-Slovakia trade relations. Majority of foreign trade transaction between Polish and Slovak partners are expressed in euro since euro is an international currency and Polish Zloty does not possess such status. According to National Bank of Poland (NBP) survey Euro is used in more than 92% of export and import transactions of Polish economic entities (NBP, 2011). One should note here that Polish Zloty to Euro exchange rate fluctuations constitute an important determinant for economic activity of Polish companies.

The main aim of the paper is to evaluate the development of Polish-Slovak trade from 2010 to 2015. An attempt has been made to analyze the value, dynamics, balance and commodity pattern of trade between Poland and Slovakia. Competitiveness of the Polish goods on the Slovak market was studied in order to determine fields of revealed comparative advantage as well as to measure intensity of intra-industry trade.

2 TRADE BETWEEN POLAND AND SLOVAKIA AGAINST THE BACKGROUND OF POLAND'S TRADE WITH THE EUROPEAN UNION AND THE WORLD – VALUE AND DYNAMICS

According to theory of regional economic integration, the higher the intensity of economic co-operation (in that international trade co-operation), the higher the economic effectiveness in international economic integration and economic benefits for countries participating in international economic integration processes. The question is: What is the intensity of Poland's foreign trade? How important is the EU as Poland's trade partner in both exports and imports? How intense is Poland's trade with Slovakia?

Tables 1 and 2 present Poland's foreign trade from 2010 to 2015. One can observe continuous rise of Poland's total exports as well as its exports to the EU and to Slovakia.

Table 1: Poland's exports to the world, the EU and Slovakia from 2010 to 2015 (thousand EUR)

<i>Specification</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>
Poland's exports to the world	120373100	136693900	143456100	154994000	165773600	179578200
Poland's exports to the EU	95286300	106620500	109080000	116292800	128398400	142543200
Poland's exports to Slovakia	3255170	3356659	3725144	4090609	4203642	4612197

Source: Central Statistical Office, 2015; Central Statistical Office, 2016.

In 2010, Poland's total exports amounted to EUR 120,4 billion, while in 2015 it reached EUR 179,6 billion. Poland's exports to the EU increased from EUR 95,3 billion to EUR 142,5 billion in the analyzed period of time. In 2010 Poland exported goods worth EUR 3,25 billion to Slovakia. In 2015, the value of Polish exports to the Slovak market amounted to EUR 4,61 billion.

Poland's total imports experienced a continuous rise from 2010 to 2015. In 2010, Poland imported goods worth EUR 134,2 billion, while in 2015 Poland's imports reached EUR 177,2 billion. The analysis of the Polish imports from the EU and from Slovakia has not shown such a strong upward tendency. Poland's imports from the EU amounted to EUR 79,8 billion in 2010 and it rose to EUR 91,0 billion a year later. The year 2012, however, marked a reduction of Poland's imports from the EU to EUR 88,6 billion. The remaining years showed a considerable rise in Poland's imports from the EU to as much as EUR 106,4 billion in 2015. The Polish imports from Slovakia amounted to EUR 2,77 billion in 2010 and it reached EUR 3,23 billion in 2012. The next years, however, did not bring further rise in Poland's imports from Slovakia (as a matter of fact there was a slight reduction to EUR 3,1 billion in 2013-2014 and in 2015 the value of Slovak goods on the Polish market equaled EUR 3,22 billion).

Table 2: Poland's imports from the world, the EU and Slovakia from 2010 to 2015 (thousand EUR)

Specification	2010	2011	2012	2013	2014	2015
Poland's imports from the world	134188400	152568400	154040200	156978000	168432300	177232900
Poland's imports from the EU	79848700	91043100	88580800	91803500	99457200	106375000
Poland's imports from Slovakia	2768434	3151426	3229645	3116457	3122891	3224072

Source: Central Statistical Office, 2015; Central Statistical Office, 2016.

Table 3: Poland's balance of trade with the world, the EU and Slovakia from 2010 to 2015 (thousand EUR)

Specification	2010	2011	2012	2013	2014	2015
Poland's balance of trade with the world	-13815300	-15874500	-10584100	-1984000	-2658700	2345300
Poland's balance of trade with the EU	15437600	15577400	20499200	24489300	28941200	36168200
Poland's balance of trade with Slovakia	486736	205233	495499	974152	1080751	1388125

Source: Source: Central Statistical Office, 2015; Central Statistical Office, 2016.

Table 3 presents balance of trade for Poland's relations with the world, the EU and Slovakia. Poland noted trade deficit in its trade with the world until the year 2014. Poland's trade deficit amounted to as much as EUR 13,8 billion in 2010 and a year later it exceeded EUR 15,8 billion. In 2012, Poland's trade deficit was reduced to EUR 10,6 billion, in 2013 it amounted to less than EUR 2,0 billion and in 2014 Poland's trade deficit equaled EUR 2,7 billion. The year 2015 was the very first one with trade surplus for Poland's trade relations with the world (EUR 2,3 billion). When it comes to Poland's relations with the EU and Slovakia, the situation was completely different. Poland experienced a positive balance in its trade with the EU and Slovakia in the analyzed period. Trade surplus in Poland's trade with the EU increased from EUR 15,4 billion in 2010 to EUR 36,2 billion in 2015. Trade surplus in Poland's trade with Slovakia amounted to EUR 500 million from 2010 to 2012, it equaled around EUR 1 billion in 2013-2014 and in 2015 it reached EUR 1,4 billion.

Table 4 presents the share of Slovakia in Poland's total trade and in its trade with the EU from 2010 to 2015. Slovakia accounted for less than 3% of Poland's total exports (its share in Poland's exports was reduced from 2,7% in 2010 to 2,57% in 2015). The share of Slovakia in Poland's exports to the EU amounted to 3,42% in 2010, while in 2015 it accounted for only 3,24%. In the analyzed period of time one could also note a downward tendency with respect

to Slovakia's share in Poland's total imports (from about 2,0% in 2010-2011 to 1,82% in 2015). In 2010-2011, the share of Slovakia in Poland's imports from the EU equaled 3.46-3.47%. In 2012, it reached 3,65% and later it was gradually reduced to 3,03% in 2015.

Table 4: The share of Slovakia in Poland's exports and imports from 2010 to 2015 (%)

Specification	2010	2011	2012	2013	2014	2015
Share of Slovakia in Poland's total exports	2.70	2.46	2.60	2.64	2.54	2.57
Share of Slovakia in Poland's exports to the EU	3.42	3.15	3.42	3.52	3.27	3.24
Share of Slovakia in Poland's total imports	2.06	2.07	2.10	1.99	1.85	1.82
Share of Slovakia in Poland's imports from the EU	3.47	3.46	3.65	3.39	3.14	3.03

Source: Central Statistical Office, 2015; Central Statistical Office, 2016.

Table 5: Dynamics of Poland's trade with the world, with the EU and with Slovakia from 2011 to 2015 (previous year=100)

Specification	2011	2012	2013	2014	2015
Dynamics of Poland's total exports	113.6	104.9	108.0	107.0	108.3
Dynamics of Poland's exports to the EU	111.9	102.3	106.6	110.4	111.0
Dynamics of Poland's exports to Slovakia	103.1	111.0	109.8	102.8	109.7
Dynamics of Poland's total imports	113.7	101.0	101.9	107.3	105.2
Dynamics of Poland's imports from the EU	111.4	97.3	103.6	108.3	107.0
Dynamics of Poland's imports from Slovakia	113.8	102.5	96.5	100.2	103.2

Source: Central Statistical Office, 2015; Central Statistical Office, 2016.

Dynamics of Poland's trade with the world, the EU and Slovakia is presented in table 5. The average growth rate for Poland's total exports equaled 8,4%, with the maximum amounting to 13,6% in 2011. In the case of Poland's trade relations with the EU the average growth rate amounted to 8,4% and it ranged from 2,3% in 2012 to 11,9% in 2011. The average growth rate for Poland's exports to Slovakia amounted to 7,3%; it was the highest in 2012 (11%) and the lowest in both 2011 and 2014 (around 3%), while in 2015 it was close to 10%.

Poland's total imports increased by 5,8% on average, with the maximum amounting to 13,7% in 2011. The average growth rate for Poland's imports

from the EU equaled 6% and it reached its maximum – 14% in 2011. The Polish imports from Slovakia increased by 3.2% on average (with its maximum in 2011 – almost 14%).

3 COMMODITY PATTERN OF POLAND'S TRADE WITH SLOVAKIA

Tables 5 and 6 present commodity pattern of Polish-Slovak trade by CN sections. There were three leading sections in Poland's exports to Slovakia:

- section XV – Base metals and articles thereof,
- section XVI – Machinery and mechanical appliances, electrical and electrotechnical equipment,
- section XVII – Transport equipment.

They accounted for about 50% in 2010 and for around 41% in 2015. One should, however, note that the significance of sections XV and XVI has been gradually decreasing while a gradual increase of the importance of section XVII has been observed. Why did the above-mentioned sections XV, XVI and XVII constitute the core of Poland's exports to Slovakia? It is of vital importance to underline the fact that the position of section XV – Base metals and articles thereof in the Polish exports to Slovakia reflected economic ties between the two economies in traditional areas (raw material intensive heavy industry). When it comes to the significance of sections XVI and XVII (Machinery and mechanical appliances, electrical and electrotechnical equipment and Transport equipment, respectively), the export activity of Poland in those new industries was strongly connected with dynamic development of those industries in Poland thanks to foreign direct investment.

Six more sections should be mentioned as far as Poland's export to Slovakia is concerned:

- section V – Mineral products (its share ranged from 14% in 2011 to around 7% in 2014-2015);
- section VII – Plastics and rubber and articles thereof (it accounted for about 8-9% in the analyzed period of time);
- section IV – Prepared foodstuffs (the share of this section ranged from 6,4% to 7,7%);
- section VI – Products of the chemical industry (its share increased from 4,8% in 2010 to 7,0% in 2015);
- section I – Live animals, animal products (it accounted for 4,8% - 5,7%);
- section XIX – Miscellaneous manufactured articles, in that furniture and toys (its share rose from 4,3% to 6,1% in the analyzed period of time).

Table 6: Commodity pattern of Poland's exports to Slovakia by CN sections from 2011 to 2015 (%)

<i>Section</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>
I	4.79	5.28	5.55	5.76	5.72	5.33
II	1.09	1.04	1.32	1.49	1.47	1.78
III	0.53	0.69	1.13	2.57	2.14	1.99
IV	6.41	6.46	7.71	7.68	7.31	7.10
V	10.69	13.99	8.51	7.65	6.83	7.00
VI	4.83	6.13	5.54	6.30	7.38	7.02
VII	7.71	8.78	8.99	8.61	8.97	8.66
VIII	0.43	0.48	0.39	0.47	0.51	0.47
IX	1.90	1.88	2.58	2.65	2.24	2.20
X	2.04	2.71	2.06	2.02	2.13	1.98
XI	2.36	2.71	2.60	2.55	3.10	3.56
XII	0.41	0.44	0.57	0.71	0.95	1.06
XIII	2.61	3.03	3.07	3.13	3.28	3.08
XIV	0.00	0.00	0.95	0.28	0.00	0.19
XV	22.71	17.21	17.00	16.44	16.07	15.00
XVI	19.09	13.50	14.37	13.93	13.40	12.98
XVII	7.69	10.04	11.21	11.34	11.15	13.03
XVIII	0.37	0.78	1.16	1.18	1.37	1.46
XIX	4.33	4.80	5.27	5.22	5.74	6.09
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00

Description of CN sections: I – Live animals, animal products; II – Vegetable products ; III –fats and oils; IV – Prepared foodstuffs; V – Mineral products; VI – Products of the chemical industry; VII – Plastics and rubber and articles thereof; VIII – Raw hides and skins, articles thereof ; IX – Wood and articles of wood; X – Pulp of wood, paper, paperboard and articles thereof; XI – Textiles and textile articles; XII – Footwear, headwear and articles thereof; XIII – Articles of stone, ceramic products, glass; XIV – Pearls, precious stones and metals, articles thereof; XV – Base metals and articles thereof; XVI – Machinery and mechanical appliances, electrical and electrotechnical equipment; XVII – Transport equipment; XVIII – Optical, photographic, measuring, checking instruments; XIX – Miscellaneous manufactured articles (furniture, toys).

Source: Own calculations based on data from: Central Statistical Office, 2015; Central Statistical Office, 2016.

On the imports side the following five sections were prevailing:

- section XV – Base metals and articles thereof,
- section XVI – Machinery and mechanical appliances, electrical and electrotechnical equipment,
- section XVII – Transport equipment,
- section V – Mineral products,
- section VII – Plastics and rubber and articles thereof.

Altogether, they stood for more than 67% in 2010 and nearly 61,5% of Poland's imports from Slovakia in 2015. Section XV - Base metals and articles thereof was the number one. It accounted for more than 25% from 2010 to 2012 and about 22% in 2015. Machinery and mechanical appliances, electrical and electrotechnical equipment constituted the second most important section in Poland's imports from Slovakia; its share ranged from 17,8% to 25,7% in the analyzed period. Section XVII – Transport equipment stood for 8,7% in 2010-2011 and its share gradually increased up to 10,6-10,7% in 2014-2015. Section V – Mineral products was quite important in Poland's imports from Slovakia until the year 2013. Mineral products represented 11,6% in 2010, 15,3% in 2011 and around 13% in 2012-2013. Later a considerable reduction of this section's importance in Poland's imports from Slovakia was observed – as a result, section V stood for only 8,6% in 2014 and 6,5% in 2015. Plastics, rubber and articles thereof represented around 8-9% of Poland's imports from Slovakia from 2010 to 2015.

Table 7: Commodity pattern of Poland's imports from Slovakia by CN sections from 2011 to 2015 (%)

Section	2010	2011	2012	2013	2014	2015
I	1.07	1.00	0.99	1.49	1.67	2.07
II	3.51	3.77	3.87	3.62	3.46	0.54
III	0.11	0.15	0.16	0.08	0.24	0.10
IV	3.18	3.48	4.60	3.82	3.27	3.54
V	11.65	15.32	13.19	13.10	8.63	6.50
VI	4.52	5.64	4.45	4.36	5.07	4.20
VII	8.21	8.58	7.69	8.81	7.76	8.58
VIII	0.14	0.38	0.46	0.19	0.71	0.99
IX	2.05	2.25	2.28	1.93	2.12	2.07
X	2.97	2.89	2.74	3.12	3.38	3.53
XI	0.56	0.55	0.57	1.56	2.45	6.32
XII	0.40	0.63	1.08	0.85	0.61	0.62
XIII	0.64	0.88	0.67	0.74	0.84	0.95
XIV	0.00	0.00	0.75	0.01	0.00	0.03
XV	25.73	25.97	25.59	22.91	23.88	21.70
XVI	24.58	17.78	19.58	21.66	22.03	20.49
XVII	8.66	8.67	9.09	9.30	10.70	10.62
XVIII	0.50	0.48	0.68	0.76	1.10	1.21
XIX	1.50	1.56	1.56	1.65	2.05	2.75
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00

Source: Own calculations based on data from: Central Statistical Office, 2015; Central Statistical Office, 2016.

The following companies were responsible for the export of „the Polish export hits“ in the Slovak market: Saba (car parts), COMPLEX (industrial, automotive and agricultural machinery), Inter Cars (car parts), Media – Tech (computer industry), KGHM Polska Miedź Polska S. A. (metallurgy industry), Żywiec (beer), Lech (beer), LPP - Reserved (clothing industry), CCC (footwear), BUD-MASZ (metallurgy industry machinery), FAM Capital Group (construction industry) (Bogacz, 2016; EXPORT GROUP, 2017).

4 THE EVALUATION OF REVEALED COMPARATIVE ADVANTAGE OF POLISH GOODS ON THE SLOVAK MARKET

Export competitiveness can be measured with the application of a number of indices, including index of revealed comparative advantage (Wydymus & Bombińska & Pera, 2012). In order to determine the areas of revealed comparative advantage in Poland's trade with Slovakia, B. Balassa's formula was used:

$$RCA_{iy} = \frac{\frac{Ex_{iy}}{\sum Ex_{iy}}}{\frac{Im_{iy}}{\sum Im_{iy}}},$$

where i – commodity section, y – trade partner, Ex – exports, Im – imports. If RCA is higher than one, one may assume that the analyzed country achieves comparative advantage in trade with its trade partner in case of commodity section i. (Pluciński, 2015; Benedictis & Tamperi, 2001; Laursen, 2015)

The results of calculations are presented in table 8. From 2010 to 2015 Poland gained comparative advantage in trade with Slovakia in the following commodity sections:

- section I – Live animals, animal products (RCA ranged from 2.57 to 5.63);
- section III – Fats and oils (RCA was higher than 4.6 in the analysed period of time and it is worth mentioning that it amounted to as much as 19.99 in 2015 and to 31.78 in 2013);
- section IV – Prepared foodstuffs (RCA was close or over 2.0 in the analyzed period of time);
- section VI – Products of the chemical industry (RCA was close to 1.1 in 2010-2011, then it rose up to 1.67 in 2015);
- section XIII – Articles of stone, ceramic products, glass (RCA ranged from 3.24 to 4.59 in the analyzed period of time);
- section XIX – Miscellaneous manufactured articles (in that: furniture, toys) (RCA ranged from 2.57 in 2015 to 5.63 in 2012).

The above-mentioned sections constituted the areas of inter-industry specialization in Poland's co-operation with Slovakia. They were all raw-material intensive industries, traditional industries. Those six CN sections accounted for around 25% of Poland's exports to the Slovak market.

With respect to some other sections comparative advantage was observed in first years of the analyzed period of time (sections XI – till 2014). A different situation was noted with respect to section IX – Wood and articles of wood and section XVIII - Optical, photographic, measuring, checking instruments: Poland has gained comparative advantage in trade with Slovakia since 2012 and 2011. In the case of sections VII, VIII, XII, XVII the situation changed dynamically and periods with Poland's revealed advantage on the Slovak market changed with the ones without such an advantage.

Table 8: Revealed comparative advantage in Poland's trade with Slovakia from 2011 to 2015

Section	2010	2011	2012	2013	2014	2015
I	4.47	5.29	5.63	3.86	3.43	2.57
II	0.31	0.28	0.34	0.41	0.43	3.29
III	4.94	4.62	7.05	31.78	8.96	19.99
IV	2.02	1.86	1.68	2.01	2.23	2.01
V	0.92	0.91	0.65	0.58	0.79	1.08
VI	1.07	1.09	1.24	1.44	1.46	1.67
VII	0.94	1.02	1.17	0.98	1.16	1.01
VIII	3.01	1.25	0.84	2.54	0.72	0.47
IX	0.93	0.84	1.13	1.37	1.06	1.06
X	0.69	0.94	0.75	0.65	0.63	0.56
XI	4.18	4.92	4.56	1.63	1.26	0.56
XII	1.01	0.70	0.52	0.84	1.55	1.71
XIII	4.06	3.45	4.59	4.21	3.89	3.24
XIV	-	-	1.27	26.31	-	6.24
XV	0.88	0.66	0.66	0.72	0.67	0.69
XVI	0.78	0.76	0.73	0.64	0.61	0.63
XVII	0.89	1.16	1.23	1.22	1.04	0.12
XVIII	0.74	1.62	1.70	1.55	1.25	1.20
XIX	4.47	5.29	5.63	3.86	3.43	2.57

Source: Own calculations.

5 INTENSITY OF INTRA-INDUSTRY TRADE IN POLISH-SLOVAK RELATIONS

Intra-industry trade constitutes an important element of international trade. Intra-industry trade means simultaneous export and import within the same industry (Kawecka-Wyrzykowska 2009). Intra-industry trade flows take a stand permanently; there are no mechanisms which would eliminate them (Molendowski 2006). Some economists claim that the more developed the economies the more intense intra-industry trade between them (Czarny 2003, Davis 1995).

The intensity of intra-industry trade in Polish-Slovak relations was measured with the application of H.G.Grubel-P.H.Lloyd's formula for IIT index:

$$IIT_i = \frac{(Ex_i + Im_i) - |Ex_i - Im_i|}{(Ex_i + Im_i)} = 1 - \frac{|Ex_i - Im_i|}{(Ex_i + Im_i)},$$

IIT index ranges from zero to one. If IIT index is close to one strong intra-industry trade is observed, if it is close to zero inter-industry trade is the case (Budnikowski 2003, Pluciński 2015). The results of analysis are presented in table 9. One should note an intensive intra-industry trade between Poland and Slovakia for the following CN sections:

- section V – Mineral products (IIT index ranged from 0,79 to 0,96);
- section VII – Plastics and rubber and articles thereof (IIT index ranged from 0,78 to 0,96);
- section IX – Wood and articles of wood (IIT ranged from 0,71 to 0,96);
- section X – Pulp of wood, paper, paperboard and articles thereof (IIT index ranged from 0,89 to 1,00);
- section XV – Base metals and articles thereof (IIT index ranged from 0,83 to 0,99);
- section XVI – Machinery and mechanical appliances, electrical and electronic equipment (IIT index ranged from 0,89 to 0,95).

In addition to that, a rising intensity of intra-industry trade was noted in case of section XI – Textiles and textile articles. On the other hand, a decreasing intensity of intra-industry trade in Polish-Slovak relations was observed for:

- section VI – Products of the chemical industry (IIT index reached 0,89-0,93 in 2010-2011, while in 2015 it was reduced to 0,59 only);
- section XII – Footwear, headgear and articles thereof (IIT index ranged from 0,92 in 2010 to 0,58 in 2015);

- section XVII – Transport equipment (IIT index was the highest in 2010 when it reached 0,98, and its minimum was noted in 2015 – 0,30 only);
- Section XVIII – Optical, photographic, measuring, checking instruments (maximum of IIT index was observed in 2010 – 0,93, the next years brought a downward tendency with IIT index ranging from 0,66 to 0,75).

Table 9: Intensity of intra-industry trade between Poland and Slovakia from 2011 to 2015

<i>Section</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>
I	0.32	0.30	0.27	0.33	0.36	0.43
II	0.53	0.46	0.57	0.70	0.73	0.35
III	0.29	0.34	0.22	0.05	0.15	0.07
IV	0.59	0.67	0.68	0.55	0.50	0.52
V	0.96	0.99	0.85	0.87	0.97	0.79
VI	0.89	0.93	0.82	0.69	0.68	0.59
VII	0.95	0.96	0.85	0.88	0.78	0.82
VIII	0.44	0.86	0.98	0.46	0.98	0.81
IX	0.96	0.94	0.87	0.71	0.83	0.79
X	0.89	1.00	0.93	0.92	0.92	0.89
XI	0.34	0.32	0.32	0.64	0.74	0.89
XII	0.92	0.86	0.75	0.95	0.65	0.58
XIII	0.35	0.43	0.32	0.31	0.32	0.36
XIV	-	-	0.81	0.06	-	0.20
XV	0.98	0.83	0.87	0.97	0.95	0.99
XVI	0.95	0.89	0.92	0.92	0.90	0.95
XVII	0.98	0.90	0.83	0.77	0.83	0.30
XVIII	0.93	0.73	0.68	0.66	0.75	0.73
XIX	0.32	0.30	0.27	0.33	0.36	0.43

Source: Own calculations.

In 2010, 84% of Polish-Slovak trade could be described intra-industry co-operation: it is important to stress the fact of really intensive intra-industry trade in the case of both Machinery and mechanical appliances, electrical and electrotechnical equipment and Transport equipment. In 2015 intra-industry co-operation between Poland and Slovakia represented 70% of their bilateral trade: intra-industry character of trade in Machinery and mechanical appliances, electrical and electronic equipment seems to be particularly important here. On the other hand, decreasing intensity of intra-industry specialization especially in

the field of Transport equipment is quite problematic; it is recommended to undertake actions to reverse this tendency.

8 CONCLUSIONS

The processes of regional economic integration of the European Union are interrelated with the processes of globalization of production and globalization of markets. Despite long and deep integration, the European Union should not be seen as homogenous market. One ought to take into consideration disparities among EU Member States. Therefore, the analysis of bilateral trade relations inside the EU e.g. trade between Poland and Slovakia does include a more practical aspect: sector or industry competitiveness is different in the case of every EU Member State, as well as in the case of the average for the EU. What's more, the importance of each EU Member State in Poland's trade relations is different. The analysis focused on Poland's trade with Slovakia.

There are four crucial elements that create favourable conditions for the development of Polish-Slovak trade relations: close geographical location, membership in the European Union language likeliness and cultural proximity. The fact that Slovakia is a member of Euro zone, while Poland has not joined the 3rd stage of Economic and Monetary Union does constitute an important determinant of Polish-Slovak economic co-operation (in that: bilateral trade). Even though Poland does not belong to Euro zone, more than 92% of foreign trade transactions concluded between Polish companies and EU partners are expressed in Euro.

Poland does co-operate with Slovakia in many areas, merchandise trade being one of the most important fields of co-operation. The value of Poland's exports to Slovakia increased from EUR 3,2 billion to EUR 4,6 billion in the analysed period of time. At the same time Poland's imports from Slovakia rose from EUR 2,8 billion to EUR 3,2 billion. A significant surplus in Poland's trade with Slovakia was observed: it exceeded EUR 1 billion in 2014 and it was close to EUR 1.4 billion in 2015. However, the share of Slovakia in Poland's total exports was reduced to less than 2,6% and its share in Poland's total imports was reduced to 1.8% in the analysed period of time. When it comes to the share of Slovakia in Poland's trade with the European Union, a similar tendency was observed: Slovakia's share in Poland's exports to the EU was reduced from 3,4% in 2010 to 3,2% in 2015; Slovakia's share in Poland's imports from the EU was reduced to 3,0% in 2015 (while in 2010 it amounted to 3,5%). Three CN sections were prevailing in Poland's exports to Slovakia, namely: Base metals and articles thereof, Machinery and mechanical appliances, electrical and electrotechnical equipment and Transport equipment. The economic ties in traditional fields, in that in raw materials intensive heavy industry, are reflected

in the significance of section XV – Base metals and articles thereof in Poland's exports to the Slovak market. When it comes to the importance of sections XVI and XVII (Machinery and mechanical appliances, electrical and electrotechnical equipment and Transport equipment), the export activity of Poland in those new industries was strongly connected with the development of those industries thanks to the inflow of foreign direct investment into the Polish economy. Several other CN sections were also quite important: mineral products; plastics and rubber and articles thereof; prepared foodstuffs; products of the chemical industry; live animals and animal products.

The implementation of RCA and IIT indices made it possible to find the possible areas of Polish-Slovak inter-industry trade and intra-industry trade intensification. A high level of RCA could be seen as an area with high potential for inter-industry trade. On the other hand, a high level of IIT index was considered an area with high potential for intra-industry trade.

The application of B. Balassa's RCA index let me distinguish the areas of Poland's revealed comparative advantage in trade with Slovakia. In the analysed period of time Poland achieved revealed comparative advantage on the Slovak market in the following sections: I, III, IV, VI, XIII, XIX. Therefore, inter-industry trade between Poland and Slovakia in the above-mentioned sections was prevailing.

Integration of the production processes in the EU goes under the intra-industry specialisation. The undertaken analysis proved a considerably high intensity of intra-industry trade for Polish-Slovak relations. The Grubel-Lloyd intra-industry trade indices for Poland's trade with Slovakia were quite high in a number of CN sections. The greatest intensity of intra-industry trade was noted for the following CN sections: V, VII, IX, X, XV, XVI. Further development of intra-industry trade between Poland and Slovakia should be promoted.

It seems that there is still some potential for strengthening Polish-Slovak co-operation – in some areas inter-industry specialisation will be continued, in other fields intra-industry trade ought to be promoted. Having in mind long-term perspective, one should note that the advantages resulting from participation in intra-industry division of labour are significantly higher than the effects of inter-industry trade.

Undoubtedly, Poland's accession to Euro zone would create even more favourable conditions for further development of Polish-Slovak trade as it would result in the elimination of exchange rate fluctuations and therefore elimination of exchange-rate risk.

Further promotion of intra-industry specialization of Poland's economy (not only in its relations with Slovakia, but generally) should be recommended. Insufficient structural adjustments of the Polish economy, keeping traditional inter-industry trade based on comparative advantages in raw materials-intensive

and labour-intensive products, will result in peripheral position of Poland in the EU. Without necessary adjustments Poland will only take advantages related to a lower level of regional economic integration (free trade area, customs union) and it will not participate in advantages offered by single market or economic and monetary union. As a result Poland will become more subject and liable to internal and external economic shocks in globalised and globalizing economy.

Looking for the area of rational choices in an open economy, membership in the EU structures ought to be treated as an instrument for obtaining the set goal, rather than the goal itself. Poland should get adjusted to the EU market in order to broaden the area of rational choices (in comparison to classic openness of an economy by foreign trade only) and to reduce alternative costs of single European market. At the same time, however, it is necessary to participate in globalization processes of markets.

It is important to stress other areas of Polish-Slovak economic co-operation, in that investment co-operation connected with bilateral transfer of capital in the form of foreign direct investment (FDI). Despite the fact that the overall level of capital transfer in the form of FDI between Poland and Slovakia was rather limited, the size or significance of some Polish investment projects in Slovakia and a number of Slovak investment projects in Poland stood out. The Polish investment projects in Slovakia were connected mostly with distribution of market commodities (construction materials, furniture, foodstuffs, textiles, footwear, and household appliances) and car industry products. The list of biggest Polish investors in Slovakia included: Maspex Wadowice, CanPack, Asseco Poland, Merkury Market, Nowy Styl Group, Black Red White, LPP - Reserved, Cropp, and House, Gatta, Top Secret, Wojas, CCC, Bonprix. The Slovak market was also attractive for consulting companies: Accace, TGC Corporate Lawyers, Acartus. According to Polish Agency of Information and Foreign Investment (PAIiIZ) there were 10 Slovak companies on the list of biggest foreign investors in Poland in 2015, namely: HB Reavis, Slovnaft, ESET, I.D.C. Holding, Vahostav, KOAM, Trade Trans Invest, Asset Portfolio Servicing EKOSERVIS and Accace. Undoubtedly, stronger investment co-operation would stimulate intensification of Polish-Slovak trade turnover.

Another significant element that must be underlined is the co-operation of local authorities, cities and municipalities of Poland and Slovakia. Nine partnership agreements have been signed between the Slovak regions and the Polish regions. More than 250 Polish cities and municipalities co-operated with over 200 Slovak towns and municipalities on the basis of relevant agreements. Co-operation between local government units was most developed in border areas. Convergence of interests in pursuit of the sustainable development of local communities favoured the development of regional co-operation.

Significant impetus for this co-operation was created by the implementation of regional projects financed by EU funds under the INTERREG IIIA Poland-Slovakia 2007-2013 Programme (amounting to about EUR 180 million), as well as the continuation of such activities planned under IINTERREG V-A Poland-Slovakia 2014-2020 program (with the budget of around EUR 155 million).

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