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Szkoła Główna Handlowa w Warszawie

Changes in types of Poland's intra-industry trade in the period 1995–2014 in comparison with the other Central and Eastern European countries – EU members: Conclusions for changes in the competitiveness of Polish foreign trade

This article aims to identify the changes in Poland's intra-industry trade (IIT) in the period 1995–2014 in comparison with the other 9 Central and Eastern European countries (CEECs) – the EU Member States (also referred to as the EU-9) – and to assess the resulting changes in the competitiveness of Polish foreign trade. We analyse the changes in Poland's trade in the context of IIT for several reasons: (a) IIT is considered to be more beneficial than inter-industry specialisation, (b) IIT intensity is an important indication of the degree of convergence of the trading partners, (c) changes in IIT illustrate the evolution of trade competitiveness. The analysis covered Poland's trade with 3 groups of trading partners: the EU-15, the EU-9 and other countries. In order to show the changes in the intensity and nature of intra-industry specialisation, the Grubel-Lloyd index was computed on the basis of the Comtrade database. The main conclusions are as follows: IIT was a vital driver of Poland's trade integration with all three groups of trading partners under examination. Its development indicated a significant improvement in the commodity structure of trade, reflected in a marked rise in the share of vertical intra-industry trade in high-quality products in total trade.

Keywords: intra-industry trade, vertical intra-industry trade, horizontal intra-industry trade, competitiveness, Poland's foreign trade

JEL classification: F14

Zmiany struktury rodzajowej handlu wewnątrzgałęziowego w Polsce w latach 1995–2014 na tle pozostałych państw Europy Środkowej i Wschodniej – członków UE. Wnioski dla zmian konkurencyjności polskiego handlu zagranicznego

Celem artykułu jest pokazanie zmian intensywności i struktury rodzajowej handlu wewnątrzgałęziowego Polski w latach 1995–2014 na tle pozostałych 9 państw Europy Środkowej i Wschodniej – członków UE (zwanych też UE-9) – i ocena na tej podstawie zmian konkurencyjności polskiego handlu zagranicznego. Zmiany w handlu Polski analizujemy przez pryzmat IIT z kilku

powodów: (a) IIT jest uważany za bardziej korzystny od specjalizacji międzygałęziowej i wywołujący mniejsze koszty dostosowawcze, (b) intensywność IIT jest istotnym przejawem stopnia konwergencji partnerów handlowych, (c) zmiany IIT ilustrują kierunki ewolucji konkurencyjności handlu. Analizą objęto handel Polski z 3 grupami partnerów handlowych: UE-15, UE-9 oraz z pozostałymi państwami. W celu pokazania zmian intensywności i charakteru specjalizacji wewnątrzgałęziowej obliczono wskaźnik Grubela-Lloyda w oparciu o bazę danych Comtrade. Główne wnioski są następujące: IIT był istotnym motorem integracji handlowej Polski ze wszystkimi trzema analizowanymi grupami partnerów (aczkolwiek w różnym tempie). Jego rozwój odzwierciedlał też istotną poprawę struktury towarowej handlu, czego wyrazem był znaczący wzrost udziału pionowego handlu wewnątrzgałęziowego produktami wysokiej jakości.

Słowa kluczowe: handel wewnątrzgałęziowy, pionowy handel wewnątrzgałęziowy, poziomy handel wewnątrzgałęziowy, konkurencyjność, handel zagraniczny Polski

Klasyfikacja JEL: F14

Introduction

The reasons for the interest in analysing the changes in Poland's trade in terms of intra-industry trade (IIT), i.e., parallel export and import of products within the same industry, are as follows [Dautovic et al., 2014, pp. 5–6]:

- in the literature, intra-industry trade is considered to be more beneficial than inter-industry specialisation. It offers better exploitation of economies of scale than specialisation based on comparative costs, as the concerned countries can focus on the manufacture of a limited number of products within specific industries. It enables production expansion and fixed cost savings. Specialisation within an industry may also stimulate innovation. Producing varieties of a product increases general knowledge about technology and facilitates the implementation of innovation [Ruffin, 1999];
- there is also a widespread opinion that changes of industry specialisation are easier, faster and require much lesser adjustment costs (especially labour relocation costs) than in the case of inter-industry trade, where the mobility of production factors is lower [Faustino, Leitão, 2009][1];
- theoretically, it is assumed that a rising share in vertical intra-industry trade of products of relatively higher quality (hereinafter referred to as high quality VIIT) in exports than in imports indicates increasing quality competition (at the expense of diminishing price competition). It is accompanied by an improving nature of the international specialisation of production and trade;
- at the same time, a growing share of IIT in horizontally differentiated products (horizontal intra-industry trade, abbreviated as HIIT) implies structural convergence of economies. Theoretically, the greater the similarities between and

[1] That hypothesis was put forward in the 1970s on the basis of observations of developments in IIT [Faustino, Leitão, 2009].

levels of development of trading partners are, the higher the level of HIIT. Therefore, it is seen in the literature as a supplementary tool for the assessment of successful convergence between countries[2];
– the intensity of IIT is also important from the point of view of the degree of preparedness of countries for monetary integration (or to assess the degree of its advancement). According to the theory, a higher level of IIT involves greater synchronisation of business cycles[3], considered to be a key condition for successful monetary integration. We merely indicate it here without further elaboration, on account of the limited volume of the article.

In the light of the above, this article aims to present the changes in the intensity and types of Poland's intra-industry trade in the period 1995–2014 in comparison with other Central and Eastern European countries (CEECs) – EU Member States (EU-9)[4] – and to assess the resulting changes in the competitiveness of Polish foreign trade.

In particular, by analysing the changes in Poland's IIT we wish to assess the changes:
– in the nature of Poland's trade specialisation in the period covered (by comparing changes in low and high quality VIIT),
– in the degree of convergence between the Polish economy and those of the 3 analysed groups of countries (changes in HIIT),
– in the competitiveness of Polish foreign trade in comparison with the other countries of the region.

The analysis covers Poland's trade with 3 groups of trading partners: the EU-9, the EU-15 and other countries ('other'). The period under examination is 1995–2014.

Further, this article presents selected elements of the theory of IIT, later used for the verification of research hypotheses, with a brief review of the empirical studies into the share of IIT in Polish foreign trade. In this context, it also follows and evaluates trends and patterns of IIT in Poland.

[2] However, such an interpretation is not always correct. For instance, in countries abundant in one or more natural resources (Canada and Finland in timber, Norway in natural gas) relatively high shares of inter-industry trade in their total trade may not necessarily mean lower development levels of those countries. The above, however, does not apply to the countries under analysis: Poland and other EU-10 countries; none of them is affluent in major natural resources disrupting the interpretation of IIT indices as measures of convergence with the EU-15 [Richter, 2009, p. 57].

[3] Peter B. Kenen [1969] was the first to point out that strongly diversified economies with a high share of IIT were less susceptible to asymmetric shocks.

[4] Whenever we refer to the CEECs – the EU Member States as Poland's trading partners, we use the abbreviation EU-9, whereas the whole CEEC group in question is referred to as the EU-10.

1. Elements of the theory of intra-industry trade

Due to the fact that the nature and determinants of IIT are widely discussed in the literature, we only focus here on the selected theoretical elements which seem important to the attainment of the research objectives adopted.

In the 1960s, IIT was first noted as a significant phenomenon in the European integration groups (in the Benelux and the EEC), i.e., between countries characterised by similar levels of economic development and factor endowments. That observation seemed to be inconsistent with the then prevailing theory of comparative costs and benefits. It indicated that the source of benefits from trade were differences between the countries concerned and provided for the specialisation of economies in different types of products [Verdoorn, 1960, pp. 291–329; Balassa, 1966]. However, IIT concerned similar products of the same industries, also semi-finished products characterised by a varying degree of processing rather than final goods. Trade took place despite the lack of significant differences in factor endowments. Researchers studying IIT pointed out that important reasons for the occurrence of that type of trade included product differentiation in conditions of monopolistic competition and economies of scale. In addition, such trade is sometimes driven by the seasonal nature of production or differences in transport costs [Czarny, 2002; Ambroziak, 2013; Molendowski, Polan, 2015].

Intra-industry trade is divided into trade in horizontally and vertically differentiated goods (HIIT and VIIT, respectively). The horizontal differentiation of intra-industry trade (HIIT) is usually understood as offering products of a similar quality but with varying non-qualitative attributes. As regards vertically differentiated trade, this refers to trade in varieties of finished goods differing in quality or in finished and semi-finished products manufactured within the same industry [Czarny, Śledziewska, 2010; Hine, Greenaway, Milner, 1998, p. 17].

The criterion to distinguish between the two types of trade is the assessment of product quality, assumed to be based on relative unit prices (unit value) in exports and imports. Such an approach was proposed by Robert Hine, David Greenaway and Chris Milner [1998]. The underlying assumption for that classification is that prices reflect quality differences between the goods traded. It is usually assumed that the deviation of relative unit values in exports and imports for products of an industry of up to 15% indicates HIIT. Vertically differentiated goods are those for which the above threshold is exceeded.

In accordance with theoretical models, VIIT (involving products of varied quality, i.e., within its intra-industry trade a country sells high-quality goods in exchange for low-quality products) tends to take place mainly among economies at different levels of development, income and factor endowment. The theory suggests and empirical studies corroborate that the intensity of vertical trade is stimu-

lated by a growing size of the trading countries, widening gaps in GDP *per capita* between the trading countries and geographical proximity.

With regard to HIIT, it is expected to develop mostly between countries at similar development levels. In other words, a decreasing difference in the intensity of HIIT between a country and its trading partners reflects the process of income convergence (a narrowing income gap between that country and its partners). The development of HIIT, as in the case of vertical IIT, is fuelled by growth in the GDP of trading partners and their geographical proximity, whereas rising differences in GDP *per capita* between partners contribute to a reduced intensity of HIIT.

2. Review of the Polish literature on IIT in Poland

One of the first authors in Poland to carry out more extensive analyses of Poland's IIT was Józef Misala [1985]. Among other things, he observed that Poland and other CEECs specialised then in heavy industry products, with a relatively low share in exports of consumer goods, usually traded within IIT. A comprehensive analysis of Poland's IIT and its determinants in the period 1989–1998 was conducted by Józef Misala and Eugeniusz Maciej Pluciński [2000]. They pointed to a steadily increasing role of IIT in Polish foreign trade.

Much attention to the importance of foreign direct investment (FDI) as a driver of IIT in Poland and in other Visegrad Group countries as well as in the whole group of Central and Eastern European countries in the 1990s and in the 21st century was given by Łukasz Ambroziak [2010; 2012; 2013]. His research unambiguously confirmed the favourable impact of FDI on both horizontal and vertical intra-industry trade of the CEECs.

Andrzej Cieślik [2008] challenged the rather popular assertion on a major impact of multinational enterprises on the development of IIT in 1994–2006. He concluded that growth in intra-industry trade between Poland and the OECD countries was largely driven by factors specific to pairs of countries rather than by operations of MNEs. A number of analyses of the types and commodity composition of IIT in Poland were carried out by Elżbieta Czarny and Katarzyna Śledziewska [2008; 2009]. The authors tended to focus on developments in such trade with the EEC/EU, indicating the scale of changes in comparison with other partners, their determinants as well as prospects of their sustainability in the following years.

An analysis of Poland's IIT in comparison with other Visegrad Group countries in the period 1999–2008 was also conducted by Elżbieta Kawecka-Wyrzykowska [2009a; 2009b]. Among other things, she pointed out that the fastest growth in IIT

in the group of countries concerned (in relations with the EU-15) had taken place in Slovakia and Poland, i.e., the countries to have recorded the lowest IIT indices in the first year of the period covered. As at the end of the period, however, most of the trade of those countries continued to be vertical intra-industry trade, with specialisation in low-quality goods accounting for a predominant share.

Having examined IIT indices in the trade of the Visegrad Group countries with the EU-15 after 2004, Patryk Toporowski [2012] concluded that as a consequence of the crisis those indices had weakened, but temporarily only; in general, IIT proved to be resilient to a more abrupt fall. A similar conclusion was drawn by Edward Molendowski [2013] as well as by Edward Molendowski and Wojciech Polan [2013] with regard to Poland and other Visegrad Group countries, based on the analysis of changes in their trade between 2004 and 2012. The authors also pointed out that throughout the period in question only Poland had noted stronger growth in the indices of IIT with the EU-15 than with the EU-10.

Several authors indicated that a marked increase in IIT in Poland (as well as in other CEECs) had been observed even before EU accession [Toporowski, 2010; Talar, 2012; Kawecka-Wyrzykowska, 2009a; Molendowski, 2006]. An in-depth analysis of changes in Poland's IIT was also carried out by Sylwia Talar [2012] for the period of 1999–2010. The study corroborated a growing share of Poland's IIT in its relations with both EU Member States and third countries. It was a favourable change in the nature of specialisation of the Polish economy.

3. Research methodology

On account of the limited volume of this article, we merely indicate that the calculations are based on the standard Grubel-Lloyd index (the so-called GL index; [Grubel, Lloyd, 1975, pp. 21–36]). It allows to compute the share of two-way trade in the total trade in an industry between two countries[5]. It takes on values from the interval <0.1> or <0.100>. An industry is understood as a group of products at the 4-digit HS code level. The GL indices were calculated on the basis of bilateral trade data for individual industries and then aggregated. IIT was broken down into trade in horizontally and vertically differentiated goods using the ratio of the export unit price to the import unit price of output of specific industries. The export and import unit price difference was assumed at 15%.

[5] In practice, the computation of indices poses a number of methodological problems, cf. [Ambroziak, 2013; Czarny, 2002, p. 186]. Therefore, it is more important to analyse the scale of changes in the IIT index over time rather than its absolute level.

4. Changes in the importance of IIT in Polish foreign trade

Foreign trade in Poland (as in other countries of the region) is dominated by inter-industry specialisation, but with IIT steadily gaining in importance. In 2014, the share of IIT in Poland's total trade jumped by more than 80% on the 1995 figure, i.e., at a rate significantly above the average for the whole group of the countries under analysis (up by ca. 40%). In terms of IIT growth Poland was closely followed by Hungary (by 65%) and slightly outperformed by Bulgaria (by 90%). Much greater increases in IIT intensity, by a factor of ca. 3, were recorded in Romania and Latvia, i.e., in the countries characterised by the lowest levels at the beginning of the period covered (statistical effect)[6]. Despite the relatively significant rise, at the end of the period in question the IIT index in Poland (33.2% of total trade) was still lower in comparison with the top performers, i.e., the Czech Republic and Hungary (39% and 38%, respectively, in 2014). Roughly the same share of IIT in total foreign trade as that of Poland was achieved by Slovenia (32.8%), not much ahead of Romania (30.7%). In the rest of the EU-9 it was below 30% (Table 1).

Similar changes occurred in Poland's trade with all the partners, but they were the strongest in trade with non-EU countries (the share of IIT more than tripled). That phenomenon is mainly attributable to the very low initial level of the IIT index (in 1995 less than 5% of overall trade with the group of countries concerned, whereas the average share in Poland's total trade was then 18%). However, in 2014 the indices of Poland's IIT with non-EU countries continued to be markedly lower than in trade with the EU-15 and the EU-9.

5. Changes in the types of Poland's intra-industry trade in comparison with the EU-9

A rising role of IIT in Polish foreign trade was accompanied by significant changes in its composition by type. Favourable changes included a considerable, nearly threefold, increase in the share of high quality VIIT in total trade in the period 1995–2014 (from 3% to 9%). Due to the dominant (even if steadily decreasing) share of the EU-15 in total trade (on average, around 65% of Polish exports and nearly 60% of imports in the period concerned), that increase largely reflected an even greater rise in the share of high quality VIIT in trade with the EU-15 (from 3% to almost 11%). But growth in the share of the group of goods discussed in trade with the EU-9 was not much lower, whereas that in trade with other partners was even higher.

[6] At the same time, the Czech Republic and Estonia experienced a certain decline in the share of IIT in total trade.

Table 1. Share of IIT in the total foreign trade of Poland and of other EU-9 countries in 1995–2014, as well as IIT by type

Country	Year	IIT				Low quality VIIT				High quality VIIT				HIIT			
		EU-15	EU-10	Other	World	EU-15	EU-10	Other	World	EU-15	EU-10	Other	World	EU-15	EU-10	Other	World
Bulgaria	1996	17.5	15.6	3.8	11.5	10.5	6.0	1.8	5.1	5.6	7.2	1.6	3.3	1.3	2.4	0.4	0.8
	2003	21.9	19.1	6.3	16.2	9.8	5.2	2.1	6.5	8.3	4.1	3.1	5.9	2.7	8.9	0.5	2.3
	2014	28.4	32.3	8.7	21.7	11.4	6.3	1.4	3.9	9.0	10.6	5.0	7.6	5.3	6.3	1.4	3.9
Czech Republic	1995	49.4	39.0	11.7	40.0	37.7	13.8	4.8	26.6	5.8	15.0	3.1	7.1	5.4	9.9	3.3	5.9
	2003	49.7	38.4	11.7	40.1	25.4	11.5	5.6	19.3	17.5	14.5	5.3	14.5	6.7	11.8	0.8	6.3
	2014	47.1	46.7	15.1	38.9	15.1	13.5	6.2	12.5	17.0	18.0	6.9	14.6	14.4	14.4	1.9	11.2
Estonia	1995	25.7	20.1	14.1	21.7	7.2	3.3	1.2	5.1	4.3	10.3	6.3	5.5	8.0	3.3	0.4	5.3
	2003	19.7	20.5	7.6	13.0	8.5	6.6	2.3	5.1	8.6	9.8	4.6	6.1	2.6	4.0	0.7	1.7
	2014	27.7	35.3	6.8	21.4	9.0	10.2	2.3	6.8	8.5	8.4	3.7	6.7	3.6	5.4	0.8	2.9
Hungary	1995	32.7	16.4	6.2	23.6	17.5	4.5	3.2	12.2	9.7	10.0	2.4	7.6	5.4	1.9	0.7	3.7
	2003	35.0	30.6	10.4	28.1	15.5	7.9	3.7	11.6	11.4	14.0	4.2	9.7	7.4	7.3	1.7	5.9
	2014	45.1	44.0	17.8	38.1	14.4	12.8	5.4	11.8	19.7	13.0	8.5	15.6	8.6	12.1	2.0	7.7
Latvia	1995	7.9	19.8	11.1	10.8	5.4	7.3	2.6	4.6	1.6	6.2	6.7	4.2	0.8	6.3	0.8	1.5
	2003	9.8	26.6	7.6	13.0	5.9	9.4	0.0	5.9	2.4	11.1	3.5	4.6	1.5	5.8	1.6	2.4
	2014	22.9	49.5	7.2	29.8	6.7	9.7	2.0	6.8	6.3	13.2	4.2	8.5	2.2	16.5	0.9	7.6
Lithuania	1995	10.2	22.6	15.6	14.4	3.4	11.6	1.3	3.5	2.1	4.2	9.1	5.7	0.6	2.5	1.3	1.2
	2003	17.6	19.2	9.7	14.5	6.3	8.2	2.4	4.9	5.6	6.0	4.8	5.2	5.7	5.0	2.5	4.3
	2014	20.5	40.2	4.7	18.7	9.2	13.4	1.3	7.0	6.7	8.9	2.9	5.7	2.1	14.3	0.5	4.3
Poland	1995	21.5	18.3	4.6	18.1	16.0	9.4	2.8	12.5	3.0	4.2	1.4	3.1	2.5	4.5	0.4	2.4
	2003	35.3	29.8	12.6	29.1	18.6	12.3	3.6	14.2	5.8	8.2	7.3	6.4	10.8	9.0	1.6	8.4
	2014	43.8	37.3	14.6	33.2	20.7	13.3	5.1	14.6	10.5	10.9	5.0	8.7	12.5	13.0	4.5	9.9

Country	Year	IIT				Low quality VIIT				High quality VIIT				HIIT			
		EU-15	EU-10	Other	World	EU-15	EU-10	Other	World	EU-15	EU-10	Other	World	EU-15	EU-10	Other	World
Romania	1995	14.7	17.6	2.5	9.9	8.2	10.7	1.3	5.4	3.5	4.9	0.9	2.4	2.7	1.8	0.2	1.5
	2003	20.3	18.0	4.5	15.6	10.1	8.9	2.1	7.7	7.3	4.1	1.7	5.4	2.8	4.6	0.5	2.3
	2014	37.7	39.0	11.0	30.7	12.7	14.0	4.5	10.7	17.1	14.4	5.3	13.4	4.5	6.7	1.0	4.0
Slovakia	1995	18.6	35.0	2.3	21.8	15.8	14.0	1.1	11.8	1.4	13.7	0.9	6.4	1.3	7.3	0.3	3.6
	2003	35.0	35.4	5.3	29.2	13.3	14.8	1.9	11.4	16.2	10.8	2.8	12.2	5.5	9.9	0.7	5.6
	2014	35.0	42.4	7.4	28.5	11.1	10.8	2.9	8.4	17.5	14.5	2.7	12.1	6.3	17.1	1.7	7.8
Slovenia	1995	31.0	8.4	14.2	25.2	18.7	2.8	7.0	14.7	6.2	4.4	4.1	5.6	5.9	1.1	3.0	4.8
	2003	36.8	19.1	14.4	28.6	24.4	8.6	4.9	17.2	6.5	7.0	5.5	6.2	5.8	3.6	3.1	4.8
	2014	42.0	30.8	18.7	32.8	17.4	9.3	7.3	12.9	12.0	10.9	6.3	9.9	11.7	9.3	4.3	8.9
EU-10	1995	30.2	29.5	7.5	24.3	20.7	11.4	3.1	14.8	5.0	11.3	2.7	5.3	4.0	6.6	1.2	3.7
	2003	35.6	30.8	10.0	28.3	17.6	11.0	3.6	13.1	10.6	10.7	4.8	9.1	7.1	8.7	1.4	5.8
	2014	41.4	41.6	13.0	32.9	15.6	12.6	4.6	11.7	14.4	13.6	5.5	11.5	10.1	12.9	2.6	8.3

Source: As calculated by Ambroziak and Polan within the framework of the grant from the National Science Centre on the basis of the Comtrade database.

The almost threefold increase in the share of high quality VIIT was, with the exception of Romania (a rise by a factor of 5.5, but from a very low 1995 level), the fastest growth in the whole EU-10. In the other countries that proportion usually doubled (being much lower in Estonia and unchanged in Lithuania).

It means that a growing part of IIT represented products of relatively higher quality in exports than in imports. It can be indirectly concluded that products of relatively higher quality in exports than in imports also gained in importance in total trade. The rising proportion of high quality VIIT means that Poland (as well as other EU-10 countries) is no longer a supplier of mostly unprocessed products or low quality processed goods. The country expands its exports of technologically advanced articles.

Apart from the above-mentioned positive changes, Poland also experienced an unfavourable phenomenon. It was an increase in the share of low quality vertical IIT in total trade (by 17%), especially in a situation where several other CEECs noted decreases in that proportion (Bulgaria, the Czech Republic, Hungary and Slovakia). Even less advantageously, the share of the type of trade in question in total trade with the EU-15 went up nearly by 30%. Therefore, although certain sectors witnessed improvement in the commodity structure of trade, such changes were not observed in all industries trading with the EU-15. In 2014, the share of low quality VIIT in total trade was still significantly (almost by 50%) higher than that of high quality trade, even though the difference was much narrower than in 1995 (as little as one-fourth).

The changes described above were probably attributable to robust growth in Poland's trade in semi-finished and finished products (within specific industries), included in vertical IIT. That type of trade develops within multinational enterprises. In other words, increasing low quality VIIT reflects a not very beneficial type of specialisation within industries rather than low quality of exported goods in relation to imported products.

Another positive change in the composition of Poland's IIT was a strong growth in the share of horizontal trade. In 1995, the share of this type of trade in Poland's total trade was quite low: a mere 2.4%. It was marginal in trade with non-EU countries (0.4%). At the same level as the average HIIT index was the intensity of that type of trade with the EU-15 (2.5%), which reflected the dominant share of those countries in Poland's total foreign trade.

Over the following almost 20 years the situation changed significantly: the share of horizontal trade in question increased in the total trade with all partners. As a result, in 2014, as in 1995, the level of HIIT was the highest in Poland's trade with the EU-9. That phenomenon reflected the fact that the level of the economic development of Poland was still relatively the closest to those of the EU-9 countries. However, it must be added that in the period covered the index of HIIT with

the EU-15 showed a fivefold increase, being not much lower than that with the EU-9 in 2014.

As regards to the changes in the intensity of HIIT in Poland in comparison with other CEECs, it must be pointed out that Poland ranked among the countries to experience the strongest changes: the share of the type of trade in question in Poland's total trade increased slightly more than fourfold, i.e., at a rate similar to that of Lithuania and not much slower than Bulgaria (a rise by a factor of 5, but from a considerably lower 1995 level) and Latvia (fivefold growth). A weaker, threefold increase was noted in Romania, whereas a twofold rise was observed in the Czech Republic, Hungary, Slovakia and Slovenia, i.e., in the countries characterised by the highest intensity of HIIT at the beginning of the period in question (4% to 6% of total trade). Estonia experienced a fall in the share of HIIT in total trade.

As a result of those changes, in 2014 the structure of Poland's ITT with all three groups of countries became more similar than 20 years before. The intensities of high quality VIIT and HIIT, considered to be the most beneficial types of specialisation, showed significant convergence. The 2014 levels were slightly lower in relations with the EU-15 than with the EU-9, but the differences were minor (below 1 p.p.). As an exception, trade with other countries continues to be clearly dominated by inter-industry specialisation (ca. 85% of total trade). The remaining 15% of IIT is distributed relatively evenly between all three ITT types discussed. Presumably, that trade occurs mostly between Poland and the most developed non-EU countries included in the group. Even where bilateral flows of trade with those countries show high IIT indices, it is not reflected in the whole group owing to the modest share of those countries in Poland's total foreign trade (the share of the largest partner, i.e., the US, was 2.5% in exports and imports in 2014).

The trends in Poland's foreign trade in 1995–2014 and the proportions found in 2014 are consistent with the theoretical projections. According to the theory, much of IIT between countries at similar levels of economic development is horizontal. In 1995, that index was the highest in Poland's trade with the EU-9. In the mid-1990s, the EU-10 were at the beginning of their transition from centrally planned to market economies; although they were characterised by a similar structure of factor endowment, all of them represented low (or very low) development levels, especially in comparison with the EU-15. The intensity of HIIT in relations with the EU-15 was then less than half of the figure for trade with the EU-9. The situation was fundamentally different 20 years later. The share of HIIT in Poland's intra-industry trade with the EU-15 showed a substantial increase, reflecting the narrowing of the income gap to the partners concerned. It reached almost the same level as that in trade with the EU-9. At the same time, the level of the economic development of Poland became closer to the EU-9 average as well as to the development level of the EU-15. The above changes must be assessed as favour-

able from the point of view of the scale of benefits from international specialisation.

In spite of those positive changes, Poland managed to only partly reduce the gap to the other CEECs in terms of ITT composition. At the end of the period in question, the intensity of high quality VIIT in the majority of the EU-10 was higher than in Poland. Its level was slightly lower only in Lithuania, Estonia, and Bulgaria, whereas in Latvia it was virtually the same as in Poland.

Conclusions

IIT was a driver of Poland's trade in the period 1995–2014. It increased faster than inter-industry trade in relations with all the analysed groups of countries. It played a vital role in expanding trade in the other CEECs as well. A positive change from the point of view of trade benefits, in addition to IIT growth itself, was that the increases resulted mostly from rising high quality VIIT and HIIT. In particular, the share of high quality VIIT in total trade went up significantly, several times. The phenomenon was observed in all 3 geographical directions of trade. To a slightly higher degree it was found in trade with the EU-15 than with the EU-9, as a result of which the intensity of high quality IIT with the two groups of partners became almost the same (11% of total trade with both groups) at the end of the period in question. Therefore, the relations with all the groups of partners showed an increased importance of quality competition (vital mostly in trade in articles of better quality) and a reduced significance of price competition (dominant in trade in lower quality goods).

However, Poland continues to sell mostly products of lower quality in exchange for purchases of high quality products. The index of low quality VIIT went up rather than declined. As a result, in 2014 the ratio of the indices of low quality and high quality VIIT in total trade was slightly over 1.5 (14.6% and 8.6%, respectively). The difference between the two indices was even greater in trade with the EU-15 (double the figure), reflecting the continuing gap in terms of quality and technological advancement of IIT with the countries concerned. At the same time, it is worth emphasising that over the past 20 years the gap has narrowed tremendously.

Despite the fact that the index of low quality VIIT (in Poland's total trade and in trade with all 3 groups of partners) is still above the EU-10 average and the index of high quality VIIT (also in total trade and in trade with all 3 groups of partners) is below the EU-10 average, the distance from the top performers in the EU-10 in terms of specialisation based on the quality of goods traded rather than on their price diminished considerably over the analysed period of 1995–2014.

An unambiguously positive development was the significant rise in the share of HIIT in Polish foreign trade with all 3 analysed groups of countries, in particular the fivefold increase in that proportion in trade with the EU-15. It was the steepest growth in the EU-10. According to the theory, it reflects a narrowing income gap between Poland and those partners. At the end of the period in question, Poland ranked second in terms of intensity of that type of IIT (being outperformed by the Czech Republic, whereas in 1995 it had been fourth to last). Those changes indicate that Poland has been catching up with incomes of the EU-15 (and with those of other countries) faster than the EU-9.

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