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European Union accession and the intensity of intra-industry trade in the new member states in 1995–2014

This article presents a part of the results of a broader analysis aimed to examine the impact of intra-industry trade flows of the new EU member states (the EU-10) on their adjustments to the requirements of the single European market. For the purpose of the analysis, the period covered was broken down into two stages, i.e., the years 1995–2003 (the period before the accession of the countries concerned to the EU) and 2004–2014 (the post-accession period). The stage 2004–2014 was further divided into the years 2004–2008 (before the crisis) and 2009–2014 (after the outbreak of the world crisis). An important factor taken into account were the differences in trade conditions resulting from the liberalisation agreements signed by the countries concerned and, after 2004, from their adoption of the EU common commercial policy rules. The countries under examination were divided into two groups: the EU-15 and the EU-10. The analysis of the intensity of intra-industry trade was based on the aggregate multilateral IIT index computed at the 6-digit CN code level in accordance with the Grubel-Lloyd formula. The article ends with a summary of the most important conclusions from the presented analysis.

Keywords: intra-industry trade, foreign trade of the EU-10, new EU member states, trade liberalisation

JEL classification: F12, F15, F42, F53

Aksesja do Unii Europejskiej i kształtowanie się intensywności handlu wewnątrzgałęziowego nowych państw członkowskich w latach 1995–2014

Artykuł przedstawia fragment wyników szerszej analizy zmierzającej do zbadania wpływu kształtowania się strumieni handlu wewnątrzgałęziowego nowych państw członkowskich (UE-10) na ich dostosowanie do wymogów jednolitego rynku europejskiego. Na potrzeby analizy wyodrębniono dwa etapy, tj. lata 1995–2003 (okres przed przystąpieniem badanych państw do UE) oraz lata 2004–2014 (okres po akcesji). Etap 2004–2014 podzielono następnie na dwa kolejne, tj. lata 2004–2008 (przed kryzysem) oraz 2009–2014 (po wybuchu światowego kryzysu). Ważnym czynnikiem, który brano pod uwagę, były różnice w warunkach prowadzenia wymiany handlowej wynikające z podpisanych przez badane państwa porozumień o liberalizacji, a od 2004 – z przyjęcia przez nie zasad wspólnej polityki handlowej UE. Kraje objęte analizą zostały podzielone na dwie grupy: kraje UE-15 oraz kraje UE-10. Analizę intensywności wymiany wewnątrzgałęziowej

przeprowadzono w oparciu o zagregowany, multilateralny wskaźnik IIT, liczony na poziomie 6-cyfrowych kodów CN wg formuły zaproponowanej przez Grubela i Lloyd'a. Artykuł kończy zestawienie najważniejszych wniosków wynikających z prezentowanej analizy.

Słowa kluczowe: handel wewnątrzgałęziowy, handel zagraniczny krajów UE-10, nowe państwa członkowskie UE, liberalizacja handlu

Klasyfikacja JEL: F12, F15, F42, F53

Introduction

Present-day international trade mostly consists in intra-industry specialisation, based on factor substitution rather than complementarity. Intra-industry trade is also an important form of trade in the single market of the European Union¹. In this aspect, it seems significant to seek an answer to the question whether trade liberalisation arising from EU accession became a driver intensifying such trade and to what degree the current trade linkages between the new EU member states and the EU-15 result from the development of intra-industry specialisation. An important objective of this article was also to examine the impact of intra-industry trade flows of the new EU member states on their adjustments to the requirements of the single European market.

The analysis presented covered the 10 Central and Eastern European countries which had become full members of the European Union following the 'Eastern' enlargement in 2004 or 2007². They are referred to as the 'new member states' or the 'EU-10'. The period of analysis covers the years 1995–2014, i.e., a total of 20 years (9 years before and 11 years after the European Union accession). The selection of 1995 as the initial year of analysis was not coincidental. To begin with, in the countries concerned, 1995 was the first year of the Europe Agreements being in force. They served as the basis for building free trade areas and closer economic cooperation with the Community. Secondly, in 1995 three new countries joined the EU (Austria, Finland and Sweden). From that year to the 'Eastern' enlargement in 2004, the majority of analyses refer to the European Union as the EU-15.

For the purpose of analysing the intensity of intra-industry trade, the period under examination was broken down into two stages, i.e., the years 1995–2003 (the period before the accession of the countries concerned to the EU) and 2004–2014 (the post-accession period). The stage 2004–2014 was further divided into the years 2004–2008 (before the crisis) and 2009–2014 (after the outbreak of the

¹ For more on this subject see: [Czarny, 2002; Jeliński, 2009; Misala, 2005; Misala, Pluciński, 2000; Molendowski, 2007; Zielińska-Głębocka, 1996].

² In order to maintain data comparability, with regard to Bulgaria and Romania the analysis also covers the period from 2004.

world crisis). The trading partners of the countries under analysis were divided into specific groups (trade relations) on the basis of the author's experience gained from previous analyses (see: [Molendowski, 2012, pp. 177–182]). An important factor also taken into account were the differences in trade conditions. Those resulted from the liberalisation agreements signed by the countries under analysis (e.g. CEFTA, BAFTA, the Europe Agreements). From 2004, such differences were a consequence of the adoption of the rules of the EU common commercial policy and of the inclusion in the single European market. Therefore, the following groups of countries were distinguished: the EU-15 (the 15 members of the Community before its enlargement in 2004), the EU-10 (the new EU member states having joined in 2004 and 2007: the Czech Republic, Bulgaria, Estonia, Lithuania, Latvia, Poland, Romania, Slovakia, Slovenia and Hungary)³.

The analysis of the intensity of intra-industry trade was based on the aggregate multilateral IIT index computed at the 6-digit CN code level in accordance with the formula proposed by Grubel and Lloyd [1975, pp. 35–36]. The IIT indices were calculated on the basis of trade data from the WITS-Comtrade database, expressed in the US dollar and in physical units (kg)⁴.

1. Trade liberalisation within regional integration groups and the intensity of intra-industry trade

Accelerated integration processes belong to the main characteristics of the present-day global economy. The scale of its effects, including the benefits of integration, depends on a number of determinants. The static and dynamic effects of regional liberalisation comprise, in particular, the effect of trade creation and trade diversion. In addition, they may be accompanied by dynamic effects such as: changes in competition intensity, an increased scale of investment and the development of intra-industry trade [Molendowski, Polan, 2015, pp. 17–18].

Even the earliest studies of factors influencing intra-industry trade (characteristic of both partner countries and industries) confirmed the interrelation between regional liberalisation and the development of IIT. Balassa and Bauwens [1987] demonstrated a positive relationship between intra-industry trade and the partners' membership in regional free trade agreements (EEC, EFTA, LAFTA). A significant contribution in this respect was made by Loertscher and Wolter [1980], who identified the most important factors shaping the level of intra-industry trade.

³ Without Malta and Cyprus – the countries were excluded due to their specific characteristics distinguishing them from the other new EU member states.

⁴ For more on the methods for the measurement of the intra-industry trade intensity see: [Ambroziak, 2013, pp. 53–68; Czarny, 2002, pp. 182–193].

Preferential trade introduced between integrating economies in the liberalisation process affects the scope and the geographical composition of trade as well as the production structure by determining international specialisation. There exists a significant relationship between the intensity of intra-industry trade and the advancement of regional trade liberalisation. Liberalisation (starting from a free trade area) expands outlets, which encourages increasing the scale of production and thus the intensification of intra-industry trade. It is an even more favourable phenomenon for integrating economies (especially for weaker ones) as, in contrast to inter-industry specialisation, in two-way trade increased imports are accompanied by simultaneous export expansion. Therefore, the benefits of greater trade flows are distributed between all or most of the countries belonging to the group concerned. Thus, regional liberalisation is conducive to the development of intra-industry specialisation [Molendowski, 2007, pp. 209–212; Kawecka-Wyrzykowska, 2009, pp. 14–21].

2. The most important trends in the development of trade linkages of the EU-10

2.1. Major changes in the rules of foreign trade

For the EU-10 countries, joining the EU meant, among other things, an essential change of previous principles and rules of trade with all partners. It primarily resulted from the adoption of the whole of *acquis communautaire* in the areas of 'free movement of goods' and the 'customs union'⁵.

The rules of the policy of the CEFTA and BAFTA countries for trade with foreign partners were significantly harmonised with those of the common commercial policy of the EU even before EU accession. Under the Europe Agreements, trade in industrial goods between those countries and the EU-15 was almost fully liberalised as early as January 1, 1999. Thanks to the agreements signed in the early 2000s, barriers to trade in agricultural products became considerably reduced. In relations with third countries (other than the EU-15), in the 1990s a number of free trade (or preferential trade) agreements were concluded with many countries which had signed such agreements with the Community before.

Therefore, for the EU-10, EU accession involved a change of the rules and conditions of trade with the EU-15, in their mutual relations and in trade with third countries. Undoubtedly, it substantially influenced trade flows, both in terms of total trade and in specific relations.

⁵ For more on the subject see: [Kaliszuk, Synowiec, 2001; Kaliszuk, 2006; Kawecka-Wyrzykowska, 2004; Molendowski, 2012].

2.2. Trade dynamics

The above-mentioned changes of the conditions and rules of trade resulting from the EU-10 countries' joining the European Union, combined with other factors (mainly the inflow of foreign investment and the modernisation of economies), had a significant positive impact on the development of their trade in goods with the EU-15, with the EU-10, as well as with third countries.

For the purpose of the analysis presented in this article, the growth rates of exports and imports of the countries concerned were calculated and compared for the whole period covered⁶. Figure 1 shows the results obtained.

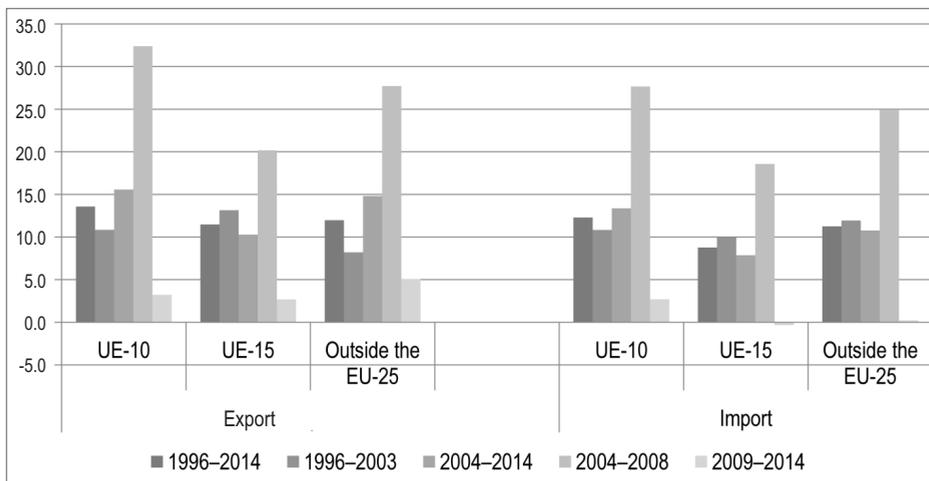


Figure 1. Annual average growth rates of the trade of the EU-10 by group of trading partners in 1996–2014, in %

Source: Own study based on: [WITS, 2015].

As follows from the results of the analysis, in the majority of the EU-10 countries, the first years after accession (2004–2008) proved to be much more favourable than the Eurosceptics had anticipated⁷. In the period concerned, the EU-10 recorded a marked acceleration of growth in trade (calculated in US\$ terms) in comparison with the previous years (1996–2003) in all trade relations.

⁶ In the presented analysis calculations were based on statistics from the WITS-Comtrade database, expressed in the US dollar. The statistics were gathered and calculations made by W. Polan.

⁷ In the pre-accession period, they had warned that those countries would be net payers in the EU, whereas their markets would be flooded with more competitive EU goods. However, after the first few years of membership it appeared that such opinions and concerns had been unfounded or definitely exaggerated. For more on this subject see: [European Economy, 2006, pp. 34–58; Czarny, Śledziwska, 2009, pp. 172–204; Kawecka-Wyrzykowska, Freyberg, Rotfeld, 2006, pp. 297–380; Kawecka-Wyrzykowska, Błaszczuk, Kopeć, 2005, pp. 247–263; UKIE, 2009, pp. 42–48].

Those trends would be clearly seen on the basis of the annual average growth rates of exports. They were, respectively: 13.1% and 20.2% in relations with the EU-15, 10.8% and 32.4% with the EU-10, 8.2% and 27.7% with third countries. A similar situation was observed in imports. Their annual average growth rates were, respectively, 10.0% and 18.6% in relations with the EU-15, 10.8% and 27.7% with the EU-10, 11.9% and 24.9% with third countries.

The greatest acceleration of trade in the post-accession period was noted in relations with the EU-10, where the annual average growth rate of exports in 2004–2008 was more than triple the 1996–2003 figure, whereas imports had gone up by a factor of over 2.7.

3. Intensity of intra-industry trade in the total trade of the EU-10

The calculations made in accordance with the above-mentioned formula suggest that, at the beginning of the period covered, in 1995, intra-industry trade accounted for a mere 24.3% of the total trade of the future EU-10. After a minor fall in the IIT index in 1996 and 1997, in the following years preceding EU accession its value increased steadily. In 2003, as much as 28.3% of the (total) trade of the EU-10 was intra-industry trade, up by 4.0 p.p. (16.3%) against 1995.

In the first years after joining the EU, that share continued to grow steadily (by an annual average of ca. 1.8%), to reach as much as 31.0% in 2008 (up by 2.7 p.p. on 2003). The outbreak of the world crisis caused a certain decline in the value of trade. It was also accompanied by a slowdown of the previous IIT growth, but only in 2009 and 2012 (on the previous year). As a result of those changes, in 2014 the index of IIT in the total trade of the EU-10 reached 32.9%, up by 4.6 p.p. on 2003 and by 8.6 p.p. on 1995. The above trends are illustrated in Figure 2.

The calculations also imply that in the period covered specific EU-10 countries markedly differed in the intensity of intra-industry trade. The most significant changes were found in the countries which at the beginning of the period covered had the lowest IIT indices⁸. Those were as follows: Romania, Bulgaria, Latvia, Lithuania and Poland, i.e., half of the group under analysis. In those countries the IIT indices increased from ca. 10% to 18% in 1993 to approximately 22% to 33% in 2014, i.e., around 2 to 3 times. Characteristically, the countries concerned noted relatively the most robust growth in the index, both in the pre-accession period (1995–2003) and in the years after accession (2004–2014). However, in the first years after accession until the outbreak of the world crisis (2004–2008), the highest indices were only found in three of those countries (Romania, Latvia and Estonia).

⁸ It was also partly due to the statistical ('low base') effect. The lower the index in the initial period, the easier its growth in the following years.

As regards the 'post-crisis' period (2009–2014), the highest index growth characterised Bulgaria, Latvia, Romania and Lithuania. As regards Poland, in the first years after accession the index went up from 29.1% to 32.2%, but in the years after the crisis it did not differ much from that level (ranging between 32.0% and 33.2%).

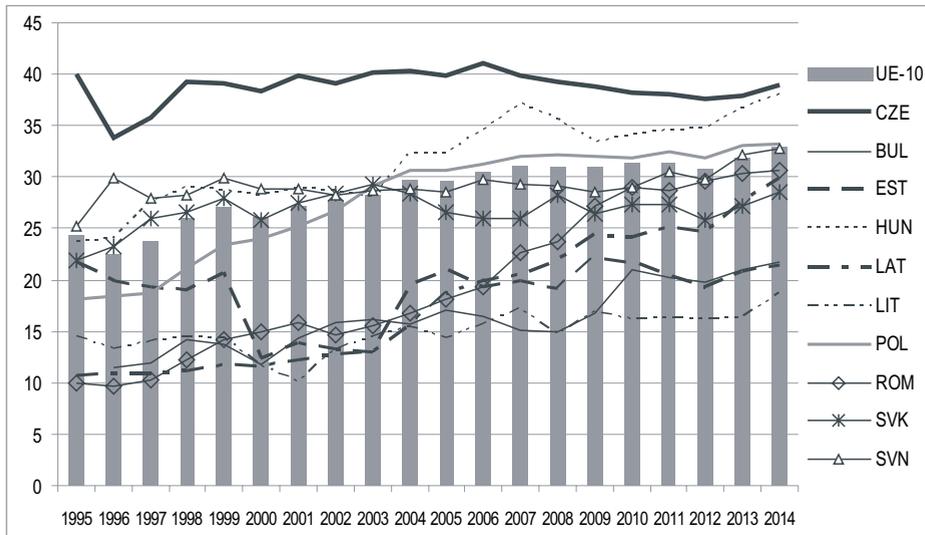


Figure 2. Indices of intra-industry trade in the total trade of the EU-10 in 1995–2014, in %
Source: Own study based on: [WITS, 2015].

A marked rise in the index throughout the period covered was also noted in the case of Hungary: by more than 14.5 p.p. (from 23.6% to 38.1%, respectively). In other countries: Slovenia and Slovakia, the IIT index augmented by ca. 30% (from 21.8% and 25.2% to 28.5% and 32.8%, respectively). An interesting case was Estonia. In the pre-accession period that country's IIT index dropped annually (from 21.7% in 1995 to 13.0% in 2003). From 2004 it showed a minor but steady growth almost every year (also in the post-crisis period), reaching 21.4% in 2014.

In addition, it is worth emphasising that in the country characterised by the highest share of intra-industry trade in total trade at the beginning of the period covered, i.e., in the Czech Republic (the IIT index in 1995 as high as 40%), throughout the period in question its importance even slightly diminished (down to 38.9%)⁹.

As a result of the aforementioned changes, in 2014 the highest intra-industry trade indices (above the EU-10 average) were noted in the Czech Republic

⁹ It is corroborated by previous studies as well, e.g. by E. Kawecka-Wyrzykowska [2009], who analysed changes in the intra-industry trade of the new EU member states in 2000–2007. K. Janda and D. Munich [2004, pp. 27–50] also point out that the Czech Republic traditionally had the highest IIT index among the Central and Eastern European countries.

(38.9%), Hungary (38.1%), followed by Poland (33.2%) and Slovenia (32.8%). In the case of Latvia and Slovakia, the index was close to the EU-10 average. At the same time, the lowest indices characterised Lithuania, Estonia and Bulgaria. In comparison with 2003, in 2004 the importance of intra-industry trade showed the most robust growth (faster than for the EU-10 as a whole) in Latvia (by 16.9 p.p.), Romania (by 15.1 p.p.), Hungary (by 10.0 p.p.) as well as in Estonia (by 8.5 p.p.) and Bulgaria (by 5.6 p.p.), whereas its share dropped in the Czech Republic (by 1.2 p.p.) and Slovakia (by 0.8 p.p.). At the same time, the most significant increases in the value of the IIT index against the 1995 levels were noted in Bulgaria (by 21.7 p.p.), Romania, Latvia (by 19.1 p.p.), Poland (by 15.1 p.p.) and Hungary (by 14.5 p.p.), while it went down in the Czech Republic (by 1.1 p.p.) and Estonia (by 0.4 p.p.).

4. Intensity of intra-industry trade with the main groups of partners

In the period covered, there were marked differences in the intensity of intra-industry trade of the EU-10 with specific groups of countries, i.e., in mutual trade, in trade with the EU-15 and with third countries.

As follows from the data summarised in Figure 3, almost throughout the period under analysis (in 1995–2012), the highest IIT indices were recorded in relations with the EU-15. However, in the last 2 years of the period covered (2013 and 2014), the indices in mutual trade slightly (by 0.2 p.p.) exceeded their levels in trade with the EU-15. It is worth emphasising that almost in all the years of the period covered the levels of the IIT index in trade with both groups of partners rose steadily (from 30.2% to 41.4% in relations with the EU-15 and from 29.5% to 41.6% in mutual trade). As a result, however, a greater increase was found in mutual trade (up by 12.1 p.p.) than in relations with the EU-15 (up by 11.2 p.p.).

The trends observed with regard to the IIT index were different in the pre- and post-accession periods. In trade with the EU-15, particularly fast growth in the IIT index was noted in the pre-accession period (by 18% – from 30.2% in 1995 to 35.6% in 2003), whereas in relations with the EU-10 – in the post-accession period (by 34.9% – from 30.8% to 41.6%, respectively). It seems to be attributable to the full elimination of various (physical, technical and fiscal) barriers to trade within the EU-10 in connection with their inclusion in the single market of the EU on May 1, 2004. It also confirms the thesis that a rising level of the openness of the economy involves improving conditions for the development of intra-industry trade [Czarny, 2002, pp. 66–76]. At the same time, in relations with third countries, intra-industry trade was much lower throughout the period covered (7.5% in 1995 and 13.0% in 2014).

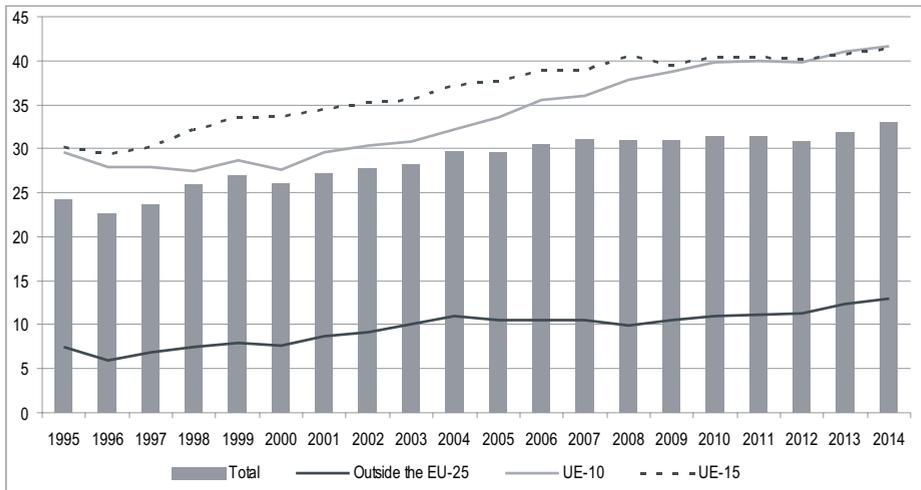


Figure 3. Indices of intra-industry trade in the trade of the EU-10 with specific groups of countries in 1995–2014, in %

Source: Own study based on: [WITS, 2015].

It is worth emphasising that in the period of the world crisis there were no major changes in the IIT index in the trade of the countries concerned with all the groups of trading partners. In 2009–2014, the annual average growth in the IIT index did not differ much from the figure for the whole post-accession period. It corroborates the thesis that intra-industry trade is rather insensitive to changes in the economic situation and trade conditions in the external environment.

4.1. Intensity of intra-industry trade with the EU-15

In trade with the EU-15, the highest share of intra-industry trade characterised the Czech Republic (see: Figure 4). Throughout the period under analysis, almost half of the Czech trade with the EU-15 was IIT (49.4% in 1995 and 47.1% in 2014). However, it means that the share showed a slight decrease (by 2.3 p.p.), faster in the post-accession period than in the years before accession.

At the beginning of the period covered (1995), relatively high IIT indices were also noted in the case of Hungary (32.7%) and Slovenia (31.0%). In the last year under analysis, the two countries were among those with the highest (above the EU-10 average) IIT indices as well. In 2014, that group was also joined by Poland. It is worth adding that Poland (43.8%), ranking third, even outperformed Slovenia (42.0%). In addition, it must be stressed that Poland (together with Latvia and Romania) belonged to the group of countries where the index in question showed the most dynamic growth in the period covered, with the greatest increase noted

in 1995–2003. In the other countries the IIT index, in both 1995 and 2014, was below the average level for the EU-10.

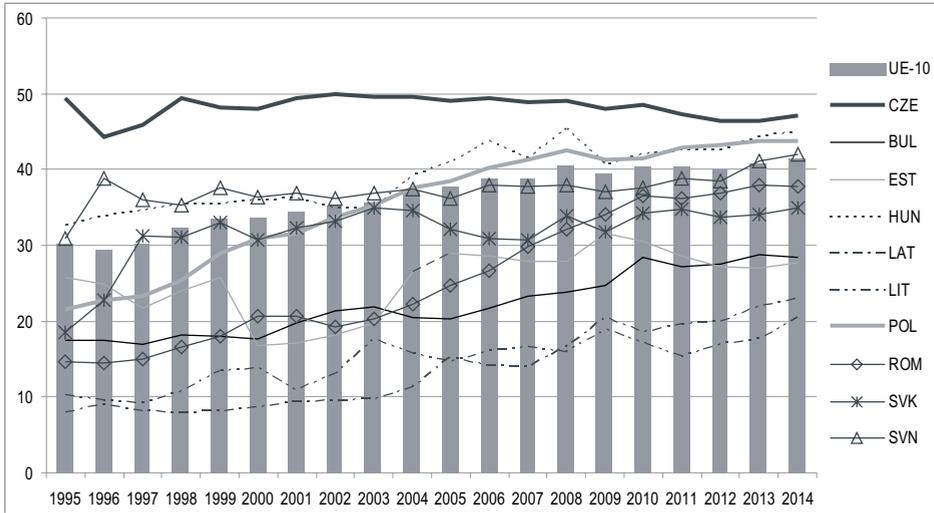


Figure 4. Indices of intra-industry trade in the trade of the EU-10 with the EU-15 in 1995–2014, in %

Source: Own study based on: [WITS, 2015].

Throughout the period under analysis, the lowest shares of intra-industry trade characterised Latvia and Lithuania. Although the two countries noted relatively fast growth in the IIT index (up by 15.0 p.p. and 10.3 p.p., respectively), it was not sufficient for their positions to improve.

In the pre-accession period, the greatest increases in the IIT index were found in the case of Slovakia (16.4 p.p.), Romania (17.4 p.p.), Latvia (13.1 p.p.) and Bulgaria (6.5 p.p.), with the EU-10 average growth of 5.4 p.p. The above-mentioned countries maintained the relatively significant dynamics of the IIT index in the post-accession period as well, when they were joined by Poland and Estonia.

Those trends seem to have resulted from the accelerated restructuring of industries of the new EU member states (both in the period of preparations for accession and in the years after joining the EU). It facilitated the building of more efficient production structures, closer to those observed in the EU-15¹⁰. As a consequence, the composition of the trade of the EU-10 became more similar to that of the EU-15¹¹. It had a considerable impact on growth in the share of intra-industry trade in relations between the two groups of countries.

¹⁰ It is also emphasised by Y.-D. Kang [2010].

¹¹ For more on the subject see: [Molendowski, Polan, 2012, pp. 35–41].

4.2. Intensity of intra-industry trade within the EU-10

As already demonstrated above, in 1995–2014 intra-industry trade markedly gained in importance in the mutual trade of the EU-10, with the IIT indices for 2014 even exceeding those in trade with the EU-15 (see: Figure 5).

At the beginning of the period covered, the highest IIT indices in mutual trade were noted in the case of the Czech Republic (39.0%) and Slovakia (35.0%). Those were at least twice as high as in the rest of the EU-10. In 2014, indices above the EU-10 average characterised as many as 4 countries: Latvia (49.5%), the Czech Republic (46.7%), Hungary (44.0%) and Slovakia (42.4%).

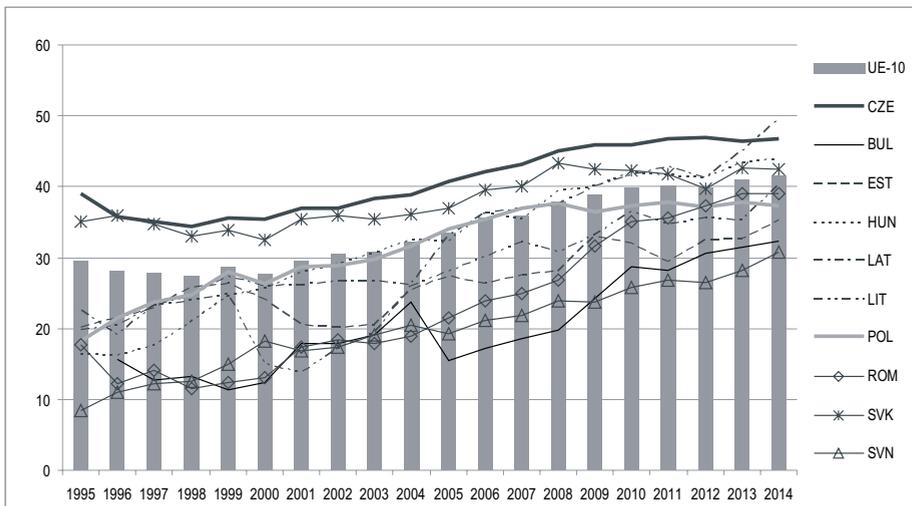


Figure 5. Indices of intra-industry trade in the mutual trade of the EU-10 in 1995–2014, in %

Source: Own study based on: [WITS, 2015].

A particularly marked increase in the share of intra-industry trade in the mutual trade of the EU-10 could be seen after their joining the EU. It is unambiguously corroborated by the comparison of the IIT index dynamics computed for 1995–2003 and 2004–2014. Only in the case of Poland the respective indices were lower in the post-accession period than in the years before accession.

It is also worth emphasising that after the outbreak of the world crisis, i.e., in 2009–2014, the share of intra-industry trade in the mutual trade of the EU-10 showed no major fall. Minor decreases in comparison with the period 2003–2008 were only noted in the case of Poland and Slovakia.

Apparently, a particularly important role was played by the lifting, as of May 1, 2004, of various (physical, technical and fiscal) barriers previously existing in trade

between those countries. That buoyant growth in intra-industry trade in the mutual trade of the EU-10 must also be attributed to increased trade between branches of EU-15-based undertakings located in the EU-10. At the same time, a minor decrease in the IIT index in the period 2009–2014 confirms the thesis that intra-industry trade is rather insusceptible to cyclical fluctuations¹².

Conclusions

The analysis results presented in this article may corroborate the thesis that an increasing role of intra-industry trade, a trend characteristic of present-day international trade, also took place in the EU-10.

As demonstrated by the analysis, in the period covered there were significant changes in the intensity of the intra-industry trade of the EU-10. The most important included a considerable rise in the share of intra-industry trade in the trade of almost all of the countries concerned with the EU-15 and, in particular, in trade with the EU-10. Furthermore, in comparison with the years before accession, the post-accession period witnessed greater positive structural changes in the mutual trade of the EU-10 than in their trade with the EU-15. Whereas at the beginning of the period covered the IIT indices for the majority of the countries concerned were lower in trade with the EU-10 than in trade with the EU-15, in 2014 most of the countries under analysis showed higher indices in relations with the EU-10 than with EU-15. The opposite was the case in the Czech Republic, Estonia, Poland and Hungary, but even in those countries the differences in trade with specific groups of partners were minor.

Although in 2014 the IIT indices in the EU-10 continued to be lower than in the EU-15, for the majority of the countries under analysis they showed marked increases over the period covered. It is worth adding that the slowdown of trade caused by the world crisis did not significantly affect the post-accession trends in intra-industry trade, whether in relations with the EU-15 or with the EU-10.

The above-mentioned trends may confirm the thesis of Loertscher and Wolter [1980] that the intensity of the intra-industry trade of a group of countries increases as their economic development levels grow, gaps in economic development narrow down and barriers to mutual trade are removed.

The obtained results may also corroborate the hypothesis arising from the studies of Balassa [1966], Flavey [1981] and Gray [1988], who concluded that there was a strong relationship between the intensity of intra-industry trade and the degree of regional trade liberalisation. It is characteristic of free trade areas that the

¹² Similar conclusions are also drawn by Ł. Ambroziak with regard to the Visegrad Group countries [Ambroziak, 2013, pp. 94–96].

liberalisation of trade between the countries concerned is accompanied by expanding markets, which boosts the scale of production and two-way trade. As demonstrated above, such processes took place in the trade of the EU-10 with the EU-15.

Considering that the intra-industry trade index is one of the most important factors reflecting the degree of real adjustments to the requirements of a single market as well as a significant measure of the competitive position of a economy, it can be argued that in the period covered the EU-10 experienced substantial changes which allowed domestic undertakings to be better prepared for cooperation and competition with their partners from the EU-10 and the EU-15 in the single European market.

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