FOREIGN TRADE CONVERGENCE IN THE EU – THE EVIDENCE BY CEEC

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Abstract

One of the most important criteria for economic cohesion in the EU is the level of convergence achieved in the export specialization of the different Member States. To determine the degree of this convergence we have analysed the changes of export specialisation of 11 Central and Eastern European Countries (CEEC). There are EU Member States which joined the EU in 2004 – Poland, Check Republic, Hungary, Slovakia, Slovenia, Latvia, Lithuania and Estonia), in 2007- Romania and Bulgaria and in 2013 – Croatia. The export specialisation of these Member States was measured in four different years: 2004, 2014, 2019 and 2022. The results show that in all new Member States there is a clear trend towards convergence with the EU average in terms of export specialization. This is also a evidence for growing economic cohesion in the EU. However, the convergence process proceeds at different speeds in different countries. The convergence process is significantly more pronounced in Slovenia, Check Republic, Slovakia than in the Baltic republics and in Bulgaria.

Key words: export specialisation, economic cohesion, European integration, CEEC integration in the EU, Bulgaria in the EU

JEL: F14, F15

Introduction

In 2012, in the Economic Alternatives magazine, was published an article in which the convergence of the export specialization of Bulgaria, Romania, Hungary and Slovakia with the average export specialization of the EU was studied for the period 2003 – 2010. The conclusion was that after Bulgaria's accession to the EU, there was a change of the country's export specialisation towards the average of the union, in other words a convergence was started. Another conclusion was that this process was not an accidental one, but a common thing for all the four countries analysed. Furthermore, there was a difference in the level of convergence, it was stronger in the countries from the first wave of the accession Hungary and Slovakia compared to the countries which later joined the EU – Bulgaria and Romania. Therefore, a conclusion was finally drawn that approximation in export specialisation is an objective process, which however can develop on different space in different new member states (Hadjinikolov, 2012, p. 44).

Now, twelve years later, it is interesting to find out whether these conclusions are still correct and if they cover not only in 2012 analysed four countries but also the rest

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of CEES, which joined the EU. moreover, it is of interest to know at what speed the processes take place in the individual CEES and what is the impact of the differences in trade convergence on economic growth. The hypothesis is that the said convergence in export specialization covers all CEES and that the higher level of trade convergence has a positive impact on GDP dynamics.

Discussion

The eleven Central and Eastern European countries that joined the EU between 2003 and 2013 were emerging economies, unlike the old EU member states, which were developed economies. Then, as now, most economists believe that emerging economies were better off pursuing a policy of diversifying their exports rather than engaging in some narrow export specialization. For example, based on an empirical model studying growth factors in a group of Latin American and Asian emerging economies, it is found that „…export diversification is indeed associated with higher economic growth." (Agosin, 2009, p. 130). A UN study based on the experience of a group of African countries reached the same conclusion, but in a much more categorical form. It is emphasized there that „…significance of the link between export diversification and economic growth…cannot be gainsaid." (UNCAD, 2008, p. 150). Many more similar studies defending the thesis of the need for export diversification could be listed, all of them, as a rule, being based on Ricardo's traditional theory of comparative advantages in trade related to differences in the prices of production factors in individual countries. Transferred to European economic integration, this approach, based on cross-industry specialization, would mean that capital-intensive industries would be concentrated in the developed part of the union, and labour-intensive ones, respectively, in its periphery.

Myrdal and his follows adhering to the concept of the cumulative cause-and-effect relationship in the development within the national economy, respectively of the European economy, can also be counted among the supporters of the thesis of the existence of a „core-periphery" economic division in the EU. Myrdal believes that the desire to increase returns from the scale of production leads to the concentration of economic activity in the regions that were first able to industrialize (economic center). There is a „cumulation" of growth, i.e. refinancing, which leads to even greater concentration of production and income, i.e. a „cumulative causality" of development occurs. The economic center also has other advantages: central location (good connectivity with other regions, lower transport costs), as well as proximity to the political center, which in turn reduces administrative costs. Thus, economically developed regions of countries are increasingly separated from the periphery (Myrdal, 1957).

Another group of economists, however, consider that the tendency towards equalization of prices of factors of production on an international scale, as well as the increasing importance of the export of capital, create the conditions for a new type of trade specialization based on intra-industry rather than inter-industry specialization. The so-

called spillover effect in technology has a significant positive impact on growth and inclusion of developing countries in modern intra-industry specialization (Seck, 2012). In the EU, the spillover effect is mainly supported by the intra-Community movement of capital, which is in the direction from the technologically advanced north and west to the more backward countries in the south and east of the union. This process also leads to an increase in intra-industry trade between member states at the expense of traditional trade based on inter-industry specialization.

The research of some authors, mainly from the new EU Member States, can be cited as evidence in this direction of analysis. For example, such evidence for a new intra-industry specialization in the EU is the emergency of a specialisation in the financial and business services in the Visegrad Four – Poland, Hungary, Czeck Republic and Slovakia (Stefaniak-Kopoboru & Kuczewska, 2016). In Lithuania, on the other hand, a growth of intra-industry specialization is observed, which reflects in the sectoral structure of country exports (Bernatonyte, 2009). Romanian researchers are even more categorical in their conclusion in favour of the trade convergence in the EU. According to them, the point of view of the so-called a new economic geography, according to which the integration process in the EU should lead to different specializations of the core (the old 15 member states) and of the periphery – the new member states from Central and Eastern Europe is wrong. In fact, we have a common perspective of all EU member states (Pascariu, Drăgan, Stăngaciu, 2019).

Another question which needs some discussion is about the impact of trade convergence on the EU integration and especially on the economic cohesion in the union. The widespread approach is to consider the reduction of differences and the achievement of greater convergence as part of economic cohesion. We can see this approach in Article 174 of the Consolidated version of the Treaty on the Functioning of the European Union (European Union, 2012, p. 127). Most authors use the GDP per capita as main indicator of economic and social differences among regions and member states and consider reduction of these differences as increase of cohesion (Bal-Domańska, Sobczak, 2016). Some authors use more complex models to tackle cohesion like the structural equation modelling (SEM) (Maucorps, Jestl, Römisch, 2020), or the Markov chain method (Begu, 2011). Even more sophisticated model is the regression-discontinuity design model (RDD) (Becker, Egger, von Ehrlich, 2013). Regardless of how complex the models are, they follow the same goal – to find out and assess the reduction or increase of differences between regions or member states, in other words to find out if level of cohesion has increased or declined.

Using this approach to convergence, we can assume that decreasing differences in the structure of foreign trade between EU member states is a sign of increasing economic cohesion, and conversely, increasing differences in exports structure, is a sign of decreasing economic cohesion in the EU.

Methodology

The first step in achieving the research objective is to determine export specialization of CEES in different years. For this purpose, it is used the so-called Balassa index, or Revealed Comparative Advantage, RCA:

$$ES_{ij} = \frac{\frac{X_{ij}}{X_{wj}}}{\frac{M_{ij}}{M_{wj}}} \quad (1)$$

Where ES_{ij} is the exports specialization or foreign trade specialization of a country i with respect to some commodity or commodity group j; X_{ij} are the total exports of country i by commodity group j; respectively, X_{wj} are the world exports for the same commodity group j; M_{wj} are country's imports of commodity group j and M_{wj} are world imports of the same commodity group j.

To apply the indicated index, we must first define the relevant commodity groups, in such a way as to obtain the needed statistical information, using the Standard International Trade Classification – SITC. At the same time, it is important that the commodity groups used for the calculations are sufficiently homogeneous and that they are presented for the relevant sectors of the EU economy. Based on the stated conditions, the following 8 commodity groups were determined:

1. „Agricultural commodities“ (SITC sections 0, 1 and 2 without divisions 27 and 28).
2. „Minerals“ (SITC divisions 27, 28 and 68).
3. „Fuels“ (SITC section 3).
4. „Iron and steel“ (SITC division 67).
5. „Chemicals“ (SITC section 5).
6. „Machinery and transport equipment“ (SITC section 7).
7. „Textiles and clothing“ (SITC divisions 65 and 84).
8. „Other manufactured goods“ (SITC section 6 without divisions 65, 67 and 68 and section 8 without division 84) (Unatid Nations, 2006).

The next step in the analysis is to calculate the total deviation in the export specialisation of each country comperated to the EU mean aberage. For this purpose, we use the following formula:

$$S_n = \sum_{i=8} (\overline{x_i} - x_{ni}) \quad (2)$$

Where S_n is the total deviation of country n from EU mean average in export specialization, x_i is the EU export specialization index in commodity group i and x_{ni} is the absolute value of the export specialization index of country n in the same commodity group i.

Further the weighted average of the total deviation of all 11 CEEC countries in 2004, 2014, 2019 and 2022 was calculated. The national deviation of each country was weighed by its share in CEEC exports. The formula is:

$$S_{CEEC} = \sum_{n=11} S_n * \frac{E_n}{E_{CEEC}} \quad (3)$$

Where S_{CEEC} is the CEES total deviation of EU export specialisation, S_n is the county's deviation, E_n is the counties exports and E_{CEEC} EU exports in the respective year.

Finaly, the dynamics of changes in individual CEEC are compared for the considered period 2004 – 2022.

Findings

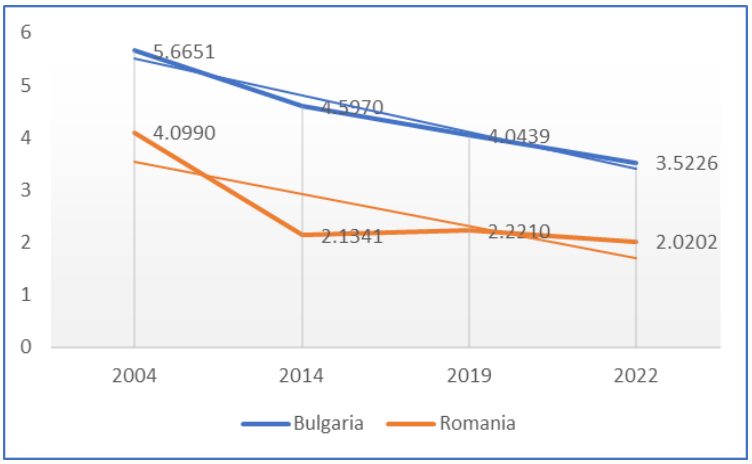
Based on formulas 1 and 2, the results shown in table 1 were estimated.

Table 1. Deviation in export specialisation of individual EU member states compared to the EU mean average export specialisation in the respective year

Country	Total deviation in export specialisation (S_n)			
	2004	2014	2019	2022
Bulgaria	5,6651	4,5970	4,0439	3,5226
Croatia	3,7869	3,3401	3,3120	2,9908
Czech Republic	1,6025	1,8754	2,1489	1,9262
Estonia	2,8214	3,2178	3,0398	2,9252
Hungary	2,0565	1,7885	1,8940	1,9379
Latvia	3,7884	3,0217	2,4192	2,6328
Lithuania	3,9867	2,6172	2,4229	2,3511
Poland	2,3939	2,5329	2,3037	2,0033
Romania	4,0990	2,1341	2,2210	2,0202
Slovak Republic	2,7146	1,9431	1,9164	1,9750
Slovenia	2,0808	1,0006	0,9628	1,1284

Source: Calculated by the author with data of WTO.

It would be interesting to follow the dynamics of rapprochement with the EU's export specialization of two countries that joined the EU at the same time and have a similar structure of the economy and degree of development – Bulgaria and Romania. The comparison is evident from the figure below.



Source: Compiled by the author with data from Table 1.

Fig. 1. Dynamics of the indicator S_n and the corresponding trend by Bulgaria and Romania

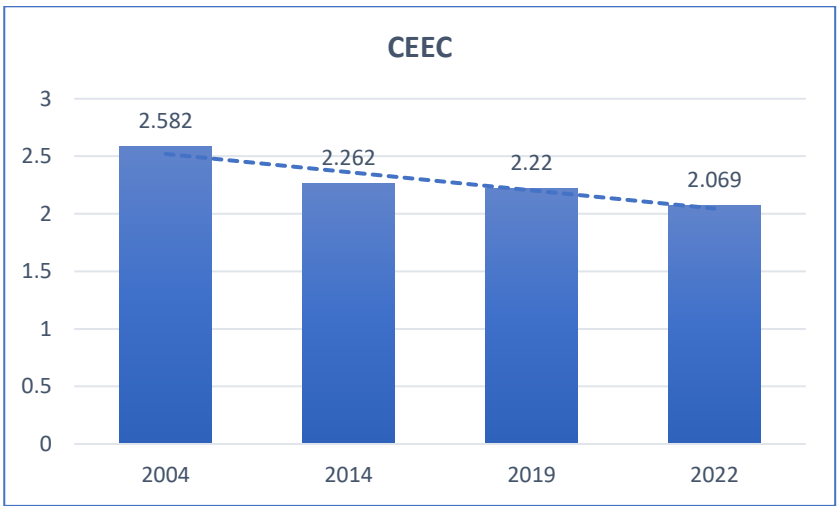
To proceed further to the calculation of aggregated results for CEEC in the EU, it is necessary to determine the relative weights of each of them, i.e. their share in the total exports of this group of countries. Again, WTO trade statistics can be used for this purpose (World Trade Organization, 2024). Thus, and using the data from Table 1, we obtain the result shown in Table 2.

Table 2. Deviation in export specialisation of individual EU member states compared to the EU mean average export specialisation in the respective year

Country	Weighted S_n			
	2004	**2014**	**2019**	**2022**
Bulgaria	0,208	0,182	0,155	0,152
Croatia	0,140	0,076	0,081	0,083
Czech Republic	0,335	0,384	0,439	0,368
Estonia	0,061	0,069	0,056	0,057
Hungary	0,360	0,240	0,250	0,244
Latvia	0,063	0,061	0,045	0,056
Lithuania	0,130	0,109	0,090	0,095
Poland	0,594	0,699	0,662	0,593
Romania	0,347	0,196	0,208	0,185
Slovak Republic	0,236	0,203	0,186	0,174
Slovenia	0,107	0,044	0,046	0,063
CEEC	**2,582**	**2,262**	**2,220**	**2,069**

Source: Calculated by the author with data of Table 1 and WTO.

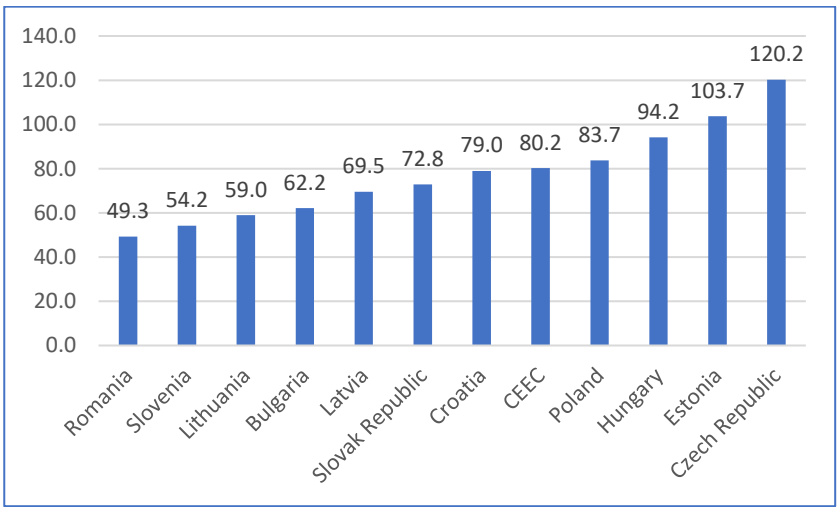
To get a clearer picture of the foreign trade convergence of CEEC in the EU the following figure can be used.



Source: Compiled by the author with data from Table 2.

Fig. 2. Dynamics of the indicator S_n and the corresponding trend by CEEC

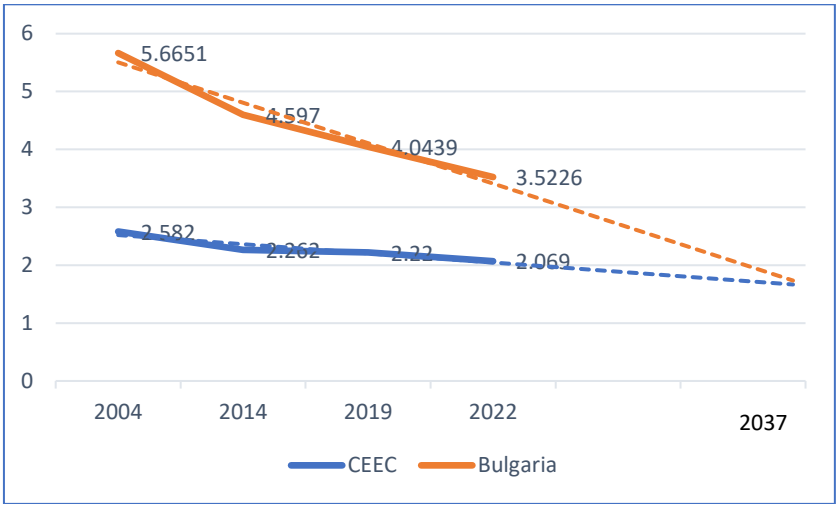
We can compare the dynamics of indicator S_n in different member states and the CEEC average.



Source: Compiled by the author with data from Table 1.

Fig. 3. Dynamics of the indicator S_n in CEEC for the period 2004 – 2022 (S_n in 2004 = 100).

Finaly, we can compare also the dynamics of indicator S_n only for Bulgaria and the CEEC average and forecast the point of full convergence between them.



Source: Compiled by the author with data from Table 1 and Table 2.

Fig. 4. Dynamics of the indicator S_n and the corresponding trend by Bulgaria and CEEC

Conclusions

1. The first and most important conclusion that can be drawn is that during the considered period 2004-2022 there is a convergence in the export specialization of CEE and the export specialization of the EU as an average value for the union. For the specified period, the CEEC total deviation in export specialisation compared to EU mean average in this indicator has decreased from 2,582 to 2,069 (Fig. 2). The achieved foreign trade convergence can be seen as a sign of the strengthening economic cohesion in the EU (Hadjinikolov, 2022).

2. Assessing the impact of the Covid-19 pandemic in the EU, we can state that there is a certain delay in foreign trade convergence related to the pandemic, but it has not significantly changed the trend of reducing disparities between CEES and the EU as an average.

3. Although there is convergence in export specialization in all countries of the studied group, the parameters of this convergence are quite different in the different member countries. As can be seen from table 2, in 2022 the foreign trade convergence was most pronounced in Slovenia, whose export structure differs too little from the EU average (S_n = 1,1284). The Czech Republic, Hungary and Slovak Republics also have very good results on this indicator with S_n = 1,9262, 1,9379 and 1,9750 respectively. The least expressed foreign trade convergence is in Bulgaria (S_n = 3,5226), Croatia (S_n = 2,9908) and Estonia (S_n = 2,9252).

4. Of interest is the comparison of the dynamics of the foreign trade convergence with the EU average of Bulgaria and Romania, two countries that simultaneously joined the EU on January 1, 2007. As can be seen from fig. 1 the trend in the development of this indicator in both countries is almost the same and the differences in S_n 2022 can be explained mostly by the presence of the same differences at the beginning of the considered period.

5. If we look at the dynamic of convergence process in export specialization by comparing the results in 2022 with the baseline in 2004 (Fig. 3) we can find out that the foreign trade convergence was faster in Romania, Slovenia, Lithuania and Bulgaria compared to Poland, Hungary, Estonia and the Czech Republic.

6. Finally, we can make a forecast about the future dynamic of Bulgaria's foreign trade convergence with the CEEC average and say that, based on the extrapolation of the trend, the full convergence will happen in approximately 13 years.

References

Agosin, M. R. (2009) Export diversification and growth in emerging economies.- *CEPAL Review*, Volume 2009, Issue 97, July 2009, p. 115 – 131, from https://www.un-ilibrary.org/content/journals/16840348/2009/97/6/read.

Bal-Domańska, B., Sobczak, E., (2016), On the Relationships between Smart Growth and Cohesion Indicators in the EU Countries.- *Statistics in Transition*, Vol. 17, No. 2, Wrozlaw, pp. 249-264.

Becker, S., Egger, P., von Ehrlich, M. (2013) Absorptive Capacity and the Growth and Investment Effects of Regional Transfers: A Regression Discontinuity Design with Heterogeneous Treatment Effects. - *American Economic Journal: Economic Policy*, 5(4), pp. 29 – 77, from: https://maxvehrlich.ch/wp-content/uploads/2021/08/Becker_Egger_Ehrlich_AEJ_EP_2013.pdf

Begu, L. – S. (2011) Cohesion in the European Union – Used Markov Chains Method. - *Review of General Management*, Volume 14, Issue 2, from

https://www.academia.edu/94356550/Cohesion_in_the_European_Union_used_Markov_Chains_Method.

Bernatonyte, D (2009) Intra-industry Trade and Export Specialisation: Lithuanian Case, *Economika ir vadyba*: University of technology, Kaunas, 2009, No. 14.

European Union (2012) Consolidated Version of the Treaty on European Union.- *Official Journal of the European Union*, 26.10.2012, Brussels, C326/47 – C326/390.

Hadjinikolov, D. (2012) Dynamics of Approximation in Export Specialization.- *Economic Alternatives*, issue 1, 2012, pp. 38 – 45.

Maucorps, A., Jestl, S., Römisch, R. (2020) The Effects of the EU Cohesion Policy on Regional Economic Growth: Using Structural Equation Modelling for Impact Assessment. - *WIIW Working Paper*, 185, August 2020, from: https://wiiw.ac.at/the-effects-of-the-eu-cohesion-policy-on-regional-economic-growth-using-structural-equation-modelling-for-impact-assessment-dlp-5389.pdf.

Myrdal, G. (1957). Economic theory and underdeveloped regions. London: Duckworth.

Pascariu, G.-C., Drăgan, G., O.-A., Stăngaciu (2019) Integration and trade Specialisation in Central and Eastern European Countries: Towards a New Core-Periphery Structural Differentation? *Romanian Joirnal of Economic Forecasting* – XXII (3) 2019, p. 166.

Seck, A. (2012) International technology diffusion and economic growth: Explaining the spillover benefits to developing countries.- *Structural Change and Economic Dynamics*, Volume 23, Issue 4, December 2012, Pages 437 – 451, from:

https://www.sciencedirect.com/science/article/abs/pii/S0954349X11000166.

UNCTAD (2008) Economic Report on Africa 2007: Accelerating Africa's development through Diversification,

from: https://www.un-ilibrary.org/content/books/9789211560732s006-c002/read

United Nations (2006) Standard International Trade Classification Revision 4.- *Statistical Papers Series M* No. 34/Rev. 4, Department of Economic and Social Affairs,

T/ESA/STAT/SER.M/34/REV.4, from: https://unstats.un.org/unsd/publication/SeriesM/SeriesM_34rev4E.pdf.

World Trade Organization (2024) Statistics on merchandise trade. from: https://www.wto.org/english/res_e/statis_e/merch_trade_stat_e.htm.

Hadjinikolov (2022) How to measure cohesion in the EU? - Conference: Bulgaria's membership in the European Union: fifteen years later. At: University of National and World Economy – Sofia, from:

https://www.researchgate.net/publication/364645945_HOW_TO_MEASURE_COHESION_IN_THE_EU.