

Nataša Drvenkar*
Katarina Marošević**
Ivana Unukić***

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REGIONAL ECONOMIC TRANSFORMATION – COULD WE LEARN FROM CENTRAL AND EASTERN EUROPEAN COUNTRIES?

Modern economies and their smaller units – regions, regardless of their development level, witness significant inequalities. European regions differ significantly in their economic structure, history, available workforce skills, technological profiles, institutional and managerial capacities, and many other aspects. Most Central and Eastern European Countries (CEECs) are not an exception. Specifically, differences exist between national economies and between NUTS 3 regions within national economies, with some regions lagging behind. The inequality problem is addressed by the EU's Cohesion Policy in the CEECs, keeping in mind that CEECs are less developed than the average of the EU28 (27). Through its Cohesion Policy, the EU is seeking to reduce economic disparities between regions. An important issue is to create region-specific policies to foster regional growth. Therefore, Cohesion Policy instruments should be used in Central and Eastern European countries to tackle regional divergences and assist them in balancing their regional development as they formulate sectoral policies.

* N. Drvenkar, Ph.D., Associate Professor, J.J. Strossmayer University of Osijek, Faculty of Economics in Osijek (e-mail: natasa.drvenkar@efos.hr).

** K. Marošević, Ph.D., Assistant Professor, J.J. Strossmayer University of Osijek, Faculty of Law Osijek (e-mail: katarina.marosevic@pravos.hr).

*** I. Unukić, Ph.D. student, Assistant, J.J. Strossmayer University of Osijek, Faculty of Economics in Osijek (e-mail: ivana.unukic@efos.hr). The paper was received on 09.06.2020. It was accepted for publication on 02.12.2021.

Many analysts argue that the higher the movement towards a post-industrial (information, service) society, the more outdated the growth, production, and productivity inherited from industrial capitalism will be. Technological innovation has always been a crucial driver of progress, but over the last 50 years, its pace and significance have been growing. Technologically leading regions have long embraced innovation and are forging ahead, whereas lagging regions require a complete transformation of their economic (industrial) structure. Therefore, this paper aims to analyze Cohesion Policy in the CEECs by analyzing the relationship between GDP per capita and spending of EU funds. Moreover, the aim is to investigate the importance of vertical and horizontal industry policy in CEECs. To do that, the paper analyzes the total output growth and inter (intra) industry exchanges of Central and Eastern European countries (CEECs). More specifically, an analysis of the changes in intra-industry trade (two-way trade) is performed, which shows how far bilateral imports and exports match within sectors. The paper reviews current theoretical knowledge and empirical research on the importance of the regional dimension of industrial policy, respecting the paradigm of innovative sustainability. The main methods used in the paper comprise a comparative analysis based on earlier theoretical and empirical studies in the field of regional economic development, as well as an analysis of industrial performance.

Keywords: *sources of regional economic growth, regional dimension of industrial policy, lagging regions, CEECs*

1. INTRODUCTION

There are significant economic, political, institutional, societal, and many other disparities at the regional level of both Central and Eastern European Countries and EU28 as a whole. Cohesion Policy instruments provide a useful tool for Central and Eastern European countries in addressing regional divergences and balancing their regional development through sectoral policies. Particular emphasis should be put on regions that are lagging behind, taking into consideration their specific needs.

Therefore, this paper aims to analyze Cohesion Policy in the CEECs by analyzing the relationship between GDP per capita and spending of EU funds. Moreover, the aim is to investigate the vertical and horizontal industry policy importance in the CEECs. Furthermore, the paper analyzes the total output growth and inter (intra) industrial exchanges of Central and Eastern European countries. More

specifically, an analysis of the changes in intra-industry trade (two-way trade) is performed, which shows how far bilateral imports and exports match within sectors. The authors assume that this intra-industry trade has been the main driver of trade growth between the new EU Member States and their trading partners. The present paper contributes to the literature in the following ways: 1) by distinguishing between horizontal and vertical two-way trade, and 2) by analyzing country and industry-specific determinants. A review of theoretical literature is followed by a summary of recent empirical evidence and a discussion of the challenges of the methodology.

The data on GDP and GDP per capita were taken from Eurostat, and the data on utilization of EU funds for CEECs were downloaded from the Cohesion Policy official website of the Council of Europe. Various statistical methods (univariate and bivariate), as well as IBM SPSS Statistics 23.0 are used in this research to determine the relationships between countries, the regions indicated (their GDP), and the utilization of EU funds, using the secondary data mentioned above. For ease of comparison, countries are divided into groups (Vujcic, 2016): CEE (Bulgaria, Czech Republic, Estonia, Croatia, Hungary, Lithuania, Latvia, Poland, Romania, Slovenia, Slovakia) and the remaining EU28 countries (17). According to this division, the authors used a T-test for EU28 countries for 2008–2017 to determine potential differences in development for those years and the specificity of recovery from the financial and economic crisis, based on GDP per capita primarily. In addition, the authors conducted a T-test for NUTS 3 regions of the CEECs and the Republic of Croatia based on GDP for the period 2014–2016, as well as the ANOVA test for the period 2014–2016 for NUTS 3 regions of the CEECs (based on GDP). Furthermore, the correlation between GDP per capita and EU fund spending until 2015 and 2017 respectively has been tested and a T-test was performed to compare EU funds utilization by the CEE Member States and the remaining EU Member States for 2015 and 2017.

2. REGIONS LAGGING BEHIND: DEVELOPMENT CHALLENGES

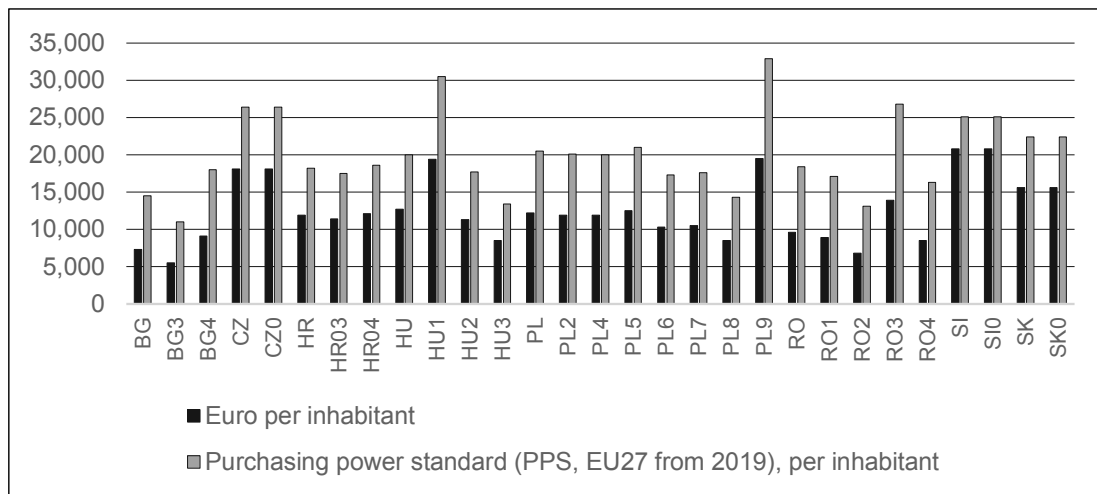
The most critical causes of lagging behind less developed regions in the EU stem from their foundations for establishing modern, market-oriented economies in the early 1990s and their institutional, economic, and social cohesion (Trippel, Zukauskaitė & Healy, 2020; Agostino et al., 2020; Stough, 2019; Lakshmann & Button in Capello and Nijkamp, 2019; Voigt, 2019; Constantin, Goschin & Dragan, 2011; Berend, 2011) with developed EU members. Stagnation in productivity,

demanding access to export markets due to untimely transformation of the industrial base (Ashford & Hall, 2019; Haraguchi, 2019; Stiglitz, 2019 in Monga & Lin, 2019) insufficiently propulsive economic structure have caused significant job losses and slowed economic opportunities for growth (Beatty & Forthergill, 2020; Farole, Goga & Ionescu-Herou, 2018).

Depending on the growth theory adopted, i.e., neoclassical or endogenous, they are essential in informing development policies across the world (Pose-Rodríguez & Ketterer, 2018). It should be noted that the neoclassical model of regional convergence has been influential in framing the analyses of regional disparities as well as the discussion of policy solutions. The model is concerned with the movement of the relevant production, capital, and labor factors between regions (Armstrong & Taylor, 2000:141). When a particular area starts to experience a rapid economic growth, it absorbs investment, labor, and resources from the surrounding regions, often leaving them behind or turning them into a source of labor and resources for the growing region (MacKinnon & Cumbers, 2019). The two main types of lagging regions, according to the European Commission (2017a; Römisch, 2017), can be classified as follows: 1) low-growth regions are less developed and transition regions (regions with GDP per capita of up to 90% of the EU average, which did not converge to the EU average), 2) low-income regions are all regions with a GDP per capita in purchasing power standard (PPS) below 50% of the EU average in 2013. Regional differences are apparent in several ways. For instance, Chapman & Meliciani (2018) present an analysis of one of the possible determinants and the evolution of income disparities across regions within Central and Eastern European Countries in the period 1991-2011. Figure 1 shows significant differences between the national economies of CEECs on the one hand and their regions on the other.

Figure 1.

GDP PER CAPITA AND PURCHASING POWER STANDARD IN EU27
 PER CAPITA (NUTS 1 AND NUTS 2 REGIONS), 2017, EURO



Source: authors according to Eurostat, 2020a & 2020b

Respecting the issue of absorption capacities, Constantin, Goschin & Dragan (2011 in Stimson, Stough & Nijkamp, 2011) analyzed significance of the cohesion policy in 2007-2013 programming period and noted that the instruments of cohesion policy was the main reason for economic and social welfare but it primarily depends on absorption capacity of member states. In considering possible ways of overcoming the challenges faced by lagging regions and accelerating development, the European Commission (2017b) emphasizes the following: 1) for low growth regions, the main challenge is to develop effective policies and strategies to overcome the stagnation they have been locked-in for more than a decade and 2) for low-income regions, the main challenge is to sustain the respectable growth they have been experiencing and to avoid entering the development trajectory of the low growth regions. Also, as stated by Rodríguez-Pose & Wilkie (2018), the reasons for the underdevelopment of some regions can be found in their geographical positioning (and not only in institutional capacity for innovation). Namely, often lagging regions are located on geographical periphery of countries or are far from developed regions of EU (for example, mountainous areas, islands, border areas, deindustrialized areas and so on). The new economic geography emphasizes the centripetal and centrifugal forces that hinder the development of such regions (Krugman, 1991). Appreciating research of “shaping smart specialization,” Tripl, Zukauskaitė & Healy (2020) classified regions as intermediate regions and

advanced regions considering the diversification of the economic structure, strong links with research institutions, and institutional transformation, among other things. In addition, Brunow, Hammer & McCann (2020) examine the innovation geography of knowledge-intensive business services in Germany, and use micro-geographic data; they confirm that the possibility of innovation is significantly reduced with increasing distance from the metropolis, and the differences also depend on the size of cities.

According to Iammarino, Rodriguez-Pose & Storper (2019), the regional economic divergence has become an obstacle to achieving economic progress, social cohesion, and political stability in Europe. The authors emphasize the need for a different development approach, which will strengthen Europe's most vital regions while promoting opportunities in less-developed regions and those with disappearing industries. There is also a new theory that supports such an approach called "place-sensitive distributed development policy" (Iammarino, Rodriguez-Pose & Storper, 2019). Thus, it is clear that lagging regions need region-specific policies aimed at mobilizing their unused resources. Peyman Asadi & Jafari Samimi (2019) suggest the construction of regional advantages policy as a policy in economic geography that can be a great tool for lagging behind areas in diversifying their policy options and successfully addressing the many challenges they are faced with. In addition, as Pose-Rodríguez & Ketterer (2018), Tripple, Zukauskaitė & Healy (2020), Constantin, Goschin & Dragan (2011), and Berend (2011) noted, a better or worse institutional set-up is often determined by historical circumstances and the quality of local/regional government. To reduce existing differences between regions, as well as to induce the development of regions lagging behind, the EU uses Regional Policy instruments. Therefore, Cohesion Policy is briefly presented in the following part of the paper, focusing on Cohesion Policy in Central and Eastern European countries. According to a study by Iyer et al. (2010: 291) but also Agostino et al. (2020), Camagni & Capello (2011 in Stimson, Stough & Nijkamp, 2011), it can be concluded that allocating monetary funds to lagging regions is not sufficient in itself. It is necessary to increase capacity, accountability, and participation at the local and regional levels, requiring significantly higher engagement. One should also take into consideration the many underlying problems faced by lagging regions, for example, transportation and other trade costs, which could be too high (Krishna et al., 2010: 2) or, as stated earlier, geographical distance from significant export markets or large, knowledge-intensive areas. Pose-Rodríguez & Ketterer (2018) examine data on 249 NUTS 2 regions in the EU for the period 1999–2013 to assess the effect of the quality of government on the development of European lagging regions. Their summary findings relate to the fact that institutions are highly influential in regional transformation processes and government policies' effectiveness at development. Furthermore, there are no simple solutions that are possible and easy to apply in each region, so the instruments need to adjust

to regional specifics. There is still a big problem of insufficient funds and a kind of poor “starting position” of underdeveloped regions, so transformation processes are complex and often take a long time to remove initial barriers.

Thus, it can be concluded that the most challenging task for the EU is transforming the economic structure on the regional level both by upgrading the institutional environment and redistributing growth from leading to lagging regions. That is why Cohesion Policy is particularly important for further development.

3. THE COHESION POLICY IS SIGNIFICANT SOLUTION FOR REGIONS LAGGING BEHIND

Cohesion Policy is one of the essential EU’s tools for the overall improvement of the well-being of its citizens through reduction of regional disparities. Molle (2007:12) clarifies the most straightforward possible relationship of causality and disparities: less disparity means more cohesion; more inequality means less cohesion. Moreover, regional and social policies are the most significant EU policies aimed at better wealth redistribution, as noted by Rodokanakis (2006), and Martin (2005), but also trigger for competitiveness, employment and territorial cooperation as noted Constantin, Goschin & Dragan (2011 in Stimson, Stough & Nijkamp, 2011; Brunazzo, 2016). The EU’s Cohesion Policy follows the standard policy cycle comprising the following stages: 1) awareness of the problem, 2) design of policy system, 3) defining of objectives and elaborating appropriate instruments, 4) delivery of the policy through programs and projects, 5) checking (evaluation) of effectiveness and consistency, and 6) drawing lessons and giving suggestion for improvement. The Cohesion Policy diverse public intervention program based on a range of funding opportunities, which targets different policy areas, such as provision of transport services and social infrastructure to support lifelong learning programs (Bachtrögler et al., 2020). Although Cohesion Policy has provided a stimulus for regional economic transformation and development (Tripl, Zukauskaitė & Healy, 2020); Dyba, Loewen, Looga & Zdražil, 2018; Ferry & McMaster, 2013; Constantin, Goschin & Dragan, 2011 in Stimson, Stough & Nijkamp, 2011; Berend, 2011), regional disparities still present a severe challenge for CEECs. In their analysis, the same authors confirm the positive effects of the EU cohesion policy on the development of CEE regions but also national regional policy components are still important. Furthermore, Bachtrögler et al. (2020) state that the effect of cohesion policy is slightly uneven, which may explain varied popularity and political support for cohesion policy across countries. One should bear in mind that CEECs have started from a weak position. As Gorzelak (2017:33) explains, CEECs became

members of the EU after a complex process of post-socialist transformation, which took place without any significant financial support. Opinions differ as to whether this transformation has been completed. Moreover, governance structures in CEECs did not (or did not want to) understand that it was not enough just to follow “the guidelines of international organizations” but to create more efficient, and innovation-capable institutions and policies. The globalization of production further weakened the position of these countries but also, as already pointed, real financial support to CEECs was almost absurd compared with the Marshall Plan (after World War II). In terms of GDP, CEECs experienced a regional form of the “great depression” resulting in “two lost decades.” In addition, the regional market and the position of regions are strongly affected by these four exogenous trends (see: Drvenkar, 2016; Adžić & Drvenkar 2017): 1) globalization (geopolitical and geo-economic changes), 2) transformation of the production system (undergoing (post)socialist restructuring following the European concept), 3) a growing impact of technological advancement and innovation, and 4) hyper-competition. Moreover, as Bourdin (2019) emphasizes, the uneven distribution of wealth is an extremely significant political issue. The general objective of the EU’s integration scheme is to stimulate the least developed countries/regions to catch up with the more developed ones. There is also a need to bridge the gap in new knowledge and innovation capabilities, as well as in research and development, as highlighted by Kondratiuk-Nierodzinska (2016). Bourdin (2019) seeks to present the effects and results of Cohesion Policy in different areas to show that its effects differ depending on the area. According to Trippel, Zukauskaitė & Healy (2020), Camagni & Capello (2017), Constantin, Goschin & Dragan (2011), the EU’s cohesion policies have been driven by two different logics – redistributive and development. The former rests on the presumed need to compensate lagging regions for the absence of some preconditions for growth, while the latter, which is based on generalized conditions of shrinking public resources and driven by the need to achieve overall spatial efficiency and competitiveness (Donaghy, 2019; Maier & Trippel, 2019 in Capello & Nijkamp, 2019; Krugman, 1991), focuses on a growth perspective, endogenous development (Stimson et al., 2019 in Capello & Nijkamp, 2019), and continuous innovation (Crescenzi, de Blasio & Giua, 2020; Capello, 2019 in Capello & Nijkamp, 2019). Various authors have raised various issues and concerns. They include: 1) concerns about the future redistribution of the EU’s regional policy funding, and the dilemma between equity and competitiveness (Bourdin, 2018), 2) the question of whether regions in all EU Member States benefit from Cohesion Policy (Crescenzi & Giua, 2018; Constantin, Goschin & Dragan, 2011 in Stimson, Stough & Nijkamp, 2011), 3) how to respond to the widening gaps and challenges arising from globalization (Adžić & Drvenkar 2017; Barnier, 2003), and 4) the role and influence of actor coalitions and interests in shaping policy and budgetary outcomes (Manzella & Mendez, 2009). Kondratiuk-Nierodzinska (2016), Crescenzi,

de Blasio & Guia (2020) seeks to determine which innovation capabilities differentiate CEECs and highly developed European economies the most and to what extent the performance of CEECs within each innovation capability has changed over a decade. Furthermore, as Bourdin (2019) states that the implementation of the EU's Cohesion Policy has shown that the market forces are not necessarily sufficient in the reduction of regional disparities. This tool for financial solidarity between the Member States was created to improve the competitiveness of slow growth regions and reduce disparities among regions. Other authors, such as Palne Kovacs (2016), emphasize that the nature of regional disparities, the use of Structural and Cohesion Funds, and the governance aspects reveal many CEEC features behind the phenomena of Europeanization and conditionality. Palne Kovacs (2016) points out that CEECs have started to catch up with the rest of the EU, thus reducing disparities between EU Member States; however, the regional gap is growing within these countries due to their lower competitiveness and lower governance capacity in the management of EU funds, as pointed out earlier. Based on the T-test ($t = -6.191$, $df = 19.264$, $p = 0.000$ *) (see: Appendix, Table 4), it can be assumed that there is a statistically significant difference in GDP per capita between CEECs and other EU Member States for 2008. CEECs have recorded an average value of GDP per capita of € 11,257.27, while other countries have recorded three times the average amount of GDP per capita in the same year (€ 33,577.06). Statistically significant differences have also been found for other observed years. GDP per capita of the Republic of Croatia is significantly below the average of the EU countries and CEECs: in 2008, it amounted to € 11,200 (Croatia), € 24,808.57 (EU28), € 11,257.27 (CEEC); while in 2017, it amounted to € 11,900 (Croatia), € 29,167.86 (EU28), € 14,090.91 (CEECs). The smallest difference in average GDP per capita between CEE countries and other EU Member States in the period 2008 to 2017 was recorded in 2009 (€ 21,656.2), while the largest was recorded in 2017 (€ 24,832.62), with an upward trend since 2009. Since the NUTS 3 level refers to primary administrative units in Croatia, the results presented below are given for the indicators at the NUTS 3 level. T-test ($t = -2.009$, $df = 237$, $p = 0.046$ *) (see: Appendix, Table 5) shows that there is a statistically significant differences in GDP for 2014, 2015, and 2016 between NUTS 3 regions of the Republic of Croatia and NUTS 3 regions of other CEE countries. However, the results of the conducted t-test do not indicate which country, in terms of GDP at the NUTS 3 level, differs from which other country. CEECs NUTS 3 regions have an average GDP value of € 4,864.46 million (2014), while the average GDP for the same year for Croatian NUTS 3 regions amounted to half that value, i.e., € 2,068.14 million. Given the above, the authors conducted the ONE-WAY ANOVA test to determine the countries from which Croatia deviates in terms of average GDP in NUTS 3 regions. Games-Howell showed that Croatia is at the NUTS 3 level in terms of GDP within the CEE countries and that it deviates significantly from Poland (Table 1).

Table 1.

ONE-WAY ANOVA TEST OF CROATIAN NUTS 3 REGIONS BY GDP
COMPARED TO POLAND, 2014, 2015 AND 2016

Countries	GDP (mean)		
	2014	2015	2016
Croatia	2,068.1419	2,124.0919	2,220.9252
Poland	5,632.376	5,893.9089	5,843.1273
ANOVA test	df= 10 F= 4.120 p<0.001	df= 10 F= 4.175 p<0.001	df= 10 F= 4.151 p<0.001

*p<0.05

**in millions of €

Source: created and calculated by authors according to Eurostat 2020a & 2020b

4. INTRA- AND INTER-INDUSTRY TRADE BETWEEN CEECS AND THE EU: WHY DOES IT MATTER?

Industrial policy can directly influence the development of the industrial structure of the economy, leading it in the desired direction and to the desired level. As Drvenkar (2016) noted, the new industrial policy is stimulated by new patterns of regional revival. It has to be based on the strength of regional industries and regional cooperation networks, so it is crucial to understand the regional dimension of industrial policy (Sepulveda & Amin in Bianchi & Labory, 2006; Drvenkar, 2012; 2016) and changes in the economic structure of lagging regions (Tripl, Zukauskaitė & Healy, 2020; Giannakis & Bruggeman, 2020). Martin (2005) suggested some mechanisms through which trade integration in Europe can support convergence between countries. This, however, is harder for regions within countries, as poorer regions cannot exploit their comparative advantages relative to rich regions in the same way that emerging countries can exploit their comparative advantages relative to more developed countries. The impact of cohesion policy can be seen through industry trade, primarily because trade plays a crucial role in the interaction between locations, growth, and inequality. It can be divided into inter- and intra-industry (IIT) trade. Many authors point that countries with higher per capita income and at a higher level of development have a higher share of IIT in total trade. Škuflić & Vlahinić-Dizdarević (2004: 748) and Botrić (2012: 11) noted that the intensity of

IIT as bilateral trade between countries with similar but qualitatively differentiated products is at the same time an indicator of the competitiveness of an economy. The basics of the intra-industry model can be found in Balassa (1966) & Krugman (1979), among others. These models separate the overall trade between two entities into intra-industry trade (trade between the same industries) and inter-industry trade (trade between different sectors, or “one-way trade”). As Kawecka-Wyrzykowska (2009, but also see: Gabrisch & Segnana, 2003) noted, inter-industry trade (“one-way trade”) reflects factor endowments and technology, which have a basis in the theory of comparative advantages. On the other hand, intra-industry trade (“two-way trade”) is based on economies of scale, income levels, innovations, etc. Alternatively, as Attila (2015) explained, comparative advantages drive inter-industry trade through specialization, and intra-industry trade is driven through economies of scale. Kawecka-Wyrzykowska et al. (2017) also noted that intra-industry trade brings more benefits than inter-industry specialization. There are two types of intra-industry trade. Vertical intra-industry trade is the trade of relatively close substitute products within the same industry. Horizontal intra-industry trade is the trade of differentiated products within the same industry (Botrić, 2012). In 1985, Helpman & Krugman added factor endowment differences, which explain the existence of two-way trade. IIT’s initial explanations (Krugman, 1979, Lancaster 1979, Helpman 1981) were based on large-scale economies (monopolistic competition and product differentiation). The models that explain vertical IIT do not always agree on the different qualities of goods. As Dautović et al. (2014) state, horizontal intra-industry trade (HIIT) is a two-way trade in products of similar quality, cost, and technology employed, but with different characteristics or specific attributes. Vertical intra-industry trade (VIIT) involves simultaneous imports and exports of goods whose quality and technology, and production costs are not comparable. HIIT’s theoretical basis was developed by Dixit and Stiglitz (1977), Lancaster (1979), Krugman (1979, 1981), and Helpman (1981, 1987), while the theoretical basis for VIIT was proposed by Falvey (1981), Shaked & Sutton (1984), Falvey & Kierzkowski (1987) and Flam & Helpman (1987).

Countries specialize in the quality spectrum of a particular product based on the assumption that human capital development or the intensity of physical capital are correlated with higher product qualities. Economic distance, the gap in the accumulation of physical or human capital between countries, is a pertinent factor of VIIT and is not exclusively related to overall inter-industry trade (Dautović, 2014: 5). So, as Dautović (2014) and Kawecka-Wyrzykowska (2009; 2017) state, trade patterns, in the European context, are a good indicator of the convergence process between countries. Furthermore, it is argued in the IIT literature that a higher degree of inter-industry trade will, over time, lead to an advanced degree of economic integration, economic diversification, and industrial development. Evolutionary thinking, noted Drvenkar (2016), refers to ‘technological lock-in’ to

explain the reduced ability of old industrial regions to learn and innovate (Storper & Scott, 1993; Storper, 1991; Boschma and Lambooy, 1999). Thus, the recovery process, the transformation of economic structure, and the convergence of countries in terms of income and development levels are expected to generate further growth in IIT. Fidrmuc, Grozea-Helmenstein, and Wörgötter (1997, in Kawecka-Wyrzykowska, 2009) observed that the increase of intra-industry trade is not uniform but reflects different patterns of integration and a different pace of industrial restructuring.

Among others, Attila (2015) analyzed the agribusiness sector among Visegrad countries and compared it to the EU. The conclusions were as follows: 1) EU enlargement was a significant reason for the growth of intra-industry trade, 2) the trade of most CEECs remains one-way (or intra-industry) in nature (see also: Soós, 2013), 3) similar factor endowments can lead to a trade of homogenous as well as quality-differentiated produce, 4) geographical proximity fosters trade, 5) product differentiation does not foster two-way trade of quality-differentiated goods, and 6) foreign capital does not foster intra-industry trade (see also: Ambroziak, 2012). Soós (2013) noted that the distance of CEECs from the EU is so negligible that it might be somehow irrelevant for the “non-distant-location-requirement” of the production of Schumpeter immobile products. Gabrisch and Segnana (2003) noted that after seven years of trade liberalization, the division of labour between the EU and the candidate countries reflects their specialization in low and high-quality goods (see Appendix, Table 6). Quality advantages lie with EU firms, and the reasons are as follows: 1) discrepancies in GDP per capita between EU member states and candidate countries (see also: Attila, 2015), 2) the size differences between them, which influences demand, and 3) inequalities in income distribution among households. Drvenkar (2016) pointed out two key areas which should be distinguished when looking into the regional dimension of industrial policy (Bellandi & Di Tommaso, 2006 in Bianchi & Labory, 2006): 1) industry with its organizational and territorial characteristics (generic industries, generic clusters, local production systems) and 2) location with its social and economic aspects and evolutionary processes (state territory, location, industrial location). Considering the impacts of globalization and integration processes that have taken place over the last thirty years and the industrial performance indicators of these countries, it is evident that some have fared much better than others. Czechia increased manufacturing exports per capita by 13,628\$ from 2002 to 2017 and Slovakia by 12,121\$ in the same period. Croatia, on the other hand, managed an increase of only 2,338\$, which can be partly justified by several factors: 1) the “delayed transition” due to the Homeland War of the 1990s, 2) the worldwide financial and economic crisis from 2009 to 2015, 3) the later entry into the EU (although this cannot be an excuse). The primary indicators of intra- and extra-EU trade are given below (Table 2). Restructuring and productivity growth come through innovation. In doing so, it is

necessary to restructure the low-income economy. Still, limitations come from a lack of educated scientists and engineers, research and development laboratories, or poor intellectual property protection. Moreover, it is complicated to accomplish innovations because of a lack of demand from potential users in the real economy – from entrepreneurs! EU accession has had a significant positive impact on member states. Analysis of intra-EU trade in total exports (Table 2) confirms that the share of exports of machinery, vehicles, and transport equipment in Slovakia was at the level of 39.8% in 2002.

Table 2.

INTRA- AND EXTRA-EU TRADE, SELECTED GROUP OF CEECS

Country	Share of imports by Member State (%), EU=100		Share of exports by Member State (%), EU=100		Machinery and transport equipment					
	2002	2019	2002	2019	Share of exports %		Trade balance, million EURO		Share of imports %	
					2002	2019	2002	2019	2002	2019
EU28	100	100	100	100	45.1	40.7	59,659.4	171,199.4	35.1	31.9
Czechia	1.3	1.9	0.6	1.4	51.5	62.4	-266.1	484.2	45.3	63
Poland	1.9	3.6	0.9	2.3	33.8	41.9	-660.0	-78.3	33.2	33.2
Slovakia	0.5	0.8	0.2	0.6	39.8	74.1	-192.8	-206.0	24.7	34.8
Hungary	1.5	1.4	0.6	1.0	46.2	49.2	119.6	578.9	57.6	51.1
Romania	0.6	1.1	0.4	0.8	22.5	36.5	2.6	-790.0	25.8	30.6
Slovenia	0.2	0.7	0.3	0.5	27.0	26.9	302.8	-105.9	32.8	34.8
Croatia	0.3	0.2	0.2	0.2	32.1	24.2	-15.9	112.5	24.8	19.5
Bulgaria	0.4	0.6	0.3	0.5	13.1	16.8	103.1	151.8	14.1	16.7

Source: authors according to Eurostat, 2020a & 2020b

In addition, the Czech Republic ranked 18th, Poland 23rd, Slovakia 25th, Hungary 27th, and Croatia 56th in terms of industry competitiveness (Table 3). Gross value added per capita, as a most important indicator of the industry and the economy in general, almost tripled in the Czech Republic and Poland, doubled in Hungary and Slovakia, and remained nearly the same (\$ 767 more) from 1995-2002 to 2010-2017. The share of medium and high-tech industry in the export of

industrial products grew significantly in all the previously mentioned countries except Croatia and Bulgaria (2002 and 2015), just like the industrialization intensity index (2002 and 2017) (Table 3).

Table 3.

INDUSTRIAL PERFORMANCE INDICATORS OF SELECTED CEECS

Country/ World ranking by CIP* index, 2020	World impact ranking		MVA per capita		Manufactu- red exports per capita		Share of medium-or- high-techno- logy produc- tion in ma- nufactured exports (%)		Industri- alization intensity index	
	2002	2017	1995 \$, 2002	2010 \$, 2017	\$, 2002	\$, 2017	2002	2015	2002	2017
Czechia/18.	32.	27.	1,607	5,607	2,669	16,297	56.2	69	0.47	0.96
Poland/ 23.	47.	22.	885	2,848	782	5,153	46.4	56.1	0.32	0.48
Slovakia/ 25.	43.	39.	1,067	4,951	2,459	14,580	54.5	70.7	0.40	0.68
Hungary/ 27.	36.	36.	1,461	3,007	3,102	10,688	73.7	76.6	0.53	0.64
Romania/ 33.	74.	37.	364	2,281	452	3,151	31.5	58.2	0.46	0.59
Slovenia/ 35.	22.	57.	3,226	4,828	4,751	14,040	53.0	62.8	0.50	0.51
Croatia/ 56.	45.	63.	1,085	1,852	920	3,258	41.9	45.3	0.25	0.36
Bulgaria/ 58.	73.	60.	366	1,113	475	3,192	32.7	42.2	0.36	0.38

*Competitive Industrial Performance of 150 countries of the world

Source: authors according to UNIDO 2020; 2018; 2005; UNIDO Statistics data portal, 2020

Integration processes have unquestionably improved the standard of living in CEECs. However, although EU cohesion policy has had a significant impact on the CEEC's transformation processes and institutional set-up, industrial upgrading has been less than satisfactory. In this context, the conclusions of Rodokanakis (2006) are pretty pertinent: as the European Commission is correctly showing particular interest in the productive performance and competitiveness of the EU and its regions, it seems that the role, effectiveness, and funding of regional policy are being subjected to a more critical appraisal and re-evaluation (Rodokanakis, 2006). As for Croatia, it is more than evident that the country is lagging in terms of industrial and economic upgrading and transforming to higher levels of competitiveness.

5. CONCLUSION

According to the literature review and analyses presented, there is a positive correlation between GDP per capita and EU fund utilization (Pearson's correlation coefficient). In the context of the Cohesion Policy of the EU, European integration has contributed significantly to shaping national policies and EU institutions, forcing regions to transform and boost their competitiveness. Therefore, it is necessary to turn to the positive examples within CEEC and learn from the good practices of other countries such as Czechia (as shown in the Competitive Industrial Performance Index or Industrialization Intensity Index). Although achieving better economic, social, or industrial performance needs more than a decade to become noticeable, two conclusions can be drawn from the analyzed data: 1) there is hope for all other countries that had a low Industrialization Intensity Index in 2017 (Slovenia, Poland, Bulgaria, Croatia); 2) national policies should be reshaped to secure the use of comparative advantages at the national, NUTS 2 or any other (non)administrative level since this can help a national economy to become more competitive.

Intra- and inter-industry trade indicators and industrial performance indicators show how European integration has contributed to strengthening trade ties among EU countries and the better performance of the CEEC industrial base. Considerable challenges remain to investigate the economic structure of the NUTS 3 regions due to the complexity of research. Still, such an analysis could provide many answers to what stimulates regional economic growth and which transformation processes of a regional economic structure are responsible for lagging – or some local/regional initiatives, spillover effects, and government improvements.

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APPENDIX

Table 4.

T-TEST OF GDP PER CAPITA OF EU COUNTRIES (CEEC & REST OF EU17)

EU countries	GDP per capita 2008	GDP per capita 2009	GDP per capita 2010	GDP per capita 2011	GDP per capita 2012	GDP per capita 2013	GDP per capita 2014	GDP per capita 2015	GDP per capita 2016	GDP per capita 2017
CEEC	11257,27	10069,09	10417,27	11088,18	11318,18	11595,45	11981,82	12527,27	13027,27	14090,91
Other	33577,06	31725,29	32956,47	33827,65	34152,35	34445,88	35390,59	37235,29	37841,18	38923,53
T –test	t=-6,191 df= 19,264 p = 0,000	t=-5,267 df= 26 p = 0,000	t= -5,069 df= 26 p = 0,000	t=-4,776 df= 26 p = 0,000	t= -5,791 df= 18,386 p = 0,000	t=-5,597 df= 18,132 p = 0,000	t=-5,491 df= 18,063 p = 0,000	t= -5,552 df= 18,000 p = 0,000	t= -5,534 df= 18,089 p = 0,000	t=-5,422 df= 18,250 p = 0,000
Difference in average GDP per capita	22319,79	21656,2	22539,2	22739,47	22834,17	22850,43	23408,77	24708,02	24813,91	24832,62

*p<0,05

Source: Created and calculated by the authors according to Eurostat 2020a & 2020b

Table 5.

T-TEST OF CROATIAN NUTS 3 REGIONS BY GDP COMPARED
 TO CENTRAL AND EASTERN EUROPEAN COUNTRIES,
 2014., 2015. AND 2016.

Country	GDP 2014	GDP 2015	GDP 2016
Croatia	2068,1419	2124,0919	2220,9252
Others	4864,4550	5116,7765	5240,1137
T –test	t=-2,009 df= 237 p = 0,046	t= -2,027 df= 237 p = 0,044	t= -1,991 df= 237 p = 0,048

*p < 0,05

Source: created and calculated by authors according to Eurostat 2020a & 2020b

Table 6.

CATEGORIES OF PRODUCTS INVOLVED IN INTRA-INDUSTRY TRADE

Differentiated products	(1)	Commodities with rather similar input requirements but low substitutability in use (e.g. petroleum products: petrol and tar; iron products: bars and sheets).
	(2)	Commodities with high degrees of substitutability in use (e.g. wood and steel furniture; nylon and wool yarn).
	(3)	Commodities with similar input requirements and high substitutability in their respective uses (e.g. cars: Renault and Volkswagen; cigarettes: Players and Gauloises).
	(4)	Parts, components and final products are classified in the same statistical category.
Homogeneous products		Functionally similar products traded in specific conditions such as: <ul style="list-style-type: none"> • re-export (mostly driven by the minimization of transport costs); • border trade (trade in products which are functionally homogeneous but differentiated by location); • periodic trade (trade is based on predictable, periodic fluctuations in nations' production of or demand for commodities such as agricultural products, electricity or similar goods); • trade in strategic goods (trade in homogeneous commodities due to government regulations).

Source: Kawecka-Wyrzykowska et al., 2017 based on: Grubel and Lloyd (1975, pp. 71-88, 114-118).

REGIONALNA EKONOMSKA TRANSFORMACIJA – MOŽEMO LI UČITI OD ZEMALJA SREDNJE I ISTOČNE EUROPE

Sažetak

Neovisno o stupnju razvijenosti suvremenih zemalja i njihovih regija, postoje značajne regionalne nejednakosti i neravnoteže. Europske regije značajno se razlikuju po svojoj gospodarskoj strukturi, povijesti, raspoloživim vještinama radne snage, tehnološkim profilima, institucionalnim i upravljačkim kapacitetima i mnogim drugim aspektima. Većina zemalja Srednje i Istočne Europe koje su članice EU nisu iznimka, a to je posebno evidentno na NUTS 3 regionalnoj razini. Kada se promotri prosječna razvijenost EU zemalja, razlike unutar zemalja Srednje i Istočne Europe koje su članice EU još su veće. Kohezijskom politikom EU nastoji smanjiti ekonomske razlike među regijama, ali programi i instrumenti ove politike ipak su u međuovisnosti s razvojnim specifičnostima regija. Neminovna je činjenica kako su instrumenti kohezijske politike značajan pokretač razvoja i regionalne razvojne transformacije zemalja Srednje i Istočne Europe koje su članice EU i mogu pomoći uravnoteženju regionalnog razvoja, s posebnim naglaskom na sektorske politike.

Tehnološke inovacije uvijek su bile ključni pokretač napretka, ali tijekom posljednjih 50 godina njihov tempo i utjecaj impresivno rastu. Vodeće tehnološki razvijene regije kontinuirano razvijaju i prihvaćaju inovacije kao osnovu napretka, a regije koje zaostaju zahtijevaju potpunu transformaciju svoje ekonomske (industrijske) strukture. Shodno tome, cilj ovog rada je utvrditi efikasnost provedbe kohezijske politike u zemljama Srednje i Istočne Europe koje su članice EU analizom BDP-a po stanovniku i alokaciji i apsorpciji sredstava iz EU fondova. Nužno je istražiti važnost vertikalne i horizontalne industrijske politike u zemljama Srednje i Istočne Europe koje su članice EU. Kako bi se to postiglo, u radu se analizira ukupan rast proizvodnje i među industrijska te unutar industrijska razmjena (dvosmjerna trgovina) zemalja Srednje i Istočne Europe koje su članice EU i utvrđuje se utjecaj članstva promatranih zemalja u EU na njihovu razvijenost i transformaciju industrijske osnove.

Ključne riječi: izvori regionalnog ekonomskog rasta, regionalna dimenzija industrijske politike, regije u zaostatku, zemlje Srednje i Istočne Europe