

Main Tendencies of Economic Development of the Cross-Border Regions of Russia and Belarus in the Conditions of Interstate Integration

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Abstract. The Russia and Belarus regions economic development depends on a number of factors, one of which is the presence of a common border. Therefore, the aim of this study is to carry out a comparative analysis of economic indicators of the Russia and the Republic of Belarus border regions (Dnieper-Dvina region), to identify the main trends of their economic development. Research methodology: the analysis of the Dnieper-Dvina region economy is carried out according to the main economic indicators for the period from 1992 to 2018. The economic development of Smolensk, Vitebsk, Mogilev regions is studied in comparison with the capital Russia and Belarus regions and other regions. The growth rate of gross domestic product (GDP) per capita (including gross regional product) and the industrial production index were chosen as the main indicators. The main results of the study. The unevenness of regions economic development in terms of GDP per capita and industrial production index is revealed. The main specialization of the region areas is determined. In the Dnieper-Dvina region, the economy is less volatile, develops slowly, but often develops more unpredictably, which may be due to the structural components of regional economies. The current situation indicates the absence of Dnieper-Dvina region advantages in comparison with other regions of these two countries.

1. Introduction

The territorial structure of Russia and Belarus is significantly different. Unlike Russia in the Republic of Belarus, all six regions are comparable in area, while they all border on the Central region – Minsk. Thus, all regions are equidistant from the Central region. Each region shares borders with three other provinces.

It can be assumed that the regions of Belarus should develop more evenly compared to the regions of Russia. The socio-economic situation in the Russia and Belarus regions is uneven. It is known that the region's economic development depends on their large-scale characteristics in natural units (area, population, natural resources, etc.). It can be assumed that the region's economic situation is also affected by the proximity of another country regions.

Today it is important to consider not separate regions of Russia, but different regions, including our country subjects, as well as the territories of other countries. These regions are formed on a territorial

basis. For example, the Baltic region includes 9 countries, these are separate territories of Poland, the Baltic States, Russia, Sweden, Finland, etc. [1].

Modern studies show that these regions economies are not only connected, but have common trends. For example, in the works of V. L. Baburin the economic and geographical position influence of regions on their competitive positions is shown [2]; tendencies of various separate region's economies [3].

The Dnieper-Dvina region includes the Russia and Belarus border regions, in particular Smolensk, Vitebsk and Mogilev. This region may have its own development trends, independent of the its constituent countries development environment.

2. Theoretical approaches to regional studies

For Russia and other independent countries of the post-Soviet area, the issues of population and economy adaptation of the "new" and "old" Borderlands regions to the geo-political changes are relevant. The works of many Russian researchers are devoted to the study of this problem. So V. A. Kolosov paid considerable attention in his works to the socio-political and infrastructural problems of the Russian border [4]. L. B. Vardomsky's works make a significant contribution to the foreign economic activity study of the post-Soviet space border regions. He studied in detail the economic parameters of the Russia border regions development, made an attempt to analyze them in the system of international economic relations. L. B. Vardomsky distinguishes two models of cross-border cooperation – institutional (multi-sectoral cooperation with a high degree of integration, fixed institutionally) and trade (traditional) [5]. He notes that the developed border regions are characterized by the pre-dominance of the institutional model, while the Russian regions of the new border region are still characterized by the predominance of a narrower trade model, which undoubtedly affects the General trend of the Belarusian-Russian border economic development.

Representatives of the Siberian and Far Eastern regional Economics schools studying the development of the regional economy, its trends, peculiarities of contemporary Russia regional economics, as reflected in the works of P. A. Minakir and A. N. Demanenko [6]; macro-economic zoning of Russia, as a method of economic analysis and forecasting (D. Wisneski, A. N. Demyanenko) [7]. The Moscow regional economics school with the theory development is actively conducting research on Russia regions economic indicators, this topic is devoted to the research of A. G. Granberg, Yu. S. Zaitseva [8]

The problems of border regions cooperation are also considered in the Institute of Economics of the Belarusian Academy of Sciences works: P. G. Nikitenko and T. S. Vertinsky. They studied in detail the influence of the Union state formation on foreign trade of Russia and Belarus. [9]. In her works, T. S. Vertinskaya identifies methods and indicators for assessing economic integration and connectivity of border regions [10]. S. L. Barinov considers the influence of borders on the population communication [11].

The largest number of the Russian-Belarusian border studies is made by A. P. Kutrovsky and G. V. Radevski, especially for the Smolensk-Mogilev section. In one of the publications authors considered the formation of the Russian-Belarusian cross-border region after the conclusion of the Customs Union. A. P. Kutrovsky and G. V. Radevski for the first time come to the conclusion that the border regions Russia and Belarus f are developing more slowly in comparison with the economies of their countries [12]. Also works of A. P. Karaskovo describe the features of the modern economic and social development of the Russian-Belarus border regions. Special attention in his works is paid to the center-peripheral relations, the leading problems of region development are revealed, the prospects of the Russian-Belarus border development as a single cross-border region are assessed.

Much attention is paid to the study of the institutional environment transformation of the Russian-Belarus border regions in the works of K. A. Morachevskaya. It examines the key consequences of state integration processes for the Russian-Belarus border economic development [13]. The examples of positive and negative consequences for various spheres – foreign trade, agroindustry complex, small business are revealed.

A number of international scientists study the cross-border cooperation experience, its principles and analyze transnational relations. Among them: M. Lesage, F. Briol, H. Cloud, S. Brahman, etc. So, in particular, S. Brahman in his works pays attention to issues related to the movement and concentration of human resources in the European Union border regions [14].

S. Stiller and A. Neiber investigate the integration processes influence on the development of border areas, identifying and describing the positive and negative effects of this phenomenon [15].

P. de Grave considers the dynamics of the European States regions development in the framework of building the ES, concluding on the polarization of regional development [16]. D. Newman considers political aspects of interaction between regions in different legal jurisdictions [17].

P. Cheshire and J. Duranton talk about the actualization of research in the field of regional economy in the last 15 years, not only in England but also around the world. The authors raise the problem of economy indicators differentiation of large cities and small settlements [18].

Regional studies of South and South-East Asia also distinguish them into a separate region, with the division into smaller territorial units, in which there are certain problems of economic development [19].

In the United States there are well-known R. J. Barro works, which focuses on economy of individual States and cities in America as part of its convergence [20] S. Hong, H. G. Shell, Q. S. How in their study of production networks in the United States talking about the close relationship of the production process in the country and the influence of the industries on each other [21] To avoid any "sectoral shocks", the authors propose some methods of crisis prevention [22].

For interregional comparisons and analysis of the industrial country development dynamics, scientists of different countries use the industrial production index, such as K. L. Kliesen examines the dynamics of the U.S. economy since 1986 [23].

Thus, studies of the socio-economic regions border development occupy a significant place in the Russian and foreign scientific literature. The consequences of the integration of Russia and Belarus are discussed in many Russian and Belarusian researchers' articles. Moreover, the advantages and disadvantages of this process requiring further reflection and analysis are formulated. Therefore, within the framework of this article, an attempt will be made to test the hypothesis directly and indirectly following from the works of key researchers of the Russian-Belarus border topics. It is important to check whether the capital regions of the two countries, namely the Minsk and the Moscow region, which facilitate the movement of human, financial and material resources across the border towards regions with higher economic and social potential, benefit from the integration process.

The purpose of the study: to analyze the GRP and the industrial production index of the Russia and the Republic of Belarus border regions (Dnieper-Dvina region) in dynamics, compare them with similar indicators of other regions, to identify the main trends.

3. Research method description

The main research methods are: induction method, table and graphical methods, dynamics analysis, trend detection.

The economic growth of country and region is closely related to the GDP indicators, or rather to its growth. In this article, we will analyze the two most important economic indicators for each country: gross domestic product (GDP) and gross regional product (GRP), as well as the industrial production index.

Since the economic indicators in Russia and Belarus according to official statistics are measured in different currencies, for comparison we will use relative indicators – the growth rate of GDP per capita and the industrial production index. In most cases, it is GDP per capita, together with others, that is used by the International Monetary Fund to assess the country welfare, that is, to determine the degree of its wealth or poverty in comparison with others. This parameter allows us to estimate without taking into account the size of the territory, seasonal and conjunctural fluctuations of the economy.

For this study, the data was taken from 1992, when Belarus legally gained independence. However, official economic indicators are not always available for research, especially regional indicators. In connection with this, some indicators for earlier periods are absent.

4. Research results

We will analyze GDP per capita in Russia and Belarus and GRP per capita in the Dnieper-Dvina region (Smolensk, Vitebsk and Mogilev regions), as well as other regions.

Table 1 shows the dynamics of GDP per capita in some Russia regions in current prices, as a percentage of the previous year according to official statistics [24; 25].

Table 1. Growth rate (chain) of GDP per capita in Russian regions in current prices.

Region	year												
	1992	1995	1998	2001	2004	2007	2010	2013	2014	2015	2016	2017	2018*
Russian Federation	85,5*	95,9*	108,8	125,2	130,5	124,5	117,7	108,1	107,5	110,8	105,1	108,1	112,8
Central federal district			109,1	122,1	128,9	128,0	117,6	109,5	108,5	108,2	106,2	108,1	108,0
Bryansk region			-	123,5	118	126,3	117,1	106,8	111,5	112,7	104,0	110,1	103
Kaluga region			160	134,6	119,5	130,2	122,1	102,8	111,2	103,8	109,4	111,9	101,2
Moscow region			130,1	133,3	128,7	137,5	119,4	106,7	106,4	114,5	113,6	102,6	109,9
Smolensk region			108,7	134,3	118,6	115,7	117,4	110,4	106,3	109,8	103,9	108,3	105,9
Ryazan region			101,5	130,1	115,1	122,1	124,5	112,7	104,5	109,9	103,2	107,6	103,5
Pskov region			102,6	121,8	123,4	121,4	118,3	107,5	108,8	110,1	108,4	105,0	101,1

* predicted or approximate values

According to the table, we can see increasing GDP growth trend in Russia and certain regions after 2008. A notable jump occurred in 2000, when GDP grew by 10 per cent compared to 1999. Especially high rates of GDP growth per capita in 1998 took place in the Moscow region, later other regions presented in the table began to develop.

Then gradually there is a decrease in the growth rate of gross added values of the regions and Russia's GDP as a whole. The highest GDP growth was demonstrated in 2001, the lowest in years 2016-2018, there is a General slowdown in GDP growth in the years of economic crisis 2014.

However, the decline in GRP growth rates in the Smolensk region compared to other regions and the country as a whole is most noticeable. So for the period since 2001, the decrease in GRP of the Smolensk region was 28.4 p., against the Moscow region in 23.4 p. Among the proposed regions, the Smolensk region showed the largest decline in the growth rate of GRP per capita.

According to the region’s ratings, Smolensk region ranked 57th in terms of GRP per capita in 2014-2016. GRP per capita of the Smolensk region lower than in Russia on average by 44%.

Even worse is the situation in the Pskov region, in the regions list for GRP per capita it took 69 place, its GRP is less than the average Russian indicator by more than 2 times.

According to the IMF, Russia in the general GDP per capita list in 2018 took 73 position, which is one step higher than in the previous year. The growth rate per person for this indicator increased by \$ 600 and amounted to \$ 9264.27. Lagging behind the leading developed countries remains significant. Belarus ranks 93rd in this ranking from 5610.17 United States dollars per capita [26].

Consider the growth rate of GDP per capita in the Republic of Belarus compared to the same indicator in the Russian Federation [27] (Fig. 1).

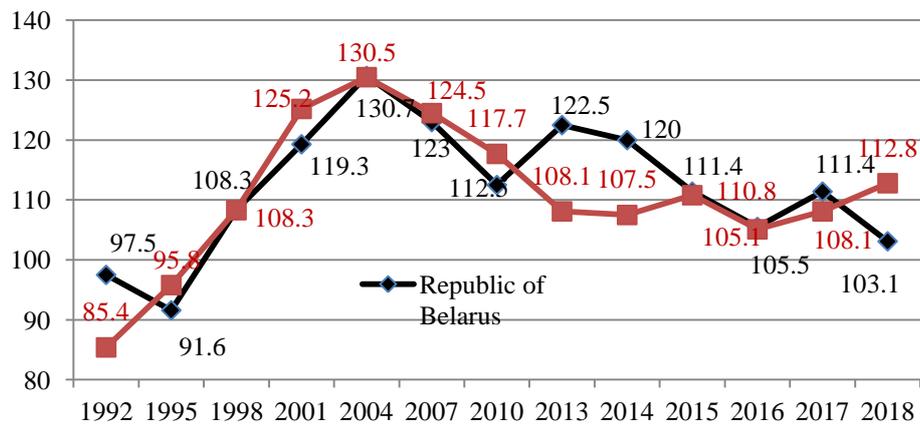


Figure 1. GDP per capita growth rates of Russia and the Republic of Belarus, to the previous year.

As can be seen from the diagram in the 1990s, the economies of the two countries were weakened by political and economic crises. Since 2000, there has been a General upward trend in the GDP growth rates of the two countries until 2004 (up to 130 %) [28]. Russia's GDP growth shows a particularly large jump (from 1998 to 2004 it grew by 35.7 p.). After that, there is a decrease in the indicators by 2018 (especially noticeable in Belarus – up to 103.1 %). There are differences in 2013-2014, when in the Republic of Belarus there is a noticeable increase in GDP growth, and in Russia its slowdown. Unlike Russia, the economic crisis in Belarus was unfolding in 2015-2016, one of the reasons for which was the crisis of 2014 in Russia.

GRP values for individual Belarus regions are known only since 2010 (table 2).

Table 2. GRP per capita in Belarus regions, thousand rubles (from 2016 – rubles).

Belarus regions	2010 y.	2013 y.	2014 y.	2015 y.	2016y .	2017 y.	2018y .
Vitebsk region	12356	46785	57021	62430	6296	6787	6807
Mogilev region	12379	46075	54161	59848	6326	7082	7857
Minsk region	16597	66497	87029	96508	9719	11129	11157

* predicted or approximate values

The table shows that the most effectively GRP produces region is Minsk region. Its GRP per capita in 2018 is 1.4 times higher than the GRP of Mogilev region and 1.6 times – Vitebsk region.

The growth rate of GRP per capita in these regions is different. Thus, in the Minsk region, the GRP growth rate in 2014 was more than 130 % compared to the previous year, while in the regions

bordering Russia, the increase was 17.5 % in the Mogilev region and 21.9 % in the Vitebsk region (Fig. 2).

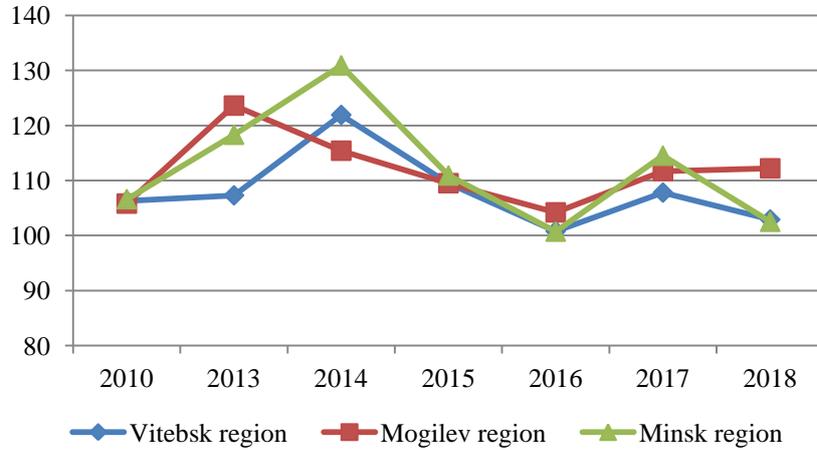


Figure 2. Growth rate of the CPR per capita in the Belarus regions, as % of the previous year.

The change in GRP of the Minsk region is characterized by greater volatility: from significant growth in 2014, to almost constant reading in comparison with the previous year in 2016 and 2018. It is important to note the positive trend of changes in GRP per capita for the period from 2016 in the Mogilev region, it is increasing at a faster pace compared to other regions.

Table 3. The industrial production index in Russia, in % to the previous year

Region	year													
	1992	1995	1998	2001	2004	2007	2010	2013	2014	2015	2016	2017	2018	
Russian Federation	84,0	95,4	95,2	102,9	108,0	106,8	107,3	100,4	101,7	96,6	101,1	102,1	102,9	
Central federal district	81,2	89,0	94,4	106,3	108,9	100,4	105,5	101,4	101,4	97,2	104,0	102,1	108,5	
Bryansk region	82,9	91,0	96,7	112,9	104,7	121,8	122,9	96,8	102,1	113,5	107,3	104	104,5	
Kaluga region	78,0	99,5	92,9	116,3	106,5	110,7	133,5	105,9	103,9	94,6	108,1	115,1	104,5	
Moscow region	79,1	87,7	92,1	104,5	115,8	106,2	107,1	105,2	104,1	101,1	114,7	111,3	110,2	
Smolensk region	91,1	84,3	92,4	107,5	99,8	108,7	106,1	104,7	101,7	101,4	102,5	102,8	100,2	
Ryazan region	80,1	86,8	104,2	104,6	107,0	111,9	111,6	105,7	102,0	97,2	101,7	102,0	103,8	
Pskov region	83,1	83,9	99,4	100,2	103,6	108,0	117,4	100,6	94,4	102,6	104,7	104,1	101,4	

* predicted or approximate values

Consider what was the basis of these changes in the Russian economy in the period under review. To do this, we trace the dynamics of industrial production indexes as a percentage of the previous year according to official statistics (table 3).

The industrial production index is an indicator of the industrial production dynamics, its rise or decline, which is determined in the form of the ratio of the current volume of production in monetary terms to the volume of industrial production in the previous year. The growth of this index can be influenced by inflation, when the output will be produced as much or less, and prices will rise.

The table shows that there has been an increase in industrial production since 1998. This is due to the relatively strong industrial development since 2000. So in this period most of the Russian automobile and motor water was combined. In the 2000s in Russia was opened many dozens of automobile plants that collect cars under the world's leading brands, including Ford, Kia, BMW, Renault, and others, the automotive Alliance Peugeot-Citroen-Mitsubishi, Nissan, Opel, Volvo Truck, Renault Truck Industries and others. The capacity of the plants was de-signed for the production of large and small-node assemblies.

During this period, the food industry is developing, compared with the shortage of food in the regions in the 1990s, there is an increase in the production of meat and dairy industries.

This rise in industry was facilitated by amendments to tax legislation. A flat scale of income tax on individuals was established at 13%, the income tax rate was reduced to 24%, a regressive scale of the unified social tax was introduced, turnover taxes and sales tax were abolished, the total number of taxes was reduced by 3 times (from 54 to 15).

The volatility of the industrial production index in the Moscow region is higher than in the other regions represented: the highest rise was observed in 2003 (+30%), the largest decline – in 1994 (-35%) and in 2009 (-13%).

In 2007-2010, industrial production in many Russia regions increased, especially in Kaluga and Bryansk regions.

When considering the industrial production index in the Smolensk region, it is noticeable that since 2000 it does not show large bursts, the maximum value of the indicator is reached in 2007 (108.7%). The main industry of the Smolensk region in the 2000s was machine-building and metalworking, its share in 2002 was more than 19%, currently the most developed processing industries of the chemical industry. As for 2019, the leading position in the region is occupied by trade.

The lagging behind the all-Russian growth rates in the Smolensk region is primarily due to the structure of the regional economy: there are practically no raw materials industries operating cheap natural resources in the region; the region's industry inherited from the Soviet Union is focused on heavily regulated markets (engineering and energy), the growth of which has so far been limited; the relatively small size of the domestic market.

In the Pskov region, industrial growth was observed in 2010 (17.4%). Of the industrial production in the most common manufacturing, they currently account for about 80% of the shipped goods volume of its own production, performed works and services on its own for industrial economic activities. A large share in the manufacturing industry of the Pskov region is the food industry, including the production of tobacco products (more than 45% in 2016) [29]. Note that in the 2000s in this region, the food industry along with mechanical engineering also prevailed over the rest of the types of production in contrast to the Smolensk, Ryazan and other regions. Thus, in 2002, it accounted for 27.2%.

In recent years (2016-2018) there has been a slowdown in the pace of industrial development in the Pskov region. A number of printing enterprises were closed, metallurgical production, production of rubber and plastic products of other vehicles and equipment decreased.

Let us consider the indicators of industrial development in Belarus.

The main branch of Belarus industry is engineering: the share of local combines in the world market is 17%, 6% of tractors, 30% of dump trucks. Metalworking, chemical and petrochemical industries, power industry, light industry are significant for the country's economy [30].

The industry in the Minsk region is the most stable in the country (table 4).

Table 4. Industrial production index of Belarus regions, % of the previous year.

Region	1992 y.*	1995 y.*	1998 y.	2001 y.*	2004 y.	2007 y.	2010 y.	2013 y.	2014 y.	2015 y.	2016 y.	2017 y.	2018 y.
Belarus													
Vitebsk region	80	85	.	107,9	109	108,7	111,7	95,1	101,9	93,4	99,6	106,1	110,3
Mogilev region	.	.	.	103	.	102,6	98,1	100,1	105	94,5	92	103,4	111*
Minsk region	.	.	.	102,5	109	112,3	116,2	98,1	95,4	93,4	101,3	105,7	103,8
				109,1		110,1	110	105,3	113,3	100,5	101,6	111,5	116,1

* predicted or approximate values

The crisis of 2015-2016 in Belarus practically did not affect the development of industry in the region. Industrial enterprises of the Minsk region produce all kinds of potash fertilizers, parquet panels or plates, cars, dump trucks, more than 73% of pasta, about 62% of water, more than 59% of fuel pellets from sawdust, 58.4% of sugar, more than 59% of tanned and tanned leather, more than 54% of knitted products, more than 46% of dairy products, more than 31% of briquettes from tor-FA, more than 23% of meat and by-products and other products [31].

Belarus region of the Dnieper-Dvina region are in general less stable economy, compared to the capital Regio-rated indicators of industry development in the Vitebsk region is also lower than in Minsk.

The dynamics of Dnieper-Dvina region industrial production index is shown in the graph (Fig. 3)

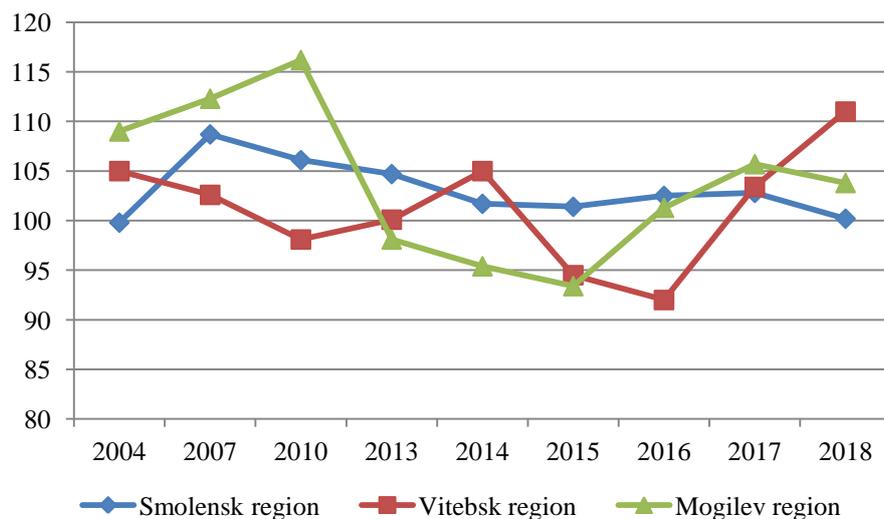


Figure 3. Dynamics of Dnieper-Dvina region industrial production index

From figure 3 we can conclude that the industry of Smolensk region is more stable in comparison with Vitebsk and Mogilev regions.

In the Mogilev region there are both significant jumps in the index (in 2010) and falls (in 2015). In the Vitebsk region recorded the largest drop in the index in 2016 (8%), due to a decrease in the production of basic products for these regions.

Consider the change in the structure of output Dnieper-Dvina region (table 5).

Table 5. Structural changes in the economy of the Dnieper-Dvina region.

Region	Structure of industrial production in 1998-2002	Structure of industrial production in 2015-2018
Smolensk	Jewelry industry (about 15%), food products (16%), chemical production (11%), vehicles and equipment (10%), electrical equipment (9.5%), non-metallic mineral products (7.5%)	Food products (12%), chemicals and chemical products (12.1%), rubber and plastic products (8.8%), wood and cork products (6%), industrial vehicles and equipment (5%), electrical equipment (5%)
Vitebsk	Industry products: electric power industry (19%), fuel industry (18%), food industry (17%), light industry (14%), chemical industry (11%) [32. pp. 76]	Coke and refined petroleum products (about 50%), food products (about 16%), chemical products (10%), textiles, clothing, leather and fur products (6%)
Mogilev	Production of branches: mechanical engineering and metal working (about 20%), chemical industry (fibers and threads, synthetic smoly and plastics), cement [33]	Food, beverages and tobacco products (25%), rubber and plastic products, other non-metallic mineral products (21%), wood and paper products; polygraphic activity (10%), chemical products (9%)

* predicted or approximate values

In all regions, the manufacturing industry is developed, its share in the structure of industry accounts for more than 85% of total production in 2017 (by types of economic activity).

The structure of industrial production in the 2000s was less diverse. The production of the main products types accounted for significant shares. In the Belarus regions, the leading positions were mainly occupied by the branches of mechanical engineering, electric power, food and chemical industries. For example, in the Mogilev region printing activity was not developed, and now it accounts for about 10% of all industrial products.

In 2015-2018, food and petrochemical industries were more developed in the regions of Belarus included in the Dnieper-Dvina region. So in the Vitebsk region, the main share of the industry is the production of coke and oil refining (motor oil additives, mastic bitumen mixtures, chemical synthesis products are produced).

The share of jewelry industry, vehicles and equipment has de-created in Smolensk region; the production of rubber and plastic products has increased significantly.

In Belarus, it is not accepted to make ratings of regions on any indicators, but the study by I. Tochitskaya and I. Pelipas shows that according to the indicators of the macroeconomic stability

index, the calculation of which used both data of the survey and statistical information, there is a large spread of values.

In Minsk and the Minsk region, the macroeconomic situation is generally characterized as stable and even conducive to economic growth. In Vitebsk, Brest and Gomel regions, the index is 2 or more times lower than in Minsk region, signaling the presence of serious problems. This discrepancy is largely due to differences in GRP and other regional indicators. Of particular concern is the "fall" in the last place for the industrial products production of the third of the industrially developed in the past Eastern regions of Belarus – Mogilev region.

According to the survey of enterprises heads of Belarus short-term economic development of the region, positive appreciate in the Gomel region. In Brest, Vitebsk and Mogilev regions the region's economy is expected to decline [34, p. 12].

5. Conclusion

The study of the main economic indicators of the Russia and Belarus border regions development allowed to identify the following main trends.

1. The uneven regions economic development in terms of GDP per capita and the industrial production index can be seen in Russia and Belarus. The highest growth rates of these indicators are observed in the capital regions.

2. Indicators of GDP per capita and industrial production index in the capital's regions are close in terms of their development trend to the indicators for the countries as a whole. In the areas of the Dnieper-Dvina region, the economy often develops more unpredictably. For ex-ample, in the economic crisis's years, these regions demonstrated more stable economy development than the capital regions. This may be due to structural components of regional economies that are less affected by economic and political crises.

3. Economic indicators of the Dnieper-Dvina region are characterized by lower volatility: their fluctuations are not significant in comparison with the Russia and Belarus capital regions.

4. According to the various ratings and individual studies the Dnieper-Dvina region are at the end of the ratings on the main indicators of the economy (Smolensk region is in the end of the Central Federal district rating, Pskov – in the North-West Federal district, Vitebsk and Mogilev – in Belarus). This situation indicates the lack of Dnieper-Dvina region advantages in comparison with other entities. This means that the Russia and Belarus integration did not bring advantages for this region's economy, allowing to increase their economic development, or the Dnieper-Dvina regions could not take advantage of it.

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