

# Research on the Impact of Macro-Region Development on the State Economy

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**Abstract**—The article is devoted to the study of the key parameters of the macro-region's development and their impact on the national economy. The country's macro-region is viewed as a modern instrument of economic policy and an integrated unit of state space. The following are proposed as the main indicators characterizing the development trends of the macro-region's territory: population dynamics, labor productivity index, creation and functioning of territorial clusters, the share of investments in fixed assets to GRP, and resource transfer. A methodology for analyzing the indicators of regions within the macro-region of the country is proposed, and its approbation is carried out on these territories of the Central Black Earth macro-region. A conclusion about the positive dynamics and stable state of indicators of the regions that are part of the macro-region is formulated. The positive effects of interaction between regions within the boundaries of the macro-region due to the mobility of labor resources, tools for creating production chains, and the development of regional clusters are revealed. The aspects of the influence of the development of macro-regions on the economy of the state are revealed, such as scientific, technological and innovative development, development of the resource base, transport and social infrastructure, increasing the efficiency of the economy based on expanding space.

**Keywords**—macro-region, development of the macro-region, development indicators of the macro-region, industrial cluster, index of labor productivity

## I. INTRODUCTION

Transformation and development of macro-regions can be called one of the vectors of socio-economic growth of the national economy. The resources available in national economies are well studied, and their quality and efficiency need to be improved through synergy. The lack of interaction between regions and tools for creating production chains that unite territories are negative factors of economic development. The formation of macro-regions is a modern tool of economic policy, and the macro-region itself becomes an integrated unit of the Russian economy, forming its economic structure [1,2,3,4]. Currently, the study of aspects of indicators of development of modern macro-regions of

Russia and their impact on the country's economy has not been sufficiently developed.

## II. METHODOLOGY

Based on the review and systematization of scientific and practical theories, the content of the categorical apparatus of the macro-region and indicators for assessing its development are presented.

Grouping, analysis, and tabular methods are used to study the dynamics of the main indicators that characterize the development trends of the Central Chernozem macro-region of Russia in 2014-2018.

On the basis of generalization, a set of effects from the impact of the development of macro-regions on the state economy is formed.

## III. RESULTS AND DISCUSSION

The achievements of the country's economy are made up of the results of the functioning of territorial economies. A prerequisite for the effectiveness of the socio-economic system at any level is the availability of resources and their free movement [5,6,7].

It is possible to determine the results of the development of macro-regions based on the study of population dynamics, labor productivity, industrial clusters, investment in fixed assets [8].

It seems obvious to us that there is a direct correlation between the performance of macro-regional socio-economic systems and the development of the national economy.

The concentration of the population on the territory of macro-regions contributes to improving the efficiency of trade and industry, which contributes to the overall economic development of the country. According to Limonov L. E., "population growth in places where it is concentrated allows achieving more than proportional growth of economic activity" [9]. This indicates an increasing return on scale at the aggregate level of the macro-region. Consider the dynamics of population indicators in the Central Chernozem macro-region (table 1).

**TABLE I. DYNAMICS OF POPULATION INDICATORS IN THE CENTRAL CHERNOZEM MACRO-REGION**

<b>Indicator</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2018/ 2014, %</b>
Population by territory:						
Belgorod region, thousand people	1548	1550	1553	1550	1548	100.0
Voronezh region, thousand people	2331	2333	2335	2333	2328	99.9
Kursk region, thousand people	1117	1120	1123	1115	1107	99.1
Lipetsk region, thousand people	1158	1156	1156	1150	1144	98.8
Tambov region, thousand people	1062	1050	1040	1033	1016	95.7
Total Central Chernozem macro-region, thousand people	7216	7209	7207	7181	7143	99.0
Russian Federation, thousand people	146267	146545	146804	146880	146781	100.4
Share of the population of the Central Chernozem macro-region in the total population of the Russian Federation, %	4.93	4.92	4.91	4.89	4.87	98.8

Source: According to the collection "regions of Russia. Socio-economic indicators 2019", Rosstat, <https://rosstat.gov.ru/folder/210/document/13204>.

As can be seen from table 1, about five percent of the population of the Russian Federation lived in the Central Chernozem macro-region during the study period. There was a decrease in the population in the Kursk, Tambov and Lipetsk regions of the Central Chernozem macro-region, which is a negative factor for the development of industries in this

territory.

The most important determinant of the development of a macro-region is population migration within its borders. Let's consider the dynamics of population movement indicators in the Central Chernozem macro-region (table 2).

**TABLE II. DYNAMICS OF POPULATION MIGRATION INDICATORS IN THE CENTRAL CHERNOZEM MACRO-REGION**

<b>Region</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
	<i>Distribution of the number of arrivals by destination, in % of the total number of arrivals</i>									
	<i>Within the region</i>					<i>From other regions of Russia</i>				
<i>Russian Federation</i>	44,8	43,4	43,4	42,0	42,0	42,7	44,0	44,4	45,6	46,5
<i>Central Chernozem macro-region</i>	43,5	41,1	40,6	41,5	44,0	34,3	34,3	33,4	33,3	34,2
Belgorod region	41,7	40,4	39,9	41,2	43,0	39,5	38,1	38,3	37,2	36,0
Voronezh region	46,2	42,9	41,9	40,9	40,8	35,6	37,7	35,5	33,5	34,0
Kursk region	49,4	42,0	37,2	42,4	47,7	35,5	31,7	28,7	32,8	32,7
Lipetsk region	46,3	43,4	44,1	45,9	46,4	34,2	32,2	31,7	33,2	33,5
Tambov region	33,9	36,7	40,0	37,1	42,1	26,6	31,8	32,9	29,6	34,9
<b>Region</b>	<i>Distribution of the number of departures by direction of travel, in % of the total number of departures</i>									
	<i>Within the region</i>					<i>To other regions of Russia</i>				
<i>Russian Federation</i>	47,5	45,7	45,9	43,9	43,1	45,4	46,4	47,0	47,8	47,7
<i>Central Chernozem macro-region</i>	48,8	45,4	45,6	42,7	43,2	41,2	42,3	39,8	39,2	38,3
Belgorod region	49,5	46,1	46,5	43,5	46,2	45,5	46,9	45,0	41,0	38,2
Voronezh region	55,3	50,5	49,4	46,3	44,3	36,9	39,7	37,6	38,0	36,7
Kursk region	55,2	51,6	45,8	41,4	46,3	43,0	46,2	40,6	39,3	39,0
Lipetsk region	49,9	46,5	49,5	45,1	46,0	43,6	43,8	40,0	39,3	39,9
Tambov region	34,2	32,5	36,8	37,1	33,1	37,1	34,9	35,9	38,6	37,6

Source: According to the collection "regions of Russia. Socio-economic indicators 2019", Rosstat, <https://rosstat.gov.ru/folder/210/document/13204>.

As can be seen from the data in table 2, in the regions of the Central Chernozem macro-region, more than a third of the number of arrivals and departures accounted for interregional movement. An even larger share in the structure of arrivals and departures is formed due to the movement of the population within the regions.

It should be emphasized that the active movement of citizens between regions stimulates the development of various sectors of the national economy.

Productivity of human, capital and natural resources is considered to be the most important macroeconomic indicators, as well as an indicator of the level of socio-economic development and competitiveness of macro-regions. The amount of productivity determines the amount of remuneration and profitability.

Let's consider the dynamics of the labor productivity index values in the Central Chernozem macro-region (table 3).

**TABLE III. DYNAMICS OF THE LABOR PRODUCTIVITY INDEX OF THE CENTRAL CHERNOZEM MACRO-REGION, IN % COMPARED TO THE PREVIOUS YEAR**

Region	2014	2015	2016	2017	2018
Belgorod region	102.8	103.2	102.3	103.0	102.8
Voronezh region	106.3	101.0	101.4	102.4	102.6
Kursk region	105.0	103.2	103.3	102.6	104.2
Lipetsk region	105.4	101.3	101.5	101.4	101.9
Tambov region	106.9	107.0	96.8	102.4	104.1
Central Chernozem macro-region	105.3	103.1	101.1	102.4	103.1
Russian Federation	100.8	98.7	100.1	102.1	102.8

Source: According to the collection "regions of Russia. Socio-economic indicators 2019", Rosstat, <https://rosstat.gov.ru/folder/210/document/13204>.

As can be seen from table 3, in the regions of the Central Chernozem macro-region, the values of the labor productivity index increased annually. The growth rate of the labor productivity index in the macro-region exceeded the national level of this indicator, which indicates a favorable productivity environment and the attractiveness of this macro-region for business.

According to many economists, high productivity in the macro-regional economic system can be achieved through the functioning of clusters [10, 11, 12, 13]. Because combining the resources and capabilities of organizations in one or more neighboring regions makes it possible to implement incredible projects for each of them.

According to the register of the Ministry of industry and trade of Russia, four industrial clusters operate in the Central Chernozem macro-region (table 4).

**TABLE IV. INDUSTRIAL CLUSTERS OF THE CENTRAL CHERNOZEM MACRO-REGION**

The name of the cluster	Number of participating companies	The region of the location of the cluster
Electrical engineering cluster Kursk	10	Kursk region
Cluster of oil and gas and chemical equipment manufacturers in the Voronezh region	16	Voronezh region
Interregional pump-building cluster	10	Voronezh region, Lipetsk region
Cluster «Lipetsk mash»	17	Lipetsk region

Source: Ministry of industry and trade of Russia, [https://www.gisip.ru/reg\\_clusters](https://www.gisip.ru/reg_clusters).

As can be seen from table 4, resources and creative potential separated by intra - and inter-regional barriers are consolidated in the Central Chernozem macro-region in the form of industrial clusters. Existing macro-regional industrial clusters contribute to the modernization of the economic structure and accelerate the socio-economic development of the country.

One of the priority mechanisms for ensuring the development of all economic regions of the country is investment in fixed assets.

Consider the dynamics of investment in fixed assets in the Central Chernozem macro-region (table 5).

**TABLE V. SHARE OF INVESTMENT IN FIXED ASSETS TO GRP IN THE CENTRAL CHERNOZEM MACRO-REGION, %**

Region	2014	2015	2016	2017	2018
Belgorod region	19.5	.2	.7	.2	.5
Voronezh region	33.5	.8	.2	.7	.3
Kursk region	24.7	.9	.8	.1	.2
Lipetsk region	26.5	.9	.4	.1	.1
Tambov region	38.7	.1	.3	.2	.0
Central Chernozem macro-region	28.6	.8	.1	.5	.4

Source: According to the collection "regions of Russia. Socio-economic indicators 2019", Rosstat, <https://rosstat.gov.ru/folder/210/document/13204>.

As can be seen from table 5, in the regions of the Central Chernozem macro-region, real investments were made annually in different segments of the territorial economic complex, which represent an opportunity to expand production capacities.

When subjects interact in a macro-region, a synergistic effect and additional benefits arise from the complementarity of regional ones [14, 15, 16].

The influence of macro-regions on the country's economy is manifested on the basis of positive effects:

- overcoming heterogeneity in territorial development;
- transfer of territorial socio-economic systems to a qualitatively new state;
- improving the functioning of the interregional cooperation infrastructure;
- saving and rational combination of resources;
- the emergence of new conditions for production and economic activities based on complementarity;
- providing the economy with a sufficient number of high-quality labor resources;
- increasing the capitalization of territories;
- development of new technologies and innovations;
- development of social results of economic activity and replication of the best experience in creating a comfortable living environment for the population;
- improving the use of competitive advantages of territories;
- increments of cash flow due to the addition of cash flows of companies included in clusters [17];
- sharing of infrastructure objects.

## CONCLUSIONS

Spatial development can be the answer to modern global challenges for the economy. A very effective method of territorial development in this regard is economic zoning based on the creation of macro-regions.

The evolution of the spatial organization of the Russian Federation is based on the vector of strengthening cooperation between regional socio-economic systems.

The functioning of macro-regions should contribute to the further development of regional clusters that unite not only enterprises related to technological cooperation, but also other organizations on the basis of homogeneity.

The main areas of influence of the development of the macro-region on the state economy should include:

- favorable impact on the acceleration of economic growth, scientific, technological and innovative development;
- development of the resource base as the basis of social reproduction;
- development of transport and social infrastructure;
- improving the efficiency of the economy by expanding the space.

#### REFERENCES

- [1] E.E. Badaeva, "Macro-region as an object and subject of economic management", *Financial Economics*, 2018, No. 7, pp. 787-788. (in Russian)
- [2] M.V. Vladyka, E.I. Gorbunova and F.M. Ermachenko, "Spatial effects of the unification of the territories in the regions", *Scientific Bulletin of the Belgorod state University. Economy. Informatics*, 2019, Volume 46, number 3, pp. 383-390. (in Russian)
- [3] O.V. Kuznetsova, "Alternative approaches to determining the role of Russian macro-regions in the system of public administration", *Federalism*, 2019, No. 4, Pp. 112-125. (in Russian)
- [4] N.M. Chernyshov, "Macro-region as a new object of state policy of socio-economic development of Russian territories: integration aspect", *Regional problems of economic transformation*, 2016, No. 8 (70), pp. 86-97. (in Russian)
- [5] N.V. Gontar, "Interregional integration in Russia: institutions and state-administrative regulation", *Bulletin of the Volgograd state University. Series 3: Economics. Ecology*, 2018, No. 20 (3), pp. 14-24. (in Russian)
- [6] P. Samecki, "Macro-regional strategies in the European Union. A Discussion Paper", 18.09.2009. URL: [http://www.interact-eu.net/downloads/1682/macro-regional\\_strategies\\_in\\_the\\_European\\_Union.pdf](http://www.interact-eu.net/downloads/1682/macro-regional_strategies_in_the_European_Union.pdf).
- [7] I. Traistaru, P. Nijkamp and S. Longhi, "Regional Specialization and Concentration of Industrial Activity in Accession Countries", *Regional specialization and concentration of industrial activity in accession countries: working paper. ZEI working paper*, 2002, No. B 16-2002.
- [8] C. Wandel, "Industry agglomerations and regional development in Hungary: economic processes during European integration", Peter Lang, 2010, 278 p.
- [9] "Regional economy and spatial development", 2014. / under the General editorship of L. E. Limonov, Moscow: yurayt publishing house, 397 p. (in Russian)
- [10] O.P. Galyuta, O.A. Privalov, "Issues of analysis and synthesis of forms of interregional integration", *Bulletin of the Altai Academy of Economics and law*, 2015, No. 4 (42), pp. 106-109. (in Russian)
- [11] V.V. Lizunov, "The role of clusters in strategic planning, innovative development, and regional competitiveness", *National priorities of Russia*, 2015, No. 3 (17), pp. 97-108. (in Russian)
- [12] T.A. Börzel, T. Risse, "Grand theories of integration and the challenges of comparative regionalism", *Journal of European Public Policy*, 2019, 26, №. 8, pp. 1231-1252.
- [13] M.E. Porter, "Clusters and the New Economics of Competition", *Harvard Business Review*, November-December, 1988, p.77-90.
- [14] S.N. Rastvortseva, A.O. Lebedev, "Development of methods for assessing factors and forms of interregional economic integration", Moscow: Ekoninform publishing house, 2016. 213 p. (in Russian)
- [15] A.A. Sargsyan, "Economic zoning of Russia: history and economic significance", *Economics and management of innovative technologies*, 2015, No. 3, p. 57. (in Russian)
- [16] D. Panke, "Regional cooperation through the lenses of states: Why do states nurture regional integration?", *The Review of International Organizations*, 2020, 15, №. 2, pp. 475-504.
- [17] L.V. Khoreva, E.V. Latypova, "Clusters of competencies in the system of innovative development of the service sector", *Theory and practice of service: Economics, social sphere, technologies*, 2014, no. 2 (20), pp. 59-65. (in Russian)