

Interregional Interaction Among The Regions Of The Central Black Earth Macroregion In The Russian Federation

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Abstract: *The article focuses on the study of interregional interaction among the regions in the Central Black Earth economic region (CBEER) as one of the most stably developing Russian regions. It has been found that interregional cooperation is actively implemented within the macroregion due to the high agricultural potential, as well as intensively developing food, iron and steel, machine-building and chemical industries. The Voronezh region is a potential core and center of the promising Central Black Earth macroregion in terms of specialization diversification and the level of cluster development. The potential of the formation and development of interregional clusters in the food, chemical, iron and steel, machine-building industries, agriculture, and tourism is identified. It has been found that the traditional sector-specific approach still takes priority over more complex intersectoral and intercluster projects, while the strategic challenges of the "new regionalization of the country" necessitate the development of systematic methods of the spatial development of territories, with due regard to federal priorities, macroregional and interregional contexts, types of multistructurality, and prospects for the rational use of the internal potential of regions. It is suggested to use Smart Specialization as an alternative method for strategizing and choosing priorities for the spatial development of regions in the context of the changing vector of economic integration and the growth of global challenges and threats.*

Index Terms: *cluster, interregional interaction, Smart Specialization, spatial development, strategizing.*

I. INTRODUCTION

The current economic and political situation in Russia and globally, sanction restrictions and import substitution policy adopted by the Russian Federation since 2014, reduction of real disposable income and domestic demand, as well as reduction of subsidiary financing of projects in the regions suggest to seek for internal factors of economic development of the territories.

In order to implement the main provisions of the Strategy for socioeconomic development of the Russian Federation and the National security strategy of the Russian Federation, as well as in accordance with the Principles of state policy for regional development of the Russian Federation, Federal Law The article was funded in accordance with the Order of the BelSU National

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Research University No. 737-OD dated 15.08.2018.No. 172-FZ dated 28.07.2014 "On strategic planning in the Russian Federation" provides for the development of a spatial development strategy for the Russian Federation, which must be considered when developing and adjusting socioeconomic strategies of economic development in macroregions and regions of the Russian Federation.

Issues of interregional interaction in the context of spatial development strategizing play an important role in the papers of Russian scientists [1]-[6] and foreign scientists [7]-[14].

A macroregional concept is now being developed at the confluence of economics and geography, which defines a macroregion as a geographical area that consists of several adjacent territorial units (regions) with common features, as well as economic management problems at the macroregional level [15], [16].

Researchers of spatial development problems currently identify incentives and determine the level of required support to disclose socioeconomic and technological potential of regions and cities [17]-[22]. They analyze aspects of the efficient infrastructure and explore the possibilities of integrating regions into the global economy, which should help unlock the potential of spatial development with due consideration for new technological capabilities. Some authors [23]-[25] focus their attention on tools for managing spatial development at the regional (municipal) level. In particular, specific examples of the spatial development strategies are provided, which are of special interest for further research. The concept of attracting places deserves special attention [26], which allows to build measures to ensure competitiveness based on the region forming factors.

II. PROPOSED METHODOLOGY

The empirical basis of research included publications of the Federal State Statistics Service (Rosstat), materials from the catalog of suppliers from the Belgorod, Voronezh, Kursk, Lipetsk and Tambov regions, data from the HSE Russian Cluster Map, a draft Spatial development strategy of Russia through to 2025 dated 17.08.2018, official websites of producers in the regions under study, and agreements on interregional cooperation (Agreement between the Administration of the Tambov region and the Government of the Belgorod region on cooperation in agribusiness development and sustainable development of rural territories dated 11.07.2008,



Agreement between the Government of the Voronezh region and the Administration of the Kursk region on trade, economic, scientific, technical, and cultural cooperation dated 08.06.2018, and Agreement between the Administration of the Kursk region and the Administration of the Tambov region on trade, economic, scientific, technical, and cultural cooperation dated 16.02.2018).

Structural functional analysis, cluster approach, comparative analysis, content analysis of official strategic documents, and methods of monitoring and matrix presentation of results were used in the study.

III. RESULTS

From the standpoint of an integrated approach in the regional economy, which combines a subject, an object, a matter and a purpose, the interregional interaction should be understood as a set of resource flow exchanges within the

agreements among authorities, legal entities, and individuals from different regions in order to represent common interests in global economic space and enhance the socioeconomic development of these regions.

The authors have chosen the CBEER (or the Central Black Earth Macroregion in future, according to the draft Strategy for the spatial development of Russia through to 2025 dated 17.08.2018) as an object of research, which includes the Belgorod, Voronezh, Kursk, Lipetsk and Tambov regions. The existing structure of interregional cooperation is primarily determined by the specialization of the regions in the production of certain industries. Therefore, the structure of the gross regional product (GRP) in the CBEER regions for 2016 must be considered in the context of the main types of economic activity (Table I).

Table I. Sectoral structure of the GRP in the CBEER regions in 2016, %

Region	Sectoral structure of the GRP					
	Agriculture	Extraction of commercial minerals	Processing industries	Construction	Wholesale and retail trade	Transport and communications
Belgorod region	19.5	11	21	6.9	15.2	5.5
Voronezh region	14.6	0.4	14.6	7.3	20.1	8.2
Kursk region	18.4	8.6	20.7	6.4	9.1	5.7
Lipetsk region	12.9	0.5	42.1	7.2	10.3	4.9
Tambov Region	24.6	-	13.7	13.2	15.5	8

It can be clearly seen from Table 1 that the largest share in the structure of the regional GRP falls for agricultural products, processing industries, and extraction of commercial minerals in the Belgorod and Kursk regions.

The structure of processing industries is unique for each region; the authors explore examples of interaction among regions using processing enterprises.

Iron and steel industry, food industry, machine building, metalworking, electric power industry, and construction materials (7%) occupy leading positions in the industry structure of the Belgorod region (Table II).

Table II. Areas of interaction between the enterprises of the Belgorod region and the CBEER regions

Enterprise name	Specialization	Address	Key consumers
JSC Belgorod Cold Storage Plant	Ice cream production	Belgorod	CBEER

JSC Oskolsky Plant of Metallurgical Machinery	Mining equipment manufacturing	Stary Oskol	Lipetsk region
JSC Confectionery Factory Belogorye	Confectionery production	Belgorod	CBEER
LLC Belgorod Steel Construction Plant	Metal structures manufacturing	Belgorod	CBEER
CJSC Gormash	Special vehicles manufacturing	Belgorod	Kursk region, Lipetsk region

The Voronezh region as a CBEER region specializes in food production, as well as industrial production and electricity (Table III).

Table III. Areas of interaction between the enterprises of the Voronezh region and the CBEER regions

Enterprise name	Specialization	Address	Key consumers
LLC AgroPromService	Grain-cleaning equipment manufacturing	Voronezh	CBEER
JSC Buturlinovsky Flour Mill	Grain processing	Buturlinovka	Belgorod region
JSC Voronezh Confectionery Factory	Confectionery production	Voronezh	CBEER
JSC Borisoglebsky Knitwear	Legwear production	Borisoglebsk	CBEER
JSC Voronezh Excavator	Excavator equipment manufacturing	Voronezh	CBEER



JSC Voronezhsintezkauchuk	Synthetic rubber production	Voronezh	CBEER
JSC Mineral Fertilizers	Mineral fertilizer production	Rossosh	CBEER

The Kursk region is one of the industrialized Russian regions, where about 350 large and medium-sized enterprises are situated. Electric power industry, iron and steel production, petrochemical industry, machine building and metalworking have the largest share in the volume of industrial production (Table IV).

Table IV. Areas of interaction between the enterprises of the Kursk region and the CBEER regions

Enterprise name	Specialization	Address	Key consumers
JSC Sudzhansky Butter Plant	Dairy production	Sudzha	Belgorod region
JSC Elektroagregat	Energy products	Kursk	CBEER
JSC Sudzhansky Tractor Plant	Auto parts sale	Sudzha	CBEER
LLC KurskHimProm	Chemical production	Kursk	CBEER
LLC Kursk Electroapparatny Plant	Low-voltage and high-voltage equipment production	Kursk	CBEER

The economy of the Lipetsk region is based on a highly productive agriculture and iron and steel industry. Iron and steel industry, machine building, metalworking, and petrochemistry have the largest share in the volume of industrial production (Table V).

Table V. Areas of interaction between the enterprises of the Lipetsk region and the CBEER regions

Enterprise name	Specialization	Address	Key consumers
JSC Chaplygin Starch Plant	Starch production	Chaplygin	CBEER
JSC Energy	Chemical production	Elets	CBEER
LLC Agro-Resource	Agricultural equipment manufacturing	Lipetsk	CBEER
CJSC LSP	Machine tool manufacturing	Lipetsk	CBEER
JSC NLMK	Steel production	Lipetsk	CBEER
JSC LMZ	Centrifugal	Lipetsk	CBEER

Svobodny Sokol	pipes production		
LLC LEMAZ	Pump manufacturing	Lipetsk	CBEER
JSC Eletsy Electromechanical Plant	Transformer substation manufacturing	Elets	CBEER

The main industries of the Tambov region are agriculture, consumer goods industry, and chemical production (Table VI).

Table VI. Areas of interaction between the enterprises of the Tambov region and the CBEER regions

Enterprise name	Specialization	Address	Key consumers
JSC Pervomaiskkhimmash	Manufacturing	Pervomaisky	Voronezh region
JSC Biokhim	Food-grade alcohol production	Rasskazovo	Kursk region
JSC Tambov shoe factory	Shoe production	Tambov	CBEER
LLC Tambovkhimmash	Heat exchanger manufacturing	Tambov	CBEER
LLC BAIT	Laboratory equipment manufacturing	Michurinsk	CBEER
LLC Plant NVA	Electrical equipment manufacturing	Rasskazovo	CBEER

It must be particularly noted that the CBEER is rich in iron ores, most of which are concentrated in the Kursk Magnetic Anomaly – according to expert estimates, 43.4 mln tons of raw materials can be extracted from this deposit. The Kursk Magnetic Anomaly is situated on the territory of the Belgorod and Kursk regions, which is recorded in the structure of the GRP of these regions: extraction of commercial minerals accounts for 11 % and 8.6 %, respectively. Enterprises engaged in extraction and enrichment of iron ore, such as Stoilensky GOK (Belgorod Region), Lebedinsky GOK (Belgorod Region), and Mikhailovsky GOK (Kursk Region) have been successfully operating on the CBEER territory for a long time (Fig. 1).

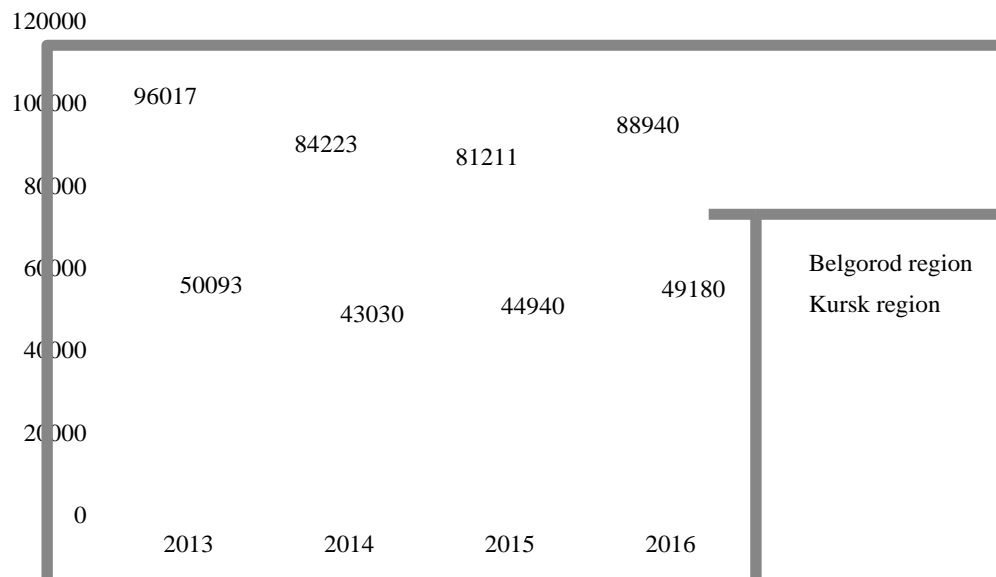


Fig. 1. Dynamics of volumes of shipped commercial minerals, thous. rub.

The extracted raw materials are supplied to other regions, including the CBEER, for further processing. For example, the Novolipetsk Metallurgical Combine (Lipetsk region) is the main consumer of Stoilensky GOK products – 9.6 mln tons of concentrate, 1.5 mln tons of sintering ore, and six mln tons of pellets were shipped to the Novolipetsk Metallurgical Plant in 2017.

The supply of fuel and energy resources is a particular aspect of the interregional interaction among the regions of the CBEER. The regional energy industry is based on the nuclear power: Novovoronezh and Kursk Nuclear Power Plants (NPPs). Kursk NPP supplies 95 % of all electricity of the Central Federal District of Russia; 65 % of all the electricity generated by the plant is exported outside the Kursk region. Kursk NPP supplies electricity to the Kursk, Oryol, Belgorod and Bryansk regions of the Russian Federation, as well as the Sumy region of Ukraine. The NPP generates 29 bln kilowatt hours of energy per year. Novovoronezh NPP is one of the largest NPPs in the country and is located in the Voronezh region. At the moment, the NPP supplies energy not only to the Voronezh region, including neighboring Novovoronezh, but also to the Lipetsk and Belgorod regions, as well as other regions of the macroregion. A peculiar connection between the plants is due to the power supply to the Oskolsky Metallurgical Combine through the pipeline from Kursk NPP and Novovoronezh NPP.

Agriculture is one of the main areas of the CBEER specialization. Interregional cooperation in agriculture is based on the activity of agribusiness holdings and corporations, which unite the CBEER regions in their activities. EFKO Group of Companies specializes in the production of oil and fat products and holds production assets in the Voronezh and Belgorod regions. Agroindustrial holding Miratorg, Russia's largest pork producer, specializes in crop production, animal feed production, pig breeding, and meat processing. The production activity of the holding covers the territory of all the CBEER regions. There are three animal feed plants of the holding, as well as 19 pig farms of

Miratorg agribusiness holding in the Belgorod region today. The holding also operates in 13 districts of the Kursk region, where more than 17 bln rubles were invested in agribusiness from 2009 to 2017. Following the results of 2017, pork production in the Miratorg structures on the territory of the Kursk region amounted to 114 thous. tons. The Miratorg network growth suggests the expansion of markets for the enterprise's products. A distribution center for product storage was built in the Voronezh region in the course of the implementation of this goal. The introduction of new logistic capacities will allow to increase the customer base in the Voronezh, Lipetsk and Tambov regions significantly by expanding the meat product range in consumer packaging and semi-finished meat products. The company is implementing the largest interregional project to increase production in the Belgorod and Kursk regions, which provided for the construction of 30 commodity pig farms in 2017 with a capacity of 203 thous. tons and an animal feed plant with a capacity of 800 thous. tons per year. The production of pink veal, the only production of such veal in the country, was launched in the Kursk region. Enterprises operating in several CBEER regions include the agribusiness complex DON and Rusagro Group of Companies. The agribusiness complex DON produces pork in the Alekseevsky district of the Belgorod region and the Ostrogozhsky district of the Voronezh region. Aside from pig farming, the agribusiness complex DON is also engaged in crop production on the territory of the Voronezh region. Rusagro operates on the territory of the Tambov, Voronezh and Belgorod regions.

There are certain prospects in interregional tourism as well. Cooperation among regions on event and gastronomic tourism on regional and interregional tourist routes with excursion programs is provided as part of the implementation of the interregional tourist project CBEER Tourist Products, where the Belgorod, Voronezh, Lipetsk, and Tambov regions participate.



IV. DISCUSSION

Let us compile the conclusions for individual CBEER

regions into a matrix of interregional cooperation in integrated areas of specialization (Table VII, X is the intensive interregional interaction).

Table VII. Matrix of interregional interaction in the CBEER

Belgorod region	Voronezh region	Kursk region	Lipetsk region	Tambov region
Extracting industry	0	X	X	0
Agriculture	X	X	X	X
Food industry	X	X	X	X
Machine building	X	X	X	X
X	Nuclear power industry	X	X	X
X	Agriculture	X	X	X
X	Food industry	X	X	X
X	Consumer goods industry	X	X	X
X	Machine building	X	X	X
X	Chemical industry	X	X	X
X	X	Nuclear power industry	X	X
X	0	Extracting industry	X	0
X	X	Agriculture	X	X
X	0	Food industry	0	0
X	X	Chemical industry	X	X
X	X	Machine building	X	X
X	0	X	Iron and steel industry	0
X	X	X	Agriculture	X
X	X	X	Machine building	X
X	X	X	Chemical industry	X
X	X	X	X	Agriculture
X	X	X	X	Machine building
X	X	X	X	Consumer goods industry
X	X	X	X	Chemical industry

Thus, all the CBEER regions are currently described by tight interregional ties within the macroregion – in particular, in agriculture, food industry, agricultural and energy machine building, as well as the chemical industry. Cooperation is not limited to simple commodity exchange operations: joint projects, based on the merger of production, resource, and human resource potential of the territories are being

implemented.

According to the international experience, the formation and development of interregional clusters in the priority and promising areas of regional specialization could contribute to intensification of interaction. The authors analyzed the existing clusters of the CBEER regions using the Russian Cluster Map (Table VIII).

Table VIII. Clusters of the CBEER regions

Region	Cluster name, year of establishment	Key cluster specialization	Number of cluster members, ea.	Number of people employed in the cluster, people	Cluster level (Beginner / Medium / High)
Voronezh region	Cluster of oil and gas and chemical equipment manufacturers, 2016	Machinery and equipment manufacturing (including machine tools and special equipment, lifting and hydropneumatic equipment, and robots)	16	9,214	Beginner
	Aviation cluster, 2010	Aircraft industry	14	11,192	Beginner
	Electromechanical cluster, 2010	Microelectronics and machine tool engineering	20	4,320	Beginner
	Furniture cluster, 2013	Furniture production	13	6,075	Beginner
	Radioelectronic cluster, 2010	Defense industry	16	13,598	Beginner



Lipetsk region	Cluster of machine building and metalworking, 2016	Machinery and equipment manufacturing (including machine tools and special equipment, lifting and hydropneumatic equipment, and robots)	120	21,329	Beginner
	Innovative territorial industrial cluster of white equipment, 2014	Machinery and equipment manufacturing (including machine tools and special equipment, lifting and hydropneumatic equipment, and robots)	22	4,577	Beginner
	Innovative territorial industrial cluster of composite materials and their products, 2014	Production of building materials and other products from glass, concrete, cement, plaster, clay, ceramics, and porcelain	10	2,193	Beginner
	Industrial cluster of machine tool industry LIPETSKMASH, 2016	Machinery and equipment manufacturing (including machine tools and special equipment, lifting and hydropneumatic equipment, and robots)	39	6,532	Medium
Belgorod region	Biopharmaceutical cluster, 2014	Pharmaceuticals and industrial biotechnologies (production based on enzymes and microorganisms for subsequent use in the chemical industry, healthcare, food and feed production)	22	2,498	Beginner

It can be concluded from the materials presented in Tables VII and VIII that the Voronezh region can become a potential core of the promising CBEER in terms of the specialization sector diversification and the cluster development level. The possibility of forming and developing interregional clusters in agriculture, food industry, chemical industry, iron and steel industry, machine building, and tourism are of interest for the study, according to the obtained results and sectors of promising economic specialization of the CBEER regions identified in the draft Spatial development strategy of Russia through to 2025 dated 17.08.2018.

V. CONCLUSION

The policy and public management of the economy spatial development must be carried out systematically, pragmatically and creatively, and all measures must be theoretically justified and practically applicable in the Russian conditions in order to achieve significant success in reforming the system of strategic territorial planning. However, many of the existing strategies are detached from the global economic and technological context and come to a simple imitation of successful practices. They are often focused on fashionable topics or prestigious projects (in information and communication technologies (ICT), as well as in bio- or nanotechnologies), but they fail to understand the lack of enterprises of the corresponding specialization. At the same time, the traditional sector-specific approach is still of priority over more complex intersectoral and intercluster projects. At the same time, the strategic challenges of the "new regionalization of the country" necessitate the development of systematic methods for spatial development of territories, taking federal priorities, macroregional and interregional contexts, types of multipatterns, and prospects

for the rational use of the internal potential of regions into account.

The lack of coordination among various authorities exacerbates the above problems, causing duplication of support measures and dispersion of limited resources, which eventually undermines the efficiency of the strategic regional planning. Duplication of competences and fragmentary nature of support measures can be eliminated by formulating the development priorities for each region. However, the complexity and diversity of the modern technologies and methods of their economic use make centralization in this area extremely risky and inefficient due to the low quality of the strategic regional planning, inter alia.

The application of the Smart Specialization concept as a method for choosing priorities for spatial development of a region can become an alternative approach to strategizing the spatial development of a region in the context of the changing vector of economic integration and the growth of global challenges and threats. It can contribute to the transition to a network cluster model, the creation of new interdisciplinary and intersectoral spatial formations that would shape interregional areas of integrated sectors of the "new" and "traditional" economy, generate significant multiplicative effects, and encourage the increase in competitiveness of the regional economies.

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