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Investments in Fixed Capital of the Oil and Gas Region as an Indicator of Its Readiness for the Financial Embargo and Transformation of the Global Energy Balance

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ABSTRACT

The financial embargo has a special impact on the economic systems of oil and gas regions. This is explained by the increased foreign trade turnover of oil and gas regions, as well as the high capital intensity of the oil and gas industry, a long period of return on financial investments, and the high profitability of innovative investments. The **purpose** of the study is to identify various aspects of the problem of investing in fixed assets in oil and gas regions, find ways, forms and methods of investment stimulation of their innovative production development and assess the possibilities of transitioning to new technological structures in the conditions of a financial embargo and the transformation of the global energy balance. **Methods** of regression analysis of the structure and dynamics of investment in fixed capital of organizations in the oil and gas regions of the Volga Federal District were used and polynomial trend lines were constructed until 2030. An economic analysis of the structure of investment in fixed capital of oil and gas regions was made by sources of financing, types of fixed assets, forms of ownership, types of economic activity, as well as a regression analysis of the dynamics and forecast of the balance (receipt minus withdrawal) of foreign direct investment in oil and gas regions according to the balance of payments of the Russian Federation. The **result** of the study was the development and justification of a system of priority factors for creating a favorable investment climate in oil and gas regions to increase their resistance to the conditions of the financial embargo and the economic transformation of the global energy balance.

Keywords: financial embargo; investments in fixed assets; sources of financing; investment climate; regional finance; oil and gas complex; industrial economics; oil and gas region

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INTRODUCTION

The investment in fixed capital of the region is a key indicator of the economic development efficiency of its industry, agriculture, construction and other major production activities and the entire regional economic system, as the reproduction and growth of the basic funds provides both an extensive and an intensive type of economic growth, taking into account the improvement of the innovative infrastructure and the policy of high-tech import substitution. Analysis of the regional structure of investment in fixed capital by main types of funds, forms of ownership, sources of financing and types of economic activity, as well as the dynamics of the index of its physical volume allows to ensure the formation of relevant institutional mechanisms of management of productive development of the region on the basis of selective programmes of preferential taxation and subsidy at the federal and regional levels. Oil and gas regions are characterized by a high concentration of production organizations for the production and processing of oil, condensate, natural and associated gas and industrial enterprises, which are both components of the oil and gas supporting infrastructure and the main consumers of the products of the regional petroleum and gas chemical complex, which is an effective economic factor for the competitive development of small and medium-sized.

In the geological, production and spatial conditions of the Volga-Ural Petroleum and Gas Province, the economic systems of the oil and gas regions are not only donors to the regional budget due to the highly profitable revenues of the petroleum companies in their territory, but also require significant capital investments due to high content of heavy, highly sulphureous hard-to-extract oil in the structure of extraction. The difficulties of the deep chemical processing of such raw materials, the high international quality standards, the achievement of which is envisaged by the state concepts of import substitution and technological sovereignty, the rational use of concomitant petroleum gas and the compensation of the environmental risks that are characteristic of the old extraction territories, also determine the high importance of the reproduction of the major funds of the oil and gas regions. Accordingly, the development of effective mechanisms for institutional support for investing in its most capital-intensive major funds, taking into account the peculiarities of budgetary-tax relations with the federal type of state system, is of paramount importance in the development and implementation of a system of indicative management of the production development of the oil and gas region. The limited powers and competences in the system of interaction of the federal and regional authorities, as well as the existing structure of their spheres of competence, form possible mechanisms of federal investment policy in the principal capital of the oil and gas region on the basis of revenue from the mineral tax, export duties and the distribution of dividends of the state shareholders of vertically integrated oil and gas corporations.

On the part of the regional authorities, the main sources of financial support and investment incentives for inclusive innovative productive development of organizations of the oil and gas region can be income from the regional budget from income tax, income tax of individuals and property tax of the budget-forming oil-gas chemical industry and interdependent sectors of the economy. At the threshold of global economic challenges, the solution of Russian problems of diversification of investment in the main capital of the oil and gas region acquires the most acute character, as not only the structure and dynamics of foreign financial flows, but also the entire economic situation of demand and supply in the world commodity markets are significantly transformed. The current trends of the technological embargo significantly complicate the processes of reproduction of basic funds, but at the same time, they

can be viewed as protectionist barriers, creating the necessary, although quite tough, conditions for the development of its own modern scientific and technological base and innovative infrastructure, which require, respectively, new economically reasonable approaches to investment in fixed capital.

The sixteen-year period considered in the study from 2005 to 2021 is characterized by significant growth and volatility of oil and gas quotations, including the economic crises of 2009 and 2014, 8 years of sanctions pressure on the Russian economy aimed at "break it in pieces" (B. Obama). The period and timing of the completion, as well as the economic outcomes of the Special Military Operation (further — SMO), can now be predicted with minimal reliability. Data for 2022 are incomplete and contradictory, but the need for economic recovery after the end of the conflict is quite obvious. This demonstrates the theoretical significance of this study, the regional aspect of which is also due to the administrative-territorial growth of new subjects of the Federation. The practical significance of the study is to develop a block scheme of priority factors to support a favorable investment climate in the production development of the oil and gas region on the basis of the analysis of the structure and dynamics of investments in fixed capital taking into account the crisis phenomena of the observed period and, accordingly, can be required to overcome the negative economic consequences of SMO.

The scientific novelty of the study is the development of a new methodological approach to assessing the readiness of the production processes of the oil and gas region to the financial embargo and transformation of the global energy balance, based on the analysis of the structure, dynamics and priority factors of investment in fixed capital. This is necessary for an effective financial policy to support the optimum directions of the development of a favorable investment climate of the regions with a budget-making oil and gas complex in the context of profound crisis phenomena under the influence of sanctions pressure on the national economic system.

STATUS OF EXPERIENCE AND FUNCTIONALITY OF THE PROBLEM

The development of new financial technologies, in particular blockchain, non-banking, cryptocurrency operations, cybersecurity, "Islamic finance" and others, can to some extent reduce the effectiveness of sanctions pressure on the results of Russian activities, especially in the conditions of a high share of oil and gas revenues in the budget and oil and gas companies, and support regulation of the structure and dynamics of cross-border movement of capital [1–3]. Under the influence of institutional constraints of the financial system of the country, its fiscal and monetary policy requires substantial strategic and tactical transformations using empirical scientific research and a probability approach based on the assessment, modeling, and forecasting of the volatility of Russian stock market shares and the financial and economic risks of the formation of the income part of the state budget. The solution to the problems of efficiency in Russian financial markets and the hypothesis of fractality of asset quotations are highly dependent on the trajectory of trends in international stock markets, and oil shocks in the commodity sector of world trade. Under the influence of the financial embargo and the transformation of the global energy balance, the short-term trading options of oil and gas companies are most appropriate. This is due to the large share of state participation in almost all Russian vertically integrated oil and gas companies and requires the introduction of preventive changes in their dividend strategy on the basis of scientific research on the economic prospects of the supranational system of regulation of the financial sector, financial innovations in sub-federal public

joint-stock companies, and monetary-credit instruments of support for national projects [4, 5].

As a result of studies of the interdependence of the volume of investment in fixed capital of the region with its socio-economic well-being and financial potential, the various aspects of the tools and mechanisms for smoothing national spatial polarization on the basis of budgetary-tax relations, federal transfers, regional support funds and investment funds of various levels have been examined [6–8]. Modeling, optimization and cost planning for technological research and innovative development in a region with a high degree of industrialization, as well as a comparative analysis of Russian regional financial systems and regional economic development have shown the effectiveness of the use of poles and centers of economic growth and the significant impact of investment territorial disparities on the rational and inclusive use of natural resource potential [9–12]. In individual scientific studies, investment in the reproduction of major production funds is represented as a major factor in both regional economic development as a whole and the horizontal industrial policy of a typical Russian depressed region. This factor may have a dominant influence on the development of organizational and managerial schemes and mechanisms in the financial system [13–16].

The problems of regional economic development acquire such spatial modifications, which reflect on investment attractiveness and financial stability of the region, that in the conditions of imbalance of investments in fixed capital by types of major funds and economic activity requires improvement of methodology of analysis and modeling of the commodity structure of import dependence and software indicative management of import substitution mechanisms [17–20]. A comparison of the results of factor analysis of investment processes at the national and regional levels in conditions of limited influxes of external capital revealed the potential prospects of the oil and gas region for the transition to a closed-cycle economy with organizational and institutional transformations of the innovation infrastructure aimed at solving the problems of efficient use of regional resources and production assets [21–24]. The small and medium-sized oil and gas business is the most high-tech, which determines its ability to make the most rational use of natural resources and intensive exploitation of the main production funds to maximize productivity of the production function, which is an important indicator of the activity of regional investment processes and, accordingly, a necessary condition for financial support of the budget-forming petroleum and gas industry of the region [25, 26].

In the context of the modern transformation of world energy cycles, investment in the capital of regional oil- and gas-pipeline systems in the Volga-Ural Oil and Gas Province in the eastern and south-eastern direction is becoming relevant, where the petroleum and gas chemical industry is gaining the characteristics of the main driver of economic growth, ensuring the transition from continental raw material dependence to an inclusive institutional production environment [27–30]. In accordance with this, it is necessary to note the transformation of financial flows in the Russian oil and gas industry, necessary to eliminate the emerging disparities in the management of natural and logistical resources, as well as the production and socio-economic development of the oil and gas region on the basis of the formation of new demanded economic zones and other territorial "points" of industrial and innovative growth [31–33]. Long-term sustainable economic development of Russian oil and gas regions in crisis conditions caused by a pandemic of decline in demand for raw materials or the effect of sanctions, possible with additional preventive investment in the main capital of pipeline transport and oil storage, which are currently insufficient to not

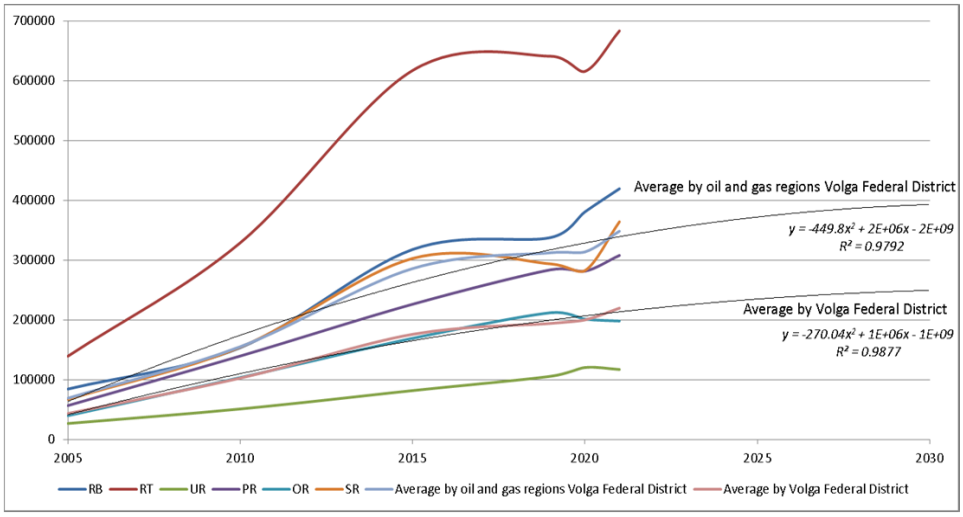

Fig. 1. **Dynamics and Forecast of Investments in Fixed Capital in the Oil and Gas Regions of the Volga Federal District, Million Rubles**

Source: Compiled by the author according to Rosstat.

stop production, taking into account the spatial-territorial factor [34–36]. In the circumstances of the change in the principles of pricing in the world energy markets and the damping mechanisms of regulation of the financial system of the oil and gas industry, problems arise with the sources of investment in the main capital of oil- and product transportation in the territories far from the sea, and regulating their tariffs, as natural monopolies, becomes one of the most important principles for the formation and evolution of financial institutions [37, 38].

INVESTIGATION METHODOLOGY

Volga Federal District is the second largest in the country in terms of oil, condensate, natural and concomitant oil gas production and holds the leading positions on the volume of primary and deep chemical processing of hydrocarbon raw materials, as well as the number of federal entities with a budget-forming petroleum and gas chemical complex. These are the Republic of Bashkortostan (RB), Republic of Tatarstan (RT), Udmurt Republic (UR), Perm region (PR), Orenburg region (OR) and Samara region (SR): "The second most important oil-producing region of Russia is the Volga Federal District, which provided 22.8% of the national production in 2021; of these in the Republic of Tatarstan received 7.1%, in the Orenburg region — 4.4%, in Samara region and Perm region — 3.2%, in Bashkortostan Republic — 2.5%, n Udmurt Republic — 2%".[1]

Based on the analysis of the dynamics of investments in fixed capital by the pairwise regression method for the sixteen-year period, their growth slowed both on average in the oil and gas regions of the Volga Federal District and in all the regions in the territory under consideration. The choice of the observed period is due to the significant growth and high volatility of oil and dependent quotations of natural gas in the international commodity markets. This is also the period of the structure of the Russian oil and gas industry in terms of sources of financing and forms of ownership. The choice of the polynomial type of trend lines is explained by the greatest value of approximation reliability at the given trajectory of capital investments, which averaged 0.98 for oil and gas regions and 0.99 for all regions of the county (*Fig. 1*).

Analysis of the dynamics of investments in fixed capital per capita in general showed

[1] State Report "On the status and use of mineral resources of the Russian Federation in 2021". Ministry of Natural Resources and Ecology of the Russian Federation. Moscow: 2022; 626 p.

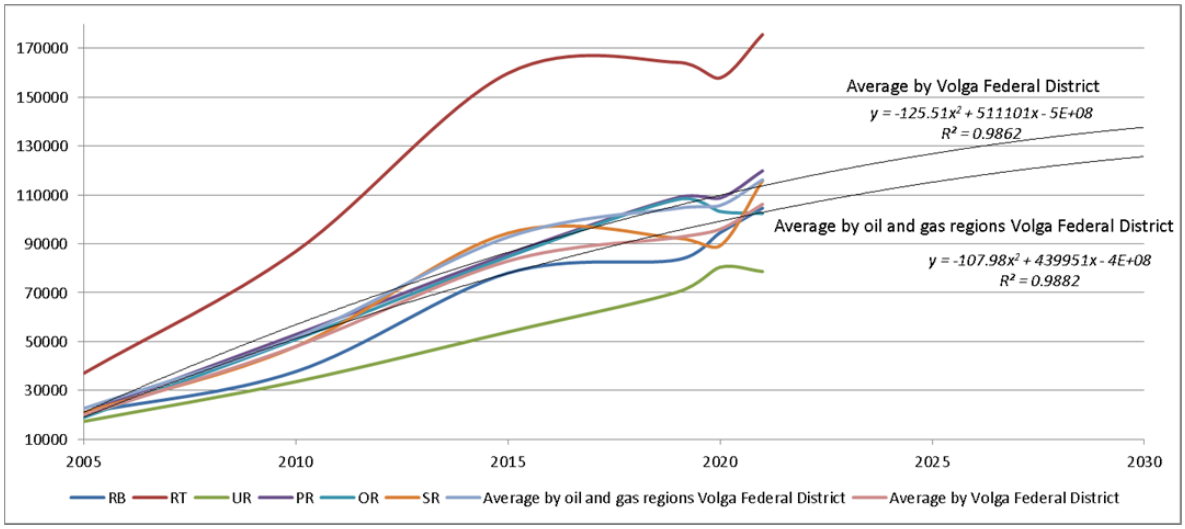

Fig. 2. **Dynamics and Forecast of Investment in Fixed Capital in the Oil and Gas Regions of the Volga Federal District Per Capita, Rub.**

Source: Compiled by the author according to Rosstat.

the correspondence of the above pattern of slowing their growth in absolute terms, but to a lesser extent, as evidenced by the smaller module negative coefficients at x^2 in the regression equations. It should be noted the high repetitiveness of trajectory of trend lines between each other in both cases considered, but it is of some scientific interest that the volume of investments in fixed capital per capita in the observed federal district was higher than the given value in the average of the oil and gas regions. To explain this result, it is necessary to examine the structure of capital investments by type of capital, sources of financing, forms of ownership and types of economic activity, which will be presented in the "Results and their discussion" section.

The highest level of capital investment — both overall and per capita — is observed in the Republic of Tatarstan, which occupies a leading position in this federal district in terms of gross regional product, oil production and many other economic indicators. The Udmurt Republic has the lowest level of equity investment, which requires further study of the characteristics of its investment climate (*Fig. 2*).

The forecast values of the dynamics of the index of physical volume of capital investments in both the average oil and gas regions and all subjects of the Volga Federal District were with a slight acceleration of growth, which may be explained by their noticeable decline in the "pandemic" 2020 and the subsequent confident recovery in 2021. This is obviously the reason for the relatively low probability of approximation of both trend lines, which amounted to about 0.7 non-dimensional values. The exceeding dynamics of the index of the physical volume of equity investments in the average of the county compared to the same figure of the average for the oil and gas regions of that county may be explained by the fact that the "pandemic" restrictions have had the most negative impact on the petroleum and gas industry. It is the economic systems of oil and gas companies, which are both the most important budget-making organizations of the region and major investors in regional equity, that are most dependent on long-term obligations in the markets of derivative financial instruments — oil futures, forward, options and others, and oil quotations have fallen even into a negative area. The marked intersection and the beginning of the recovery of growth of the described trend lines occurred precisely in 2020 (*Fig. 3*).

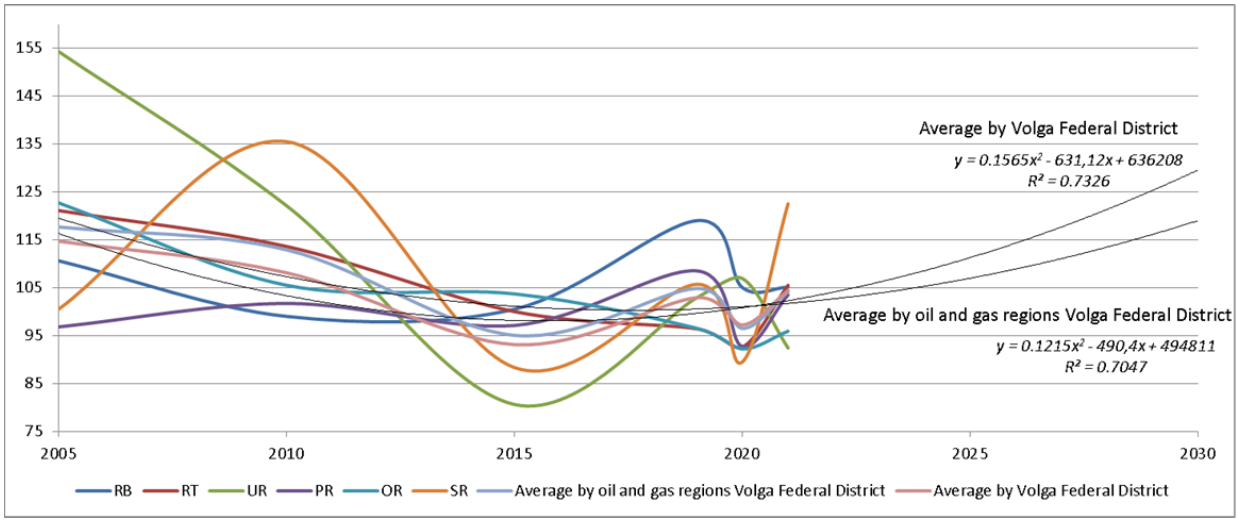

Fig. 3. **Dynamics and Forecast of the Index of the Physical Volume of Investments in Fixed Assets in the Oil and Gas Regions of the Volga Federal District, % to the Previous Year**

Source: Compiled by the author according to Rosstat.

From a methodological point of view, it should be borne in mind that investment in the capital of the region takes into account funds received to increase the initial value of the capital, which includes the construction, upgrading and reconstruction of buildings and structures, the acquisition of machinery, equipment and other non-current assets. In addition, investments in fixed capital include the funds attracted by individuals and legal entities in the construction of residential real estate on the terms of equity construction. Investments in fixed capital do not include investments in unfinished buildings and secondary markets. According to the methodology of Rosstat, all data on investments were included without value added tax.

RESULTS AND DISCUSSION

According to the analysis of the structure of investment in equity by types of equity funds, it is possible to assume that in the industrial activity of the oil and gas regions of the Volga Federal District, which in the context of this study may be characterized by non-residential buildings and structures, machines, equipment and other production capital, disproportions have not been found. This may indicate the effectiveness of the spatial distribution of economic resources and the territorial organization of the national economy. At the same time, attention should be paid to the noticeable lag in investments in the main housing and premises funds of the Samara, Orenburg and Perm region. This demonstrates the imbalances of a number of oil and gas regions in such a significant form of economic activity in the gross regional product, as construction, but can be explained not only by economic, but also socio-demographic factors. At the same time, a significant lag behind the volume of investment in the construction of residential buildings and structures compared to investment in production basic funds is also observed on average in all regions of this federal district. On this basis, it should be pointed out that highly profitable oil and gas regional activities are likely to indirectly stimulate additional growth in residential real estate, as seen in the examples of the Republic of Bashkortostan, Republic of Tatarstan and the Udmurt Republic. This can be related to the oil and gas regions' high rate of overall economic development, which increases their demographic attractiveness, as well as long-term equity investments by business organizations that don't have

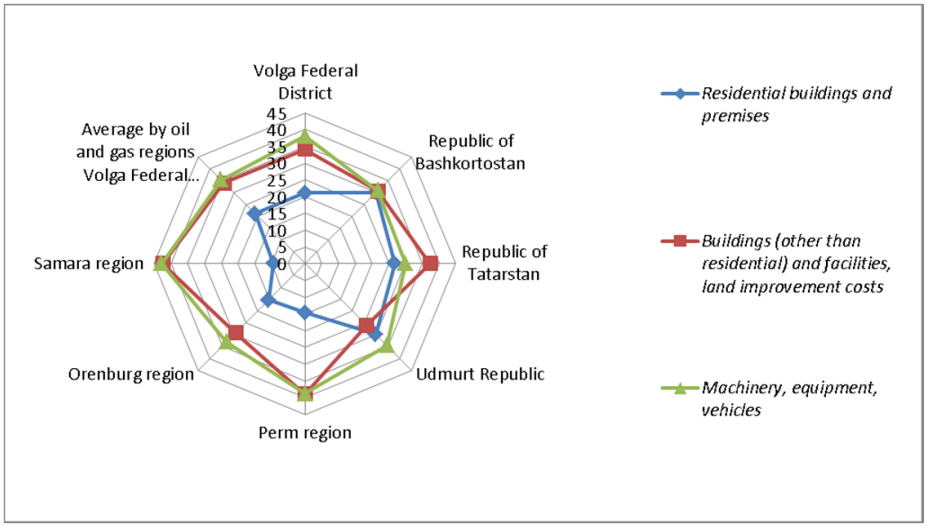

Fig. 4. **The Structure of Investments in Fixed Assets of the Oil and Gas Regions of the Volga Federal District by Types of Fixed Assets at the End of 2021, % of the Total**

Source: Compiled by the author according to Rosstat.

a financial deficit. The relatively low levels of investment in residential buildings and premises in the Samara region, the Orenburg region, and the Perm region are obviously attributable to separate reasons for each of these oil and gas regions. For example, in the Samara region, these reasons may be the high share of the aerospace industry and the public sector in the economic system of the region; the Orenburg region is characterized by raw material specialization and a relatively poorly developed processing industry; and the Perm region is not the most favorable geographical location of the area, which determines insufficiently satisfactory market infrastructure. The characteristics described in the oil and gas regions do not affect the percentage of investment in production capital, which is within practically the same values (*Fig. 4*).

The high level of readiness of the Russian oil and gas region to transition to technological sovereignty and to meet the need of the state economy for import substitution can also be confirmed by the absence of significant disproportions in investments in fixed capital by sources of financing. With this important observation of the study, the need to encourage the banking sector to invest in equity capital, whose adequacy is a fundamental prerequisite for achieving sustainable economic development in the face of external challenges and financial, oil and technology embargoes, should be noted. The highest amounts of attracted capital investments, including budget funds and bank loans, should be noted in the Republic of Tatarstan, Republic of Bashkortostan and in the Samara region, which corresponds to the average for all subjects of the Volga Federal District. The low amount of funds attracted in the Orenburg region, Perm region and Udmurt Republic is almost directly dependent on the low level of budgetary investments (*Fig. 5*), the explanation of which requires a study of the ratio of budget investment of federal and regional origin, as well as the size of bank loans in this ratio (*Fig. 6*).

In the Orenburg region and the Perm region, the low level of capital investment from both the federal and regional budgets should be noted, which explains the overall small amount of investment attracted in these regions. In the Udmurt Republic — on the contrary, the low volume of investments attracted is due to other reasons, as funds from the federal, regional budgets and loans

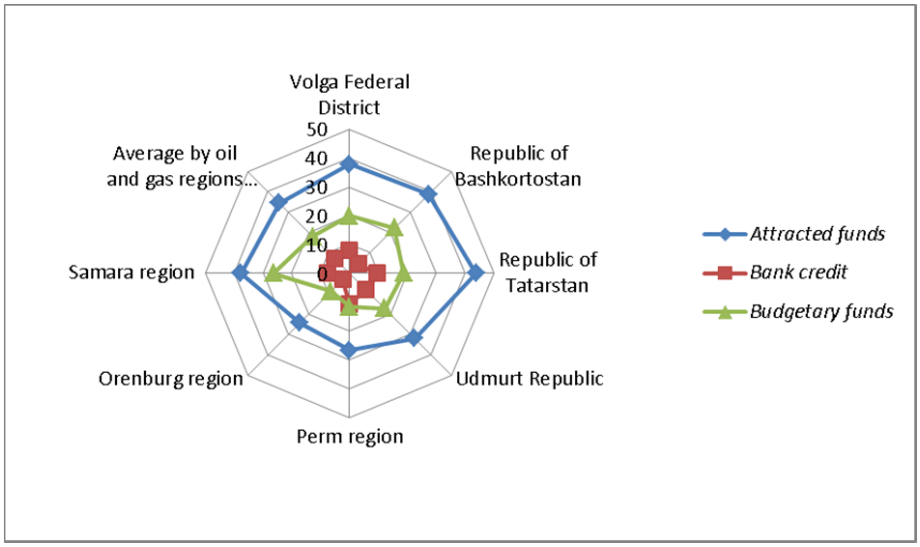

Fig. 5. **The Structure of Investments in Fixed Assets of the Oil and Gas Regions of the Volga Federal District by Sources of Financing at the End of 2021, % of the Total**

Source: Compiled by the author according to Rosstat.

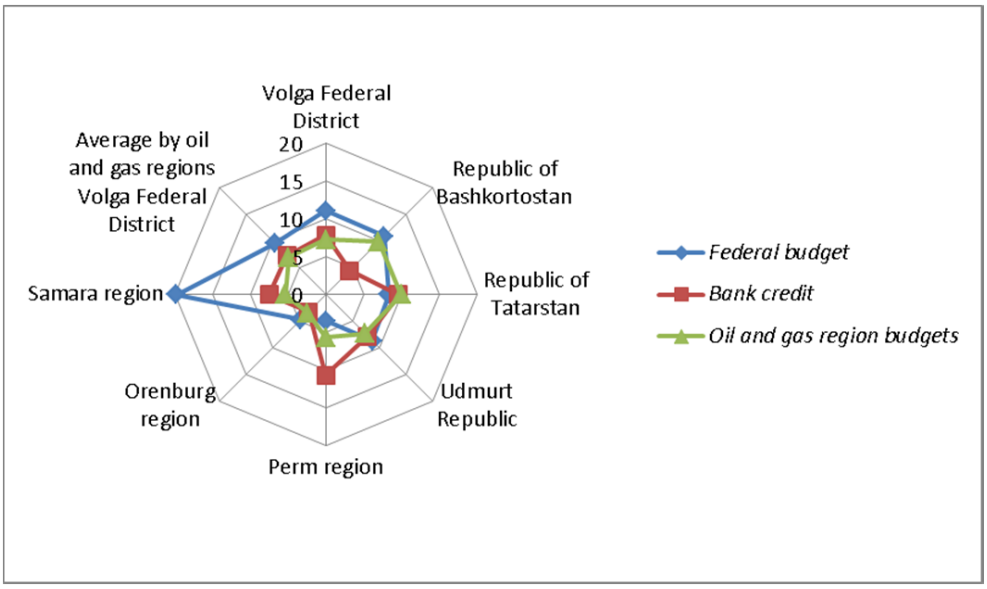

Fig. 6. **The Structure of Investments in Fixed Assets of the Oil and Gas Regions of the Volga Federal District by Sources of Financing at the End of 2021, % of the Total**

Source: Compiled by the author according to Rosstat.

of banks are almost the same percentage as in other oil and gas regions. In the Republic of Tatarstan, Orenburg region and Udmurt Republic there are practically equal proportions of capital investments from the federal, regional budgets and loans of banks, which is likely to have a positive impact on increasing the resilience of the economic systems of the regions to the financial embargo.

The substantial predominance of foreign forms of ownership in capital investments in relation to other regions was found in the Samara and Orenburg regions, which may indicate the increased sensitivity of the production development of these regions to the effects of sanctions.

According to the analysis of the structure of investments in the principal capital of the oil and gas regions of the Volga Federal District by

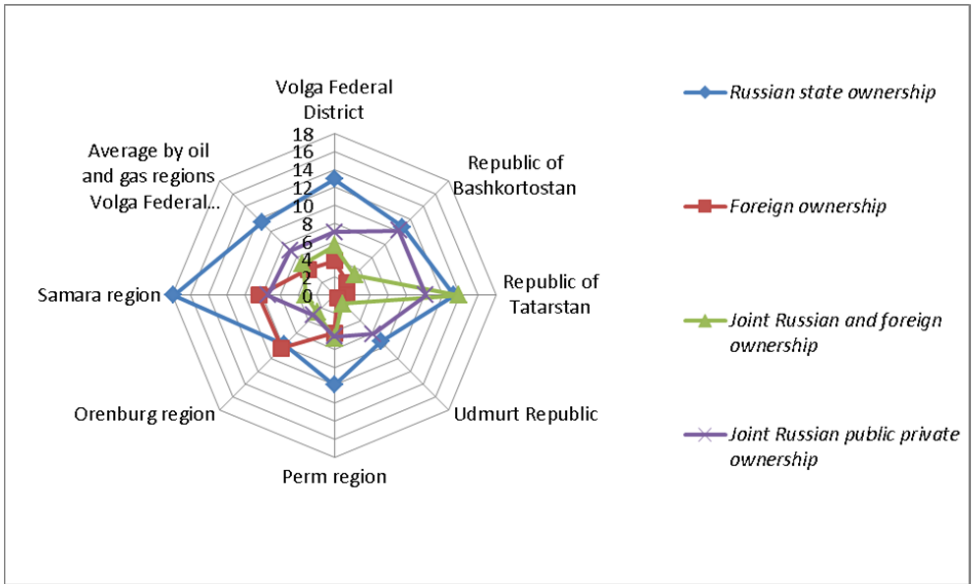

Fig. 7. **Structure of Investments in Fixed Capital of the oil and Gas Regions of the Volga Federal District by Types of Ownership Based on the Results of 2021, % of the Total**

Source: Compiled by the author according to Rosstat.

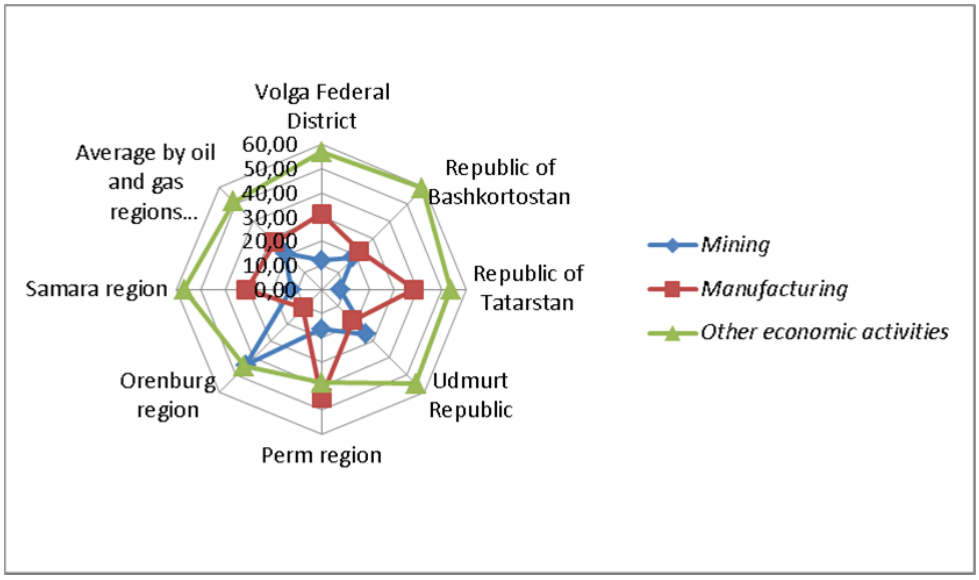

Fig. 8. **Structure of Investments in Fixed Capital of the Oil and Gas Regions of the Volga Federal District by Type of Economic Activity Based on the Results of 2021, % of the Total**

Source: Compiled by the author according to Rosstat.

forms of ownership, it should be noted that the Russian state form of property in the Samara region is significantly dominated, which can be explained by the concentration in this entity of the assets of the aerospace industry, as well as the asset of PJSC "Rosneft", the main shareholder of which is the state (*Fig. 7*).

The effects exposed above may also be explained by the structure of investments in fixed capital in the oil and gas regions of the observed federal district in their most significant economic activities, including mining and processing. Thus, in the Orenburg region, investments in fixed capital in mineral production activities, in which the structure of oil and natural gas production is of decisive importance, significantly predominate over investment in the main capital of processing

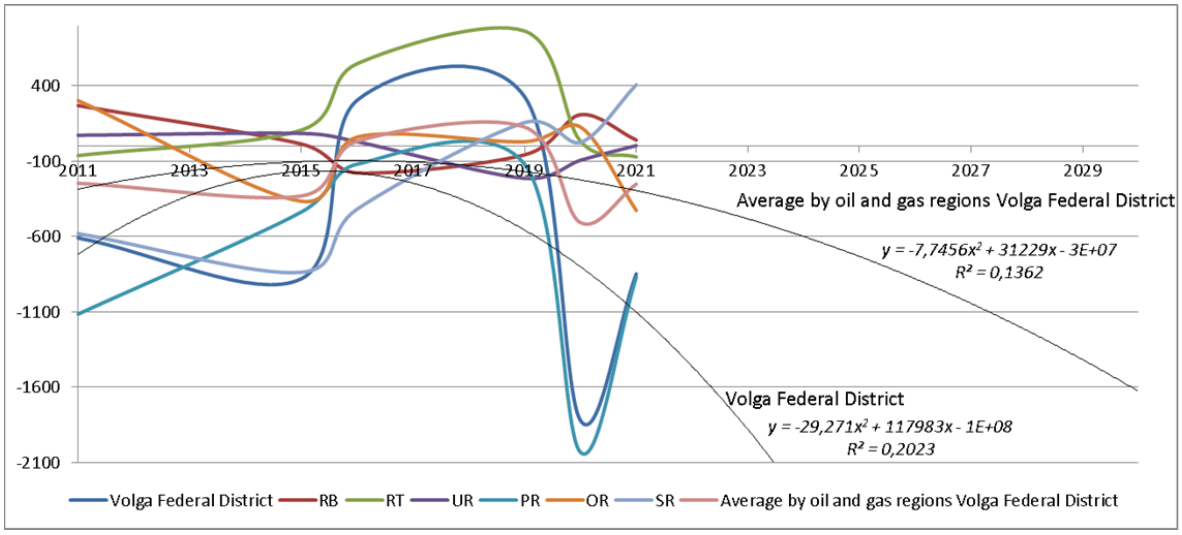

Fig. 9. **Dynamics and Forecast of the Balance (Inflow Minus Withdrawal) of Foreign Direct Investment in the Oil and Gas Regions of the Volga Federal District According to the Balance of Payments of the Russian Federation, Million US Dollars**

Source: Compiled by the author according to Rosstat.

industries and are about 45%, reaching the level of all other economic activities in the region. In the Republic of Bashkortostan and the Udmurt Republic, capital investments in mining and processing are practically comparable. They account for about 25% of each of these economic activities and correspond to their ratio in the average oil and gas regions.

In the Republic of Tatarstan and the Perm region, on the contrary, investment in the capital of processing industries significantly exceeds similar revenue in mineral mining activities, with an approximate ratio of 45% to 15%, which was close to the proportion of such investment in these types of economic activities in the average for all regions of the observed federal district. On the basis of the structure of investments in the principal capital of the oil and gas regions of the Volga Federal District by type of economic activity (*Fig. 8*), it is possible to conclude on the need to develop a model of investment climate for inclusive production development of the petroleum and gas region, taking into account the balanced interaction of institutional, technological, innovative factors of growth of the fund yield of regional fixed capital.

The dynamics of the balance (income minus withdrawal) of foreign direct investment in oil and gas regions are characterized by absolute chaos. This is evidenced by both their direct trajectories and the consequent low values of the reliability of the approximation of trend lines. Nevertheless, there is a certain pattern, which is that both on average in the oil and gas regions and on average for the federal district, the balance of foreign direct investment shows a steady decline. At the same time, comparing the dynamics of such a decrease, the regional production of petroleum and gas chemical complexes can be considered a significant factor in the delay of the outflow of foreign finance, obviously as a result of the fact that oil and gas resources and the products of their processing are the most traded commodities in the world. In addition, the oil and gas industry has traditionally been one of the most capital-intensive with a long return on investment, which may also limit the possibility of foreign investors withdrawing financial assets from oil and gas regions (*Fig. 9*).

Thus, on the basis of an economic analysis of the investment climate in Russian oil and gas regions, it is possible to conclude about an effective federal policy of regional development,

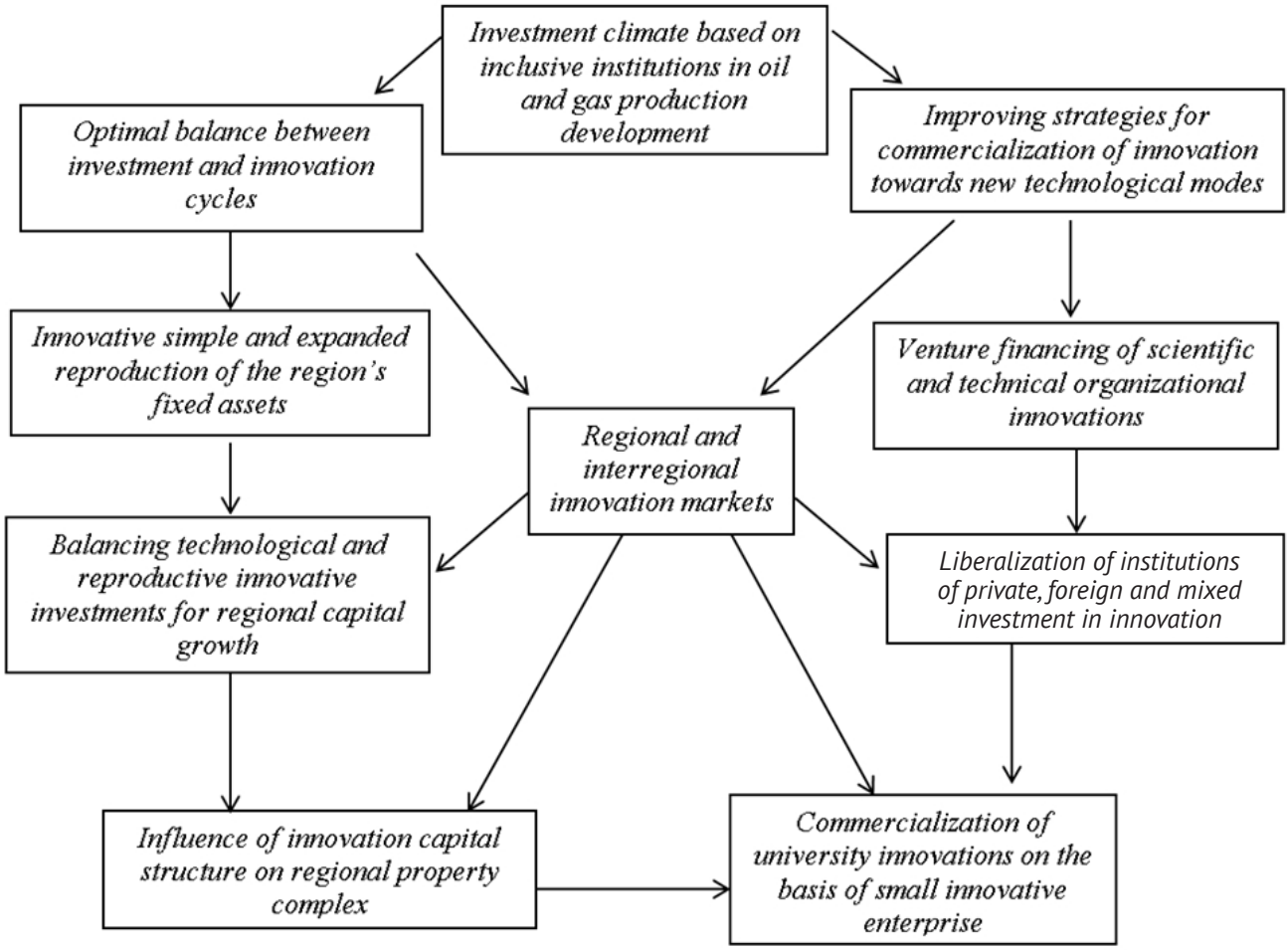

Fig. 10. **Block Diagram of Priority Factors for Supporting a Favorable Investment Climate in the Production Development of the Oil and Gas Region in the Context of the Financial Embargo**

Source: Compiled by the author.

which, based on a sustained balance of federal and regional sources of financing and public and private forms of ownership, forms territorial "points" of industrial and innovative development. At the same time, it should be noted that there are certain imbalances in the investment climate in the Samara region, both in terms of the types of major funds, as well as the forms of ownership and sources of financing. This may be due both to the high share of state ownership in the region associated with the aerospace industry and to the problems of the profitability of the assets of the large oil refineries located on its territory due to the large proportion of physically and morally outdated deep hydrocarbon raw material processing equipment. The solution to the problems of the disproportionality of investment in the main capital of the oil and gas region in the context of the financial embargo and the intensification of energy sanctions can be the formation of a sustainable regional system of innovation activity. Its effectiveness requires processes of development and introduction in the regional economy of institutional mechanisms of a favorable investment climate, improvement of the market of innovations and strategies of commercialization of innovative products, provision of the necessary infrastructure for the transition to a new technological system, a balanced policy of state support of innovation and investment cycles and venture financing (*Fig. 10*).

Priority directions for investments in fixed capital in the oil and gas region under the conditions of the financial embargo and the economic transformation of the global energy balance require preventive analysis because to maintain high profitability in the production and processing of hydrocarbon raw materials and, accordingly, filling the budgets of the regional and federal levels require high capital investments into the development of new projects and modernization of existing ones. This can be a driver of achieving new technological patterns and modern world standards of quality in the oil and gas industry, ensuring the competitiveness of its products, goods, and services under the conditions that the structure and dynamics of both foreign direct financing and export revenues are subject to significant changes under the influence of foreign economic and foreign policy management and unmanaged factors.

Structure, dynamics and directions of investment in fixed capital of oil and gas regions, the economic results of which are an important factor in the sustainability of the national economic system, can be of significant scientific interest as an indicator of the readiness of such entities to the financial embargo and transformation of the global energy balance. The oil and gas industry is characterized by its high capital intensity and long return on investment, as well as strong integration into the context of international stock and derivative markets, which is directly related to the problems of the financial embargo, and the transformation of the global energy balance has the greatest impact on the logistics and profitability of petroleum and gas products.

CONCLUSION

The investment climate of the production development of the oil and gas region, based on its inclusive institutional environment, is determined, on the one hand, by the optimal balance of investment and innovation cyclicality, which is a necessary condition for innovative, simple, and expanded reproduction of basic funds and the formation of regional and interregional markets of innovation. This ensures the balance of technological and reproductive innovation investments to increase the return of regional basic capital, which further, through the functions of regional and interregional innovation markets and the influence of the structure of innovative capital on the regional property complex, can increase the effectiveness of the commercialization of university innovations on the basis of small innovative enterprises. On the other hand, the development of a regional investment climate based on the principles of an inclusive institutional environment in the region can stimulate the improvement of strategies for commercializing innovation towards new technological patterns, which, in turn, will provide additional incentives for venture capital investment in scientific, technical, and organizational innovations and is the second essential condition for the effectiveness of regional and interregional innovation markets. A complementary effect of such interconnection could be the liberalization of private, foreign, and mixed investment institutions in technological innovation in the region, taking into account the sources of origin and destination of products, in order to address the import substitution policy and the problems of the financial embargo.

The results of the study can be requested in the activities of the ministries of finance of the oil and gas regions in conducting a unified financial, budgetary, tax, as well as monetary policy, and coordination of other executive bodies at the regional and federal levels in the financial sphere. The study of the problems of investing in fixed capital in the oil and gas region as an indicator of its readiness for the financial embargo and transformation of the global energy balance, taking into account the highly profitable oil and gas incomes of production organizations and budgets, may prove useful in the administrative structures

and the real sector of the economy in the following fields:

- development of the regional financial markets and concentration of regional financial resources on priority areas of socio-economic development;
- development of state borrowing programmes and their implementation, republican target programs and their financing at the expense of the regional budget;
- improvement of the regional budget system and extrabudgetary relations, as well as long-, medium- and short-term forecasting of regional socio-economic development;
- financial recovery and structural restructuring of the economy, support and protection of the interests of the Russian manufacturing sector of goods, works and services;
- development of priority areas of regional monetary policy, improvement of settlements and payments in the economy, financing of regional investment programmes.

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