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Impact of Innovative Processes on Russia's Economic Growth Under Sanctions

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Abstract

The article deals with the problems of innovation activity in the Russian economy in the context of the implementation of the import substitution policy.We revealed the patterns of innovation development in sixteen types of innovation and economic activity in the conditions of Western sanctions and in the pre-sanction period.We determined the dynamics of influence of the situation in the Russian innovation field on the main macroeconomic indicators. As indicators characterizing the dynamics of innovation processes in the country, we used data on the size and structure of costs for technological innovations, differentiated by the industry basis.Using the macroeconomic indicators during analysis, we determined the indicators of the added value created, the output volume, the volume of produced innovative goods and services, as well as the indicators that characterize the movement dynamics of labor resources.On the basis of the conducted studies, we proved that the logic of import substitution in the Russian economy should critically evaluate the axiom about the expediency of forming in the country the entire chain of value created for the consumer on the scale of entire commodity groups. We have substantiated that the development of industries that are closest to the final consumer along the value chain is the most preferable in the Russian economy.

Keywords: Russia; Economic growth; Innovation; Western sanctions; Influence.

1. Introduction

In recent years, the Russian economy, despite the presence in its structure of a sufficiently large scientific and research sector, largely retaining its potential since the times of the Soviet Union, has nevertheless not shown any convincing results in its development.

However, given the recent low demand from the subjects of the production sector for the knowledge created or capable of being created in the R&D sector, this contradiction finds its logical explanation.

In this regard, the continuing sanctions pressure from Western countries, which has largely predetermined the shortage in the domestic economy of a wide range of goods and technologies previously imported from abroad, can be considered as a completely real factor that can activate the much-needed transfer of innovative technological developments from the scientific to the manufacturing sec (Anisimova and Sadriev, 2017; Melnik A. and Sadriev, 2014; Melnik A. N. *et al.*, 2015; Melnik K. and Ermolaevb, 2018).

From the point of view of the prerequisites of its theoretical substantiation, the problem of import substitution is largely due to the appearance of classical works in the field of economic growth, in which the first attempts have been made to explain the reasons for the differentiation of the economic development level in different countries of the world.

One of the first such works is the "Economic Table" (Quesnay, 1894) created by the efforts of F. Kane.

The development of the theory of economic growth in the subsequent years turned out to be associated with the emergence of the Keynesian direction of macroeconomic equilibrium, within which the Keynes multiplier, demonstrating the limitations of economic growth from the position of limiting propensity of the population to savings, was proposed (Kaldor, 2015).

The significant development of the theoretical foundations of this area of research was promoted by R. Harrod, being one of the first, who managed to develop the dynamic models of economic growth (Harrod, 1974).

In a later period, the founder of the neoclassical growth model R.

Solow (1956), who pointed out the dependence of the output volume and the provision of services in the economy on the amount of cash savings, capital growth rates, as well as labor, scientific and technological progress, contributed to the development of the theory of economic growth.

Somewhat later P. Romer proposed the concept of positive scale effect in the economy to increase the significance of the factor of scientific and technological progress in the models of economic growth that existed at that time (Romer, 1986).

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An alternative model based on the same hypothesis about the contribution to the economic growth of scientific and technological progress was proposed by Lucas (1988).

These models were further developed in the conceptual work of the founder of the new classical macroeconomics Barro (1990).

In many respects, relying on the fundamental works in the field of economic growth, the researchers from various countries of the world began to orient their studies in the framework of more specific scientific problems, one of which was import substitution.

Among the most discussed developments carried out in this direction is a study devoted to the problems of production specialization and expansion of the range of imports in the US economy (Broda and Weinstein, 2006).

A broader geography of studying the problem of import substitution is presented in the work (Balasubramanyam *et al.*, 1996).

On the scale of countries belonging to the FTAA, the conditions of international trade and the problems of developing the import-substituting industries are discussed in article (Hertel *et al.*, 2007).

2. Methods

In conducting this study, we used the method of correlation and regression analysis, the possibilities of which were focused on identifying a bilateral relationship between various indicators of the innovative development of the Russian economy.

Statistical data processing was performed using IBM SPSS Statistics v22.

The research was based on the official data of the Federal State Statistics Service on the socio-economic development of Russia, customs statistics of the Federal Customs Service on foreign trade, as well as the results of special studies revealing the specific nature of functioning of various sectors of the economy under sanctions pressure from Western countries.

We analyzed the dynamics of the innovation development of the Russian economy using the indicator of the proportion of organizations implementing technological innovations in the total number of surveyed organizations, the indicators of the volume of innovative goods, works and services of organizations and their proportion in the total volume of goods shipped, works and services performed, the indicator of the costs for technological innovations in the organizations.

The study of the dynamics of changes in these indicators was carried out in the context of sixteen different types of innovation and economic activity, which were recorded by the state statistics bodies.

3. Results and Discussion

Thus, during this study, we made comparative assessment of the dynamics of changes in the indicators of the innovative development of the Russian economy under the conditions of sanctions pressure that began in 2013, as well as within the period from 2010 to 2012 that preceded this pressure. The purpose of this assessment was to identify the industries and areas of activity that managed to take advantage of the current market situation and intensified the goods production that replace the products subject to external sanctions.

The analysis of the proportion of organizations that carried out technological innovations in the total number of surveyed organizations allowed us identifying seven industries and fields of activity that demonstrated the growth of this indicator in the period of 2013-2015, i.e. during the import restrictions.

At the same time, the main part of the sample, namely, six economy branches at once, including food production; textile and clothing production; manufacture of leather, leather goods and footwear; wood processing and production of wood products, chemical production, and other industries showed a growth rate of the proportion of organizations that carried out technological innovations in the amount exceeding a change in this indicator in the pre-sanction period.

Moreover, all these industries, without exception, were generally characterized by either negative dynamics of the share of innovative organizations, or its value was close to zero during 2010-2013.

The dynamics of the indicator of the proportion of organizations that carried out technological innovations during the pre-sanction period and during the period of sanctions was directly reflected in the dynamics of the indicator of the volume of innovative goods, works and services of the organizations.

Among the organizations that demonstrated during the period of import restrictions the growth rate of this indicator turned out to be the business entities from exactly the same industries that showed an advancing increase in the share of innovatively active enterprises. In addition, the positive dynamics of this indicator was achieved in the production of electrical equipment, electronic and optical equipment, as well as in the industry of production and distribution of electricity, gas and water.

Without significant changes, the positive dynamics of two indicators considered remained in relation to the rate of change of another indicator, revealing the content of innovative processes, the volume of innovative goods, works and services of the organizations in the total volume of goods shipped, work performed and services rendered.

As before, the list of relevant economic activities included the food and tobacco production; textile and clothing production; manufacture of leather, leather goods and footwear; wood processing and production of wood products; pulp and paper production, publishing and printing; manufacture of electrical, electronic and optical equipment.

Finishing the review of the main indicators of innovation development, let us pay attention to the dynamics of costs for technological innovations of the organizations.

There were no expected deviations from the current dynamics of the already considered indicators.

The industries with the leading growth dynamics (during sanctions) of the analyzed indicator were textile and clothing production; production of leather, leather goods and footwear, as well as wood processing and manufacture of wood products.

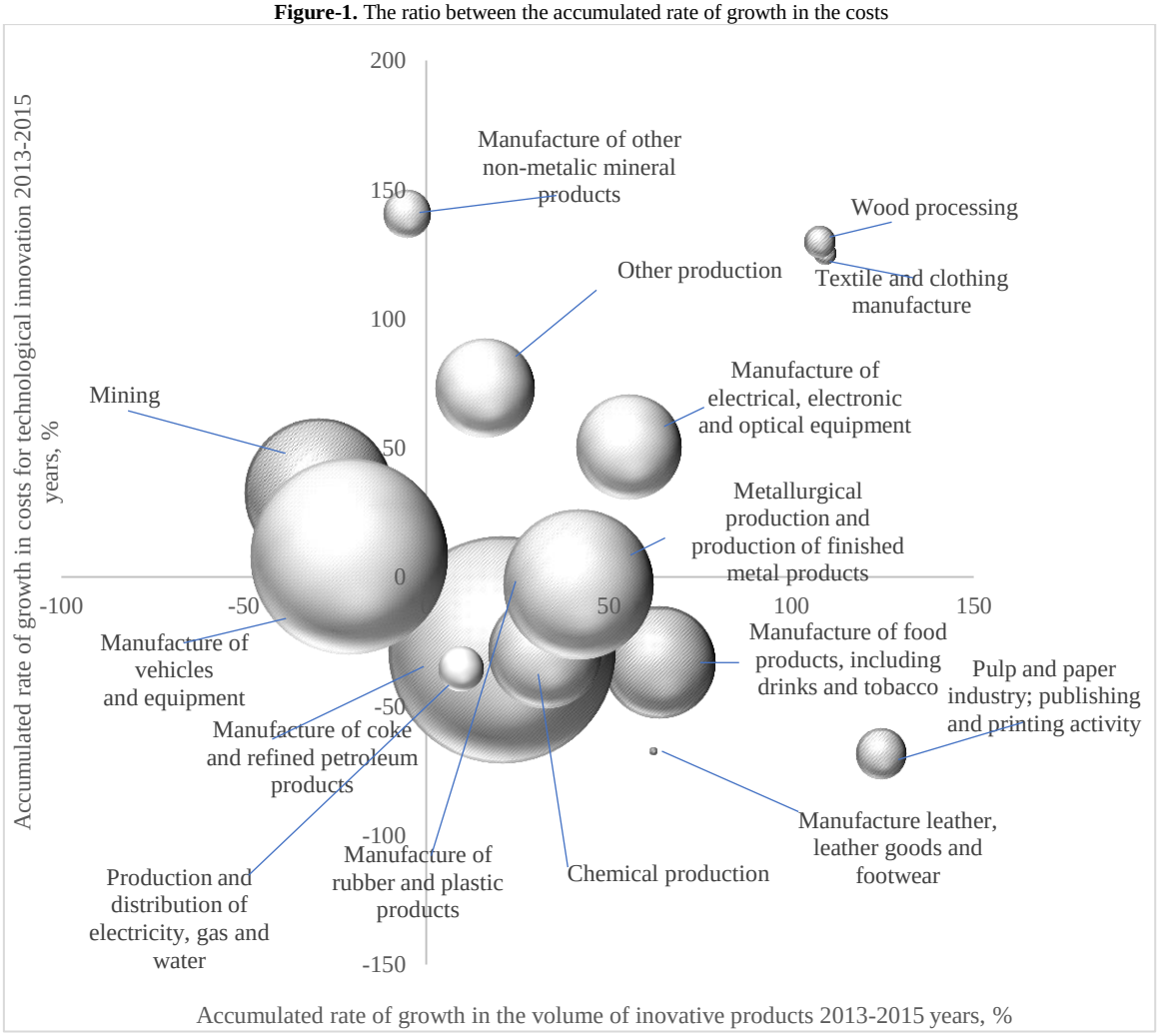
At the same time, unexpectedly, the number of spheres of activity that demonstrated negative dynamics of the costs for technological innovations during the sanctions included food production, pulp and paper production, publishing and printing, as well as chemical production. A significant increase in the costs for technological innovations was observed in the areas of production of rubber and plastic products, as well as other industries not included in other groups of manufacturing industries.

Some recovery in terms of an increase in innovation costs was also observed in the production of machinery and equipment.

For a holistic perception of the results of the study specified in Figures 1-2, we systematized the data for the period of 2010-2012 and 2013-2015 on three main indicators of innovation development:

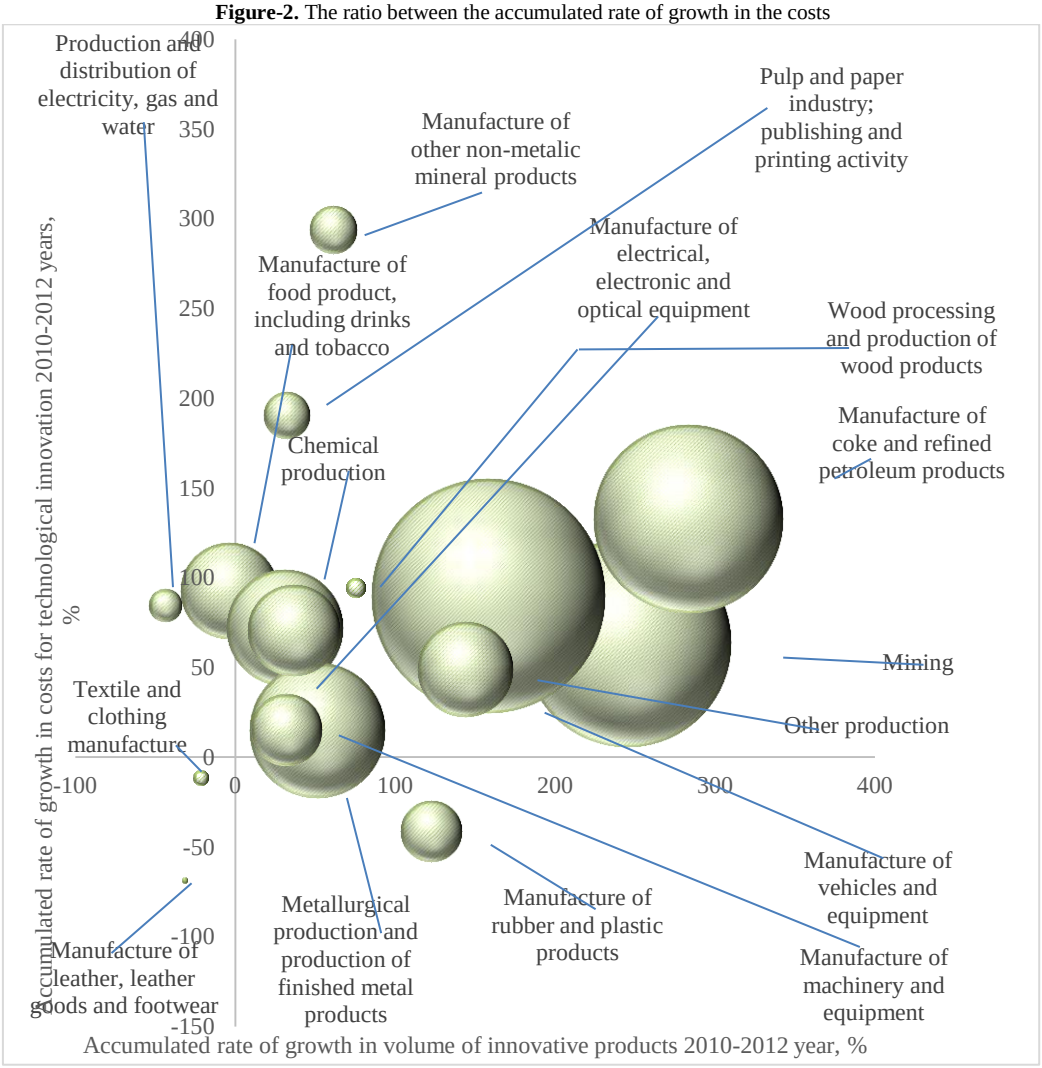
accumulated rate of growth of the costs for technological innovations, accumulated rate of growth of the volume of innovative products and the absolute value of the output of innovative products in the context of various types of innovative activities.

Figure-1. The ratio between the accumulated rate of growth in the costs



For technological innovations and the accumulated rate of growth of the volume of innovative products for the period of 2010-2012.

Figure-2. The ratio between the accumulated rate of growth in the costs



for technological innovations and the accumulated rate of growth of the volume of innovative products for the period of 2013-2015.

Based on the dynamics of these indicators, we can draw the following main conclusions.

Firstly, the greatest changes in the indicators of the innovative development of the Russian economy during the period of sanctions are demonstrated by the types of economic activities related to food production, textile and clothing production, leather production, leather goods and footwear production, as well as wood processing and manufacture of wood products.

However, the insignificant part of the value of their products is unlikely to allow them being considered as fundamentally important for ensuring the multiplicative innovative growth of the entire national economy.

Secondly, the largest in terms of output of innovative products during the period of sanctions remain the economic activities associated with the production of coke and petroleum products, as well as with the extraction of minerals, which together can be attributed to the predominantly lower branches of industries that are at the very beginning of inter-industry technological chains.

At the next stage of the study, we determined the dynamics of influence of the situation in the Russian innovation field on the main macroeconomic indicators.

For this purpose, we used a non-parametric method to identify the closeness of the relationship between signs, known as the method of calculating the Spearman coefficient.

As indicators characterizing the dynamics of innovation processes in the country, we used data on the size and structure of costs for technological innovations, differentiated by the industry basis.

Using the macroeconomic indicators during analysis, we determined the indicators of the added value created, the output volume, the volume of produced innovative goods and services, as well as the indicators that characterize the movement dynamics of labor resources.

4. Summary

Interpretation of the study results allows us making the following conclusion. Firstly, the correlation between the value added indicators and the indicators of the costs for technological innovations throughout the period under consideration tends to decrease within the economy as a whole.

The value of the corresponding Spearman correlation coefficient decreased from 0.768 in 2012 to 0.564 in 2015, with an average of 0.729 over the entire analyzed period.

At the same time, the largest decrease in the dependency occurred in relation to the cost item, which is associated with the acquisition of machinery and equipment, which can be explained by a reduction in the innovation sector within the economy as a whole, as well as a decrease in investment in the technological development of production processes in most industries.

At the same time, the closeness of the relationship between the value added and the costs for technological innovations in terms of the software acquisition has increased, which is naturally a reflection of the increasing influence on the economic growth of information and communication technologies.

In addition, attention is drawn to the relatively low values of the Spearman coefficients throughout the period under consideration, which reveal the link between the value added and the costs for research and development.

Secondly, from the point of view of the dynamics of influence of various factors on the output indicator in the scale of the national economy for the period of 2012-2015, there is a tendency to maintain the values of closeness of the relationship between the corresponding indicators within the range of values of 0.800-0.836.

At the same time, it should be noted a significant growth dynamics of the values of the correlation coefficient between the output indicator and the cost of acquiring new technologies, as well as maintaining high correlation values between the output and the cost of acquiring machinery and equipment.

This indicates the continuing dominance among the factors of economic growth of the acquisition and adaptation of foreign developments.

Thirdly, a high dependence on the indicators of the costs for education and training of personnel, as well as for the software acquisition, was revealed in relation to the indicator of the volume of innovative goods and services.

At the same time, a consistently high level of values of the correlation coefficients has been established between this indicator and the total costs for technological innovations for the period of 2012-2015.

Its low dependence on the indicator of costs for the acquisition of rights to patents and licenses is inherent in the indicator of the volume of innovative goods and services.

This may indicate an insufficiently substantial depth of the integration process of foreign technologies into the production activities of Russian enterprises.

Fourthly, the range of the highest values of the correlation coefficients was between the average monthly wage and the costs for technological innovations - 0.925-0.892, with their average over the entire analyzed period - 0.925.

At the same time, consistently high values of the correlation coefficients are observed in relation to all components of the integral indicator of the costs for technological innovations, with the exception of the costs for marketing research.

This relationship is due to the creation of new high-tech jobs that require the use of more qualified specialists, who are also more demanding to the remuneration level.

5. Conclusions

Sanctions pressure from the coalition of Western countries had a rather serious, however, ambiguous impact on the development of the Russian economy.

On the one hand, in the conditions of imposed restrictions on access to foreign credit resources, the dynamics of investment activity significantly decreased among the subjects of Russian business.

On the other hand, Russian manufacturers have opened up the opportunities for its replacement.

Any import substitution scenario in the Russian economy should be balanced by quality and volume indicators of export activities of national producers.

At the same time, the logic of import substitution in the Russian economy should critically evaluate the axiom about the expediency of forming the entire chain of value created for the consumer in the country, starting with the extraction of raw materials and ending with final consumption.

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References

Anisimova, T. Y. and Sadriev, A. R. (2017). Energy awareness and conservation behavior of Russian residential households. *Journal of Environmental Management and Tourism*, 7(4): 559-70.

Balasubramanyam, V. N., Salisu, M. and Sapsford, D. (1996). Foreign direct investment and growth in EP and IS countries. *The Economic Journal*: 92-105.

Barro, R. J. (1990). Government spending in a simple model of endogeneous growth. *Journal of Political Economy*, 95(5): 103-25.

Broda, C. and Weinstein, D. E. (2006). Globalization and the gains from variety. *The Quarterly Journal of Economics*, 121(2): 541-85.

Harrod, R. (1974). Pure theory of growth economics. *Zeitschrift für Nationalökonomie*, 34(3-4): 241-47.

Hertel, T., Hummels, D., Ivanic, M. and Keeney, R. (2007). How confident can we be of CGE-based assessments of free trade agreements? *Economic Modelling*, 24(4): 611-35.

Kaldor, N. (2015). *Keynesian economics after fifty years. In Essays on Keynesian and Kaldorian Economics.* Palgrave Macmillan: London.

Lucas, J. R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics,* 22(1): 3-42.

Melnik, A. and Sadriev, A., 2014. "Formation features of the cluster-network model of energy companies'innovative development." In *In Sgem2014 Conference On Political Sciences, Law, Finance, Economics And Tourism, SGEM2014 Conference Proceedings.*

Melnik, A. N., Lukishina, L. V. and Sadriev, A. R. (2015). Formation of the system of indicators to assess the impact of energy efficiency on the innovative development of the enterprise. *International Journal of Applied Engineering Research*, 10(20): 40991-97.

Melnik, K. and Ermolaevb (2018). Study on the processes of energy conservation and efficient energy use in the innovative development programs of Russian companies. *Journal of Engineering and Applied Sciences,* 13(1): 14-18.

Quesnay, F. (1894). *Tableau oeconomique.* Macmillan.

Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of Political Economy*, 94(5): 1002-37.

Solow, R. M. (1956). A contribution to the theory of economic growth. *The Quarterly Journal of Economics,* 70(1): 65-94.