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Prospects for new industrialization in Russia

T. Uskova
the Institute of Socio-Economic Development of Territories of RAS
The Vologda Research Center of the Russian Academy of Sciences
Vologda, Russia
lukin_ev@list.ru

E. Lukin
the Institute of Socio-Economic Development of Territories of RAS
The Vologda Research Center of the Russian Academy of Sciences
Vologda, Russia

L. Mukhametova
Institute of Economics and Information technologies
Kazan State Power Engineering University
Kazan, Russia

***Abstract*—Industry is an important sector of economy, predetermining the quality of the population life and creating the prerequisites for the sustainable development of the national economy. It concentrates industries with a high multiplier, which are the locomotive for development of other types of economic activity. Industry contributes to the economic security of the country, it is a catalyst for scientific and technical progress. However, in Russia there are a number of problems constraining evolution of this sector of economy. The country is facing low rates of production, a decrease in investments, a decrease in real incomes of the population, a decrease in consumer demand. The evolution of industry is significantly affected by high rates on commercial loans and prices for fuel and energy resources, materials, equipment, and raw materials. As a result, the technological lag of the Russian industry from the level of advanced economies in the world will grow. All this puts the task of modernizing domestic production at the top priority level. The aim of the work is to analyze the current economic conditions of the Russian industry, identify the factors hindering its devel-opment, and the main sources of modernization. A modernization break can be achieved by improving the tax and depreciation policies. Implementation of measures in these areas will significantly reduce the burden on en-trepreneurship and free up the necessary amount of financial resources for the implementation of promising investment projects, which will make it possible to quickly overcome the technological gap between Russia and the leading economies of the world and restore the lost period of scientific and technical potential of the country.**

Keywords—industrialization; national economy; domestic production; Russian industry; modernization break.

I. INTRODUCTION

On May 7, 2018, the President of the Russian Federation signed a Decree “On the national goals and strategic objectives of the development of the Russian Federation for the period up to 2024”. It sets a goal to become one of the five largest economies in the world by 2024, ensuring economic growth rates higher than the world ones while maintaining macroeconomic stability. At present, the Russian economy is in the sixth place in the world (after China, the USA, India, Japan and Germany). The rates of its growth over the last five years are inferior to the world ones, the country does not increase, but reduces its share in world GDP.

With the current trends preserving, Russia will not be in advance of Germany by 2024, but will lag behind Indonesia (in 2013–2017, the average annual GDP growth rate was 0.2% for Russia, 1.7% for Germany, 5.1% for Indonesia). According to our estimates, in order to occupy and retain the fifth place, it is necessary to grow at a rate of at least 5% per year. The economy for the entire post-Soviet period showed such growth rates only in 1999–2008, when the average annual GDP growth was 6.9%. For 2009–2017 the country's GDP increased by only 5.5% (0.6% per year), for the same period the world economy grew by 24.4% (2.5% per year).

According to experts [1,2], the raw materials export model existing in Russia has exhausted itself and is unable to provide the required growth rates. This is proved by the results of the socio-economic development of the last 10 years. Industrial production grew by only 10.5%, investment by 1.2%, real incomes of the population grew by 5.2%. The country share in global GDP reduced from 3.5 to 2.9%. The processes of de-industrialization of the economy are increasing, and the contribution of industry to the formation of added value has decreased down to 24.3% (including the contribution of manufacturing industries which reduced to 11.9%).

The country faces the problem of choosing a new strategy of high-quality economic growth, calculated for the long term. To change the situation, government policy is required to increase the incomes of all economic entities (population, companies, government) by forming their own added value chains that produce goods for final consumption.

The basis for these transformations should be the policy of a new industrialization of the economy. The country needs its own industrial capital, embodied in automated engineering and automated workplaces, robotic, digitized high technologies and high-tech complexes of the manufacturing industry.

II. NEOINDUSTRIAL PARADIGM OF THE ECONOMY EVOLUTION

The problem of increasing competitiveness and achieving high production rates is relevant for the most countries of the world, both developed and developing. The potential for fur-ther growth in the productivity of the economies of developed countries under the condi-tions of the existing economic and technological structure was close to exhaustion. Over the past decade, labor productivity in the United States has increased by only 7%, in Canada it increased by 6%, in France and Japan by 4%, in Germany and the UK by 2%. Compared with the 2000s, productivity growth rates in developing countries' economies slowed down significantly.

The scientific-technological and innovation policy carried out by industrialized coun-tries and a number of new industrial countries is now used to obtain answer to these chal-lenges. Its goal is to stimulate the development and

introduction of advanced technologies whose performance significantly exceeds the characteristics of traditional ones. Leading countries implement a whole package of large state programs in the field of advanced technologies in industry and non-industrial sectors of the economy, designed to launch a new technological revolution and radically strengthen competitive positions in global markets [3]. Examples of such programs are Industrie 4.0 in Germany, SmartFactory in the Netherlands, UsineduFutur in France, HighValueManufacturingCatapult in the UK, Fabbri-cadelFuturo in Italy, Made Different in Belgium, MadeinChina in China, Monodzukuri in Japan, IndustrialInternetConsortium in the USA.

Research is actively conducted on various aspects of the neo-industrial agenda. The current state of Industry 4.0 and its development trends [4], features of different countries [5] are assessed, the principles of its design are defined [6], as well as the prospects for implementing the SmartFactory [7]. It describes the state policy for managing the structural characteristics of the economy in the context of a new industrialization [8].

The core of the neo-industrial development paradigm in Russia is the fundamental sci-entific generalizations of S.S. Gubanov, presented in a series of articles on this topic in the Economist magazine, starting from 2008. Subsequently, the paradigm of new industrializa-tion was actively discussed by leading Russian scientists (S.D. Bodrunov [9], S.Yu. Glazyev [10], S. S. Gubanov [11], V. V. Ivanter [12], E. B. Lenchuk [13], O. A. Romanova [14], V. V. Ryazanov [15], A. S. Sukharev [16], A.I. Tatarkin [17]).

III. Influence of the New Industrialization of the Economy

The degree of competitiveness of the economy directly depends on the level and quality of provision of branches of the national economy with industrial products, in particular, high-tech engineering, and the scale of penetration of the latest technologies into all spheres of social life.

Industry (and especially machine-building) acquires key importance in the framework of new industrialization. It has the potential for development and, if system limitations are removed, it can become the basis for a qualitative renewal of the country's productive forces. Despite the deindustrialization and the fact that the transition period after the collapse of the USSR had a detrimental effect on the condition of the Russian industry, contributed to a significant loss of scientific, technical and production potential accumulated during the Soviet period (during the period 1991–2017 the GDP decreased from 40.1% to 27.7%), and the contribution of industrial activities to the sustainability of the economy still remains significant.

High-multiplier industry branches are concentrated in industry, they are the locomotives for development of other economic sectors, which underlines the extreme importance of the industrial sector of the national economy. And it is obvious that due to the need for new industrialization, it is industrial enterprises that should become a priority for the authorities when choosing investment objects.

Conducting a new industrialization will increase the demand for industrial products and especially engineering. To assess the growth in demand for Russian engineering products for the economy, an inter-industry balance sheet model is used, based on the basic equation of inter-industry balance, which in the matrix form has the form.

$$x = Ax + y \tag{1}$$

where x is production output volume vector; A is coefficient matrix of direct costs; y is the end product vector.

For clarity, we fix the increase in domestic demand for the nomenclature of the machine-building industry at the level of 10%. In this case, it will be possible to observe an increase in the main indicators for all types of economic activity. In general, for the Russian economy, the activization of engineering industries will ensure an increase in gross output by 708.5 billion rubles, the number of employees will increase by 277.4 thousand people, payroll fund will increase by 113.9 million rubles (Table 1).

Thus, the performed calculations show that the increase in demand for products of the processing industries of the Russian industry has a tremendous impact on the rise of the entire national economy of the country. A ten percent increase in demand for the products of only three main machine-building industries activates economic growth by about 1%. The growth in other fundamental industries, together with the development of non-producing sectors of

TABLE I. The increase in key economic indicators as a result of increase in machine building production by 10%

Economic activity	Production gross, mln. rub.	The number of employees, people	Payroll Fund, mln. rub.
Agriculture, hunting and forestry	11456	12092	2.862
Mining	19543	1928	1.474
Manufacturing industries (not including machine-building)	112385	25262	8.97
Machine-building	396487	166013	70.096
Generation and distribution of electrical energy, gas and water	23777	6296	2.785
Construction	5074	2902	1.043
Wholesale and retail trade	47054	30051	9.717
Transport	29695	8680	4.537
Financial activity	13894	4513	3.795
Real estate transactions, rental and provision of services	43130	13639	6.516
Others	6018	6068	2.196
In total for the economy	708513	277444	113.991

the national economy, will provide the necessary growth rate of the domestic economy in the amount of 4.5–5% per year.

A significant problem is how to organize a real increase in production indicators, there-by creating demand for domestic products and stimulating the emergence of high-tech industries, when the innovative import nomenclature is abundant in the domestic market. In our opinion, in a spontaneous way, a new industrialization will not occur, no matter how general the understanding is that technologically advanced industry contributes to ensuring the economic security of the state and a decent standard of living of the population. The fact is that the deindustrialization and the number of problems associated with it lead to spontaneous emergence of this sector of material economy on an intensive development path seems impossible.

The urgent need for the speediest organization of the neo-industrial reconstruction of the national economy is also due to the current socio-economic situation. In particular, the current stage is characterized by a rather long decline in production growth rates and a de-crease in real incomes of the population. One of the acute problems is the reduction in con-sumer demand, which entails a reduction in the standard of living and retail sales. High tariffs and interest rates on loans have a negative impact on the domestic industry; there is a shortage of skilled labor.

Thus, the economic system that has emerged as a result of the reforms is an internal cri-sis, and therefore it is one of the main reasons complicating the conditions for the function-ing and development of industry.

IV. System conditions of manufacturing industries functioning in Russia

The presence of a systemic crisis fully explains why the global financial crisis of 2008 and the economic and political sanctions against Russia only aggravated the crisis trends in the domestic economy. Their main consequence was the acceleration of the devaluation of the national currency, which began in mid-2014, as well as the growth of interest rates on commercial loans, the decline in aggregate demand, living standards and business activity. Due to the depreciation of the ruble against the dollar and the European currency, the availability of imported equipment, raw materials and materials has decreased. The growth of production costs and the decline in real incomes of the population ultimately led to a deterioration in the financial condition of enterprises in the industrial sector. Additionally, the industrial activity in Russia was deteriorated as a result of the decision of the Bank of Russia on December 16, 2014 on increasing the key rate to 17% in order to limit devaluation and inflation risks. One and a half months later, the Central Bank of the Russian Federation made a decision on a phased reduction of the rate, subject to observation of a steady downward trend in inflation and inflation expectations. But for 2015–2019 the size of the key rate decreased by 9.25 p.p., never reaching the level of the beginning of 2014, i.e. 5.5%.

Such changes in the monetary policy of the country led to the tightening of credit conditions by financial organizations and led to an increase in the cost of the borrowed funds, which reduced the attractiveness and availability of credit resources for the majority of business entities in the industry.

The intensive evolution of domestic manufacturing industry is also hampered by the high price dynamics of fuel and energy resources and freight traffic. Between the growth of selling prices for capital goods and consumer goods, on the one hand, and products of en-terprises engaged in extraction of minerals, generation and distribution of electricity, gas and water, on the other hand, there is a critical gap that, among other things, contributes to a decrease in the competitiveness of the manufacturing industries due to high growth rates in the cost of their commodity nomenclature.

Such trends for price in fuel and energy resources help to maintain a fairly high level of profitability in the mining industry (24.6% in 2017), however, it regularly generates low efficiency indicators in the manufacturing sector (10.9% in 2017).

The current system conditions negatively affect the interest of investors, who are mainly focused on more profitable types of economic activity. Under such conditions, investments in manufacturing industries are not recoupable, it is beneficial to withdraw capital from the country even at low deposit rates abroad.

This state of affairs partly accounts for the sluggish dynamics of investments in fixed capital of industrial enterprises. Over the past 15 years, the volume of capital investments in the industry has increased for only 1.5–2 times, which is extremely insignificant when the real sector faces the need for intensive high-tech development, competitiveness and efficiency of domestic production.

As a result, the current situation doesn't lead to evolution of industry in the country and, in particular, the confident development of the newest technological systems and the production of internationally competitive products. As a result, the volume of production over the years remains at the same level, and the growth rate is non-essential in comparison with the leaders of industrial production in the world.

V. Factors constraining the development of industry

In our opinion, conducting of large-scale neo-industrialization of Russia should be car-ried out simultaneously with the neutralization of a number of negative factors constraining the development of the Russian industry. Among them, the lack of financial resources is very critical.

In the context of systemic development constraints, the financial aspect in all cases be-comes the prime cause of the unsatisfactory position of domestic producers, thereby caus-ing a shortage of highly skilled labor, low availability of modern means of production (in particular, imported raw materials, materials and equipment) and almost unchanged na-tionwide shipment volumes.

The main reason for this situation is low profitability of research and development ac-tivity and the manufacturing industry, which in fact leaves no space for high-tech maneu-vering of domestic enterprises. The resources currently allocated for research and develop-ment activities, the development of innovative technologies and the improvement of pro-duction processes in order to improve the competitiveness of products in most cases are spent only

on maintaining the current level and are not channeled into development.

The lack of funds in the Russian industry is due to the well-known imperfection of the tax and monetary policy. In the first case, the payment of tax fees almost exposes industrial production, leaving no sufficient financial resources for further operation. In the second case, an enterprise gets access to external sources of financing on extremely unfavorable, often very heavy conditions.

In the advanced countries of the world, one of the main sources of financial resources is the profits of enterprises themselves, but in Russia the current proportions of distribution of primary incomes of the economy make it difficult to increase the relative amount of profits left at the disposal of enterprises and directed to investment projects. The gross profit of the economy of Russia in 2018 amounted to 42.9% of GDP, which is at the level of industrially developed countries (for example, in 2017 in the USA it was 40.4%), but in industry no more than 50% of potential volume is compounded. Meanwhile, prognosis of the Ministry of Economic Development of the Russian Federation show that in the future the situation may worsen (Table 2).

TABLE III. THE STRUCTURE OF USAGE OF GDP AND FINANCIAL POTENTIAL OF ACCUMULATION

Indicator	2018	2019–2024 (forecast)	2025–2030 (forecast)	2031–2036 (forecast)
GDP used	100.0	100.0	100.0	100.0
1.Final consumption	66.9	68.2	67.9	69.0
2.Gross accumulation	23.0	25.8	28.3	28.6
3.Net export, including:	10.0	5.5	3.4	2.0
Export of goods	30.9	28.7	28.2	27.7
Import of goods	20.9	23.2	24.8	25.7
Statistical mismatch	0.1	0.4	0.4	0.4

The expanded involvement of savings in the economic processes of the country be-comes possible due to the development of state policy in terms of lowering interest rates and fiscal stimulation, an increase in the recoupment of investments in industrial capital, the implementation of large investment projects in the industry.

The solution of the main task of new industrialization is associated with the growth of GDP associated with an increase in the absolute value of gross capital formation and the share of GDP used for gross capital accumulation. An important role is played by the rate of accumulation. The existing rate of accumulation in Russia is significantly inferior to the level of the leading developed and developing countries, not allowing the effective neo-industrialization of the economy. At present, 21.3% of GDP is spent on the accumulation of fixed capital, while in China this characteristic is 44.6%, in India it is 31, in South Korea it is 29.3%. Based on the socio-economic forecast development for the planning period until 2036, a significant increase in the rate of accumulation is expected (Table 3). However, investment demand is largely planned to be met by imports.

VI. FINANCIAL POTENTIAL OF MODERNIZATION

Setting the strategic task of neo-industrialization for the

TABLE II. THE RF GDP STRUCTURE ACCORDING TO THE SOURCE OF INCOME, % TO THE TOTAL

Characteristics	2018	2019–2024 (forecast)	2025–2030 (forecast)	2031–2036 (forecast)
GDP	100.0	100.0	100.0	100.0
Costs of labor of employers	45.7	48.4	48.9	48.7
Net taxes on production	11.4	10.8	10.6	10.6
Gross profit of the economy	42.9	40.8	40.5	40.7

country naturally means the need to increase accumulation and increase final consumption while reducing its growth rates. The main way to change the ratio between final consumption and capital accumula-tion is the rational use of GDP growth, reflecting the increase in the incomes of the economy.

Sources for increasing funds of accumulation from the standpoint of the reproduction process and optimization of the volumes of goods and services used for final consumption and gross capital accumulation can be the following:

- Growth of industrial production, providing an increase in the amount of resources for the rise in demand and final consumption;

–The change in proportions between savings and final consumption by reducing the growth rate of final consumption and increasing the savings rate in GDP;

–Reduction of residents' investments abroad due to their orientation to capital invest-ments in domestic production [18];

–Attraction of foreign investment, including through the organization of joint industrial enterprises;

–External loans of the state and private sector, under the condition of their use for the organization of high-tech industrial production.

The availability of funds for new industrialization is inextricably linked with GDP and industrial efficiency. The development of production ensures an increase in the gross profit of the economy, due to which gross accumulation is carried out at the same time. The basis for the development of production will be domestic demand, and a source of increase in efficiency will be a new industrialization, ensuring cost reduction, growth in labor produc-tivity, increase in capital.

The most important thing for development and activization of the neo-industrialization process can be formulated as follows: in Russia it should be profitable to produce products and make a profit based on the development of industrial production. The introduction and use of new capacities should be more profitable than the exploitation of old equipment introduced back in the Soviet years.

However, the tasks of new industrialization cannot be solved only by increasing the growth rate of production. It is necessary to increase the rate of savings and the accumulation of capital as a source of funds for increasing the inflow of technological investments.

The key areas for increasing the savings rate can be an increase in taxation for high-income individuals, a decrease in the amount and proportion of funds currently used by business owners and top management for personal purposes, and an increasing role of de-preciation as a source of investment funds. Reduction of investment by residents abroad through their orientation towards national production and the attraction of foreign invest-ment (subject to their targeted use for the purposes of development the productive forces).

VII. Conclusion

In our opinion, the nearest reserves for a qualitative breakthrough in industry and the development of the neo-industrialization of the country as a whole are currently hidden in improving tax policy and depreciation legislation, the development of which will allow overcoming the technological gap between Russia and the advanced industrial countries of the world, to restore the scientific, technical and industrial potential lost during the post-reform period.

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References

[1] S.Yu. Glazyev, Strategic Priorities 1, 101 (2017)

[2] S. Gubanov, Economist 2, 3 (2016)

[3] M. Coccia, Technology in Society 42, 199 (2015)

[4] L.D. Xu, E.L. Xu, L. Li, International Journal of Production Research 56, 2941 (2018)

[5] C. Fuchs, Triplec-Communication Capitalism & Critique 16, 280 (2018)

[6] M. Hermann, T. Pentek, B. Otto, Proceedings of the Annual Hawaii International Conference on System Sciences (Hawaii, Koloa, 2016)

[7] S. Wang, J. Wan, D. Li, International Journal Of Distributed Sensor Networks 3159805 (2016)

[8] J.Y. Lin, Global Policy 3, 397 (2012).

[9] S.D. Bodrunov, The Manager 9, 2 (2018)

[10] S.Y. Glazyev, Economic and Social Changes: Facts, Trends, Forecast 11, 30 (2018)

[11] S.S. Gubanov, Economic and Social Changes: Facts, Trends, Forecast 38, 23 (2015)

[12] V.V. Ivanter, Herald of the Russian Academy of Sciences 87, 22 (2017)

[13] E.B. Lenchuk, Journal of the New Economic Association 3, 138 (2018)

[14] O.A. Romanova, Economy of Region 13, 276 (2017)

[15] V.T. Riasanov, SotsiologicheskieIssledovaniya11, 140 (2014)

[16] O.S. Sukharev, Economy of Region 12, 315 (2016)

[17] A.I. Tatarkin, Economy of Region 12, 9 (2016)

[18] V.A. Ilyin, Problems of public administration efficiency. Trends in market transformations. The crisis of the budget system. The role of private equity. Strategy 2020: Problems of implementation (ISEDT RAS, Vologda, 2014)