

Sources of Stimulation of Investment Activity in Russia for the Transition to a New Stage of Technology

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Abstract — Innovation is a major factor in market competition, which allows companies to earn extra profits through intellectual rent generated by the exclusive use of more efficient technologies. The purpose of the research is to study the resource support for investments in technology modernization of the Russian economy and to identify key areas of government influence on the effective production modernization. The research works show that the production capacities of the Russian economy are currently loaded at 60 %, labor force – at 80 %, raw materials – at 25 %, only 10 % of the existing scientific and technical potential is used. It is necessary to move to a system policy for the Russian economic development, which should be formed as a mixed strategy of advanced development of a new stage of technology and dynamic technological catch-up. This requires the adoption of a set of measures to concentrate resources and efforts on key areas of a new technology, enhance existing scientific and technical potential, import advanced technologies and attract foreign direct investment to bridge the technological gap. First of all, the monetary policy of the Central Bank should be reviewed. Within the conditions of structural transformation of the world economy caused by the changes of technology and world economic structure, the monetary policy of Russia has a restraining effect on economic growth. While other countries are increasing currency issue monetary emission to credit the growth of a new technology sector at nominal interest, reducing risks for innovators and supporting investors, in the Russian economy the money supply is artificially reduced. In order to overcome scientific, technical and technological stagnation, owned R&D expenditures should be doubled, first of all, through the growth of government resources and stimulation of innovative activity of the private sector providing tax incentives, infrastructure development and credit expansion.

Keywords — innovation, new technology, money emission, investment, capital outflow.

I. INTRODUCTION

It is well known that scientific and technological progress is a main factor in modern economic growth. The share of new knowledge embodied in technologies, equipment, personnel training, manufacturing organization in developed countries is about 70–90 % of GDP growth. Innovations is a major factor in market competition, which allow companies to earn extra profits through intellectual rent generated by the exclusive use of more efficient technologies.

At the moment, five life cycles of successive stages of technical and economic development can be identified (starting with the British Industrial revolution), including information technology dominating in the structure of the modern economy. The next technology development stage will be focused on biotechnologies based on the achievements of molecular biology and genetic engineering, nanotechnology, artificial intelligence systems, global information networks and integrated high-speed transport systems. Their implementation provides a multiple increase in production efficiency, reduction of its energy and capital intensity. At the same time, the technological structure of the economy, the list of leading firms, countries and regions will change. The most competitive will be countries investing in promising areas of a new technology stage. In this way, China, India and Brazil are currently making a technological breakthrough.

The purpose of the research is to study the resource support for investments in technology modernization of the Russian economy and to identify key areas of government influence on the effective production modernization.

In order to accomplish this purpose, the following main tasks were formulated:

- analyze the resource basis of technology modernization of the Russian economy and substantiate solutions to identified problems;
- formulate proposals for improving the institutional conditions that determine the inflow of investments in technology modernization.

II. LITERATURE REVIEW AND METHODS

The research is based on the scientific works of Russian and foreign authors who studied the problems of technological progress and economic development and its investment support. The role and importance of technology modernization for the Western countries, its contribution to economic development, as well as the origins of scientific and technological progress are considered in the works of J. Galbraith [1], R. Solow [2, 3], K. Arrow [4, 5], J. Tobin [6, 7] and others.

The priority of problems in scientific, technical and innovative development, the role and importance of technology modernization in the reproduction process, and the principals of scientific and technological progress are covered in the research works of the following Russian scientists: S. Glazyev [8–11], A. Nekipelov [12], V. Ivanter [12], S. Sulakshin [13], etc.

Based on these scientific works, solutions to some issues regarding resource support of investments in technology modernization of economy were considered and proposed.

The methodological basis of the study is formed by the following scientific tools: systemic and logical analysis, the synthesis of control decisions and approaches, the methods of scientific classification and ranking of objects and phenomena in the study of features and development trends.

III. RESULTS AND DISCUSSION

High-tech industries contribute more than 9 trillion USD to global production, which is 11 % of global gross domestic product. The United States is the world's largest producer of high-tech products. They account for almost one-third of world production. In particular, the United States leads the markets of aircraft production, pharmaceuticals, computer, electronic software and optical products, getting ahead of China and the EU in these industries. However, China is the world's largest producer in medium-technology industries: information technology (IT) services, production of transport equipment and scientific facilities. Its share reaches 26 % of world production. China is followed by the USA (23 %) and the EU (22 %). The United States and China invest the most in research and commercialization of artificial intelligence technologies [14].

The researchers suggest that the production capacities of the Russian economy are currently loaded at 60 %, labor force – at 80 %, raw materials – at 25 %, only 10 % of the existing scientific and technical potential is used [8, 9].

In Russia, we observe a reduction of scientific and technological resources, while other countries are rapidly developing them (table 1) [15]. Russia is the only country of the G20 group with a net reduction number of scientists and

engineers, research institutes and project entities. In terms of the share of research and development expenditure of GDP per scientist, Russia lags behind other industrialized countries. The innovative activity of enterprises remains extremely low. The number of patent applications has been reduced; the share of Russian patent applications with foreign applicants is growing. Lack of demand for R&D causes 'brain drain' in Russia.

TABLE I. RANKING OF NATIONAL HIGHER EDUCATION SYSTEMS

| Rating | Country | Index |
|--------|-----------------------|-------|
| 1 | the USA | 100 |
| 2 | Switzerland | 88.6 |
| 3 | the UK | 84.5 |
| 4 | Sweden | 82.9 |
| 5 | Denmark | 82.5 |
| 6 | Canada | 81.9 |
| 7 | Singapore | 81.3 |
| 8 | Australia | 80.9 |
| 9 | Finland | 80.4 |
| 10 | the Netherlands | 80.2 |
| 11 | Norway | 77.8 |
| 12 | Austria | 77.2 |
| 13 | Belgium | 73.6 |
| 14 | New Zealand | 71.5 |
| 15 | Hong Kong | 70.2 |
| 16 | Germany | 69.6 |
| 17 | France | 67.6 |
| 18 | Israel | 67.3 |
| 19 | Ireland | 64.7 |
| 20 | Japan | 61.7 |
| 21 | Taiwan | 60.5 |
| 22 | Saudi Arabia | 59.3 |
| 23 | the Republic of Korea | 57.4 |
| 24 | Spain | 57.3 |
| 25 | Portugal | 56.8 |
| 26 | Czech Republic | 55.2 |
| 27 | China | 54.7 |
| 28 | Malaysia | 54.5 |
| 29 | Slovenia | 53.6 |
| 30 | Italy | 53.4 |
| 31 | Poland | 52.2 |
| 32 | Chile | 51.3 |
| 33 | Slovakia | 49.6 |
| 34 | South Africa | 48.7 |
| 35 | Hungary | 48.5 |
| 35 | Russia | 48.5 |

In terms of research activity, Russia is behind China, the USA, and India (occupying the first three positions in the world in this indicator), as well as Germany, Great Britain, Japan, France, Italy, and South Korea [16].

The lag is partially balanced by the import of high-tech products containing the embodied results of foreign R&D, which already exceed the volume of domestic ones. However, transition to a foreign technology base deprives the Russian economy of the ability to reproduce independently and poses a threat to the national security of the country.

It is necessary to move to a system policy for the Russian economic development, which should be formed as a mixed strategy of advanced development of a new technology stage and dynamic technological catch-up. It requires the adoption of a set of measures to concentrate resources and efforts on key areas of a new technology stage, enhance existing

scientific and technical potential, import advanced technologies and attract foreign direct investment to bridge the technological gap [17].

The macroeconomic policy of the state should be concerned with these issues. Nobel prize-winning economist J. Tobin made a fundamental conclusion that the main task of a central bank's monetary policy should be to create favorable conditions for maximizing investment. To ensure an annual increase in Russia's GDP of 8 % requires investment growth of at least 15 % [12].

The experience of 'economic miracle' shows the need to increase investments up to 35–45 % of GDP. These investments will move the economy to a new technology stage. Thus, China's ten-fold increase in GDP from 1993 to 2016 was followed by an increase in investments by 28 times, money supply and bank credit on the manufacturing sector – by 19 and 15 times, respectively [10]. Therefore, the economic development policy should include the following main measures.

First of all, it is necessary to increase the monetization of the Russian economy. Monetization factor of the Chinese economy is 150–200 % of GDP; it provides an annual GDP growth by 8–10 %. In Russia, this indicator remains at a level slightly higher than 40 % [13, 18].

Over the past few years, the main objective of the Central Bank's monetary policy has been not to achieve economic growth, but to reduce inflation. Thence the limited money supply appears.

The international experience of all successful national economies suggests that with balanced development control of inflation is achieved on the basis of increase in production and production efficiency, but not by limiting money supply and production degradation. The economic rise of South Korea, Singapore, Malaysia, China, India and Vietnam was followed by advanced money emission in the form of credits for investment and production growth in accordance with the priorities established by the state [19]. Targeted issue of money for investment credits in successful developing countries does not lead to inflation, as the result is an increase in production efficiency and expansion of output of goods, which reduces costs, increases the supply of goods and the purchasing power of money. On the 1st of January, 1999, the inflation rate (annual) was 84 %. In July 1999, it reached 127 % (prices increased by 2.27 times). Despite a high inflation rate, in 1999 for the first time since the Soviet Union period, the Russian economy showed an unprecedented GDP growth of 6.4 %. This situation continued in 2000. At the beginning of the year, the inflation rate was 36.6 %; it did not stop the real GDP growing by a phenomenal 10 %. This example demonstrates that economic growth amid high inflation is possible. On the other hand, examples of Japan, the USA, the EU, Brazil and Vietnam show that low inflation is not enough to achieve economic growth.

With increase in production and production efficiency, household incomes and savings and profits of private companies increase, as a result private sources of investment financing expand and currency issue decreases [20]. However, as soon as private investment activity falls, the state

compensates it with the increase in public investment and money supply.

The increase in money supply can cause inflation if economy is already full of money, the excess of which gives rise to financial pyramids. However, this does not correspond to the current state of the Russian economy, which monetization (about 40 %) is relatively low compared to the level exceeding 100 % of the main competitors.

The money supply can be increased by adopting measures implemented in developed countries: reducing the refinancing rate (in Russia, despite a decrease, it remains at a high level compared to developed countries (table 2)), co-financing of state programs and provision of state guarantees [21].

TABLE II. KEY RATES OF CENTRAL BANKS

| Country | Bank | Rate | Date of effect |
|--------------|--|-------|----------------|
| Australia | Reserve Bank of Australia | 0.75 | 01.10.2019 |
| Brazil | Central Bank of Brazil | 4.50 | 11.12.2019 |
| the UK | Bank of England | 0.75 | 02.08.2018 |
| Denmark | Danmarks Nationalbank | 0.05 | 19.01.2015 |
| Eurozone | The European Central Bank | 0.00 | 16.03.2016 |
| India | Reserve Bank of India | 5.15 | 04.10.2019 |
| Canada | Bank of Canada | 1.75 | 24.10.2018 |
| China | People's Bank of China | 4.15 | 20.11.2019 |
| Mexico | Bank of Mexico | 7.25 | 19.12.2019 |
| New Zealand | Reserve Bank of New Zealand | 2.00 | 11.08.2016 |
| Russia | Central Bank of the Russian Federation | 6.25 | 16.12.2019 |
| the USA | Federal Reserve System | <1.75 | 31.10.2019 |
| Turkey | Central Bank of the Republic of Turkey | 11.25 | 16.01.2020 |
| Switzerland | The Swiss National Bank | -0.75 | 15.01.2015 |
| Sweden | Sveriges Riksbank | 0.00 | 19.12.2019 |
| South Africa | South African Reserve Bank | 6.25 | 16.01.2020 |
| Japan | Bank of Japan | -0.10 | 03.08.2016 |

The next measure is taxation. Enterprises allocated their income for investing in production development, R&D and development of new technologies should be exempted from taxation. Special attention should be paid to the value added tax (VAT). This tax burdens high-tech products with high added value and stimulates the development of resource-based industries.

In 2019, the standard VAT rate in Russia was raised to 20 % (In accordance with Federal Law No. 303-FZ of 03 August 2018) [22].

In the United States, there is no value-added tax, but there is sales tax. In 2007, the research work 'U.S. corporate tax policy for the 21st century' of the Office of Tax Policy of the US Department of the Treasury was issued. Based on world experience instead of a value-added tax and a profit tax applied in some countries the authors of the paper have proposed to introduce a business activity tax (BAT), a kind of consumption tax with an extended tax base.

The report says: «A BAT is a tax on goods and services sold to consumers. Under a BAT, the tax base for each firm is the gross receipts from the sales of goods and services minus purchases of goods and services (including purchases of capital goods) from other businesses. For economy as a whole, the tax base of a BAT is the sales of real goods and services to consumers, because sales from one business to another have

been deducted from the tax base. A BAT imposed at a rate of roughly 5 to 6 percent would replace the revenue from current U.S. business income taxes» [23]. According to the report, the introduction of BAT will improve economic performance, increasing the size of the economy by roughly 2.0 to 2.5 percent.

Our recommendations for improving VAT are essentially the same as those proposed by American scientists:

- establish a unified VAT rate equal to 8 %;
- reduce the number of VAT exemptions;
- regard added value as the difference between cost of goods sold and value of goods and services of third parties, including fixed assets value;
- follow the Chinese experience, i.e. cancel or reduce the VAT refund for exporting raw materials.

At present, the importance of state's scientific, technical, innovative and educational policy, specifying the general conditions of scientific and technological progress, is increasing. R&D expenditure grows reaching 4 % of GDP in advanced countries, more than a third of them are funded by a state. Following the example of developed countries, Russia should demonstrate at least a two-fold increase in scientific research budget financing and establishing a system of targeted scientific and technical programs supported by the state as innovative activity in promising economic areas. Such programs are already being implemented. The example is a 'Program for the popularization of scientific, technological and innovative activities' (approved by the Ministry of Economic Development of the Russian Federation). The program implementation period covers the years 2019–2024. The program aims to: engage young people in scientific, technological and innovative activities; raise public awareness of scientific achievements, outstanding scientists, engineers, technological entrepreneurs; increase interest in science and technology, promote the social prestige of scientific, technological and innovative activities; cultivate an open-minded attitude to scientific and technological progress and innovations, their implementation in manufacturing and everyday life.

Russia's national project 'Science' is another example; it was implemented in 2018 and runs until 2024. The project aims to: ensure Russia's presence among the world's top five countries conducting scientific research and developments in the spheres defined by the priorities of scientific and technological development; make Russia more attractive to native and foreign key scientists and young promising researchers; advanced increase in domestic spending on R&D from all sources compared with the GDP.

The most important measure is the deoffshorization and fighting the illegal capital flight.

At the end of 2018, the amount of capital outflow from Russia grew by 2.7 times – from USD25.2 billion to USD67.5 billion. In general, according to Bloomberg, the outflow of capital from Russia from 1994 to 2018 was up to USD1 trillion [24].

In order to reduce capital outflows, it is necessary to introduce to offshore companies owned by Russian residents the requirements to comply with Russian legislation, to provide all necessary information about company members (shareholders, investors, beneficiaries), as well as disclosure of tax information for tax purposes in Russia of all income derived from Russian sources under the threat of establishing 30 % tax on all operations with 'non-cooperating' offshore companies. In addition, it is advisable to introduce taxes on speculative financial transactions (Tobin tax) and net capital outflows [11].

IV. CONCLUSION

Russia will not have a chance to join the list of global leaders without advanced technologies in economy. The ability of national economy to update its technological base and upgrade the technical level of enterprises is a key factor for improving and realizing its competitive potential. Only then can the Russian economy respond to the challenges of new technological revolution; new jobs will be created, enterprises will produce popular and competitive products. It requires the implementation of a set of measures. The necessary measures for bringing the Russian economy onto the path of accelerated development have long been proposed by economic science and implemented in successful countries. They are based on the all-out stimulation of investment activity in promising directions of a new technology stage by the coordinated application of all instruments of government management of the economy: targeted money emission, development institutions, public-private partnerships, fiscal system, etc.

First of all, the monetary policy of the Central Bank should be reviewed. Within the conditions of structural transformation of the world economy caused by the changes of technology stage and world economic structure, the monetary policy of Russia has a restraining effect on economic growth. While other countries are increasing currency issue to credit the growth of a new technology sector at nominal interest, reducing risks for innovators and supporting investors, in the Russian economy the money supply is artificially reduced.

In order to overcome scientific, technical and technological stagnation, owned R&D expenditures should be doubled primarily, through the growth of government resources and stimulation of innovative activity of the private sector providing tax incentives, infrastructure development and credit expansion.

The practical significance of the study lies in the use of its recommendations in the activities of state government bodies of the Russian Federation in the field of regulation of investment processes as the means to lead the economy to innovative paths of development and the transition of the national economy to a new post-industrial type of development.

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