

## Problems of Structural, Investment, and innovation Policy in the Crisis Period

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**Abstract**—The article discusses some urgent structural changes in cross-sectoral proportions, related to possible import substituting growth of production and noncommodity exports in the sectors of the Russian economy. The author analyzed sources of investment and innovations, opportunities for spot improvement of investment climate necessary to exit from the current phase of the crisis.

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In Russia, the market economy developed in several stages when the transition period of the 1990s was replaced by stabilization and economic growth at the beginning of the 21st century. In 2013–2015 Russia entered a crisis period.

The figure shows the trajectory of economic growth of Russia in the last decade [1].<sup>1</sup> If we ignore the decline of 2009 caused by specific conditions of the world financial crisis, and connect dots representing 2008 and 2010, the obtained trend characterizes a monotonous decrease in economic activity

In the last three years, the quantitative growth slowdown grew into qualitative changes as follows:

—In 2013 the rate of economic growth fell to 1.3%. The country moved from the group of catching-up economies to the group of outsiders lagging behind the average level of growth (3.5%). These growth rates are acceptable for domestic economic policy, since the Russian population is hardly growing.

—However, in 2014, the pace of Russian economic growth reset to zero.

—In 2015, the growth rate turned negative. The crisis began, a consequence of which may be the absolute impoverishment of the country and its population.

In 2015, for the first time in the modern history of the Russian economy, there was a threat of reducing oil production. The continuation of this trend allows us to pose the question about the possibility of long-term permanent crisis in the future.

Even the immediate future of the Russian economy is very uncertain. According to the projections of the World Bank, the IMF, and the Central Bank, in 2016, the recession will continue. The basic version of the

forecast of the Ministry of Economic Development suggests transition to growth in 2016, but so slight that the level of GDP of 2014 will not be achieved. This means that, three years after the start of recession, investment and incomes continued to fall. Scientific debate on economic growth stopped, since in any case the result is negative.

In the current economic situation, it is apparently impossible to only assess results at macro level. Sectoral decomposition and exploration of possibilities of production growth at the level of individual industries and economic activities is necessary.

The article analyzes some industry issues of long-term economic growth. These include structural problems of the redistribution of production loading burden between energy industry, mechanical engineering, the agrifood sphere, and other areas of economic activity. The prospects for change in the contribution of individual sectors of economic activity in foreign trade relations and prospects for domestic and global demand for certain types of Russian products. We also consider additional sources of investment and innovation, which can ensure the growth of production at the points of import substitution and development of non-oil exports.

### STRUCTURAL POLICY

Urgent steps of transforming the basic proportions of the Russian economy in general terms are obvious, and include increasing the proportion of the manufacturing industry and apparently the agricultural sector, which requires their accelerated development.

At the crisis stage, new forms of implementing structural policy in the form of import substitution and developing nonoil exports were determined, and

<sup>1</sup> 2015 Assessment of the Ministry of Economic Development.

structural changes become imperative when, as Cowen figuratively said, low-hanging fruits on a tree have been picked and the time comes to pick the high-hanging fruit. This situation appeared in the Russian economy due to the collapse of oil prices, as well as due to the impoverishment of traditional continental oil deposits and economic sanctions against Russia.

The structural policy problem lies in the substantiation of specific preferences. However, the choice is not so large. There are not so many kinds of domestic products that are in demand in Russia and, especially, in overseas markets if we ignore the relatively high demand for Russian raw materials. These include, e.g., large-diameter pipes for constructing gas pipelines, among them large-diameter pipes for constructing gas pipelines. Russia began constructing gas pipelines from the contract of the century, pipes in exchange to gas. As a result of modernization, domestic metallurgy fully secured the large-scale construction of gas pipelines and began to supply its products for export. Due to the shock devaluation of the ruble, the competitiveness of Russian pipe has increased to such an extent that a number of countries imposed anti-dumping duties against their exports.

Another example. The successful development of the domestic production of poultry allowed the industry to give up imports and increase exports.

Obviously, the market entry strategy usually begins with import substitution in the domestic market, which is then distributed through export to foreign markets. In the present economic situation, additional prerequisites for import substitution and export promotion were the devaluation of the ruble and sanctions.

The potential for import substitution and the growth of production depends on the share of imports in the supply of products to the domestic market. It is equal to the imports net of reduction of imports due to falling consumer demand caused by lower incomes and the decrease in investment activity, which does not require compensation.

The table shows the data for the three most import-dependent groups of products, the production of which is concentrated in the agrifood sector (food and raw materials), in civil engineering (machinery, equipment and vehicles), in chemical industry (plastics, tires, drugs and other goods). The share production of these three sectors is nearly 80% of total Russian imports.

As can be seen from the table, machines, equipment and vehicles are import intensive. Here, the share of imports is 49%, and its cost is more than half of the country's total imports. Imports make up 65% in the supply of chemical products and 27% in the food industry.

The agrifood sector has great potential for import substitution and development of exports, especially meat and dairy production, which satisfies the

demands of the domestic market by 75–80%. There is a real significant demand for Russian bio products on the markets of developed countries.

A prerequisite for increasing food production in Russia is its raw material base, which includes unique agricultural land, fresh water, production of high-quality grain, and also recognized work of scientists and breeders. The main challenges for the development of production in agrifood sector are caused by impoverishment of labor resources in a countryside, its underdeveloped transport and social infrastructure, and high import dependence of agricultural machinery. For example, 90% of tractors are imported.

Demand for most domestic brands of machinery, equipment, and vehicles, even in the domestic market is limited by the low technical level accumulated over the past decades. Russian machine engineering uses two methods to catch up. The first method is based on borrowing technology from foreign leaders. The automotive industry uses this method. The second method is based on borrowing from the leading enterprises of the Russian defense industry; for example, the civil aviation industry goes this way.

A competitive advantage of the development of the Russian automotive and aviation industries is that they mainly use domestic construction materials. The automotive industry makes extensive use of ferrous metals, particularly the automobile body sheet. The aviation industry uses nonferrous metals, aluminum, and titanium on a large scale, and composites in increasing quantities. The competitiveness of most construction materials of Russian production is proved by the demand for them on world markets.

The Russian aviation industry is able to produce its own competitive models of both military and civilian aircraft. However, the domestic market of civil aircrafts has nearly been lost. Producers have to enter market with a small series of machines, which is associated with high production costs and therefore increase in prices. However, for an aircraft, it is not the most important thing, since most of them are purchased in leasing. The main difficulty in sales of a small series is the after-sales service. It is impossible to overcome this difficulty without government support, as it is necessary to compete with the largest aviation giants of the United States and Europe.

The domestic chemical industry is a large producer of plastics, but at the same time, 20% of the demand for plastics and articles made from them is covered by imports. In recent years, the country has created a powerful raw material ethylene production that has allowed Russia to refuse imports, replacing them with domestic products. The main difficulty consists of transitioning from large-capacity oil-chemical plants to the production of consumables, often in small batches. For example, the availability and quality of plastics is insufficient for producing vehicle bumpers. Specific technologies and equipment that are capable

of ensuring competitiveness of domestic substitutes for imports are necessary.

The domestic market of medicines is provided largely by imports. The share of drugs accounted for one-fifth of imports of chemical products. Demand for drugs is growing due to the aging population. However, the replacement of imported drugs by domestic is justified only for few drugs, since western pharmaceutical industry is far ahead of the domestic due to enormous concentration of financial resources and scientific forces of the best universities. More details in the Questions of import substitution in industries of the Russian economy are considered in more details in our article [2].

### SOURCES OF INVESTMENTS

Before the crisis, 45% of investments in fixed assets were financed by companies' own resources. The remaining 55% of investments were attracted. The most significant source of borrowed funds were budgetary allocations, which accounted for about 20% of investments in fixed assets. Bank loans accounted for about 10%. The share of investments from abroad, loans from foreign banks, and public funds accounted for 1–2% of the total amount of investment by each of these sources. The share of investments in private ownership accounted for almost 60% of investments in fixed capital, and about 20% for the state, including state-owned corporations.

The crisis has led to the impoverishment of both own and borrowed sources. In 2015, investments decreased by about 10%; meanwhile, during the crisis, Russian businesses, even those as successful as the oil business, reached out to the state for help. Lending opportunities reduced significantly due to high rate of the Central Bank and sanctions on access to international financial markets. A predictable consequence of this is further curb of economic growth in the short term, cyclically reproduced in the distant future.

Russia needs additional sources of investment in order to exit from the crisis. Let us consider some of them.

In the forecasts of the Ministry of Economic Development pension savings, accumulated by the return to a mandatory funded pension system are considered as a source of investment for future economic growth. In this case, retirees will pay for the growth of economy. The process began with cuts of indexation of pensions to the level of inflation target, which is several times less than expected inflation. Meanwhile, the threat to leave pensioners without a sufficient pension is so dramatic that the above measures are not even negotiable.

It is logical to assume another source of investment, namely, the introduction of a progressive income tax for high-income segments of the population. For example, a progressive scale of taxation can

be introduced starting from a certain income threshold, above which the level-of-happiness indicator hardly grows. In this case, the rich pay for growth in pay.

The introduction of a progressive income tax for the rich will contribute to a shift of preferences of companies from consumption towards saving and investment. Reduction of taxation on funds allocated for investment in fixed assets will operate in the same direction.

Gold and other reserves of the state, business, and population can serve as additional sources of investment during a crisis. However, there is a risk of losing the sustainability of growth in the future if accumulated reserves are spend recklessly on economic growth. This is an exchange of today's hope for tomorrow's risks. Meanwhile, the Ministry of Economic Development plans to allocate 80% of the National Welfare Fund to investments.

Another way is to invest in growth through savings and hidden savings of population and business. Their propensity to save and accumulate has grown in recent years. Experience has shown that tax amnesty is not sufficient to return illegally acquired capital that was exported offshore back to Russia. A system of measures used to eliminate the disruption and isolation of the country during the period of the NEP is necessary. People and businesses were given opportunity to use savings to create a small business in the field of production, services, trade, or construction of apartment buildings at their discretion and without excessive control by the state. Economic recovery started. However, soon flourishing of the economy ended by expropriation of all the achievements.

Investment growth is possible by revising the structure of budget expenditures in favor of accumulation. It is possible that even protected budget items can be cut. Will Russia be able to pretend to the role of great sports power, country of smartest people, and military superpower [3]? Or will it be limited to the status of a country with decent economic prosperity? The proposal to use funds released by reducing the administrative apparatus to develop the country appears to be a win-win. The only problem is that all previous attempts to reduce administrative staff and the cost of its maintenance inevitably ended with their growth.

The country has a large number of not fully loaded production facilities. For example, in the pre-crisis 2013, level of use of annual production capacity in meat and vegetable oil production was 55%, 31% of butter and soft drinks, 41% of the bread, and so on. During the crisis, the coefficient of capacity utilization decreases in many, if not all industries. The use of spare capacity allows one to increase the production without any or with only minimum investments. However, the possibilities of investment-free recovery growth are limited by the fact that spare capacity is

often outdated and do not allow the release of good-quality products.

#### SPOT IMPROVEMENT OF THE INVESTMENT CLIMATE

The reduction of capital outflow abroad, combined with the growth of foreign investment inflow from abroad can become the most important source of investment of import substituting point growth and export development.

Russian business, as well as government agencies, export capital due to unfavorable investment climate and high risks. In 2014, capital outflow from Russia amounted to 151 billion USD. According to the forecast of the Central Bank, in 2015, the export of capital is expected to reach 105 billion USD, and 80–90 billion USD according to the Ministry of Economy [4]. However, even the most modest of the following numbers approximately equals to the entire Russian military budget. Russian capital flows to the Virgin Islands (30% in 2013), Cyprus (10%), Switzerland (24%), and Austria (11%) [5]. Some of the exported funds come back to the country in the form of investments by foreign investors, as well as foreign branches of Russian legal entities. In 2012, a prosperous year, inflows and outflows were approximately equal. In 2013, outflow of investments from Russia amounted to about 200 billion USD and the flow of foreign investment was 170 billion USD. The main suppliers of foreign investments for Russia are Switzerland (15%), Cyprus (13%), and the United Kingdom (11%), which includes the Virgin Islands. The intricate financial schemes do not allow even a rough estimate of investment growth opportunities from this source.

Many Russian sectors of the economy lack effective investment projects for accommodation of investment money, rather than investment itself. Accounts of Chamber's inspection of budget execution for 2014 showed that a significant part of the funds allocated to anti-crisis measures were unused.

The recovery of the process of integration with developed countries, as well as international contacts with developing countries, especially China, which provides 3% of all foreign investment into Russia, plays a crucial role in gaining access to foreign investment.

How can capital flows be reversed? Doubts about the possibility of this turn are quite appropriate, considering that all developing countries begin to lose capital, the outflow of which is growing, and its arrival from abroad is reduced due to the falling prices of raw materials. Moreover, the factors that keep capital out of emerging markets will operate for a long time.

In order to turn capital flows in the direction of Russia's economy, effective investment projects are needed, participation in which will be desirable to many investors. These investment-attractive projects

in the Russian economy are concentrated mainly in extraction and primary processing of raw materials, wholesale and retail trade, financial activities and real estate transactions. Statistics show that these economic activities attract most of the foreign capital to Russia.

Factors that hamper the growth of Russian production can be seen in a particular example. Rostselhoz mash, along with the Canadian machine builder established in Canada, a company that produces highly competitive tractors, which they sell in the United States, Germany, and many other countries. Since mainly imported products occupy large-scale Russian market of tractors, there was a question whether it is expedient to transfer this production to Russia. Calculations showed that Canadian tractors would be about 40% more expensive in Russia. Even though labor here is cheaper, there are higher taxes and interests for loans [6].

In recent years, the automotive industry became an attractive sector for foreign investors. The capacious Russian car market was not the only reason. Russia attracted more investment in the automotive industry because the major car companies have received special preferences and guarantees of the state and regions [7]. As a result of manual control, car projects became attractive to foreign investors. Therefore, almost all automotive multinational companies rushed to organize the production of cars in Russia with a greater or lesser degree of localization. There was even an opportunity to choose investors and to dictate conditions for the localization of production.

Experience in manual project management can be used in other industries [8], especially since shock devaluation of the ruble created additional advantage for price competitiveness of exports made in Russia. Foreign companies who work in Russia have already stated that these benefits should be used to increase export sales of their products. Based on past experience, regulations for supporting investors in a manual mode and the stimulation of investment demand should be developed.

The essence of manual control is as follows. The effectiveness of investment projects depends on investment and business climate, and in particular, on investment risk. Although investment and business climate in Russia has recently improved, it is still less attractive than in many other countries. It would be rash to wait for the completion of the reform of investment and business space for the whole economy in a crisis situation. The only way is to use the pointed, selective improvement of the investment climate for individual projects.

The state and the regions can select individual investment projects and special cluster zones, and form a special favorable investment and business environment for them in manual format. We are talking about conditions such as preferential loans, tax, tariffs,

risk guarantees; the creation of favorable conditions for allocation of land, connection to power grids, transport infrastructure, electricity tariffs; etc.

The use of a manual control mechanism in order to increase the efficiency of investment projects is associated with a number of disadvantages [9]. For example, the manual control of investment projects leads to the shutdown of the market mechanism, including competition. However, the manual sorting of anti-crisis measures in times of crisis is justifiable. Note that this is a temporary anti-crisis measures.

As experience in the automotive industry has shown, it is possible to coordinate actions of various departments to intervene in the economy through the adoption of special provisions and regulations at the federal and regional levels. Disadvantages of manual control of anti-crisis projects can be corrected by creating a large array of effective anti-crisis projects, which would be in demand among investors.

Anti-crisis measures may not be limited to projects of creation of import substitution agricultural holdings, petrochemical giants, gas processing plants, transport infrastructure, automotive, defense and other large enterprises. There are always enough investment and preferences for realization of such projects in Russia. The main difficulty is to find investments in footwear, apparel, the food industry, trade, and services where small business occupy a significant place. Federal and regional authorities and banks unfortunately do not have enough experience in the manual control of small business import substitution projects. However, we can use the experience of the European Bank for the Reconstruction and Development for Russian small business lending. Under new conditions, administrative resources should be redirected to a manual control of the process of investment growth not only in large, but also in small and medium businesses.

A major principle of the anti-crisis investment policy is to focus on a limited number of investment projects and programs. It is possible to apply a manual method to only improve the efficiency for a limited number of projects, especially in a crisis, when many businesses are going bankrupt. The problem of concentration of resources and management efforts on a limited number of objects is always difficult, since it involves reasoned refusals on many projects. There is often a doubt whether to invest funds in areas where the country is lagging behind, but in the future, significant growth is possible, or resources are concentrated on maintaining results already achieved. In a crisis, the conclusion is obvious. To a great extent, the effectiveness of anti-crisis projects determines innovation.

## SOURCES OF INNOVATION

In our opinion, under a looming crisis, Russian science should mobilize its creative potential in order to address the following two priorities:

—to improve the quality and competitiveness of Russian imports substitutes;

—to preserve leadership in areas where it has been achieved (the nuclear industry, missile and space sector, defense, aviation, etc.).

These goals are relevant not only to applied science, but also in part to fundamental research. OECD classification divides basic research into pure and oriented basic research, which are designed with a probability for application.

The crisis has created additional opportunities for reviving Russian applied sciences. The devaluation of the ruble has increased the price competitiveness of Russian developments, freed Russian exports of defense products from the looming threat of increased costs, and a loss of price competitiveness on world markets. Sanctions generally released some product markets from the competition of Western products. Just as during the war forces of scientists were focused on solving the defense problems whenever possible, during the crisis, potential of science must be mobilized to address anti-crisis problems of competitive import substitution and nonoil exports.

In order not to give way to companies in China, Belarus, and other potential market competitors that have become vacant of Western imports, within its capabilities, Russian science should create competitive advantages in domestic products. Hopefully, the forced abandonment of Western imports will not lead to a deepening of technological backwardness, a decline in the population's living standards, and increased dependence on imports from developing countries.

A partial refusal of the predominance of a free search of subjects, from bottom-up scientific management, and from proposals of research institutes is able to increase the effectiveness of science in a crisis. A normative social order of the state, business, and society that is focused on creating a finished product and competitive on both domestic and foreign markets should be given priority wherever possible. It is desirable to overcome the fragmentation of research plans when research and development is aimed at improving individual elements of a finished product without reference to the final result, namely, by increasing its competitiveness. Scientific management should systematically and comprehensively link many developments with the ultimate goal of increasing its competitiveness.

In the current state, applied science will not always be able to ensure the competitiveness of the final product, since industrial science is almost completely self-liquidated and substitutes (technoparks, business

Structure of Supply for Three Groups of Products in the Russian Federation in 2013, billion USD

group of product	Russian production	Import	Export	Supplies in national economy	Share of imports in supply, %
Food	131.7	43.1	16.2	158.6	27
Machinery, equipment and vehicles	184.8	152.6	28.9	308.5	49
Machinery, equipment and vehicles	57.6	50.0	30.8	76.8	65

Source: author's calculations according to the "Statistical Yearbook. 2014", p. 338, 525, 606, 607.

incubators, and venture capital firms) are still in the formative stage [9]. In this case, the new social order should include the incorporation of Russian science in the chain of the localization of certain imported parts and materials.

The implementation of the social order must be accompanied by decent grants allocated on a competitive basis. This competition should be open for both Russian and foreign scientists. Funds for grants should be budgeted in relevant projects and programs of import substitution. By focusing on a **new social order**, Russian science gets an additional, mostly off-budget source of financing. A new social order means changing priorities, since the priorities of modern Russian science usually do not cause serious interest and desire from businesses to invest. "We need to revise the priorities of scientific, technical, and innovation development of the country; they should include detailed descriptions of the objectives, materials contained in specific goods, and services, as well as be linked to potential markets" [10].

The leading role in the development of new anti-crisis research-and-development proposals must belong to an expert community of scientific professionals. Business and the state should play the main role in determining the demand for results of research and development in innovation policy.

Priorities of applied science should be formed taking into account the objective data of science statistics. Otherwise, when the examination is based only on opinions of scientists, research priorities in areas where Russia is hopelessly behind in terms of patent and bibliometric statistics are often proposed [11], or priorities are not stipulated at all. For example, the Scientific Council of the European universities sometimes reject the possibility of internal policy and distribute resources equally between university departments [12].

**The innovative development of the Russian economy cannot be achieved only through development of national science without foreign scientific or technical borrowing based on integration into the world economy.** Indeed, Russia's expenditure on research and development amounts to only 2.5% of the world expenditures, and the number of Russian publications makes up only 2.1%. Do these figures suggest Russia's dependence in terms of innovation on the rest of the world? Under these conditions, Russia's isolation from the achievements of international science and technology, the rejection of foreign borrowings, and efforts to provide leadership in all areas of research independently will lead the country to modernization with a growing backlog.

For example, the attempt to replace imported equipment for producing hydrocarbons on the shelf

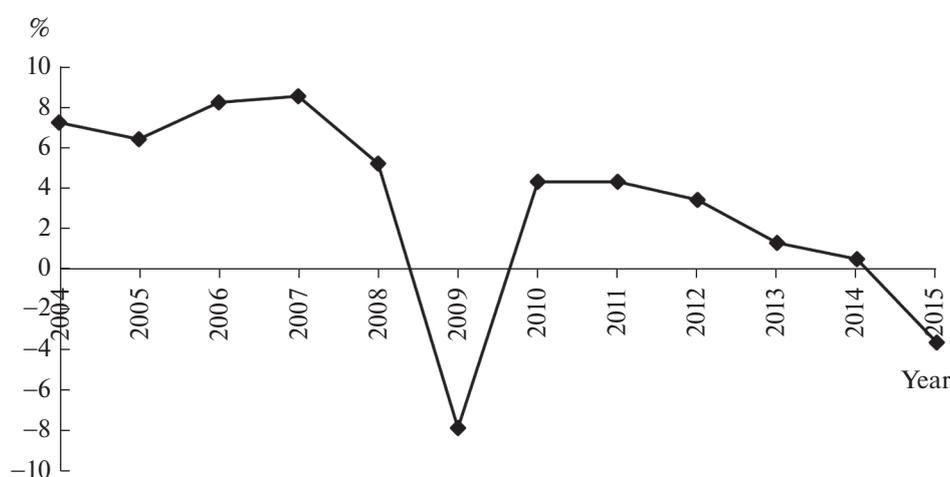


Fig. 1. GDP Growth Rates.

was unsuccessful. According to experts, it is almost impossible to establish the full-fledged production of shelf technology without foreign partners. Russia's lag in production platforms is large and, in the short term, the key technological components are likely to be of foreign production. Only borrowings of technology can save import substitution [13].

The Russian automotive industry demonstrates experience in the successful use of foreign scientific and technical and technological borrowing in the elimination of the accumulated backlog.

### CONCLUSIONS

The long-term consequences and prospects of the current economic situation are not limited to expectations of change in the rate of economic growth. The impoverishment of continental oil fields, as well as of other mineral sources, which together account for over 70% of all export revenues, provide a long-term threat to the Russian economy. The collapse in oil prices coupled with sanctions deters the possibility of maintaining its level of production. Innovative modernization and necessary investments are limited by both external (sanctions) and internal (growth) factors.

Based on experience, we can name the following urgent anti-crisis measures:

—anti-crisis competitive import substitution and nonoil exports and point increase in production for the types of economic activities, goods and services, which managed to reach the level of competitiveness;

—the manual control of projects and programs that create special conditions for the high efficiency and investment attractiveness of a limited number of projects, clusters, and economic zones;

—shifting the focus of control towards the support of projects of small- and medium-sized businesses, especially to the agrifood sector, and the production of shoes, clothes, and other consumer goods;

—the reorientation of science management to a new social order;

— the recovery of integration with the global economy on an appropriate scale, especially with Greater Europe, the United States, Canada, and Japan.

—real, not decorative, reform of a sprawling administrative system that does not meet anti-crisis goals or objectives.

Finally, in our opinion, the pursuit of moderation in growth, consumption, and ambitions is very important.

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