

# The Contradictions of Innovation Funding in Russian Reproduction

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In modern financial studies, the systemic role of innovative reproduction funding and the corresponding contradictions are understudied. At the same time, the reproduction processes originally predetermined the functionality of financial relations. Accordingly, the relevance of the research of the opportunities for financial relations development, in terms of the integration of innovative components of reproduction, is increasing. The objectives of the work are to reveal the contradictions in the existing Russian system of reproduction innovations funding, and to determine the priorities for the development of new digital tools, allowing combining all types of reproduction financing. The systematic approach and general scientific methods, statistical and comparative analysis, methods of comparison, logical and structural-functional analysis were used in the work. Analytical and theoretical studies have shown that the most important functional criterion for innovative reproduction in modern conditions is the financial subsystem. At the same time, innovative funding must overcome the negative trends in the functioning of the system of financial markets, incentives and relationships. In the framework of the existing financial system, this cannot be done, and the use of

administrative restrictions will lead to even greater contradictions. Therefore, the measures, complementing market relations with modern digital tools, are more preferable. The results of the study can be used for the formation of new digital tools for the effective funding of national innovative reproduction. The Russian financial system contributes to the abandonment of a low level of innovative activity in the economy, and turns into a factor of restraining the processes of formation of innovative reproduction. The main contradiction of innovative funding is in the fact, that, on the one hand, the existing financial system excludes the advanced innovative development, and on the other hand, it plays an increasingly significant reproductive role. In such conditions, it is advisable to create the national innovation ecosystem, which can integrate all interested participants - consumers of all levels, manufacturers of various forms of ownership and economic activities through the digital platform of innovative projects funding.

**Key words:** *Finance, funding of innovations, innovative reproduction, financial instruments, digital technologies, ecosystem.*

## Introduction

The objective task of technological breakthrough, which has become strategic for the Russian economy, has led to the additional interest in the problems of reproduction funding; since the real possibilities of future development are represented the most acute in this process. Accordingly, the main issue in the organisation of reproductive changes is the innovative component, which is directly related to the effectiveness of financing from various sources.

At present, in the economic literature, there are sufficiently developed criteria for innovative reproduction, which distinguish it both from expanded reproduction and from economic growth (Gubanov, 2014). In this case, the most important are the internal systemic relationships. Firstly, the amortisation fund fully meets the needs for the reimbursement of fixed capital components. Secondly, there is a quantitative increase in the fixed capital through the effective investment accumulation, involving the increasing use of new equipment and high technology. Thirdly, working capital needs tend to be relatively reduced through the use of better raw material components and the involvement of more skilled labor (Cherkovets, 2009). At the same time, despite the significant anti-crisis orientation of the noted developments, the systemic role of financing of this model of innovative reproduction is not defined.

In general, the functionality of financial relations was initially predetermined by the reproduction processes, their cyclic features and the specificity of behaviour over time.

Temporarily free cash, as the main object of financial relations, have exclusively reproductive origin and content. It is characteristic, that a fairly widespread idea, that at present in economic science there are no unambiguous interpretations of the essence, functions, and areas of finance, does not reflect such an important reproductive moment (Barulin & Kovaleva, 2004). In the conclusion about the multidirectional movement of financial resources and the motivation of the process of their movement, as the basis of finance, reproductive factors are also not presented. Moreover, the most important innovative component is not touched at all.

From general theoretical positions, many scientists emphasise the need to increase the level of integrity of economic processes in our country, through the multi-structure of the national economy, developed in the post-reform period. This will allow for the formation of progressive technological and social trends of reproductive development (social reproduction in the mixed market economy of Russia: the structure, contradictions, objective function). In this regard, it is necessary to provide at a new level the functions of maintaining proportionality, which are divided between the state and the corporate sphere. In accordance with this, the responsibility was distributed for the transition of national reproduction to innovative foundations, and the establishment of its innovative character as a whole. Therefore, the scientists and specialists are increasingly emphasising the need to create the organisational foundations of state forecasting and strategic planning of the innovative development of the Russian economy.

In our opinion, the noted proposals, in their systemic sense, contradict the market fundamentals of the economy, and their implementation is possible only in case of serious nationalisation. At the same time, regarding the integration of innovative components of reproduction, the opportunities for financial relations remain almost beyond the scope of attention.

The problem of the main conditions and prerequisites for economic development in the context of the modern day and, especially, in the upcoming transformation of society has been widely discussed in the scientific literature for a long time. From the standpoint of the topic of our article, one of the most interesting approaches is the definition of innovative reproduction as the main criterion and the most important systemic condition for the effective implementation of new industrialisation (Sushkova, 2014). But at the same time, the very essence of innovative reproduction is mainly reduced to the determining of the priorities of economic policy, especially in the field of intensity of costs for technological innovations.

The Russian innovation system is considered as imperfect and ineffective, where a number of functionally important components are simply missed. These components are the following: a high level of expenses for science, which lags behind the parameters of several countries in



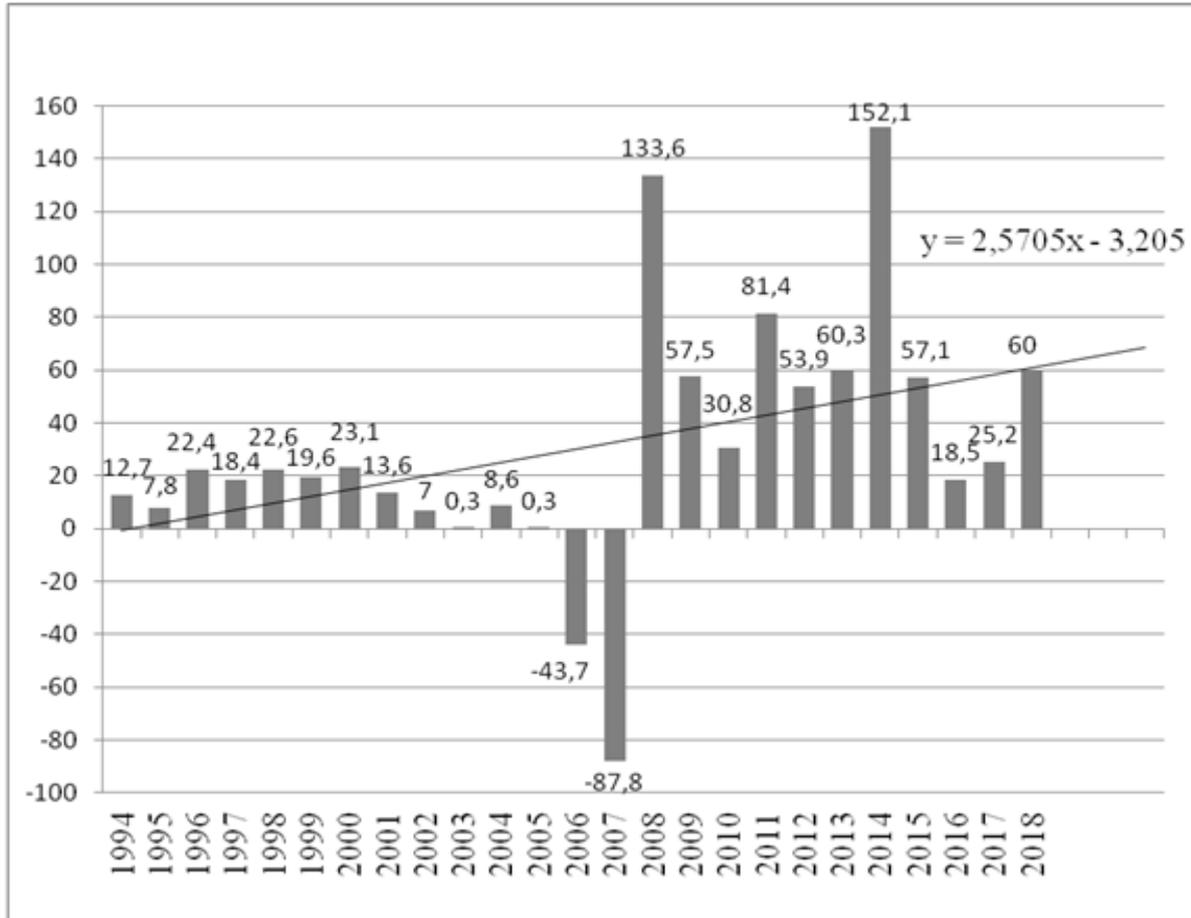
Asia, America and Europe, the institutes for the integration of science and education, the mechanisms for strategic and operational concentration of resources in key areas of fundamental science and technological progress. In many respects, the reason for the existing lag is explained by the lack of funding, which is most clearly seen in the severe limitations of the funding potential for innovations at the early stages of technological development. These financial constraints, such as the lack of own funds and lack of financial support are also determined by the business community as the main factors, impeding technological innovations.

To overcome the current state of affairs in innovative reproduction processes, it is proposed to radically change the attitude of government towards business, to strengthen the specialisation of government and business managers, to reduce the risks in development of innovative business by improving the insurance institutions, to reduce taxation in the innovative part of entrepreneurship, and to increase large investments, mainly with state participation. In general, it turns out that the key constraints on innovative reproduction, mainly financial, are proposed to be addressed outside of financial relations. But, despite this contradiction, it is advisable to emphasise the provision, that the innovative economy begins to form when there is a pronounced need for appropriate changes in society. Moreover, it is necessary to restore the demand of production companies for innovations (Komkov, 2014).

In this respect, the differentiation of the world economic development and globalisation of the world economy plays a negative role directly for the conditions of our country.

The indicated need should be formed, first of all, within the entrepreneurial community. Numerous official statements and sociological surveys can be regarded differently, but one of the main indicators of the prevailing disposition is the export of capital. Here we are dealing with the chronic problem of the post-reform period - the active export of capital from the country (see Figure 1).

**Figure 1.** Net import/export of capital by the private sector of the Russian Federation in 1994-2018, in billions of US dollars (compiled by the author according to the data of the Central Bank of the Russian Federation):



[https://www.cbr.ru/statistics/credit\\_statistics/bop/outflow.xlsx](https://www.cbr.ru/statistics/credit_statistics/bop/outflow.xlsx);

[http://www.fincan.ru/articles/28\\_ottok-kapitala-iz-rossii-ctatistika-po-godam/](http://www.fincan.ru/articles/28_ottok-kapitala-iz-rossii-ctatistika-po-godam/) (Date of access: 10.04.2019))

The problem has become quite acute, especially in recent years. This forced the Bank of Russia to change the long-used statistical terms of capital import/export to more general financial transactions in private sector, at the end of last year. As a whole, it refers to the export of more than 755 billion US dollars for the period 1994-2018, that is equivalent at the current rate to the amount of about 50 trillion rubles. For example, this almost doubles the total amount of funds, allocated for all national projects for the period 2019-2024.

Moreover, at present, the researchers consider the essence of innovation activities, in relation to Russian conditions, as a priority tool for the necessary restructuring of the national economy. The existing challenges of global competition, including the use of numerous sanctions, along with the internal reproductive contradictions, are the objective factors of



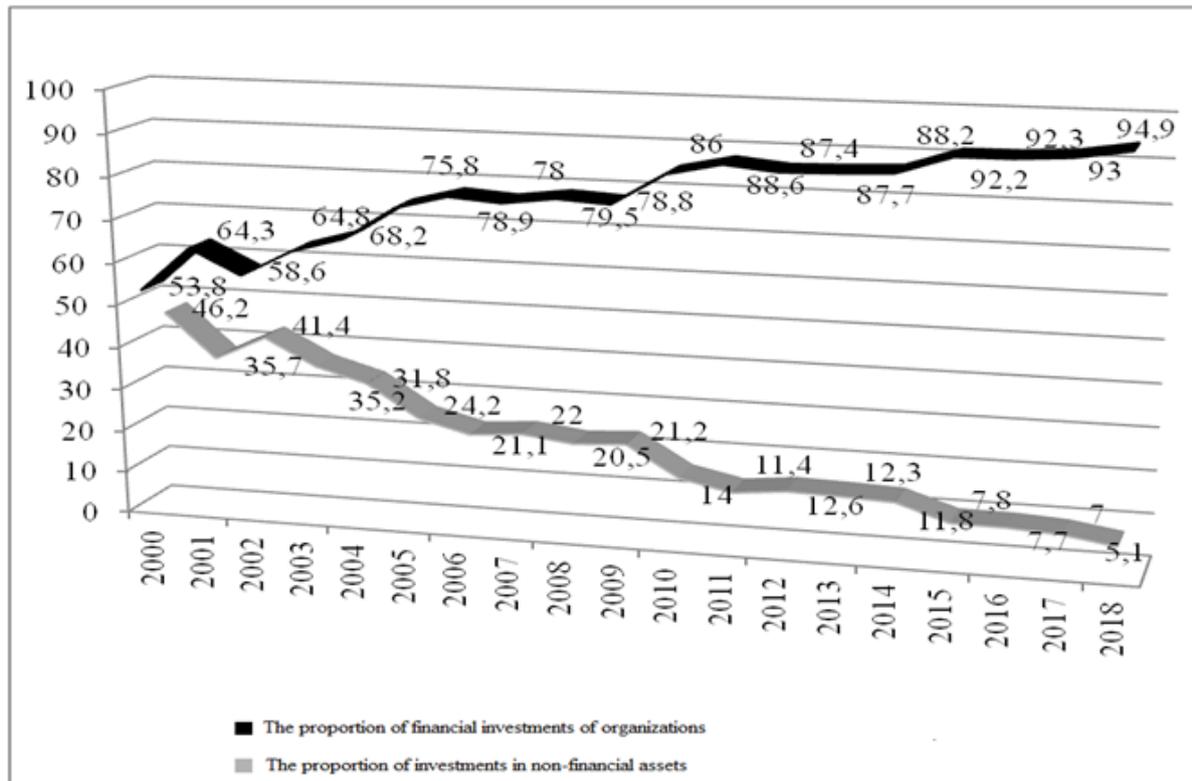
turning the innovations into the most important conditions for the development of economic entities (Mironova & Virtsev, 2017).

Accordingly, there is a need for effective commercialisation of innovative entrepreneurship, and its income should be increased at a rate, outstripping the general growth of incomes. In our opinion, the most interesting generalised conclusion is made with reference to global practical experience – the steady and permanent growth of the innovation sector is possible only on the basis of broad and motivated funding of industries, which are competitive and actively increasing the existing innovative potential. In addition, it is important to have government support through the mechanisms for direct and indirect financing of innovative projects (Sokolova, 2010).

The system of funding of innovative processes assumes the active role of commercial banks through the formation of venture markets in direct participation in the development and implementation of research results. The most specialised innovative banks, as a rule, are allowed to take financial share participation in the development of those industries, which implement organisational projects for the creation and subsequent economic use of scientific inventions. It is also allowed to use such instruments of financing as bond loans, and to place them with the legal entities and individuals, interested in specifically selected innovative projects. However, with all the variety of instruments and mechanisms of innovative funding, the lack of financial resources is the key deterrent of innovative reproduction. This also reflects one of the real characteristics of bank lending.

According to the aforementioned authors, the main factor, constraining the formation of an active role of banks in financing of innovations is the mismatch of the main parameters of credit products of commercial banks (primarily, upon the criteria of volumes and terms) and the needs (especially reproductive) of funding of innovative research, inventions and projects. This mismatch of key characteristics is exacerbated by the high profitability of short-term credit investments of banking resources. The latter significantly reduces the interest of commercial banks in medium- and long-term investments in general, and in venture financing in particular, since all this directly leads to a decrease in the main indicators of their liquidity. As a result, there is a passivity of commercial banks in the Russian venture market that mainly focuses on financing of innovations at the late final stages. At the same time, the effective innovative entrepreneurship requires the financial resources of banks at all stages of the project life cycle, without exception.

**Figure 2.** The ratio of investments in non-financial assets and financial investments of organisations in the Russian Federation in 2000-2018, in percentage points (the chart is compiled by the author, based on the data of the Federal State Statistics Service: URL: [http://www.gks.ru/wps/wcm/connect/rosstat\\_main/rosstat/ru/statistics/enterprise/investinve/nonfinancial/](http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/enterprise/investinve/nonfinancial/) ; [http://www.gks.ru/wps/wcm/connect/rosstat\\_main/rosstat/ru/statistics/enterprise/investment/investing/#](http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/enterprise/investment/investing/#) (Date of access: 12.04.2019))



Thus, it turns out, that the most important functional criterion for innovative reproduction in modern conditions is the financial subsystem. The priority of innovative funding is the main feature of reproduction in the conditions of modern socio-economic transformation.

Regarding the conditions of Russian reproduction specifically, significant reduction in the potential of innovative funding is connected with the priority of financial investments in the Russian economy (see Figure 2).

Such a sharp increase in the share of financial investments over the investments in the real sector in recent years, and their transformation into absolutely dominant ones virtually excludes the sufficient innovative funding. In such conditions, the formation of innovative reproduction is almost impossible.

With regard to Russian modern conditions, as it is shown by the studies of a number of scientists, there is an initial predetermination of centralisation of the banking system by the active centralisation of the national economy and the comprehensive maintenance of financial stability, sometimes to the detriment of development potential (Galazova, 2017). The latter has a rather negative effect on the regional innovation and investment processes (Shanin, 2012).

The high risks of investment in innovative projects should also be noted. The reasons for this are the need of credit provision to any innovative projects at their initial stages, that is, when the cash flows, required to repay the loan, are practically absent. In such a situation, it is impossible to demand the expansion of innovations funding from the banking sector, due to the specifics of banking itself. As a result, it is quite objectively, that only 3-4% of innovative projects, existing in the Russian economy, are actually financed by using bank loans. Banks also cannot expand the funding of innovations, on the one hand, due to the lack of required long-term resources and, on the other hand, due to the rigidity of existing rules of credit risk assessment (Karpenkov, 2014).

In addition, the resource base of Russian commercial banks is now being formed out of access to the external funds, and in a structural shortage of liquidity. Therefore, the main component of the banking resource base is the short-term deposits of the population and legal entities.

As a result, the contradiction of reproductive and banking development intensifies. In accordance with the commercial motives and the objectives of ensuring the required level of liquidity, banks cannot provide innovative reproduction with a sufficient number of loans, since they are not able to finance long-term projects by using the resources of short-term liabilities. If this practice is used, then risks will increase and the stability of not only individual banks, but the entire credit system will decrease.

Even in cases when the bank has the necessary resources for funding of long-term innovative projects, there are additional restrictions, associated with the objective requirements of defining the solvency of the borrower and ensuring the repayment of loans. As a rule, the latter involves the use of effective tools for ensuring the repayment of loans - guarantees, pledges and sureties, which are either difficult to obtain or absent for borrowers, due to the peculiarities of their innovative projects. Therefore, higher interest rates are applied for these types of loans, and that additionally reduces their number.

**Table 1:** Selected indicators of investment funding in fixed assets in the Russian Federation in 2008-2017 \*

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Investments in fixed assets, total, trillion rubles.	6.71	6.04	6.63	8.40	9.60	10.07	10.38	10.50	11.28	12.26
Gross domestic product, trillion rubles	41.28	38.80	46.31	55.07	66.93	71.02	79.20	83.39	86.19	92.04
Share of investments in fixed assets in GDP, %	16.3	15.7	14.3	15.3	14.4	14.2	13.1	12.6	13.1	13.3
Including the sources of financing as a percentage of the total										
Own funds	39.5	37.1	41.0	42.1	44.5	45.3	45.7	50.2	51.0	51.3
Involved funds	60.5	62.9	59.0	57.9	55.5	54.7	54.3	48.9	49.0	48.7
including										
bank loans	11.8	10.3	9.0	8.5	8.4	10.0	10.6	8.1	10.4	11.2
borrowed funds of other organisations	6.2	7.4	6.1	5.8	6.1	6.2	6.4	6.6	6.0	5.4
investments from abroad	3.0	3.2	2.3	1.7	-	0.8	0.9	1.2	0.8	0.8
budget resources	20.9	21.9	19.5	18.9	17.9	19.0	17.0	18.3	16.4	16.3
other	21.2	23.0	24.1	24.5	20.0	15.5	15.7	12.1	12.2	11.5

\* The table is based on: Finances of Russia, 2012: Statistical Book/ Rosstat. - M., 2012. - Pp. 15, 334; Finances of Russia, 2014. - Statistical Book/ Rosstat. - M., 2014. - Pp. 16, 278; Finances of Russia, 2016. - Statistical Book/ Rosstat. - M., 2016. - Pp. 16, 285; Finances of Russia, 2018. - Statistical Book. - M., 2018. - Pp. 16, 375.

In such conditions, commercial banks mainly carry out selective lending in those spheres and areas (connected with innovative projects), which are included in the range of industry and sector preferences. To overcome such constraints, attention is focused on the state with its possibilities of using the tools for reducing the risks of commercial lending to innovative projects. In recent times, the guarantees and co-financing have become the most widely used among such instruments.

It is believed that the formation of the above conditions for attraction of bank credit resources is a necessary prerequisite for the transition of the national economy of Russia to the innovative development basis. However, regarding financing of investments in fixed assets, the Russian enterprises and organisations have to increasingly rely on their own funds. At the same time, the share of bank loans, state budget funds, borrowed funds of other organisations, and investments from abroad is currently declining (see Table 1). That is, increasing the investments at their own expense, the enterprises and organisations should less rely on the resource support of the financial system.

It is noted in the economic literature, that in many economies of the world an effective innovation system has not been formed, due to the lack of necessary resources and, above all, financial sources. At the same time, in a number of countries, which initially embarked on good innovation trends, insufficient attention is paid to the immediate current practice of innovation. As a result, this negatively affects the quality of reproduction (Guzikova, 2014).

Russian realities objectively require the development of a special system of innovative activities organisation for the purpose of macroeconomic growth. Currently, in the domestic economy, the formed market mechanism mainly generates the incentives for microeconomic effects. Such market motivational imbalance leads to a natural loss of interest by the corporations and entrepreneurship in high-tech, long-term innovative projects.

The current state of affairs is proposed to be overcome through a rigorous definition of innovative macroeconomic priorities, followed by the identification of “growth points”, taking into account macroeconomic effects. After this, the distribution of innovations should be carried out in a planned manner.

Thus, the problem mainly comes down to the state strategy for the provision of scientific research and innovation for the long term. Within its framework it is necessary to use the possibilities of direct budget financing, tax regulation and investment incentives. Moreover, direct budget financing is possible in the form of loans, based on the traditional principles of recoverability, maturity and serviceability, project financing and the provision of state guarantees. In the meantime, in practice, the share of building industry is growing in the

investment structure, with a reduction in the share of machinery and equipment, which are especially important in the formation of innovative processes (see Table 2).

**Table 2:** Investments in fixed capital in the Russian Federation by the types of fixed assets in 2005-2018, in actual prices \*

	Investments in fixed capital, total	dwellings	buildings (except residential) and constructions	machinery, equipment, vehicles	other
2005	100	12	40.4	41.1	6.5
2006	100	11.8	40.9	40.5	6.8
2007	100	13	41.7	38.9	6.4
2008	100	13.6	42.6	37.7	6.1
2009	100	13	43.7	37.2	6.1
2010	100	12.2	43.3	37.9	6.6
2011	100	12.7	43.3	37.9	6.1
2012	100	12.2	44.2	37.6	6
2013	100	12.5	41.5	38.8	7.2
2014	100	14.5	40.8	36.3	8.4
2015	100	15.6	43.7	31.5	9.2
2016	100	14.7	44.7	31.5	9.1
2017	100	13.6	43.8	33.7	8.9
2018	100	12.7	43.3	34.6	9.4

\* The table is based on: Investments in non-financial assets // Federal State Statistics Service. URL: [http://www.gks.ru/free\\_doc/new\\_site/business/invest/tab\\_inv-vf.htm](http://www.gks.ru/free_doc/new_site/business/invest/tab_inv-vf.htm).

At the same time, in our opinion, despite the consistency and long-term verification of most measures in world practice, we are still talking about the counteraction and opposition to market mechanisms. How this confrontation can be effective is a difficult question. We believe that the measures, which complement market relations and focused on their development as on the main tool for overall socio-economic development, are more preferable.

Thus, innovative funding must overcome the negative components of functioning of the system of financial markets, incentives and relationships. In the framework of the existing financial system, this cannot be done, and the use of administrative restrictions will lead to even greater contradictions.

Taking into account the challenges of global competition, the economic role of the state seems to be oriented directly towards the development of new technologies, with the aim to ensure the benefits of the national economy in the global economic space. But all



generalisations of positive practices in this direction also face the challenge of insufficient funding, which is becoming a key systemic deterrent.

This is especially acute in terms of expenditures for technological innovations by the sources of funding, where, the own funds of the organisations are explicitly prevailing, with the exception of certain positions in a limited number of high-tech industries (see Table 3). This is one of the bottlenecks of modern Russian reproductive development, which, as already noted, faced the challenge of the necessary technological breakthrough. Technological innovations must be accompanied by a broad and diverse support of funding.

In such conditions, even the most effective integration-matrix concept of innovative development management remains unaddressed from the standpoint of financing and searching for sources of sufficient funding. An interesting approach is the proposal to create a new innovative model of amortisation (along with accounting, economic and fiscal models), which allows the transition of enterprises and organisations to accelerate to innovative development.

**Table 3:** The structure of expenditures for technological innovations by the sources of funding and the types of economic activity in the Russian Federation in 2016, in percent \*

	Own funds of organisations	Federal budget	Budgets of constituent entities of the Russian Federation and local budgets	Scientific and innovative activities support funds	Foreign investments	Venture funds	Other funds
Mining industry	70.2	-	-	0.04	-	-	29.7
Manufacturing activities	57.8	24.1	0.3	0.01	0.2	-	17.7
including							
- high tech	35.9	56.1	0.1	0.02	0.2	-	7.7
- medium-tech high level	87.7	4.6	0.7	0.01	0.02	-	7.0
- medium-tech low level	63.9	2.5	0.03	-	0.3	-	33.3
- low tech	59.7	2.1	1.2	-	0.1	-	37.0
Production and distribution of electric energy, gas and water	82.1	2.0	1.3	-	1.2	-	13.5
Building industry	100	-	-	-	-	-	-
Agriculture	59.3	0.5	0.6	-	0.5	-	39.1
Telecommunication services	97.6	1.5	0.01	-	-	-	0.9
Activities, related to the use of computer and information technologies	86.1	10.5	1.7	0.2	-	-	1.4
Research and development	24.2	58.0	0.1	1.2	2.0	0.01	14.5
Other types of services	31.2	41.7	0.6	-	0.8	-	25.7

\*The table is based on: Indicators of innovative activity: 2018: Statistical Book/ N.V. Gorodnikova, L.M. Gokhberg, K.A. Ditkovsky et al.; National Research University "Higher School of Economics". - M.: NRU HSE, 2018. - Pp. 199-202.

The creation of such a model involves the optimisation of use of amortisation resources, taking into account a detailed analysis of innovative processes within the enterprises and organisations (Nikitenko, 2018). At the same time, the organisations' own funds are not enough for the transition to high-tech development.

One of the most important characteristics of national economic systems is the presence and effectiveness of functioning of the immanent innovation system. Moreover, the most important thing - the effectiveness of the national innovation system - is determined not only by its composition and structure, but also by organic coordination in the process of implementing the tasks of generating, transferring and using of new knowledge in the production of high technology products. These tasks are facing both the state and private business. This becomes the basis for the formation of new innovative technological structures, sites and platforms, which can create new challenges for development, and open the possibility of fundamentally changing of competitive positions in the domestic and world goods and services markets. In general, this is a theoretical, but real chance for the Russian national economy, from the standpoint of the need to ensure breakthrough development (Zaernyuk, 2013).

The importance of the formation of domestic effective innovation system is enhanced by the challenges from more economically developed countries. For a long time, innovation processes in these countries have not only been supported in all major areas, but the state technological policy has been built on them. Due to this, new or modernised technologies account for up to 80% of gross domestic product growth in the most developed countries.

First of all, such a strategic result for modern conditions was the result of priority and systemic concentration of free financial resources in the most important areas of development and use of innovative solutions. This was achieved both by market and administrative measures.

The measures to support those representatives of small and medium-sized businesses, which focused on the development and implementation of innovations, have become another important component. Particular attention was paid to the tax system, stimulating innovations, which provided for sufficiently significant tax incentives in two areas - directly based on the results of innovative production, as well on the staff training and education.

Accordingly, the foundations of high-tech states were formed. The USA and Japan became such countries, being significantly ahead of others. Only these two states account for two-thirds (36 and 30 percent, respectively) of the global market for high-tech civilian industry products.

It is noteworthy, that against such a background, Russia, having potential competitive advantages in the form of disposable natural resources, diversified industrial base, a wide scientific and technical sector, and the largest community of highly qualified personnel, integrating about 12% of all scientists in the world, turned out to be the economy with falling innovative indicators. Thus, for example, the total volume of innovations, coming from

Russia to the global economy, is only about 0.3%. This indicator has practically not changed in recent years, and it has a number of factors for its maintaining at such a low level.

At the same time, there is a certain consistent decrease in innovation processes, when we move from the indicators of general innovative activity of organisations to the share of innovative goods and services (see Table 4). The indicators of the rate of expenditures for technological innovations, which play a systemic functional role in innovative reproduction, are even lower.

Thus, for many decades, new developments, especially those of an innovative and technological nature, have been extremely poorly implemented in the Russian economy, mainly for the reasons of limited access to the required financial resources.

**Table 4:** Relative indicators of innovation processes by the types of economic activity in the Russian Federation in 2016, in percent \*

	The level of innovative activity of organisations	The share of innovative goods, works, services	The rate of expenditures for technological innovations
Industrial production, total	9.2	8.4	1.8
- manufacturing industries:	11.8	10.9	2.0
high tech	29.4	18.2	8.1
medium-tech high level	15.7	13.1	1.8
medium-tech low level	10.4	11.1	1.4
low tech	6.6	4.8	0.6
- mining	5.5	4.0	1.3
- production and distribution of electricity, gas and water	4.1	2.3	1.5
Service industry	6.2	11.9	9.5
Building industry	1.1	1.7	0.005
Agriculture	3.4	1.4	0.9

\*The table is based on: Indicators of innovative activity: 2018: Statistical Book/ N.V. Gorodnikova, L.M. Gokhberg, K.A. Ditkovsky et al.; National Research University "Higher School of Economics". - M.: NRU HSE, 2018. - Pp. 12, 13, 15.

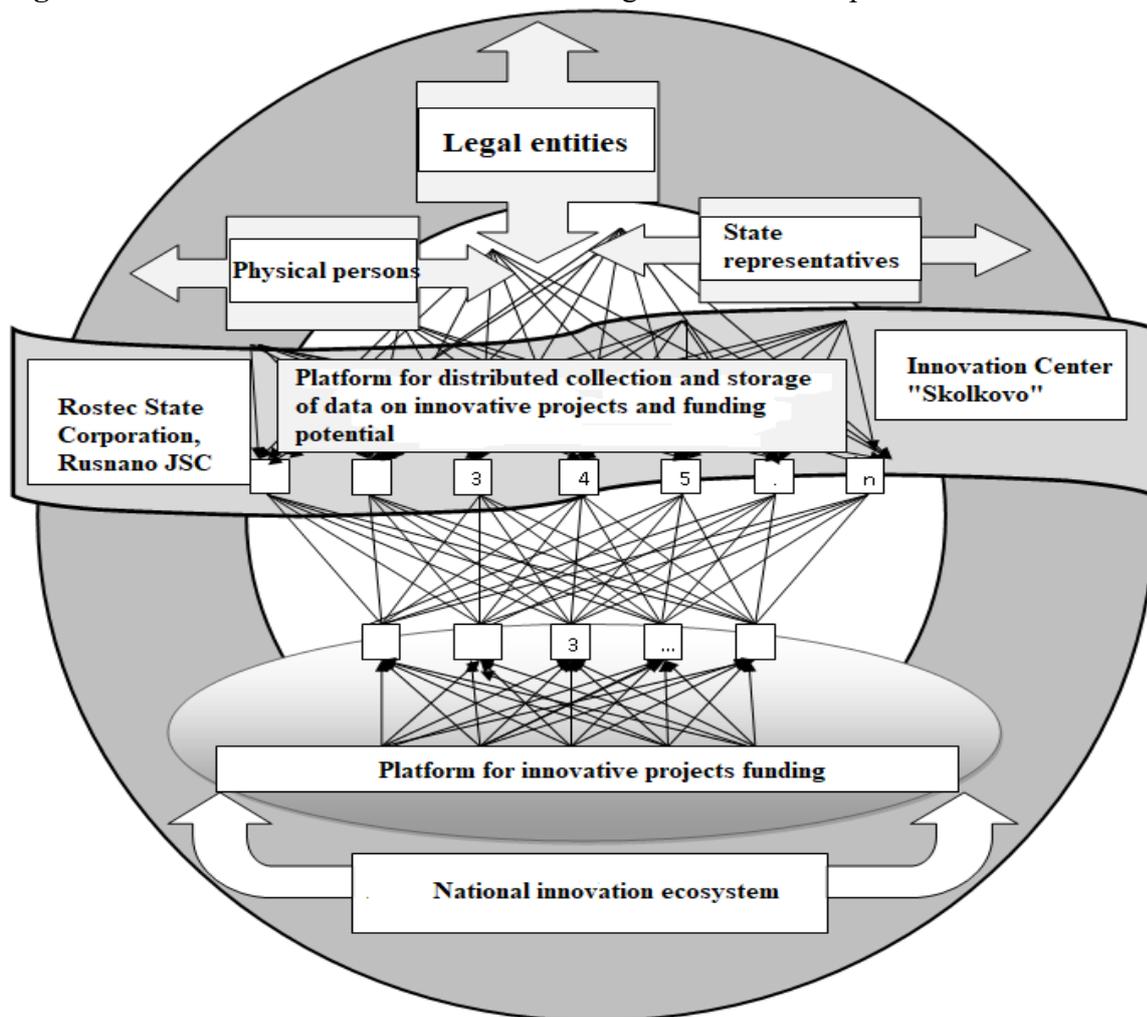
The existing financial system, oriented almost exclusively to the investments, contributes to the abandonment of a low level of innovative activity in the domestic economy, and is the main factor of restraining the processes of formation of innovative reproduction. At the same time, the system of innovation funding is currently the key one in reproduction processes. This is precisely the main contradiction of innovation financing - on the one hand, the

financial system excludes the advanced innovative development, and on the other hand, it plays an increasingly significant reproductive role. Therefore, it is impossible to get out of this contradiction through the expanding of administrative practice and wider state participation, due to the systemic market restrictions.

In this case, it is advisable to create the complex of new, mainly digital instruments, within the framework of the existing Russian financial system. This will allow combining all types of reproductive financing, when the advantages of some can compensate for the disadvantages of others. At that, it will be necessary to take into account the national need for breakthroughs in technological development.

First of all, it is necessary to form the national innovation ecosystem (see Fig. 3), which integrates all interested participants - consumers of all levels, manufacturers of various forms of ownership and business lines, through the digital platform for innovative projects funding.

**Figure 3.** The fundamentals of modern financing of innovative reproduction





The organisational foundations of such platforms are well represented in the scientific literature, both in general economic research (Doroshenko & Shelomentsev, 2017), and in the studies of prospects for economic growth (Smorodinskaya, 2014). In addition, a significant demand has already been formed in Russian science for the creation of new financial mechanisms and instruments (Tatuev et al., 2018).

## **Conclusion**

Thus, the prerequisites for a universal and effective collaboration of supply and demand in the innovative part of national reproduction will be created, that is the main advantage of the so-called "multilateral platforms" (Kovalenko, 2016). It should be noted, that there are no proper interpretations of the content and systematic idea of the corresponding state policy on the development of ecosystems (Belyatskaya, 2017). Moreover, so far there are no general principles for the regulation of innovative digital financial technologies either globally or domestically. Relative unanimity of opinion is at the level of understanding the need for active participation of the state, especially regarding the introduction of these technologies into socio-economic processes (Apatova et al., 2017).

We believe that the national innovation ecosystem, as a key component of Russian reproduction, should become the integration platform, with the following purposes:

- 1) to represent the interests of the population through the possible use of household financial resources (the innovative potential of households is noted in the scientific literature (Rozhkov, 2015));
- 2) to develop the cooperation between science and production, that is currently being carried out through the joint projects or indirect support for enterprises and universities at processing areas;
- 3) to implement the strategic research, using the institutions for financing of fundamental and applied research - the Russian Science Foundation, the Russian Foundation for Basic Research, etc.;
- 4) to provide the outsourcing services to innovation-oriented companies, through the creation and operation of technology parks, incubators, centers for technology transfer, etc.;
- 5) to finance the innovation-oriented companies by providing grants, loans, guarantees, sureties through the Innovation Assistance Fund, VEB Innovation Company, etc.;
- 6) to finance the innovative projects with highest priority, through the Internet Initiatives Development Fund, etc.;
- 7) to create the integrated platform for the distributed collection and storage of data on innovative projects and financing potential of the subsystems of scientific and technological innovation complex for the development and commercialisation of new technologies Skolkovo, Skolkovo Foundation, Rostec State Corporation, Rusnano JSC, and other state and non-state structures.



8) to form the platform for financing of innovative projects, which will allow to create a single integrated innovative entrepreneurial space, based on modern blockchain technologies. The openness of access to the sphere of transactions, inherent in these technologies, allows the formation of an effective publicity of the innovative system.

The creation of the national innovation ecosystem makes it possible to overcome the contradictions and shortcomings of functioning of the modern Russian mechanism of innovation funding, for administrative, market and digital tools.



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