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The Role Of Financial Institutions In The Development Of Innovation In  
Russia

El Papel De Las Instituciones Financieras En El Desarrollo De La  
Innovación En Rusia

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## **Abstract.**

Innovative development of Russia is a key priority in the context of the complicated macroeconomic situation in the country, increased geopolitical risks and serious global economic challenges. Russia was in the top 60 in the innovation ranking of countries until 2018, according to the results of which it, ranked 49th, rising 13 points compared to 2017. The goal set in the Strategy for Innovative Development of Russia to increase the share of industrial enterprises implementing technological innovations to 50% by 2020 requires not so much a large-scale financial flow as new incentives and instruments for financing innovation, with a focus mainly on the early stages of business development. There is an obvious need for alternative tools for financing innovations, such as crowdfunding, which combines the achievements of openness of the Internet space and the ability to use free financial resources of the population. Today, there is a historical moment in the formation of a new financial instrument, and it is important to support crowdfunding at the beginning of its development. According to World Bank estimates, investments through crowdfunding will amount to about 96 US Dollars Billion by 2025 (an increase of 30 times since 2012), which is double the global market for venture financing.

**keywords:** venture financing, investment, industrial enterprises, business, innovative development.

## **Resumen**

El desarrollo innovador de Rusia es una prioridad clave en el contexto de la complicada situación macroeconómica del país, el aumento de los riesgos geopolíticos y los graves desafíos económicos mundiales. Rusia estuvo en el top 60 en el ranking de innovación de países hasta 2018, según los resultados de los cuales ocupó el puesto 49, aumentando 13 puntos con respecto a 2017. El objetivo establecido en la Estrategia para el Desarrollo Innovador de Rusia de aumentar la proporción de empresas industriales que implementan innovaciones tecnológicas al 50% para 2020 requiere no tanto un flujo financiero a gran escala como nuevos incentivos e instrumentos para financiar la innovación, con un enfoque principalmente en las primeras etapas del desarrollo empresarial. Existe una necesidad obvia de herramientas alternativas para financiar innovaciones, como el crowdfunding, que combina los logros de apertura del espacio de Internet y la capacidad de utilizar los recursos financieros gratuitos de la población. Hoy, hay un momento histórico en la formación de un nuevo instrumento financiero, y es importante apoyar el crowdfunding al inicio de su desarrollo. Según las estimaciones del Banco Mundial, las inversiones a través del crowdfunding ascenderán a unos 96.000 millones de dólares estadounidenses para 2025 (un aumento de 30 veces desde 2012), que es el doble del mercado mundial de financiación de empresas.

**Palabras clave:** financiamiento de riesgo, inversión, empresas industriales, negocios, desarrollo innovador.

## **Introduction**

Describing the transition of the world economy to an innovative path of development, researchers are increasingly talking about the formation of "innovation economy", "knowledge economy", "new economy", etc. This type of economy requires the formation of an integrated system in the country that effectively converts new knowledge into new technologies, products, and services that find their real consumers (buyers) in national or global markets. This system is called the national innovation system (NIS). K. Freeman should be considered the founder of this new approach, who introduced the very concept of NIS in the late 1980s as a complex system of economic entities and public institutions (such as values, norms, law) involved in the creation of new knowledge, its storage, dissemination, and transformation into new technologies, products, and services consumed by society (Bokareva et al., 2018b).

## **Materials and methods**

The theoretical basis was the work of Russian and foreign scientists in the field of financing innovation and behavioral finance.

The methodological base was formed by general scientific principles and research methods, suggesting a systematic approach to the study of the problems of financing innovation. Directly in the process, such general scientific methods and techniques as grouping, classification, comparison, and others were applied.

## **Analysis and Results**

The term "innovation" does not have a well-established defined content. The works of I. Schumpeter, who proposed five types of innovations, had a huge impact on the formation of the theory of innovations:

- 1) introduction of new products,
- 2) introduction of new production methods,
- 3) opening of new markets,
- 4) development of new sources of supply of raw materials or other resources,

5) creating new market structures for a particular industry.

The analysis of research on the essence of innovation (Table 1) has shown the presence of two key approaches to understanding:

1) object – considers innovation as the result of activities, tools, products, technology, etc. (Russian legislation); REICE | 364

2) process – considers innovation as a process, change, use, etc. (international reference documents).

**Table 1. Individual views on the concept of "innovation" (Bokareva et al., 2018b)**

Interpretation	Author(s)
<i>Process approach</i>	
a process that depends on how knowledge and technology develop in the course of interaction between different actors under the influence of various factors	R. Nelson, S. Winter (2005)
a complex process that brings together various participants, such as firms, producers of new knowledge, technology centers, think tanks, which are connected by a variety of interconnections, thus creating an innovative system	B. Lundvall (1992); R. Nelson (1993)
a special tool that allows the entrepreneur to use the changes and turn them into new opportunities, for example, opening a new business or providing a new service	P. Drucker (2007)
a process in which an invention or idea acquires economic content	B. Twiss (1989)
a socio-economic process, which leads to the creation of the best technologies, products through the practical use of ideas and inventions	B. Santo (2006); B. Santo (1990)
a process of introducing new methods in the organization and implementation of economic activities	
a) event, the emergence of something new in the business sphere; b) a process in which one innovation triggers another	F. Jansen (2002)
a process of implementing a new idea in any sphere of human activity that contributes to the satisfaction of existing needs in the market and brings economic benefits	F.F. Bezdudny, G.A. Smirnova, O.D. Nechaeva (1998)
a result of the creative process in the form of created (or introduced) new consumer values, the use of which requires those who use them or organizations to change the usual stereotypes of activity and skills	P.N. Zavlin (2000)
<i>Object approach</i>	
a final result of implementing innovations to change the object of management and obtain economic, social, environmental, scientific, technical, and other effects	R.A. Fatkhutdinov (2008)
a result of innovative activity, which is embodied in the form of a new or improved product introduced on the market, a new or	L.M. Gokhberg (1996)

improved technological process used in practice, or a new approach to social services	
profitable use of innovations in the form of new technologies, products and services, organizational, technical and socio-economic solutions of production, financial, commercial, administrative, and other nature	Yu.P. Morozov (2000)
innovation in the manufacturing and non-manufacturing sectors, in the field of economic, social, legal relations, science, culture, education, healthcare, in the field of public finance, in business finance, in the budget process, in banking, in the financial market, in insurance, etc.	A.G. Gryaznova (2004)
innovation in the field of engineering, technology, labor organization and management, based on the use of scientific achievements and best practices and the use of these innovations in a variety of fields and areas of activity	B.A. Raizberg, L.Sh. Lozovsky, E.B. Starodubtseva, (1999)

There is an active search for an effective approach in the Russian Federation, as in most developed countries that would, on the one hand, rely on a comprehensive analysis and understanding of global innovation processes, the characteristics of the development of high-tech world markets, and on the other hand, take into account the current state of the domestic innovation sphere, its strengths, and weaknesses, the socio-economic context in which the transition to a knowledge-based innovative economy is to be made. Individual definitions in Russian legal documents are presented in Table 2.

**Table 2. The concept of innovation in Russian law**

Interpretation	Legal act
Results of basic and exploratory research	On approval of the regulation on the state innovation program and the model regulation on the direction of the state innovation program. Resolution of the Council of Ministers of the RSFSR dated March 27, 1991 No. 171 (ed. from April 13, 1993)
New or improved products, new or improved technological process	Draft Federal Law "On Innovation and the State Innovation Policy" (1999) Rejected by The President
Result of innovative activity (goods, works, services) intended for implementation	On scientific, scientific-technical, and innovative activities in the Moscow region. Law of the Moscow Region of May 13, 2006 No. 9/178-P

The most conceptual apparatus in the field of innovation is formed in the Federal Law "On Science and the State Science and Technology Policy": innovation is defined as "a new or significantly improved product (product, service) or process, a new sales method or a new organizational method that has been introduced in business practice, organization of workplaces ,or external relations" (this concept was introduced by the FederalLaw of July 21, 2011, No. 254-FL).

Without aiming to clarify existing definitions or propose a new one, this study is based on foreign practice ("Oslo Manual") and considers innovation as a process of change (Makarenko, 2006a).

Specific features of innovations are:

- openness, which implies the need for constant situational correction of innovation activity in the course of its implementation;
- non-linearity, i.e. unpredictability of innovations, constant presence of a moment of uncertainty in the appearance and implementation, which is a prerequisite for the implementation of various options and models of innovative development and pluralism in innovation practice;
- a high level of dynamics, which implies constant development, improvement of types and forms of innovation, elements of creativity;
- incompleteness, i.e. the presence of a constant intention to generate innovations, inventions, the appearance of creativity at all levels as a factor and source of self-development and self-organization of society;
- alternative, including the possibility of choosing and implementing a set of invariants of innovative development;
- probabilistic and risky nature, which implies a high degree of uncertainty about their implementation and effectiveness, as well as the lack of guarantees of both commercial and social success;
- systematic innovation, which implies their implementation if all types and forms of activity are mobilized at various levels in a single process aimed at implementing the main innovation idea;
- objectivity, i.e., the determinism of innovations and their conditionality to socio-cultural, historical, industrial, and other circumstances and needs;
- processuality, which is manifested in the existence of a special "life cycle" of innovation, during which the implementation of innovations occurs in stages (Makarenko, 2006b):

1) The first stage is the "seed" stage when a business idea is promoted by a development team that is either not legally registered or organized into a new legal entity;

2) The second is "start-up". At this stage, the company does not yet have a market history and large assets, but it can demonstrate samples of the finished product intended for the market. Funding for such companies is often provided by business angels.

Business angels are usually referred to as wealthy private investors who invest in risky innovative companies or projects that have not yet been registered as a separate legal entity. Today, the activities of "angels" in Russia are often charitable in nature and are based on the

psychology of rich people who are ready to help in the development of risky high-tech businesses.

3) The third stage is the "growth" stage or "early stage". Such companies usually already have a market product and can produce it in small quantities, but they do not have enough profit to organize large-scale production, investment in equipment, advertising, etc. Sometimes they need resources to continue R&D with the goal of finalizing market models;

4) The fourth stage is "expansion" when the company is already viable and its product is in demand.

All countries of the world have taken a course towards an innovative economy. Thus, for example, in comparison with the modern world market of high technologies (the volume of which is about 3 US Dollars Trillion) and the market of energy resources (volume – 700 US Dollars Billion), then their ratio will be 4:1. Over the next few years (until 2020), the dynamic growth of the market for high-tech products is forecasted to reach 10-12 US Dollars Trillion in the main areas, and a drop in the market of energy resources to 1 trillion 200 million dollars. Thus, on a global scale, there will be a radical change in the innovation and traditional resource base, which will be 10:1. In recent years, the cost of developing the technologies that make up the new way of life and the scale of their application has been growing at a rate of about 35% per year. There are serious reasons to believe that after a structural reorganization of the economies of the leading countries based on it, which will last another 3-5 years, a new long wave of economic growth will begin.

The financial crisis of 2008 stimulated the processes of competition and restructuring of companies and entire industries, and anti-crisis solutions and programs implemented in the US, EU, and Japan confirmed the high priority of science and innovation. The United States has set the task of bringing science spending to 3% of GDP (which has almost been achieved). The EU considers it necessary to bring spending on science to an average of 2.6-2.8% of GDP. In Japan, spending on science has long exceeded the 3% level and is constantly increasing (according to the latest data, the share of spending on science remains 3.45%). The number of researchers in the world's leading countries and the cost per researcher is also growing (Makarenko, 2006d; Bokareva et al., 2014).

Large developing countries – China, India, Brazil are exploring new growth paths for them based on the globalization of innovation, combining an active policy of attracting foreign investment in high-tech industries, first with trade expansion and then with their high-tech investment projects. The modernization of agriculture, industry, construction, transport, and communications based on the latest technological solutions, implemented in countries where most of the world's population lives, fundamentally changes the picture of global development. Rising spending on science in China and Brazil is constrained by a lack of researchers. However, in China, the share of spending on science has already reached 1.8% of GDP and continues to grow. According to the 2020 Plan, the Chinese authorities intend to create an innovation-oriented state in the long term. China's leadership openly puts innovation and scientific development at the forefront, calling them the basis of national development: reducing the economy's dependence on imported technologies to 30% and increasing the share of high-tech industries in the entire GDP to 60%, and the time frame by which the indicators should be achieved. China's national innovation research network includes 5,400 national government institutions, 3,400 universities affiliated with research institutions, 13,000 research institutes in large state-owned enterprises, and 41,000 non-state

research-oriented enterprises. According to American statistics, every fifth person with a PhD degree in the USA is Chinese (Bokareva et al., 2018a; Internal Integrated Framework, 1992).

There are universal trends in the development of innovative systems in the world. The state plays a crucial role in them, developing coordination mechanisms to link the actions of their subjects and regulating "market failures". There are several such market failures in the field of innovation: the dilemma "perfect competition – innovative rent"; uncompensated external effects; duplicate studies; lack of speed of dissemination of new knowledge; in the accessibility of large-scale investments; problems of internal coordination of the innovation process; "Worsening selection", "moral hazard" and the problem of the principal-agent when ordering research; institutional traps of innovative development ("psychological unpreparedness", rent-oriented development, and catch-up modernization and copying); incompetence of innovative potential, innovative costs, institutional environment.

It is market failures in the innovation sphere that force the state bodies of developed countries, if necessary, to take on part of the costs and responsibilities, regulate the direction of the innovation market and respond quickly to changes in the situation. The market alone will not be able to force investors to leave the most profitable commodity sectors today and move free capital to sectors with very high risks and much longer payback periods. In this regard, it is important to determine the scope and degree of participation of citizens, businesses, and public institutions (state, regional, and municipal) in innovative development (Bokareva et al., 2014).

The role of the state in financing innovative development, according to many experts, can be implemented based on two alternative approaches:

- 1) the state directly invests from the budget in individual projects (world-historical experience has proved the low effectiveness of this policy);
- 2) the state creates preferences for private capital by sharing risks, reduces the tax burden, removes various barriers, begins to invest in the infrastructure itself, etc. At the same time, the key task of the state is to create conditions for increasing the economic return on investment in science (Makarenko, 2006c).

## **Conclusions**

Based on the results of a study of the activities of financial institutions for the development of innovation in Russia, conclusions are formulated to highlight the following specific features of the current system.

1. There is a steady trend towards expanding the scope of activities of Russian financial development institutions, which is manifested both in the form of an increase in the volume of investments made and in the growth of quantitative indicators of supported innovative projects.

2. The interaction of financial development institutions to support innovation activities has been intensified.

3. Unbalanced financial support at various stages of innovation. The total number of supported projects is growing mainly due to the financing of innovative projects at late stages (growth and expansion). At the end of 2018, the total volume and number of investments in the expansion, restructuring and late stages amounted to about 2.7 US Dollars Billion and 47 investments (respectively, 3.6 US Dollars Billion and 59 investments in 2017), compared to about 263 US Dollars Million and 178 investments in the "venture" stages (respectively, 397 US Dollars Million and 136 investments in 2012). At the same time, the role of the state (represented by developing institutions) in supporting innovation is important at the early stages, when private initiative is most lacking.

4. There is no independent assessment of the activities of financial institutions for development, which increases the risks associated with the emergence (strengthening) of certain imbalances.

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