

The Tools of Financial Engineering to Strategizing "SMART" Economy of the Region

D. V. Lanskaya

candidate of economic sciences, associate professor,
Department of General, Strategic, Information Management
and Business Processes
Kuban State University
Krasnodar, Russia
lanskayadv@yandex.ru

V. V. Ermolenko

doctor of economics, associate professor, Head of the
Department of General, Strategic, Information Management
and Business Processes
Kuban State University
Krasnodar, Russia
oleda93@gmail.com

M. V. Zelinskaya

doctor of economics, professor, Department of Accounting, Analysis and Audit
South Institute of Management
Krasnodar, Russia
zelinskaya@inbox.ru

Abstract— The article discusses the solution of the actual scientific and practical problem connected with the purposeful financing of the strategic development process of the "smart" economy based on the development by the financial engineering tools of the financial infrastructure, new financial institutions, financial technologies and processes. Their development in relation to the specifics of the development of the "smart" economy or the knowledge economy in Russia is necessary for comprehensive investment support for the process of strategizing the regional economy and innovative ecosystems in the regions. The sources of investments are considered on the example of one of the region's innovatively active regions - the Krasnodar Territory. An open classification of innovation investment mechanisms, an atlas of financial instruments, which should reflect the scope of their application, the terms of the contract, mechanisms for monitoring conditions in the application of tools, consistency with various tools and other features should be offered.

Keywords— *strategic directions of the region's development, strategic project, strategy, "smart" economy, financial institutions, financial infrastructure, knowledge economy.*

I. INTRODUCTION

The development of the regions of the Russian Federation for the long term due to a new quality of growth and development becomes an area of close attention. The head of state at a meeting with university rectors called for preparing people so that they could "think beyond the horizon." It is about strategic management and strategic vision of development problems. Two related problems of driving the growth points of a new quality without the consolidation of resource support in the context of the narrowing of the investment market and the full development of innovations are extremely topical for Russia [5,11,12]. Scientific, organizational, financial and information-monitoring support

for the implementation of the adopted regional development strategies in the context of active application of technology of project management are necessary conditions for their successful strategic planning [1,6]. The need for financial innovations, the formation of financial infrastructure, new financial institutions, financial technologies and processes for investment support for the process of regional economic strategy development, developed with reference to the specifics of the development of the "smart" economy or knowledge economy in Russia, has grown and is an urgent task of financial engineering [2,7,20].

Theoretical and methodological concepts of the knowledge economy in the domestic literature are reflected in the works of V.L. Makarova, B.Z. Milner, G.B. Kleiner, A.N. Kozyreva, L.E. Mindeli, L.K. Pipia, E.V. Popova, A.I. Tatarkin and others. Conceptually financial engineering is defined as the process of creating innovations in the sphere of finances [4,7,15,20]. E.V. Sysoyeva, having analyzed different points of view on the essence of financial engineering, holds the view that his "result is a financial innovation in the form of a new financial product, a new technology or process, new financial institutions" in order to obtain financial benefits [23].

The purpose of the research is to develop the elements of the theory and methodology of financial engineering and their application in the development of a flexible line of financial instruments to strategize the region's "smart" economy, as well as redistribute risks for long-term support of innovative development in priority national projects.

II. SATISFACTION OF NEEDS IN INVESTMENTS IN THE STRATEGY OF INNOVATION DEVELOPMENT OF THE REGION

The development of Russia's regions is planned on the basis of global imperatives and the specifics of their refraction

to the characteristics of the country as a whole and regions [12]. The features of strategic planning in the constituent entities of the Russian Federation are broad inclusion of government, business and the regional community in discussions at the stages of analyzing the state and development dynamics regarding the relevance of various problems, as well as in the collective generation of strategic directions for development and the development of strategic projects.

In the draft strategy for the development of the Krasnodar Territory until the year 2030, seven strategic directions of development were recorded: markets, institutions, human capital, innovations and information, natural resources and sustainable development, spatial and real capital, investments and financial capital, each of which is meaningfully filled with a complex measures that take into account the special zoning of the region's space [22]. It is yet to form regional state programs in each of the seven areas, as a set of interrelated projects and activities, united by strategic goals and strategic directions. Their implementation is coordinated by the project office in order to improve overall manageability and achieve effectiveness and effectiveness of the strategy (strategy) of the region.

The development strategy of the Krasnodar Territory is only a document of the first level, which determines the systemic actions of the authorities and businesses to address the following key problems: low global competitiveness of key economic complexes; inertness of the institutional system; systemic problems in the development of human capital; lack of innovation ecosystem; high anthropogenic load and low quality of the system of sustainable development; significant spatial and infrastructural limitations; high dependence on external financial institutions with insufficient quality of internal financial institutions management system and attracted investments [12,22].

The strategy has yet to be satiated with a systemic set of projects and programs aimed at achieving unique results in conditions of constraints that are resource-based and sanctions that pass the measure of civilization.

It is planned that Krasnodar Region will conduct active cluster activation within the South Pole of growth: agro-industrial, tourist-recreational, trade-transport-logistic, smart industry, social and creative industries [22].

It is necessary to emphasize that the region's economy is divided into a significant service part that develops as a service economy, as well as the traditional agro-industrial sector and a part that will develop as a "smart" knowledge economy introducing technologies in the cancers of the sixth technological order. It is important that the formation of an "intelligent" economy is a strategic project that is of an intersectoral nature and capable of changing the existing appearance of business entities that emerged from earlier technological structures through the use of technologies developed on knowledge of a new quality. Synergetic impulses from the "smart" economy are important for the historically traditional multi-structural economy of the region. The diversification of the regional economy is a specific

feature from the point of view of the formation of investments for their development.

The state of the regional economy is such that, in terms of the main types of economic activity, the share of innovative industrial production organizations in Russia that carry out technological innovation in 2016 is 9,2%. This share has a pronounced and, unfortunately, a continuing minimum value over the past five years [8,9,13,17,22].

The budget of the Krasnodar Territory has been non-subsidized and balanced for a number of years, and the investment flow to fixed assets, although it shows considerable fluctuations, is still preserved according to 2010-2015 data. in the range from 955 to 579 billion rubles. [13]. The region's investment needs, taking into account the ambitious development strategy, amount to 4,5 trillion rubles [13,17]. The problem of investment grows into a combination of potential opportunities for the development of all components of a diversified regional economy with an emphasis on bringing into play qualitatively new points of growth and development.

The functioning of the financial sphere in modern conditions is conditioned by the need to constantly find a balance between the three components of investment parameters in any asset: riskiness, profitability, liquidity. Long-term financial investments in Russia according to data for 2014 are only 12,5%, of which 17,7% are directed to processing industry, and the share of investments aimed at the production of machines and equipment is 5.1%. The share of long-term financial investments in fixed assets in the period 2010-2016. in the total volume of investments is kept at the level of 10-13%, although the level of depreciation of fixed capital over the same period is 47,1-48.1% [17].

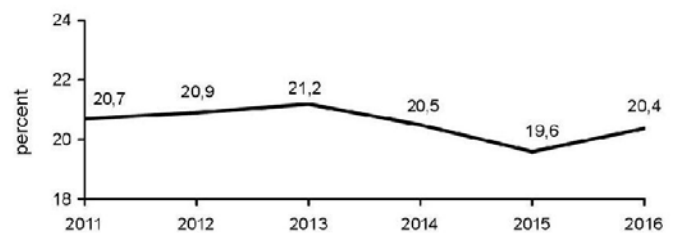


Fig. 1. Investing in fixed capital in the GDP of the Russian Federation

The share of industrial production organizations that carry out technological innovations for the period of 2010-2016 in Russia varies between 9,2-9,9%. Investments in fixed assets are directed by the private sector in 2016 at a rate of 56,3%, and state corporations – 1,4%. In the sphere of mining, transport and communications, real estate transactions, the main share of investment in fixed assets was in total in 2016 - over 77%. Small and medium business, as an important component of the economy, which gives 20% of Russia's GDP, invests in fixed assets in 2016 only 20,6% [17].

Business is inadequate in terms of the share of financial resources invested in fixed assets and in research and development. Therefore, the share of funds sent to Russia for

innovation is one of the lowest in the world. Irrelevant investment in the innovation of large businesses can and should be overcome in a purposeful manner by civilized state regulation for a long time.

A number of regions - the leaders making up the TOP-7 group in Moscow, the Moscow Region, the Republic of Tatarstan, St. Petersburg, the Sverdlovsk Region, the Krasnodar and Krasnoyarsk Territories, account for 42% of Russia's GRP, and their investment capacity for 2011 - 2020 gg. in 1 trillion. USD is filled for the years 2001 - 2010. by 31%, and the economically active population is 29% [21].

Krasnodar region, entering the TOP-7 regions by general indicators, shows extremely low values of the Russian regional innovation index (RII). And if you show the place of the Krasnodar Territory in a broader perspective, taking the TOP-20 regions, then the situation of the province looks embarrasingly contradictory: on the one hand, its social and economic indicators grow due to the development of traditional industries, and on the other hand it "lives" with the old approaches, formed in the industrial era. The innovative component in regional development is not activated as a growth point.

III. SOURCES OF INVESTMENT IN INNOVATION

The level of innovative activity of enterprises in Russia from year to year is significantly behind the indicators of the leading economies of the world. According to Rosstat, as well as the European Social and Economic Committee for the past 5 years, on average, it was at the level of 9,6% (Figure 2). For comparison: in the European Union the average figure reaches 53% [8,17,24].

Attention deserves an analysis of the innovative activity of enterprises in the Krasnodar Territory, which is included in the development indicators in the TOP-7 regions of Russia.

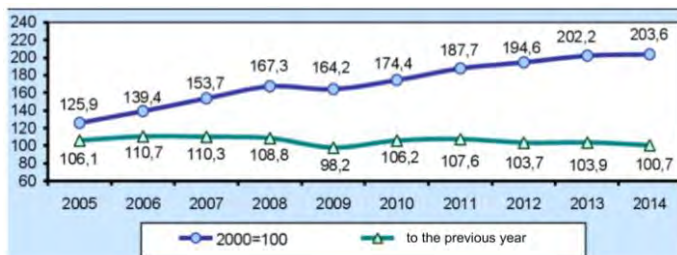


Fig. 2. Dynamics of the gross regional product of the Krasnodar Territory

The main sources of innovation are the results of intellectual activity in the field of research and development. For the period 2000-2016 the amount of state funds in the cost of science increased by 2,4 times at constant prices. And only at the expense of the federal budget. The means of the business sector in 2016 amounted to only 28% of the total expenditure on research and development by sources of financing.

If the share of the state's funds in the internal costs of IR increased from 54,8% in 2000 to 68,2% in 2016, then the federal budget - from 38,6 to 53,7%.

Investing financial resources in the IR and the actual innovation activity on the part of the business sector is disproportionate to owning a share of ownership.

Various sources of financing are considered in the compartment from the point of view of applying a mixed form of financing innovative activity by business entities. It is not possible to single out only one source as the main one due to the current situation in the financial markets.

Investments are divided according to their composition into interrelated groups:

- self-financing of the enterprise, including means of issue of shares;
- commercial credit financing;
- financial leasing;
- project financing;
- unconventional methods: franchising, factoring, crowdfunding, bootstrapping, etc.;
- mixed financing.

The analysis shows:

- the region among the leaders in the country in terms of socio-economic development;
- advanced positions in the socio-economic state of the region are provided by traditional sectors of the regional economy;
- volumes of attracted investments are directed only to support the development of infrastructure and traditional sectors of the economy;
- the existing stereotype of the region's image as an agrarian, transport hub and health resort of the country hinders the process of searching for qualitatively different additional growth points and, in particular, for the development of the region;
- the innovative subsystem of the regional economy is experiencing a resource hunger and does not receive investment impulses for development;
- ambitious development goals are not complemented by a broad practice of using tools to achieve them.

In practice, there are three methods of state support for development projects:

- allocation of loan funds based on the principles of repayment, pay and urgency;
- allocation of loan funds subject to the provision of a part of the shares to the state, created "for the project" of companies.

Sources of financing of the innovation sphere the most real in this economic situation can be:

- own funds of budgets, as well as extra-budgetary funds;
- attracted funds of the state banking and insurance spheres;
- borrowed funds in the form of internal and external public debt (government bonds, international loans);
- Investors' funds, i.e. individuals and legal entities;
- funds of external investors, i.e. venture funds, investment funds, entrepreneurs and individuals (business angels), who are inherent in the spirit of risk, innovation;
- funds of the largest enterprises and "financial-industrial groups", aimed at financing of domestic innovations.

Investment activity in the country shows unstable and unsystematic nature and, most importantly, unsystematic. Most of the subjects of the Russian Federation show a decline in the share of investments sent to fixed assets.

The main reason for the slow innovative changes in the Russian economy is the low level of investment in innovation. For this reason, the technological update of production, the share of manufactured competitive products on world markets is deployed on an insignificant scale.

Limited budgetary resources play an insufficient role in the investment process. At the same time, state participation in large investment projects always creates conditions for attractiveness for private capital on the basis of public-private partnership [14].

The key moment in the solution of innovative issues is active state participation in the implementation of innovation policy through direct and indirect support of this industry.

Without systemic measures of political, economic, legal and organizational nature, the problem of a new quality of growth and development of the region, ensuring a harmonious combination of development directions, taking into account regional priorities and without adopting new intersectoral proportions, can not be solved. A regional approach to development strategy is associated with the reorientation of financial and investment policies to support strategic projects. The project trip to realize without project financing will be extremely difficult. The solution of large-scale tasks of regional development of a new quality is connected with the institutional design of the innovative investment model of the financial and investment industry of the Kuban, focused on the full satisfaction of the real economy.

International experience shows that state authorities of economically developed foreign countries pursue a purposeful policy in the innovation sphere with the formation of target vectors, sources of financing and criteria for assessing the effectiveness of innovative companies.

The innovative activity of domestic business entities can be characterized as unstable and fragmented, the main trend of which is the withering of the innovation process.

A.I. Kashirin points out that business angels, 3F (family - friends - fools), seed funds, state funds, venture funds, private equity funds, banks, private investors, own funds can be potential investors in innovative development. [10].

The methods of investment are:

- participation in the authorized capital of the company, including by making an exclusive right to an object of intellectual property in the authorized capital;
- buy shares;
- provision of a targeted loan or loan guarantees;
- liability Insurance;
- Innovative vouchers;
- the use of securities market instruments and a number of others.

Sluggish behavior of the business sector in the innovation sphere has been going on for a long time and it is not commensurate with the trend of redistribution of property in its favor.

The main direction of creating an effective and stimulating innovative environment in our country is the creation of innovative and technological centers, budgetary and extra-budgetary funds, which in turn help the existence of innovative organizations and facilitate the transfer of finished scientific products to the market.

IV. INNOVATION INVESTMENT MECHANISMS

A.B. Feldman, speaking about the prospects of the securities market, noted that "new names will be offered and mastered, and the list of derivatives will expand in time (especially exotic and combined products-tools) [24].

It seems that the question of the lower level of the signs that predetermine the image of derivative products of tools is legitimate.

Necessary and sufficient signs for belonging to derivatives are: special property rights, special contractual relations, own payment schemes, combined (together with additional characteristics) into the system (a set of mutually agreed elements).

A.B. Feldman proposed the following classification of financial instruments:

"Composition of derivative products-tools:

A. Impeccable financial derivatives: futures; option; swap; Cap, Caption; Flo, Florion, Floption; the agreement on the future interest rate (Future Rate Agreement, Forward Rate Agreement - FRA), etc.;

B. Financial exotic derivatives.

B. Financial combined (complex, hybrid) derivatives (Structured Products).

G. Actually derivatives - financial instruments that exist in the form of forward transactions.

D. The main derivatives commodity products-tools" [24].

According to the International Financial Reporting Standards (IFRS-32): "A financial instrument is any contract that simultaneously generates a financial asset from one company and a financial liability or an equity instrument from another." In accordance with this definition, the standard specifies: "a derivative is a financial instrument: a) the value of which changes as a result of a change in the interest rate, security price, commodity price, exchange rate, price index or rates, credit rating or credit index, (sometimes referred to as the "basic"), b) which requires a small initial investment in comparison with other contracts, the course of which reacts similarly to changes in the market situation, c) the accounts for which are carried out in the future" [16].

In order to manage the variety of mechanisms for investing in innovations and to form a range of tools for the specific features of a particular project, it is advisable to develop an atlas of financial instruments that reflects their scope, the terms of the contract (derivatives), mechanisms for monitoring conditions during the application of tools, consistency with various tools, and other their features. It is possible to note with a high degree of probability that the effectiveness of financial innovations in various fields of activity, including in other sectors of the economy.

So, the counter-movement of the state and business entities in the innovation-investment process: either effective or active participation in it, or the same, but with the adoption of tax incentives or new methods offered by financial engineering.

A number of problems in the innovation sphere are connected with the absence of special legislation regulating specific innovation activity [3,6,19,20].

V. CONCLUSIONS AND RECOMMENDATIONS

Financial innovations in the development strategy of the region's "smart" economy are based on the counter-movement of the state and business entities in the innovation-investment process

The known direct methods of public financing, applied in different countries, are inherently very similar to each other with their known variability. This is determined by historically established stereotypes in management under the influence of basic institutional foundations.

In stimulating innovation activity, direct methods on the part of the state are increasingly less used, giving way to indirect methods.

The variety of applied mechanisms for investing in innovations is indicated by their classification and characteristics presented on fourteen grounds.

Managing such a variety of mechanisms for investing innovation is impossible without forming a line of tools for the specific features of a particular project. The basis for such management could be an atlas of financial instruments.

The direction of further research is the development of an atlas of financial instruments with a reflection of the scope, terms of the contract (derivative), and mechanisms for monitoring the conditions in the application of tools, consistency with various tools and other features, as well as the regional development budget.

References

- [1] Andreev V. Formation of a strategy for financing innovative projects: diss. Ph.D. - Moscow: Financial University under the Government of the Russian Federation, 2011.
- [2] AA Ayupov Methodological foundations of the formation and use of innovative financial products through financial engineering // Bulletin of Kazan Technical University. 2008. №1. P. 169.
- [3] AA Ayupov Derivative financial instruments: circulation and management / AA Ayupov. Togliatti: TSU. 2007. 202 p.
- [4] Blank IA Fundamentals of financial management: in 2 tons. T. 2 / IA Blank. - 4 th ed., Sr. - M.: Omega-L, 2012. 673 p.
- [5] Budaeva K., Klimanova V. Points of growth as an element of strategic planning in the regions of Russia // Regional Studies. 2017. №3. from. 99-106.
- [6] Goryunova L. Innovative system of the region. Tools and mechanisms of management. - St. Petersburg: Publishing house SPbGuEF, 2011. 202 pp.
- [7] Financial engineering: tools and technologies. Monograph. Publishing house "Prospekt". 2015. 250 p.
- [8] European Social and Economic Committee URL: <http://www.eesc.europa.eu/> (date of circulation: 20.04.2018).
- [9] Zapparov B.A. Institutional framework for building a financial mechanism in a regional innovation system // Modern problems of science and education. - 2015. - No. 1-1.; URL: <http://science-education.ru/en/article/view?id=17132> (date of circulation: 04/28/2018).
- [10] Kashirin A.I. In search of a business angel. The Russian experience of attracting start-up investments [Text] / A.I. Kashirin, A.S. Semyonov. Moscow, 2008. 384 p.
- [11] Klimanov V.V., Budaeva K.V., Chernyshova N.A., and Yagovkina V.A. Regional strategy and programming in the Russian Federation. 2016: Annual Report. M.: IROF. 2017. 88 p.
- [12] Konstantinidi H.A. Strategic development of the regional economic system in conditions of acceleration of post-industrial transformations. Moscow: Publishing Sputnik +. 2015. 248 p.
- [13] The Krasnodar Territory in figures. 2015: Stat. Sat / Krasnodarstat - Krasnodar, 2016. 307 p.
- [14] Lenchuk E.B., Vlaskin G.A. Innovation and investment potential of Russian regions.// MIR (Modernization, Innovation, Development). 2017. T.8, No4. pp.667-681.
- [15] Marshall JF. Financial engineering: a comprehensive guide to financial innovations. with English. M.: INFRA-M, 1998.
- [16] Morozova T.V. International Financial Reporting Standards: Textbook / T.V. Morozova. – Moscow: MFPU Synergy, 2012. 480 p.
- [17] The science. Technologies. Innovations: 2017: A brief statistical digest Gorodnikova N.V., Gokhberg L.M. and others; Nat. Issled. University Higher School of Economics. - Moscow: NIU HSE, 2017. 80 p.
- [18] On national goals and strategic tasks for the development of the Russian Federation for the period up to 2024. Decree of the President of the Russian Federation of May 7, 2018.
- [19] Orlova N.V. Tools for ensuring innovative development of the Russian economy. - Saratov: Science, 2010. 141 p.
- [20] Poltoradneva N.L. Financial engineering of innovative financial instruments in conditions of growing instability in financial markets: world and Russian experience: monograph [text] / N.L. Poltoradneva. Yoshkar-Ola: Colloquium, 2013. 132 p.
- [21] Investment site.URL: <https://starttrack.ru/> (reference date: 20.04.2018).
- [22] The strategy of social and economic development of the Krasnodar Territory in the long term. Version 1.1. Krasnodar. St. Petersburg. 2017. 225 p.
- [23] Sysoeva E.V., Kozlov D.V. Financial engineering as the process of creating innovations // Strategy of economic development. 2010. No7 (64). pp. 51-55.
- [24] Fel'dman A.B. Derivative financial and commodity instruments. The essence, concept and definitions of derivative products-tools. The fundamentals of the market for derivative securities. - M.: Infra-M, 1996.