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Policy Analysis: Re-thinking Innovation Policy in Times of the Global Financial Crisis

Ekaterina P. Stepanets^a and Alexander A. Khasin^{b*}

^a Erfurt School of Public Policy University of Erfurt
63 Nordhäuser Strasse, Erfurt, D-99089 Germany

^b Moscow Institute of Physics and Technology
9 Institutskii, Dolgoprudny, Moscow Region, 141700 Russia ¹

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This paper develops a model for the evaluation of the financial needs of innovative companies on the «seed» and «start-up» stages of their projects. In the model, the demand for finance is calculated with regard to the target performance of the industry set in «The Concept of Long-Term Socio-Economic Development of the Russian Federation» (17 November 2008). The study reveals certain problems that have impeded the process of establishing a venture industry in Russia. These setbacks include a lack of venture entrepreneurship experience, an insufficient amount of private investment in the early stages of innovative projects and the absence of a functioning infrastructure. In order to tackle these problems a new concept of «seed» finance is proposed. The suggested scheme, which involves the OJSC «RVC» and «RUSNANO», seeks to stimulate innovation development in universities, regions and technological clusters and increase the efficiency of budget spending. The key parameters of the scheme are also described in the work.

Keywords: innovative companies, «seed» stage, «start-up» stage, venture industry, private investment, stimulate innovation development.

Introduction

At the moment the government of the Russian Federation undertakes a number of measures designed to encourage innovation in the development of the economy. In times of the global financial crisis and declining growth of the world's output, the transition to innovative development is especially important as it will increase the competitive capacities of the Russian economy and create a good basis for a technological and economic breakthrough after the crisis is over.

The worsening economic conditions limit the government's capability to interfere and demand

more efficient allocation of public funds. The question of accelerating the process of transformation of the economy into an innovative one cannot be put off, since any delay will give other countries the chance to occupy prospective markets.

This paper revises the state of affairs in the innovative industry in Russia and describes possible courses of action for eliminating existing barriers that impede the appearance of innovative Russian products on the market and the creation of new opportunities within it.

The first part of the document deals with the current situation, discusses the historical

* Corresponding author E-mail address: khasin.alexander@gmail.com

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and socio-economic factors that have shaped the development of the innovative industry in Russia thus far, identifies and analyzes various stakeholders and their interests, describes the framework of an innovative project and considers typical problems on every stage.

The second part focuses on four policy options. Each option is described and assessed on the basis of four criteria, which are outlined at the beginning of the chapter.

The final part draws conclusions and recommendations for policy action and contains suggestions for further research.

The methods of research used include desk research and interviews with individuals who participate in the market.

Analysis

Features of the Russian Innovation Sector

«The Concept of the Long-Term Socio-Economic Development of the Russian Federation» (CLD)¹, worked out by the Ministry for Economic Development and approved by the government, rests upon the innovative scenario of the development. This means an intensive expansion of the share of innovative products in Russian output: it should reach 25 % of the GDP by 2020. In 2007 it was only 5.5 %. The weight of Russian high technology products in the world export is planned to become 2.0 % in 2020, while the forecast figure for 2009 is 0.42 %.

In order to achieve these ambitious goals a lot needs to be done. The current state of the innovative industry is far from being satisfactory, as recognized by government officials, such as the Russian President, Dmitry Medvedev. A few months ago, he admitted that in the sphere of innovation «almost nothing has been done»².

Since the end of the 1980's until the beginning of the twenty first century, the environment limited the development of innovation in Russia: key macroeconomic figures declined and the political situation was not stable. The rapid reduction of investments into the real sector and the breakdown of old economic ties led to the abolishment of cooperation between industry and science and, hence, the reduction of demand for development.

The economic growth of the last eight years was caused by rapidly increasing world prices for natural resources. It did not, however, produce proper incentives to improve the efficiency of corporations. The focus on the extraction industry led to a dramatic reduction of production in the spheres that did not bring immediate high returns and were not competitive on the global market. As a result, the Russian economy is now facing significant imbalances and is hardly diversified.

The situation has been further aggravated by non-economic issues such as corruption, criminalization of some industries, and illegal immigration.

Nevertheless, the modern Russian reality reflects a number of preconditions which can allow for a relatively fast integration into the world economy. These include:

- Good quality of human capital and Russian fundamental science despite many years of remaining underfinanced and neglected by the society;
- Financial capital, amassed by both the Russian government and corporations during the previous years of growth;
- A sufficient level of industrialization, as evident in the existence of transport, communication and other infrastructure schemes.

Stakeholder Analysis

In this part each stakeholder is described from the following perspectives:

¹ 17 November 2008, later in the text: CLD

² 11 November 2008, <http://www.primetass.ru/news/show.asp?id=836048&ct=news>

1. Who constitutes a stakeholder?
2. What is the role of the stakeholder in the industry?
3. What problems does the stakeholder face?
4. Which interests does the stakeholder pursue?

State

- *Organizations of ministries and departments; non-profit organizations financed and controlled by the government.*

The State creates public value by establishing and maintaining the institutional framework for the realization of a policy, by working out and fulfilling strategies for development in the sphere of innovation and by evaluating results.

The questions regarding government policy in the sphere of innovation are being dealt with:

On the federal level, through the actions of the president of the Russian Federation and his or her administration, committees and commissions of the upper and lower chambers of the parliament, and also coordinating bodies aimed at ensuring the consistency of a policy.

The Council for Science and High Technologies, directly subordinated to the President, informs him or her about the state of affairs in government innovation policy, maintains cooperation with research organizations and scientists, and works out proposals for priorities.

The strategy of the scientific and technological development for the short and medium term is defined by the president on the basis of the special report of the government. At the moment, there are three main ministries that formulate and implement innovative policy: the Ministry for Economic Development, the Ministry for Education and Science, and the Ministry for Communication and Connection. Each contains numerous committees and agencies.

On the regional level, through the cooperation of the local government and the federal ministries.

Currently, main institutions and other forms of financial and professional support for the improvement of the industry of innovations have already been established. These include venture funds, business-incubators, techno parks, etc. The structure of this system unexpectedly coincides with those of the countries that are leaders in innovative economies - Finland, Israel, and Singapore. However, the actuality of the system reveals its ineffectiveness in accelerating or transforming the economy from traditional to innovative. Government regulations and policies on innovative development in Russia are severely lacking in coordination. As a result, budget funds are used inefficiently. Initially, these funds are allocated, with a similar purpose, but pass through different channels, resulting in a diffusion of responsibility for building up the national innovation system.

The state, in its aim to meet the demands of its society, is interested in the development of the innovative sector, as it will diversify the Russian economy and ensure profits and welfare, especially in the long-term.

Business

- *Organizations with the main purpose of producing goods or services for sale; non-commercial organizations rendering services to above-mentioned organizations.*

Entrepreneurs use governmental and private resources to produce goods and services to meet demand of markets. They receive profits, provide jobs and pay taxes. While considering the business sector from the point of view of the development of the innovative industry, it makes sense to distinguish between:

Large industrial corporations, which form the demand for innovative products, obtain

funds and can use these funds for research and development (R&D), and

Innovative companies, typically small and medium enterprises (SME) that produce innovative products.

The most pressing problem with large industrial companies lies in low incentives to invest in innovation due to high incomes, which have been caused by the sharp incline in world prices. As a result, innovative companies suffer from insufficient investment, lack of personnel and other problems, which will be discussed in the next part of the analysis.

The business sector will greatly benefit from the development of the innovation sector, as this will diversify the economy, not only creating opportunities within a new growing market, but also improving the competitive power of Russian products on the world market.

Higher Vocational Sector

- *Universities and other institutions of higher education, scientific research, and clinics.*

The higher vocational sector serves as a supplier of personnel for research and as a producer of research itself. It suffers from the lack of funds and the fact that its performance does not reflect the needs of the business sector.

The development of the innovative industry is unambiguously connected to the development of the higher vocational sector.

Non-Commercial Sector

- *Organizations, which do not aim at generating a profit (professional societies, unions and associations, public organizations, funds, etc.).*

The non-commercial sector promotes development of the innovative sector by attracting attention of the general public and the government to the importance of the industry, by creating professional networks and enhancing

communication, and by promoting education and providing funds for research.

The primary problem here consists of the overall low level of the civil society's influence on the political agenda in Russia; especially, in the sectors that do not generate immediate high incomes.

This stakeholder's most important concern is to promote a more educated community and to create scientific potential and business ties, with the goal of creating a more prosperous and developed society.

Citizens of the Russian Federation

- *People holding Russian citizenship.*

The society of the whole is interested in higher living standards. This can only be reached by sustainable economic development, which is impossible without diversification of the economy.

The World

- *All other countries.*

The world market will benefit from the products of Russian innovative companies because increased supply intensifies competition, usually leading to improved quality.

Innovative Project Framework and Problems Within It

Innovative Project Framework

The distinctive feature of the innovative business sector is that SME provide the best environment for the development of «breakthrough» ideas and serve as a driving force of the industry. Emergence and global expansion of their products are also possible within big corporations, but the first stage of commercialization, in most cases, can only be successful within SME. That is why among western companies there is a wide-spread practice of spin-offs, i.e. the detachment of specific products into independent companies, as well as takeovers of small and medium

innovative enterprises for further product development.

Today, the share of innovative enterprises in the small business sector in Russia is 1.3 %, while in Germany it amounts up to 59 %, in Iceland – 52 %, and in Ireland – 47.2 %.

With regard to this, support of SME should be one of the main priorities of government policy in order to stimulate innovation development.

For a better understanding of the barriers that small businesses encounter, it is important to know an innovative company's stages of development and key actions implemented in each phase.

There are three major stages of such a project:

1. «Generation of knowledge», which includes fundamental and applied scientific research;
2. «Venture phase», which consists of two sub-stages:
 - a. «Seed phase», during which any additional research is conducted, the product is developed, the team is formed, a business-plan is created, intellectual property rights are registered, and prototypes and experimental samples are produced;
 - b. «Start-up», during which a short-run production, a certification of products and licensing of production are executed, results of the first sales are received, and serial production is organized;
3. «Late stage», which includes expansion of the business and production, market development, building up a distribution system, and enlargement of key assets and capital.

The problems of the late phase are not considered here, since an innovative company functioning in this stage represents a working

business, the government regulation of which should be done on a common basis.

Generation of Knowledge

In order to estimate the state of affairs in the system of knowledge generation, one should look at the volume of money spent on research, consider its amount, quality and commercial use.

In comparison to the countries with developed innovative economies, the expenditures on R&D in Russia, in % of GDP, appear to be relatively sufficient (they are lower, but have the same order of magnitude – Fig. 1).

As revealed by statistics, the number of researchers per one million inhabitants is also lower in Russia than in western countries, but the difference is not tremendous (Fig. 2).

The difference in the number of patents registered is more striking, but not striking (Fig. 3).

Alltogether, this data gives a positive impression about the quantity of the scientific activities in Russia. Nonetheless, a consideration of the commercial use of developments is frustrating: as estimated by of the Ministry for Education and Science, in the Russian Federation less than 1 % of the results of scientific work are used for commercial production. In the United States and the United Kingdom this figure amounts up to 70 %.

Another observation demonstrating that Russia is far behind other innovative economies, is the extremely low number of patents, as registered by the Russian developers in the European Patent Office (Fig. 4).

Considering the sufficient amount of scientific work and its commercial potential, raises the question: What is preventing the current system of academia and industry from effectively transforming financial resources into the development of goods competitive on the global innovation arena?

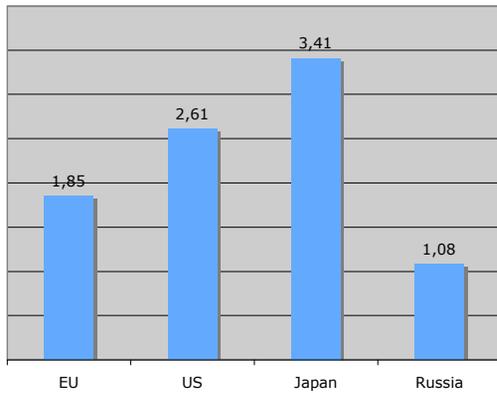


Fig. 1. Expenditures on R&D in 2006, % GDP¹

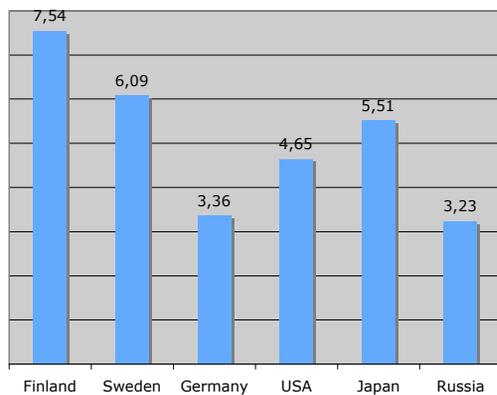


Fig. 2. Researchers per one million inhabitants, 2006²

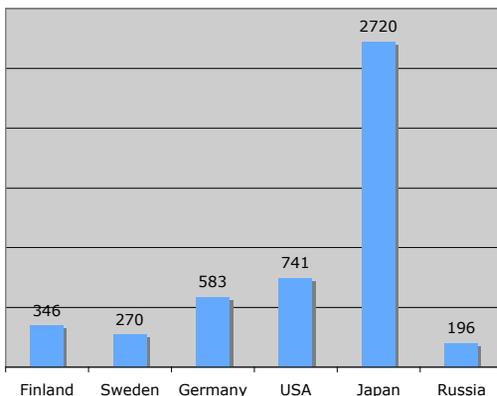


Fig. 3. Number of patents, registered by residents of the country, per one million inhabitants, 2006³

A primary line of reasoning explains that Russian companies invest significantly less in R&D than their western counterparts. As a necessity then, academia is to a large extent financed by the government. Due to a lack of ties to the market, scientific results cannot be produced for commercial use.

Venture Phase

The main objectives of this stage include the development of a commercial product, working out a market entry strategy and obtaining the first results of sales. In order to fulfill these tasks, a company needs financial resources and a favourable environment.

Financing innovative projects, which are characterized by a high level of risk in the early stage, is typically arranged through venture funds. Often, venture investors have experience and business connections, which allows for the reduction of risks and for helping companies to develop faster and with fewer losses.

The amount of money invested into Russian companies in the venture phase is much less than that of the countries with advanced innovative economies (Fig. 5).

This result is not surprising since the numerous less risky investment opportunities exist in Russia.

To increase the flow of money into the industry, the Russian government has already initiated a number of measures:

- Foundation of the Russian Venture Company (RVC) with a nominal capital of 30 billion rubles¹, under which two venture funds were created and five are in the process of establishment;
- The government corporation «RUSNANO» was established with a nominal capital of 130 billion rubles. Its

¹ UNESCO Institute of Statistics Data Centre, <http://stats.uis.unesco.org/>.

² UNESCO Institute of Statistics Data Centre, <http://stats.uis.unesco.org/>, data for the US is for 2005.

³ WIPO Statistics Database, <http://www.wipo.int/treaties/en/statistics/>

¹ 1 US dollar=36 rubles, 1 Euro=46 rubles on the 5th of March 2009. It is important to note, that at the moment Russian Central Bank is pursuing the policy of gradual devaluation of the ruble.

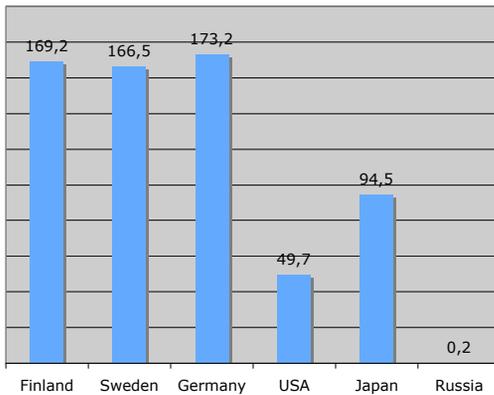


Fig. 4. Number of patents, registered by different countries in European Patent Office, per one million inhabitants, 2006¹

goal is to support the development of nanotechnology in Russia;

- The venture fund «RIFIKT» was created with a capital of 1,45 billion rubles;
- 21 regional venture funds were established with the cooperation of the Ministry of Economic Development and the regional governments, making up a total capitalization of more than 6 billion rubles.

These actions coincide with the global practice of stimulating the venture industry. As long as these financial resources are going to be spent during the next five-ten years, they seem to suffice. The effectiveness of the funds' allocation, however, will depend on the people involved in the sector. Considering the historical lack of entrepreneurs and investors in Russia, it is necessary to attract new specialists. Without them there is a risk that the created funds will turn into financial institutions that provide money for the building of factories rather than invest into the commercialization of prospective technologies.

Moreover, the functioning of these funds primarily serves to finance the second sub-stage of the venture phase – start-up, when the product

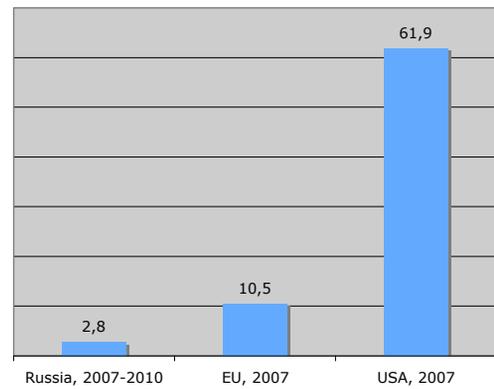


Fig. 5. Total amount of financing of innovative projects from seed stage to expansion and growth (venture capital, business angels, governmental funds), billion dollars¹

and prototype have already been developed. As for now, the only source of finance for the seed phase is the Fund for Support of the Development of Small Enterprises in the Scientific-Technical Sphere (belonging to the Ministry for Education and Science), which gives out one billion rubles per year in forms of grants. The Association of Business Angels of Russia estimates that private seed investment is about 0.5 billion rubles a year. Thus, the total amount of seed investment is 1.5 billion rubles - an obvious imbalance with the financing of the start-up stage.

The necessity of additional seed investment was acknowledged by the Minister of Economic Development, Ms. Nabiullina, but no actions have been taken yet. The global financial crisis and the declining economic growth challenge the government to spend money economically and efficiently. Under such conditions investment into the mechanism of seed investment appears to be worth undertaking: with a relatively low level of use of financial resources one can tackle system problems in the sphere of innovation and lay the foundation of the future prosperity. The main point here is not to increase government

¹ WIPO Statistics Database, <http://www.wipo.int/treaties/en/statistics/>

¹ Seventh EBAN Congress, presentation of the company «New Vantage Group»: data PWC Money Tree 2007, data of the National Association of Business Angels (Russia), European Investment Fund (EIF) Annual Report 2007, European Business Angel Network (EBAN).

spending, but to create an environment which would attract private investment.

Coming back to the important conditions for the development of an innovative company in the venture phase, the second component – environment – is to be deliberated. The first aspect that comes to mind in regard to this is physical infrastructure, and the Russian government has already taken a number of steps to cope with this issue: business incubators, technoparks and technology centers have been set up. The latter requires special attention: the creation of centers of collective use has proved its effectiveness in the world practice, and it is necessary to further establish and improve the work of the existing ones on the territory of the Russian Federation.

However, even the best infrastructure means little if people do not utilize it. It is well-known that entrepreneurial culture, especially in the sphere of innovation, has been weaker in Russia than in the western countries. Moreover, if developers are not entrepreneurs by nature then they require professional business support, which is usually delivered by business incubators. Unfortunately, a poll conducted by the Russian Public Opinion Research Centre revealed that the current structure of professional support does not satisfy the needs of the market neither in terms of quantity nor quality.

A primary reason for this is the short period that has passed since the measure was put into practice. Nevertheless, it does not lessen the importance of paying attention to the provision of professional support because the key task of it is to attract the most qualified specialists in order to ultimately build the future of the industry.

Lastly, taking care of supply does not make much sense without demand on the market. Unfortunately, Russian companies have not shown much interest in Russian innovative products, while western companies have been ready for a

dialogue and consideration of the production of Russian innovative SME. Stimulating internal demand, a decisive factor for the existence of SME, should become one of the priorities of government policy.

Policy Options

In this part, policy options are described and assessed based on the criteria:

1. Compliance of the policy with long-term economic goals:
 - a. Compliance with the goal of promoting an innovative economy in the Russian Federation;
 - b. Volatility of the economy to external factors.
2. Capabilities to achieve short-term economic goals, i.e. to cope with the current crisis:
 - a. Creation of jobs;
 - b. The ratio of potential increase in GDP with regard to the amount of the required investment.

Intensive scenario: seed investment as a driver for the innovative industry

Seed investments constitute the money provided for the initial stages of a new venture; for instance, to conduct research, develop the prototype of a product, or test if an idea is workable or economically viable. In order to stimulate these types of investments, the government has to share the burden of high risks on this stage. This can be done in two ways:

- Government and private financial capital are accumulated into funds. These funds then invest into projects;
- Private investments are attracted for particular projects into which government invests as well.

In both cases private investors should be allowed to buy the governmental part of a project.

The first scenario has been realized in the work of the RVC and regional venture funds. In most cases investors in such ventures are institutional and are not interested in the operations of the companies; therefore, the financial resources are directed to the later phases. The use of this method, however, is not suitable for encouraging seed investment, especially during the financial crisis, when investors are prone to choose low-risk projects.

The second scheme of mixing private and public investment in a particular project to boost seed investment has been successfully realized in Israel¹ and Singapore². A similar structure can be used in Russia to tackle the problem of professional support and financial resources in the seed stage. Such a framework may involve four major types of agents: a governmental agent, service organizations, private investors and innovative developers or SME. A governmental agent forms a seed investment fund, while service organizations discover prospective technologies/projects, assist companies with finding and hiring specialists, attracting private investment and support a company throughout the venture phase.

Within the current structure of the innovation sector, the fund can be based on resources of the RVC and RUSNANO. The suggested framework implies that the seed fund gives up to 75 % of required financial resources, providing that a company already obtains the rest 25 % in private investment. In this way service companies are responsible for forming flow of deals, attraction of the private investment and provision of professional support to the companies, while the fund, or a special commission within it, approves the companies that receive financial help.

¹ *The Technological incubators program*, Ministry of Industry, Trade and Labor, Israel, retrieved on the 28th of February from: <http://www.incubators.org.il/>

² Irene Tham, *NSTB to invest S\$50m seed funding in 100 start-ups*, retrieved on the 28th of February from: <http://www.zdnetasia.com/news/hardware/0,39042972,13025877,00.htm>

The proposed scheme is flexible and allows using different elements of the innovative infrastructure. There are many actors which can become a service company:

- Management companies of business incubators and technoparks;
- Management companies of venture funds;
- Organizations which are hired by industrial corporations;
- Organizations which are hired by regional governments.

In some regions of Russia there already exist companies that act as service organizations, but their number is insufficient. Further companies can be established with the financial resources of local governments or mutual funds of a municipality and the Ministry for Economic Development.

The annual budget of a service company is 20-30 million rubles³. Key cost items are salaries and expertise of projects. As mentioned above, the money can come from the municipal budget, or be combined with those from the Ministry for Economic Development, as is done for the venture funds. It is estimated, that the size of the fund in 2009 should be 4.4⁴ billion rubles. If we take for example that an average service company obtains an investment budget of 500 million rubles⁵, then in 2009 there should be approximately 9 service organizations. Then the maximum expenditures on the establishment of the service organizations will amount up to 270 million rubles. This is a relatively low investment in comparison to the amount needed for innovative infrastructure.

³ Expert estimation

⁴ Calculation based on the Model 1, Appendix 1: the forecast figure for 2008 is 7.8 bln roubles. 1.5 bln are already in place in forms of grants and private investment, then the additional money needed: $(7.3-1.5)*0.75=4.4$ (assumption: government provides 75 % of the needed investment, the rest should be private)

⁵ Expert estimation

Stimulating seed investment may have a substantial impact on the development of the innovative industry on the whole as it will tackle system problems. Service organizations will solve the problem of lack of entrepreneurial experience in the industry and will help to create a class of innovative specialists. This may lead to an increased number of professional teams, capable of running innovative projects. Moreover, the work of a service organization in the region may improve the effectiveness of the utilization of the infrastructure and reduce the operational costs of innovative companies (by allocating portfolio companies in business incubators, use of the centers of collective use, use of the governmental financial support, etc.).

The seed investment fund and the flow of deals are likely to encourage small private investors to act more actively, which should lead to an increase in the number of business angels, who are almost absent on the Russian market today. As a comparison, in the countries with advanced innovative economies these actors play one of the most important roles on the early stages of innovative projects.

This scenario fully coincides with the long-term goal of establishing an innovative economy in Russia and should lead to a remarkable decrease in the dependence on external factors, such as world prices for raw materials.

The policy option may serve to create jobs not only for the group of developers and people involved in working for service organizations, but also for potential serial production.

It is important to point out that the relatively low level of investment seems to be feasible even during the times of the global financial crisis. It cannot only create new opportunities, but also may improve the return on investment that has been made.

The risks of this option are mostly associated with the complication of the system and the

necessity to control performance of the service organizations. Delegating the responsibility to the local governments can be a way to overcome such barriers.

Another question that arises is how to motivate a service organization to search and select prospective projects. Providing the opportunity for a service company to buy a certain share in the business can help in turning it from being a bureaucratic structure into a profit-oriented unit.

The control of the seed investment fund should be made similar to the control of the existing venture funds.

Passive scenario: invest into later stages and infrastructure

This option implies further support of the establishment of venture funds, technology centers, business-incubators and techno parks and maintaining the existing ones.

At the moment there are 56 centers on the territory of the Russian Federation that possess equipment for 7 billion rubles¹. However, most of them are physically and morally old and can hardly be used effectively. Moreover, new centers of collective use should be created.

Building techno parks is an expensive activity (for example, for the techno park in Dubna the total investment made up to \$470 million, from which governmental part was \$88.5 million (or 19 %)), but results are often worth the money spent: techno parks reduce operational and transactional costs, and even let businesses benefit from the interaction of employees in the informal atmosphere out of offices.

Without a precise calculation, the total amount of investment into the later phase and infrastructure amounts to billions of rubles, that is noticeably more than seed investment. As with

¹ *Centers of Collective Use*, Seventh Framework Programme of the EU, retrieved on the 26th of February from: <http://fp7-infra.ru/infrastr/>

any large investment, main risks are associated with relatively long time for the return and the risk that the result of investment will not be used effectively.

As well as the first scenario, this one fully reflects the goals of the long-term development, as it contributes to the establishment of the innovative economy in Russia and reduction of its dependence on the world raw material prices. It also obtains a scope for creation of jobs, which may, however, be limited at the moment because of the deteriorating economic climate and, as a result, declining amount of investment .

*Formation of the internal demand
for innovation*

The goal of stimulating the internal demand for innovations is usually achieved by providing tax remissions for the companies that invest in and/or implement the result of R&D.

The problems related to getting access to large corporations, which innovative SME might encounter, can be also solved by service organizations, proposed in the policy option 3.1.

Another strategy is to introduce the requirement for companies working on governmental orders to have a certain share of Russian innovative products in their procurement structure. This is a widely applied measure, for example, in the United States, where private companies that participate in tenders for governmental orders have to attract small companies as subcontractors.

The high priority of this policy option for the long-term success of switching to innovative economy is indisputable, since without it the results of any or both scenarios discussed above will be almost useless.

Talking about creation of jobs, the growing demand for innovation should contribute to the increase in jobs in the innovative sphere and is supposed to expand investments.

During the crisis the government may find it hard to decrease taxes and introduce the requirement for a share of innovative products, that a corporation has to consume. Still, the current situation may unexpectedly create incentives to increase the demand for innovations. Falling prices mean diminishing profitability of businesses, what will stimulate them to implement innovations, pursuing the aim of improving efficiency and finding new ways of organizing the processes.

The implementation of this scenario on its own contains risks of inefficient use of the investments, that have already been made into the innovative industry in order to deal with the problems related to infrastructure, availability of financial resources and professional support to SME.

*Inertial scenario: concentrate
on export of raw materials*

Pursuing this scenario means that Russia continues the economic path based on extraction of the resources and orientation on the export of them. Even with regard to the fact that Russia possesses large fossil resources, the high costs of extraction makes the future of this strategy questionable. Compared to the options listed above, this policy option does not eliminate in any way the dependence of the economy on prices on the external markets and does not comply with the long-term economic goal of establishing innovative economy in the Russian Federation.

The impact of the sector on the GDP is significant and should not be omitted. However, the investments that are needed for further expansion are high, while profitability has relied on the prices. With the prices at a low rate it is time to improve efficiency in the industry, and here, again, innovations can play an important role.

Concentrating solely on this scenario leads to the neglecting of investments into innovative

industry that already have been made, what bring the risk of inefficient use or even total loss of them.

The role of this sector in jobs creation in Russia is momentous. However, during the crisis, further jobs creation is unlikely to take place. On the contrary, the industry may suffer jobs cuts as it was announced that they would have to decrease output in 2009.

Recommendations

It may sound astonishing, but the crisis should be perceived as an opportunity for Russian innovative sector to develop significantly with government support. Without understating the importance of stimulating internal demand for innovation and improving infrastructure, launching the mechanism of seed investment appears to be the key factor to allow Russian developers and entrepreneurs to create products competitive on the global market. By the time the

crisis loses its severity in 2-3 years and investors become more optimistic about the market, the companies will be able to attract investment for the products, they will have developed due to the seed investment. This can be the time of establishment of venture industry in Russia.

If the development of seed investment is postponed, the government money that has been invested so far is likely to be lost. There is a risk that private capital, which came during the previous years, will leave because of the crisis. That means that the created infrastructure will not start functioning, because there will be no real use out of it. In this case, providing that the seed stage is not supported, in a few years' period the industry will be lacking new ideas and there will be hardly anything to invest in.

The estimation of costs for additional seed investment and establishment of service organizations may require further scrutiny.

References

Christian Gianella, William Tompson, *Stimulating innovation in Russia: the role of institutions and policies*, OECD Economics Department Working Papers No. 539, Retrieved on the 25th of February from: www.oecd.org/eco/working_papers

Derzhin, I. G., Saltykov, B.G., *Mekhanizmy stimulirovaniya kommercializacii issledovaniy i rasrabotok (The Mechanisms to stimulate commercialization of research and development)*, Insitute of Economics in Transition, Moscow: 2004

Rashkin V.F., *Nekotorye aspekty gosudarstvennogo regulirovaniya innovacionnoy deatelnosti v Rossiyskoy Federatsii (Some aspects of governmental regulation of innovative activity in the Russian Federation)*, retrieved on the 6th of December from: http://www.dpr.ru/journal/journal_9_2.htm

Koncepciya dolgosrochnogo socialno-ekonomicheskogo razvitiya Rossiyskoy Federatsii do 2020 goda (The Concept of Long-term Socio-Economic Development of the Russian Federation till 2020), Ministry for Economic Development, retrieved on the 10th of February from: <http://www.economy.gov.ru/wps/wcm/myconnect/economylib/mert/welcome/pressservice/eventschronicle/doc1217949648141>

Russia in figures, Federal State Statistics Service, retrieved on the 10th of Febtuary from: http://www.gks.ru/bgd/regl/B08_12/Main.htm

Gokhberg, L.M., *Novaya innovacionnaya sistema dlya «novoy ekonomiki» (New innovative system for «new economy»)*, Questions in Economics, Moscow, 2003, №3 (pp. 26-44)

Gorin, A.A., Mindeli, L.E., *Gosudarstvennoe finansirovanie issledovaniy I razrabotok v usloviyah perehodnoy ekonomiki (Public Financing of Research and Development during Economic Transition)*, Centre for Science Research and Statistics, 1998

Audretsch, David B., *Entrepreneurship, Innovation and Economic Growth*, Cheltenham, Elgar, 2006

World Patent Report: A Statistical Review, World Intellectual property Organization (WIPO), retrieve on the 1st of March from: <http://www.wipo.int/ipstats/en/statistics/patents/index.html>

UNESCO Institute of Statistics Data Centre, data retrieved on the 1st of March from: <http://stats.uis.unesco.org/>.

Between Invention and Innovation. An analysis of Funding for Early-stage Technology Development, National Institute of Standards and Technology, US, retrieved on the 26th of February from: <http://www.atp.nist.gov/eao/gcr02-841/exec-sum.htm>

Centers of Collective Use, Seventh Framework Programme of the EU, retrieved on the 26th of February from: <http://fp7-infra.ru/infrastr/>

Innovacionnoe maloe I srednee predprinimatelstvo: problemy rasvitiya (Innovative Small and Medium Entrepreneurship: Problems of Development), Russian Public Opinion Research Center, retrieved on the 26th of February from: <http://www.opora.ru/analytics/library/2009/01/11/maloe-pred-prinimatelstvo-v-rossii-2008>

The Technological incubators program, Ministry of Industry, Trade and Labor, Israel, retrieved on the 28th of February from: <http://www.incubators.org.il/>

Irene Tham, *NSTB to invest S\$50m seed funding in 100 start-ups*, retrieved on the 28th of February from: <http://www.zdnetasia.com/news/hardware/0,39042972,13025877,00.htm>

Appendix 1

Model 1: Dynamics of the need of the Russian innovative industry in financial resources during the period 2008-2020 to meet the goals of CLD¹.

The assumptions and logic of the model:

- Innovative products are produced by large and medium enterprises;
- Large enterprises are those that have existed on the market for a relatively long period of time and can produce not only innovative products. Besides working on their own developments they can take over small innovative companies. The share of large enterprises in total production is 80 %;
- Medium enterprises grow from innovative start-ups after going through the whole «venture» phase. A medium enterprise produces only innovative products. In ten years time it either becomes a large enterprises or is taken over by a large enterprise;
- The amount of innovation production in each year (specified in the CLD) defines the number of medium enterprises needed to produce this certain volume. On the basis of that the number of companies in the seed and start-up phases during the previous years can be calculated. Then, with regard to the amount of investment needed on the different stages of the life cycle of an innovative company, required investment can be estimated;
- The annual income of a medium enterprise is assumed to be 500 million rubles, annual rate of growth – 15 % during the first 10 years. This is an optimistic scenario for income and sales, what allows to minimize the required financing;

1 Author: Alexander Khasin, General Manager «EcoInvest»

- The seed and venture phases are taken to last two and three years respectively, the need in financial resources is assumed to be 20 million rubles in the seed stage and 100 million rubles in the venture stage (these figures are taken on the basis of the US statistics, which gives the following intervals (depending on the year): seed investment - \$0.5 – 1.5 million, start-up investment - \$3.2 – 6.1 million).
- It is supposed that 30 % of the companies go through the seed stage, and 20 % - through the venture stage, this means that only 6 % of the initial number of companies survive, the figure that is reflected by empirical data.

In accordance to the CLD, the share of innovative production should reach 25-35 % of GDP by 2020. The average rate of growth of GDP is assumed to be 6.5 %. Extrapolation of the macroeconomic parameters for 5 years longer, to 2025, with consideration of the trend during 2008-2020, provides the requirement for financial resources during the period 2008-2020.

The results are presented on the char (Fig. 6).

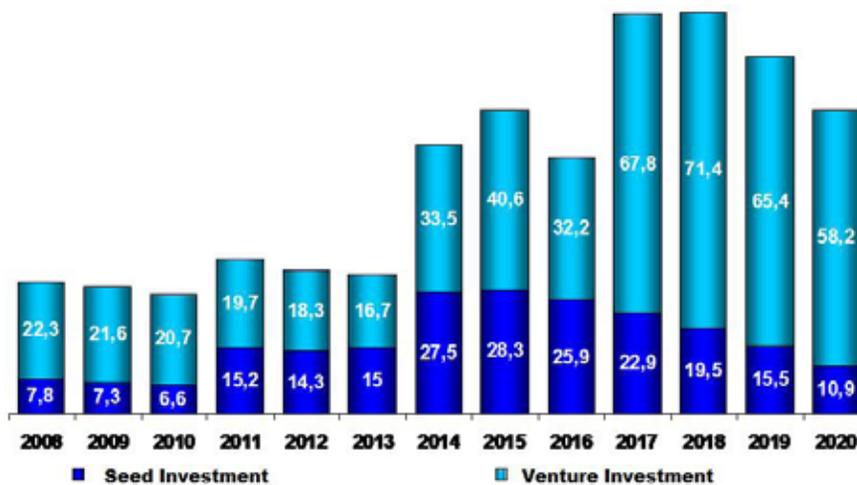


Fig. 6. Dynamics of the need of the Russian innovative industry in financial resources during 2008-2020, billion rubles

Although the model is rather rough, it gives an idea about the order of magnitude of the spending.