Russian Companies do Innovate[1]

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Abstract

Innovation is a vital process for organizations and countries in order to be able to evolve and have a competitive position in the international markets.

This paper is based on a research designed to evaluate the strengths and weaknesses of the national innovation system in Russia. The objective of the survey was to evaluate innovation activity and innovation performance in Russia, as well as to identify the priorities of the government policy to promote innovation.

Keywords*: Russia, innovation, national innovation system, performances*

JEL classification: **L0, M0**

Prologue

" … In the twenty-first century, our country once again needs to undergo comprehensive modernisation. This will be our first ever experience of modernisation based on democratic values and institutions. Instead of a primitive raw materials economy we will create a smart economy producing unique knowledge, new goods and technology of use to people.

Instead of an archaic society in which the leaders think and decide for everyone we will become a society of clever, free and responsible people.

Instead of chaotic action dictated by nostalgia and prejudice, we will carry out an intelligent domestic and foreign policy based on purely pragmatic aims.

Instead of the Russia of the past we will build the Russia of the present – a modern and forward-looking young nation able to take a worthy place in the global economy.

I published my proposal to reflect on how we can overcome our chronic backwardness, dependence on raw materials exports, and corruption, how we can prepare

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ourselves for the fierce competition on global markets, and create the best possibilities for ensuring that each of us can make full use in practice of our knowledge, opportunities, and experience without depending on higher-ups. In other words, I proposed that we reflect on the steps we need to take right now to improve the quality of life in Russia and make our country one of the world's leaders. …"

Dmitri Medvedev
The President of the Russian Federation
Presidential Address to the Federal Assembly of the Russian Federation
Moscow, November 12, 2009

Introduction

Figure 1 summarises gross expenditures on R&D (GERD). In terms of GERD relative to GDP, Russia is positioned in the club of such countries as Estonia, Belarus, South Africa, and Ukraine. Russia slightly exceeds India, Turkey, and Chile, but she is behind China and the Czech Republic. GERD, in the group of countries to which Russia belongs, is less than a half that of such a group of countries as the United States, Germany, France, and Canada and less than a third of Japan, Finland, and South Korea. It is also visible that the scientific and technological achievements of Israel have not cost that country cheap in the literal sense of the term. Israel allocates 5% of her GDP to research and development, and this amount is increasing.

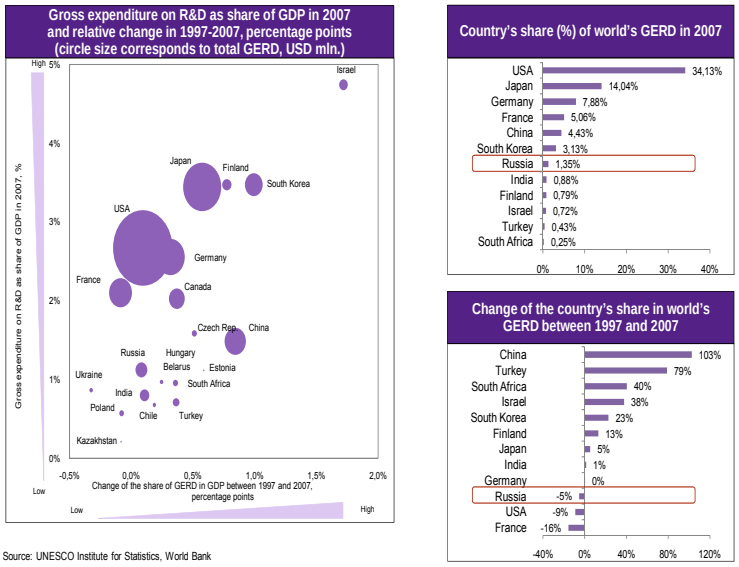
Firm's capacity for innovation can be thought of as a sum of three factors. First is the ability to create new valuable technological knowledge to improve products and processes. Second is the ability to adapt technology and know-how from various external sources. Third is the level of technology employed by the companies. The Russian firms do not rank high on any of these three components (Figure 2).

The share of businesses' expenditure on research and development (BERD) in the Russian GDP is not very high (0.72%). This is more than in her CIS neighbours, and more than in Turkey, Chile or Brazil, but it is clearly less than in China. Regarding the ability to adapt technology and the present technological level, the Russian executives provide exceptionally low rankings compared to other countries. According to the World Economic Forum's Executive Opinion Survey, firms from Ukraine and Kazakhstan were more able to adapt technology, as well as had a more sophisticated technology at their disposal than enterprises from Russia.

Why is the situation so distressing for a country that was first to launch a satellite into the space? And what can be done to improve the situation?

Figure 1

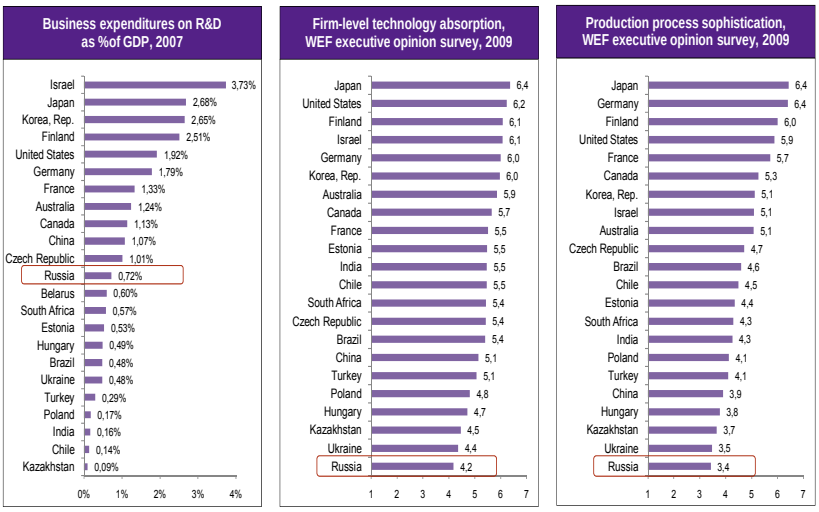
Expenditure on R&D



Source: UNESCO Institute for Statistics, World Bank

Figure 2

The state of innovation in Russia according to statistics and WEF Executive Opinion Survey 2009-2010



Source: World Economic Forum, World Bank, UNESCO Institute for Statistics

Research setting

The data for our analysis were taken from the Russian Innovation Survey 2009-2010, which is a part of joint effort by Bauman Innovation and OPORA (the All-Russian association of SME unions) to evaluate the strengths and weaknesses of the national innovation system in Russia.

The objective of the survey was to evaluate innovation activity and innovation performance in Russia, as well as to identify the priorities of the government policy to promote innovation.

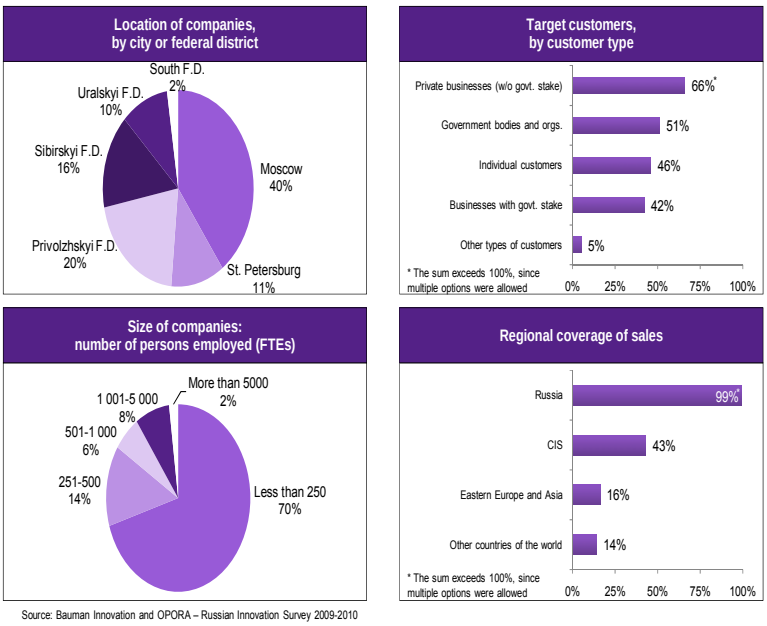
Due to the research budget constraints it was decided to enrol a sample of 250 executives. To organise the sample we had a large contact database of more than 3000 middle-sized and large companies from all over Russia, compiled in earlier surveys conducted by Bauman Innovation. The initial sample was organised via a random sampling from this database. Potential respondents were contacted through telephone. The final sample was obtained via random substitution whenever the initial contact was invalid or refused to answer the survey. Personal interview was the preferred method to obtain the survey data.

The quality of the response was ensured by tightly analysing the answer patterns and undertaking a telephone call check. The calls to the executives revealed 3 false respondents, whereas answer pattern analysis showed that two other respondents inappropriately treated scale questions as 'yes' or 'no' questions. One respondent did not fill a sufficient number of answers. Thus, out of 251 surveys we received 6 were excluded, and therefore, 245 were employed in the present analysis.

Our sample included companies from the across Russian regions and aimed to cover the largest cities in Russia (Figure 3). Around a half (51%) of the surveyed companies were located in Moscow (including suburbs) and St. Petersburg, while another half (49%) were located in the major cities of Privolzhskyi (Volga), Sibirskyi (Siberia), South and Uralskyi (the Urals) Federal Districts, including Chelyabinsk, Nizhny Novgorod, Novosibirsk, Omsk, Perm, Rostov-on-Don, Samara, Saratov, Togliatti, Tomsk, Yekaterinburg and other cities. The sample did not include companies from the Far East of Russia since too few potential contacts agreed to participate. Given that the Russian Far East is neither an especially distinguished place for innovation nor it is a highly populated location, this minor sample bias is not an obstacle to conclude that the employed sample is rather representative of the Russian middle-to-large sized enterprise sector.

Figure 3

Sample characteristics (general), %



Source: Bauman Innovation and OPORA – Russian Innovation Survey 2009-2010

70% of the sample were middle-sized firms (up to 250 persons employed, measured in full-time equivalents [FTEs]), while 14% were sized between 251 and 500 FTEs in employment. The remaining 16% of the corporations had more than 500 employees. The sample included just 5 companies which employed more than 5 000 persons each. Relative to the population distribution of enterprises located in Russia, large companies are under-represented in the sample. Nevertheless, the analyses were conducted without re-weighting the data, which means that the results might be biased towards middle-sized businesses.

The majority of the companies surveyed performed in several industries. The most represented industries were manufacturing (73%), construction (20%) and trade (19%). The Russian owners had stake in majority (92%) of sample companies, while private foreign owners had stake in the remaining firms. The Russian government had stake in 11% of the companies studied.

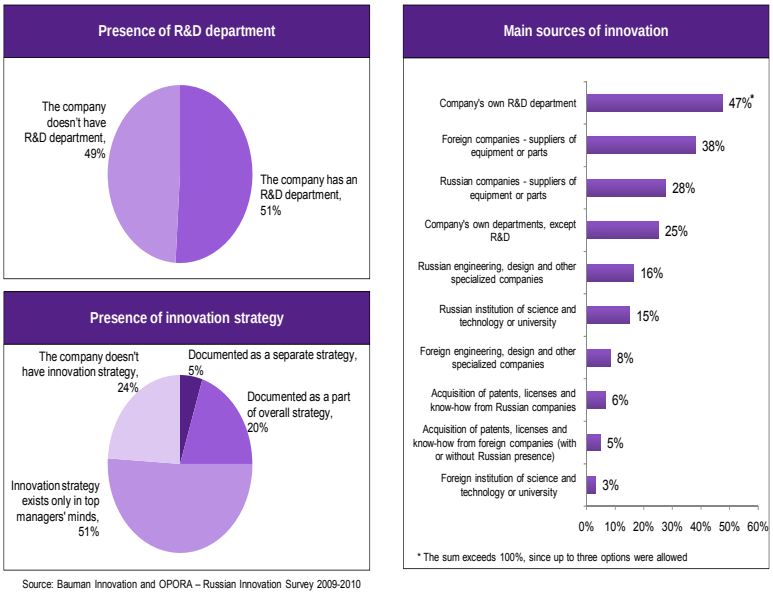
Regarding the geography of sales, all companies except one had sales in Russia. Approximately a half of the companies were exporting some part of their products to other countries. 43% of sample companies exported to the CIS countries, 16% exported to Eastern Europe and neighbouring Asian countries, while 14% had sales in all other countries (this group thus included Western Europe, the Americas, Australia, Africa as well as countries of Asia, however excluding the CIS, Mongolia, Japan and China).

Empirical results

Approximately a half (51%) of the sample was companies with a dedicated R&D department, or another department with R&D as a primary function. Only a quarter of all the firms documented their innovation strategy either as a separate publication or a part of corporate strategy. 51% reported to have innovation strategy which was not documented (i.e. the innovation strategy existed only '*in the minds of top managers*'), and 24% acknowledged that they do not have innovation strategy at all (Figure 4).

Figure 4

Sample characteristics (innovation), %



Source: Bauman Innovation and OPORA – Russian Innovation Survey 2009-2010

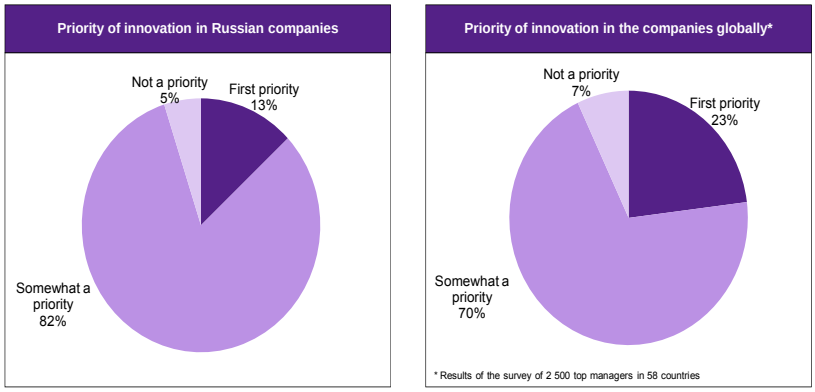
The major source of innovation for 47% companies in the sample was an own R&D department. Foreign and Russian suppliers of equipment and parts, as well as other functional departments were other three most frequently used sources of innovation. Institutions of science and technology, dedicated design and technology companies, as well as patenting and licensing were less frequently cited among important sources of innovation.

As a rule, the Russian companies do not regard innovation as the first strategic priority. Only 13% of the sample indicated that innovation is the first priority for the firm; most of these firms do business in the industries where the pace of innovation is globally considered to be high. However, when compared to their peers in other countries of the world, the Russian companies rate poorly. According to the Innovation 2007 survey conducted by the Boston Consulting

Group in 58 countries, 23% of 2 500 executives recognise innovation as the first priority. Our survey confirms the view that the Russian firms are in general less innovative both by activity and intention (Figure 5).

Figure 5

Priority of innovation

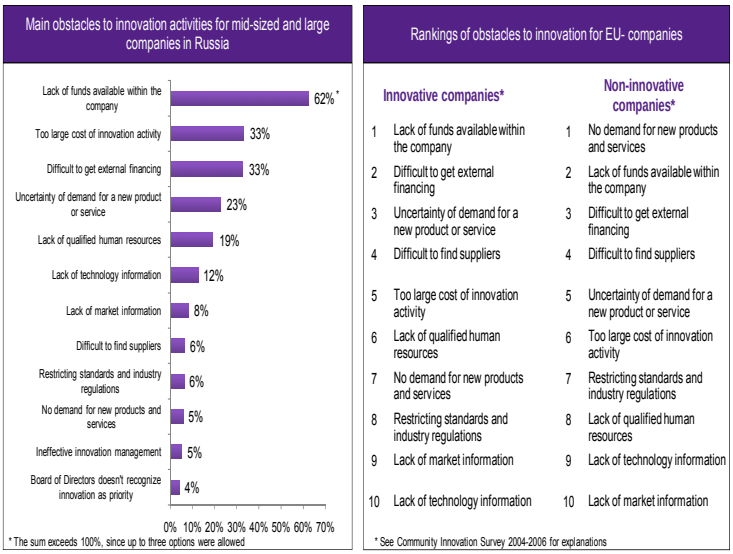


Source: Bauman Innovation and OPORA – Russian Innovation Survey 2009-2010; BCG Senior Management Survey "Innovation 2007"

The Russian Innovation Survey intended to reveal obstacles for innovation activity. In one of the questions, the companies mentioned up to three obstacles that limit the firm's ability to implement innovation. According to this survey (Figure 6), the most common obstacle is a lack of funds for innovation (62% of the respondents) followed by high cost of innovation in Russia (33%), as well as low availability of financing from external sources (also 33%). The other obstacles include the problems to forecast the demand for innovative products on the consumer market (23%), as well as a lack of qualified personnel (19%), and the scarcity of accessible information about available technologies and new technological developments (12%). When compared to the innovation surveys conducted among the EU firms, the ranking of innovation barriers amongst the Russia enterprises reveal much similarity. The companies in the EU report a lack of available funds and difficulties with getting external financing among three most important obstacles. However, it is important to bear in mind that too large cost of innovation activity ranks the second largest obstacle for the Russian firms (33% of the companies studied), whereas too large cost of innovation ranks only 5-6th in the EU. Thus, this stresses the fact that innovation in Russia is considered relatively costly.

Figure 6

Obstacles to innovation



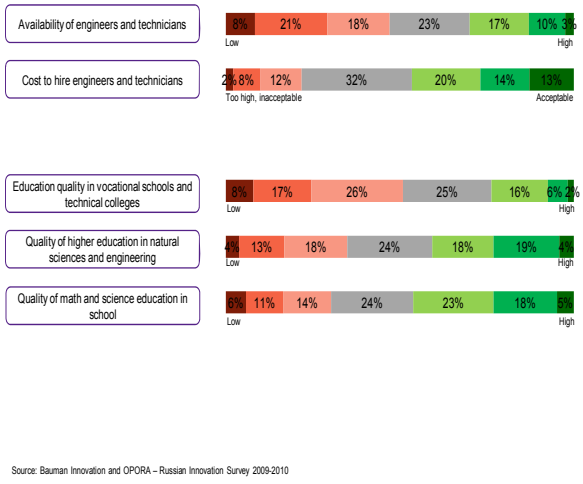
Source: Bauman Innovation and OPORA – Russian Innovation Survey 2009-2010; Community Innovation Survey 2004-2006, Central Statistics Office

When a lack of qualified human resources was analysed, about a half (47%) of companies mention that it is not easy to find and hire a qualified engineer or technician (Figure 7). And for the majority of the companies, this is a question of availability, not a question of cost. Only 22% of the executives stated that the level of salaries and remuneration expectations of engineers is too high and inacceptable.

Another problem is the quality of education. The Russian CEOs see many gaps in the knowledge of university graduates and major problems in vocational education and general secondary schools. 35% regarded education quality of today's university graduates as low, versus 41% of those who is inclined to say that it is high. 51% evaluate vocational schools and college graduates as low and inadequate to their companies' needs, whereas positive evaluations come from only 23% of respondents. The education of the mathematics and sciences at the Russian schools was evaluated as relatively poor by 31% of companies, whereas 46% of the companies rated it as relatively good.

Figure 7

Barriers to innovation: human resources and education

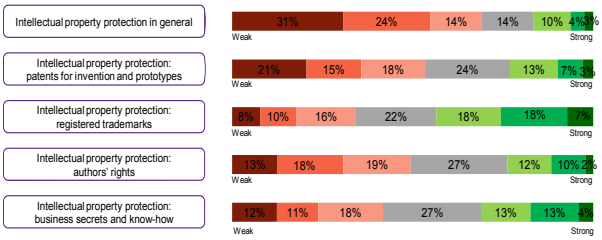


Source: Bauman Innovation and OPORA – Russian Innovation Survey 2009-2010

When asked about intellectual property protection, the business executives were to acknowledge that the state of affairs is far from an ideal situation (Figure 8). More than two thirds state that intellectual property is either not protected at all (31%) or weakly protected (38%). The most problematic issues are copyright and patent protection. The survey data shows that intellectual property is not protected adequately in Russia.

Figure 8

Intellectual property protection



Source: Bauman Innovation and OPORA – Russian Innovation Survey 2009-2010

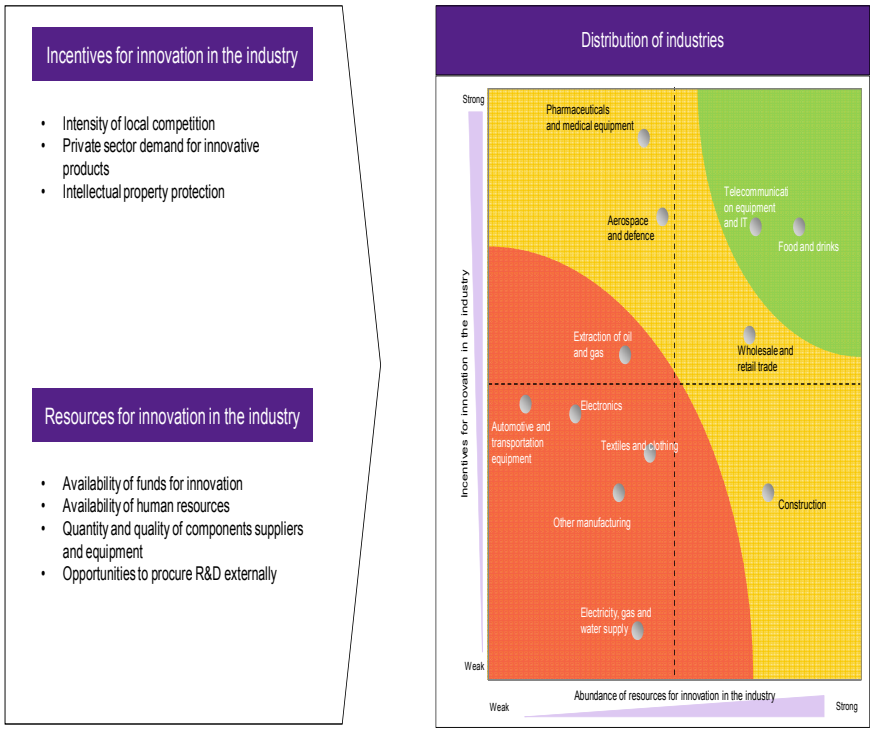
Some survey-based policy recommendations

A. The government should take into account industry-specific characters, when designing its innovation policy

The survey results provide a picture of importance of incentives for innovation and abundance of resources for innovation activity. The industry matrix represents a picture of external innovation drivers, averaged for driver types and for each industry group. Both incentives and resources variable represent simple averages of several factors and items shown in Figure 9.

Figure 9

Incentives and resources for innovation in Russian industries



Source: Bauman Innovation and OPORA – Russian Innovation Survey 2009-2010

The matrix shows that such industries as pharmaceuticals and medical equipment, as well as aerospace and defence and oil and gas can boast of relatively high incentives for innovation. Still, the availability of resources in these industries is estimated to be less than the average. Such industries as construction and trade

demonstrate the highest level of resource availability for innovation. Nevertheless, there are relatively weak incentives to innovate in these industries. Only two industries, manufacturing of food and beverages and telecommunication equipment (with the IT sector), have both adequate resources and sufficient incentives for innovation.

Numerous other industries, including automotive, electronics, textiles and clothing, as well as infrastructure-related industries, neither possess adequate resources nor sufficient incentives to innovate. Our research reveals an interesting fact that the oil and gas is very close to this lagging group, since the level of incentives is just slightly above the average. One explanation might be that the demand for innovative products in this raw material-based sector is almost non-existent. Another explanation may be that high prices of oil and the high crude oil export tax make it extremely profitable for the Russian oil companies to possess refineries and do some processing, but the potential return on investment in technological renovation and upgrade of refineries is very low compared to other potential investments.

It is evident that applying the same policy for every industry is not a suitable approach. For the telecommunication equipment sector and the food and beverage industry capability gaps is the main weakness to address, whereas in the electronics and the automotive industries more resources should be provided to stimulate innovation activity. Yet pumping-in resources in the aforementioned industries and other industries which belong to lagging group, it will have no effect on innovation until incentives to innovate in these industries are seriously improved.

B. Establish associations and specialised technology trade agents between Russia and her key technology partners

How can the leading Russian innovators help themselves in the absence of high-quality R&D in Russia? The answer is the internationalisation.

As far as we are concerned, the companies search for partners throughout the globe, and the Russian firms are no exception. We asked the respondents a number of questions regarding their technological cooperation with partners in other countries, and the findings (Figure 10) allow us drawing several policy-relevant conclusions.

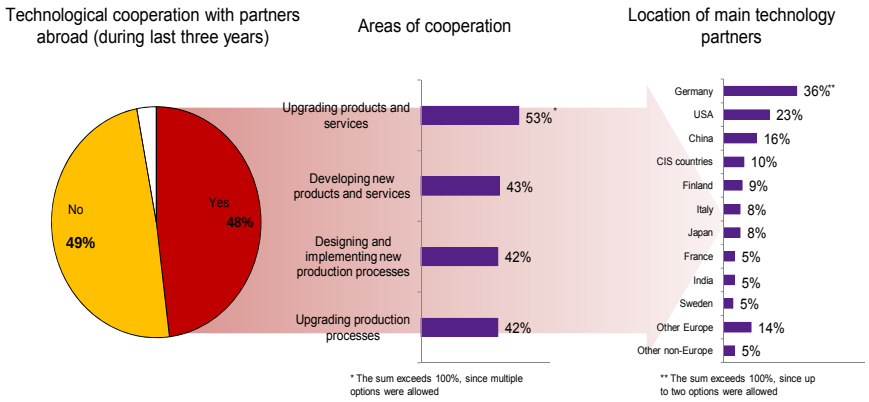
Approximately a half of Russian middle-sized and large corporations cooperate with foreign partners in technology and innovation. The findings indicate that the most frequent reason for cooperation is upgrading of existing products. Among those companies that cooperate with some foreign partners, over half (53%) mention product innovation among the purposes of cooperation.

The Russian firms often establish partnerships with companies in Western and Central Europe. The overwhelming majority of the surveyed executives pointed out to a European country as the location of their major technology partner, whereas the USA is only 23%, while Japan is about 8%. A more detailed analysis

reveals a dominating role of Germany as a technology partner for Russia (36%), which seems to confirm traditional views on the intensive Russia-Germany cooperation. The collaboration with Germany seems to be of more importance compared to technological partnership with all other European countries taken together, including France, the UK, Italy, Spain, the Nordic countries and the Central East European countries, except the CIS.

Figure 10

Cooperation with foreign companies in area of technology and innovation



Source: Bauman Innovation and OPORA – Russian Innovation Survey 2009-2010

Finland holds the second place among the European countries as a technological partner for Russia. Finland is twice more often mentioned as the major technology partner for a Russian company than Sweden.

It is interesting to note that the technology cooperation between Russia and the rest of the CIS countries is less frequent than with China. And although our empirical results do not contain information about the direction of the technology transfer, most partnerships with China are certainly bi-directional i.e. the technology transfer occurs to both directions.

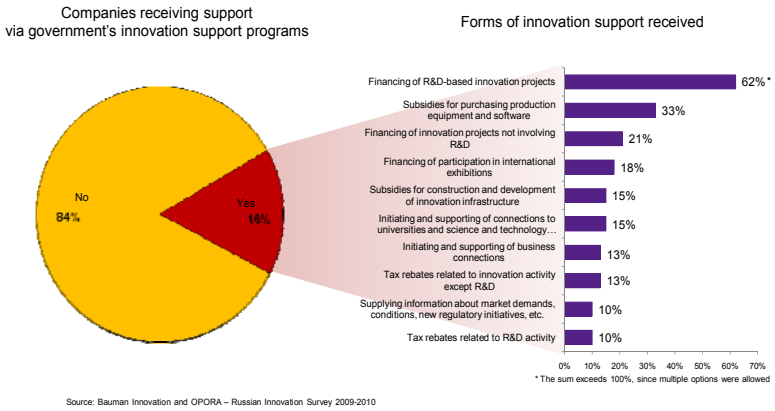
More efforts can be applied to streamline the international partnerships. One way is establishing associations and specialised technology trade agents in the most important countries. For example, special technological exchange offices may be set up in Düsseldorf and Munich, Boston and San Francisco, Shanghai and Beijing, Helsinki and Tampere / Turku.

C. The surveyed firms regard the R&D funding as well as policy steps to increase effectiveness of the R&D-related institutions as the highest priority measures in the Russian government's innovation policy

The Russian government is not staying aside, although much more can be done to improve innovation activity in companies. 16% of companies studied indicated to have participated in some government-led innovation support programs at least once (Figure 11).

Figure 11

Companies' participation in government's programs to support innovation



Source: Bauman Innovation and OPORA – Russian Innovation Survey 2009-2010

The most widespread type of support is providing funds for R&D-based innovation projects. 62% of those companies, which obtained support for innovation, report to have used these funds. Financing and subsidising various projects and activities, including innovation projects, purchasing of production equipment and software, construction and development of innovation infrastructure and participation in international exhibitions, are the most common forms of support, and this is in a direct correspondence to the major innovation obstacles outlined by the executives.

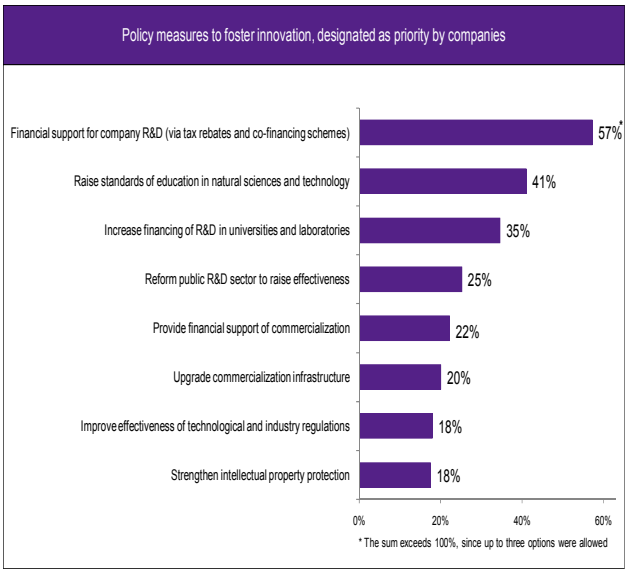
Other forms of support such as tax rebates or supporting connections either with universities and research institutions or with businesses are less common. Only 10-15% of executives, who obtained any government support for innovation, reported to have used such forms.

The companies' own potential to improve innovation is limited. Therefore, the Russian government policy measures should be proactive and focused. However, these characters do not describe current policy in Russia. In general, the enterprises consider government science, innovation and technology policies to be ineffective. 65% of surveyed executives do not see positive results of the government intervention at all. Just 11% consider that there are positive results.

Given that the government can take multiple roles and implement a multitude of approaches, and therefore, we asked what should be the direction of the governmental intervention (Figure 12).

Figure 12

Policy priorities to foster innovation



Source: Bauman Innovation and OPORA – Russian Innovation Survey 2009-2010

According to the firms studied, tax rebates for R&D as well as co-financing and other measures of direct and indirect funding of R&D in companies are the priority instrument. This potential policy direction is supported by 57% of the executives. This is of course not surprising if we take into account that these types of funding are direct benefits for the businesses.

Among measures which do not directly presume giving money to companies, 41% consider enhancing the level and scale of education in natural sciences and engineering (at all stages of education) as something that can effectively improve innovation activity. Giving away more R&D funds for research institutes and universities is the third most popular measure with 35% of the company executives considering it as a priority. In addition, companies propose to the government to support the commercialisation via grant systems, to reform the existing system of the government research institutes to increase the R&D effectiveness, and also to pay more attention to developing intellectual property rights, industry regulation, technological standards, and the commercialisation system.

Therefore, the Russian enterprises consider R&D funding, both in private and public sectors, as well as policy steps to increase R&D effectiveness, as those measures of innovation policy which should be of the highest priority for the Russian government.

Epilogue

"… there is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things. For the reformer has enemies in all those who profit by the old order, and only lukewarm defenders in all those who would profit by the new order … arising partly from fear of adversaries … and partly from the incredulity of mankind, who do not truly believe in anything new until they have actually experience of it."

Nicolo Machiavelli
Philosopher
The Prince (1532)
Modern Library College Editions, Random House (1950), p. 21

"*You'll miss 100 per cent of the shots you never take.*"

Wayne Gretzky
NHL ice hockey player (1979-1999)
Canada

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