Innovation by Large Companies in Russia

Mechanisms, barriers, perspectives
The survey was completed by the New Economic School, PricewaterhouseCoopers Russia and the PwC Center for Technology and Innovation in cooperation with the Russian Venture Company and Russian Corporation of Nanotechnologies, and was specifically timed to arrive before the commencement of St Petersburg's 2010 International Economic Forum.
## Content

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive summary</td>
<td>4</td>
</tr>
<tr>
<td>Introduction</td>
<td>6</td>
</tr>
<tr>
<td>Data description</td>
<td>8</td>
</tr>
<tr>
<td>Level of innovation activity</td>
<td>10</td>
</tr>
<tr>
<td>Innovation factors</td>
<td>14</td>
</tr>
<tr>
<td>Innovations mechanisms</td>
<td>18</td>
</tr>
<tr>
<td>Barriers to innovation</td>
<td>20</td>
</tr>
<tr>
<td>Barriers facing companies</td>
<td>20</td>
</tr>
<tr>
<td>Barriers facing the Russian economy in general</td>
<td>22</td>
</tr>
<tr>
<td>Fostering innovation: proposed policy measures</td>
<td>23</td>
</tr>
<tr>
<td>Prospects for innovation in Russia</td>
<td>25</td>
</tr>
<tr>
<td>Annexes</td>
<td>26</td>
</tr>
<tr>
<td>The questionnaire</td>
<td>30</td>
</tr>
</tbody>
</table>
In May 2010, PricewaterhouseCoopers, the New Economic School, the Russian Venture Company, and the Russian Corporation of Nanotechnologies conducted a survey of 100 large companies operating in Russia in order to assess the level of innovation among large corporations. The survey was also designed to explore the key factors which determine the level of innovation and the key barriers to innovation (both for the companies themselves and for the economy in general). Finally, the survey seeks to identify government policies which would, in the opinion of large business, be most effective in fostering innovation in Russia.

The study uses a broad definition of “innovation” based on methodology adopted by the Organization for Economic Co-operation and Development. According to this definition, “innovation” includes both implementation of products and services, production methods and business process that are essentially new to the global market or represent significant improvements (innovation in the narrow sense), and replication and adaptation of existing innovation products, technologies and processes (which could be broadly referred to as “modernization”).

The survey results show that companies who innovate most actively are the largest ones, especially foreign and those Russian companies that are present on global markets. More than one-third of respondents (39%) reported that their companies launched new products in 2008-2010. However, the shares of respondents who said that they implemented new technologies and business processes were twice as high (73% and 66% of respondents, respectively).

Products, technologies, and processes that are new to global markets account for a significant share of innovation activity: the shares of respondents implementing products, technologies, and processes, which are new to global markets, were 14%, 17% and 18% (of all respondents), respectively. However, twice more respondents admit that their innovative products, technologies and business processes were new only to their companies (26%, 27% and 35%, respectively) and not to the global or even Russian markets. Thus, adaptation of existing innovative products, technologies and processes represents a substantial segment of corporate innovations in Russia. According to recent economic studies, imitation and adaptation can be the main source of rapid efficiency improvements for countries that are below the technological frontier.

Companies implementing technologies or introducing products that are new to the global, post-Soviet, Russian, and regional markets, are 18%, 31%, 49% and 53% of all innovators, respectively. Innovation activity of companies in Russia on the domestic market is comparable with respective indicators on national markets world-wide. But companies in Russia are at least three times less active than their peers in developed countries in terms of global innovation. Levels of innovation depend to a large extent on characteristics of companies. The survey found that large private companies operating beyond their domestic markets are most likely to be active innovators. In 2008-2010, the probability of launching a new product was four times higher for private companies than

1 Half of our sample are companies with annual turnover in excess of USD 1 billion, the other half are companies with annual turnover from USD 100 million to USD 1 billion.
for companies in state ownership (companies in partial or full state ownership, which took part in the survey, did not report a single instance of introducing products that are new to global markets in the relevant period).

The effects of private ownership are mostly confirmed by econometric analysis, controlling for differences in industry, company size, and the presence of international capital (though the scale of the effect is significantly smaller).

The survey results also show that international companies operating in Russia are more active innovators than Russian companies, and that Russian companies which have entered global markets are more active innovators than Russian companies, which operate only on the domestic market.

It is also notable that the largest companies are much more likely to introduce new technologies and new business processes. Other things being equal, companies with annual sales of over USD 1 billion are 30% more likely to introduce new technologies than companies with sales of USD 100-500 million. The largest companies (with sales of over USD 1 billion) were, ceteris paribus, 46% more likely to introduce new business processes than companies with sales of USD 100-500 million.

The greater intensity of innovation among the largest companies can be explained by the fact that companies are developing innovations internally, without using external intellectual or financial resources. New products and technologies are commonly developed within the companies that ultimately implement them (almost 80% of the companies surveyed reported that they develop their innovations internally). Only a small share of companies (less than 20%) employed external Russian contractors for development purposes, and just a handful of companies employed foreign contractors. The most common way for companies to finance development of new products is to use their own capital (87% of the respondents). Nearly one fifth (18%) of respondents used funding provided by Russian Venture Company and RUSNANO, and a mere 10% of the companies used foreign investments.

The biggest barriers to innovation activity, according to companies, are difficulties in financing development of new products and bureaucratic obstacles. Respondents said that the most useful actions by government to stimulate innovation would be improvement of higher education, increased state financing of R&D, tax incentives for innovation, and improvements to legislation.

Most company respondents believe that the innovative component of the Russian economy will expand significantly by 2020. Companies that have already implemented globally innovative technologies are much more optimistic in this respect.

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4 i.e. according to results of the regression analysis
The need for innovative development in Russia is particularly relevant in light of key challenges facing the national economy today. Shrinkage of manpower (due to population contraction), low labour productivity, low energy efficiency, and the economy’s dependence on natural resources mean that stimulation of innovation (in a broad sense) is a key task for Russia’s economy and society.

This research attempts to assess the level of innovation activity by large companies inside Russia. Using a unique survey of executives representing 100 large corporations (annual turnover in excess of USD 100 million each), we try to assess the extent of innovative product development and implementation of innovative production technologies and business processes, as well as levels of optimism among companies about their ability to achieve global or domestic leadership. The survey also seeks to explore the mechanisms of innovation in Russian corporations: what are the main drivers of innovation within companies; how is innovation financed; who develops new products and technologies; and how important are innovative products, technologies and processes for company business? Finally, the survey looks at how companies themselves assess their own level of innovation and the level of innovation in their industries, the barriers which (in the companies’ view) hinder innovation in Russia, and measures that government could take to stimulate innovation activity.

The survey is based on a broad definition of innovation that is not limited to “inventions.” This is in line with the broad definition of “innovation” used by the OECD (Organisation for Economic Co-operation and Development). First, innovations can refer to implementation of new or significantly improved products or services, new production technologies or new business processes. Secondly, innovations can be of a global nature when a company is a global pioneer in a certain field. However, products, technologies and processes can also be innovative within a specific market (this survey focuses on the Russian and CIS market), and within a specific company. Innovation also includes a broad range of activities focused not only on inventing and implementing something new, but also replicating and adapting something that already exists. Innovation does not necessarily result in direct global leadership, but it is vital for continuous improvement of company performance and for retaining competitive advantages.

As shown by data gathered in OECD countries, the majority of multinational firms implement all of the types of innovation listed above. This is also true for Russia, and results of our survey show that among companies in Russia, innovations at the level of regional markets or even individual companies (companies oriented to replication and adaptation) account for a large part of innovative activity. This is not surprising: as suggested by recent economic studies, replication and adaptation can be the main source of rapid efficiency gains in countries with relatively low levels of productivity.

One of the distinctive features of this survey is its focus on large companies. The importance for the innovation economy of small- and medium-sized companies and start-ups is evident, but it is just as important to understand to what extent large companies, which make up the lion’s share of the Russian economy, implement new products, technologies and business processes. The role of large companies in driving
innovation is especially significant in Russia, in view
of inadequate levels of innovation activity by national
small business. Also, as we will see, innovation activity
by Russian companies depends mainly on internal
intellectual and financial resources of the companies
themselves, and this further enhances the role of large
business. The lack of mature markets for financial
capital, human capital and products, coupled with the
role played by political connections, put large business
at a major advantage in matters of innovation (including
replication and adaption). Russia is not unique in this
respect: according to research into economic growth
stages, large companies are usually the driving force
behind productivity growth in emerging markets (mainly
through imitating and adapting advanced technologies).
By contrast, small businesses are the engine
of innovation in countries, which have already achieved
high levels of productivity.

Another feature that makes our study special is that
we asked companies about their innovation activities
in 2008-2010. Most of this period coincides with the
global financial crisis, which pushed some of these firms
to the edge of bankruptcy. Interestingly, the survey found
that innovation activity continued despite the crisis.
Whether such activity was more intense compared
with less turbulent times is a topic for further research.

Businesses tend to cut their R&D budgets during
recessions. OECD studies suggest that the latest
economic crisis is no exception to this rule. However,
a large number of foreign companies have continued
to invest in innovation, and latest data indicate
a growing number of companies that plan to increase
such investments. Most companies surveyed by BCG
said that they intend to increase investments
in innovation, and the share of companies that plan
to cut R&D costs this year nearly halved against last
year (8% versus 14% in 2009).

Our main conclusions are quite consistent with trends
captured in official statistical data (see, for example,
the Indicators of Innovative Activities). However,
the advantages of our survey are that it is focused
on large businesses, whose performance, in many
instances, is not sufficiently covered by official statistical
reports, and that our findings reflect the current, rather
than the past situation.

This report is based on responses provided by representatives of 100 large companies operating in Russia to the questions of a specially designed questionnaire (Attachment 6). The questionnaire was mailed to top managers at firms with an annual turnover of at least USD 100 million (as of 2009). Each company is represented by a single respondent. The survey took place in May 2010.

Our sample is to a large extent biased towards large companies: 49 of the respondents represented companies with revenues of more than USD 1 billion and another 17 were from companies with revenues between USD 500 million and 1 billion. The majority of companies (67) which took part in the survey are 100% privately owned, whereas the number of those fully controlled by the government is 16. The government stake in another 8 companies exceeds 50%, and the government holding in 5 of the companies is between 25% and 50%. The sample covers all key industries of the Russian economy.

Figure 1. Sample structure by industry and size of companies
The sample is not large enough and it is not representative with respect to company size and industry. If we compare our sample of a hundred companies with the population of all 3269 Russian companies generating at least USD 100 million annual revenue, we find that our sample includes a greater share of large companies and companies specialized in mining, metals, energy and financial services sectors than the population.

The share of machine-building companies in our sample is also greater than their share in the overall group of companies of the relevant size.

We used a regression analysis in order to take account of effects of the sample bias with respect to size, industry and (possibly) ownership structure, as well as other characteristics.

Table 1. Breakdown of the sample and of the respective population by industrial sectors

<table>
<thead>
<tr>
<th>Industrial Sector</th>
<th>General population</th>
<th>Sampling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining and processing of natural resources</td>
<td>0.07</td>
<td>0.12</td>
</tr>
<tr>
<td>Metals</td>
<td>0.04</td>
<td>0.08</td>
</tr>
<tr>
<td>Finance and banking</td>
<td>0.07</td>
<td>0.11</td>
</tr>
<tr>
<td>Retail</td>
<td>0.43</td>
<td>0.13</td>
</tr>
<tr>
<td>Consumer and food products</td>
<td>0.10</td>
<td>0.15</td>
</tr>
<tr>
<td>Engineering industry</td>
<td>0.07</td>
<td>0.12</td>
</tr>
<tr>
<td>Construction and building materials</td>
<td>0.09</td>
<td>0.07</td>
</tr>
<tr>
<td>Transport and communications</td>
<td>0.07</td>
<td>0.09</td>
</tr>
<tr>
<td>Energy</td>
<td>0.05</td>
<td>0.13</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2840</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

13 49% of companies in our sample have annual revenue in excess of USD 1 billion, whereas the overall corporate pool – the population – includes only 10% of such companies. Only 34% of our respondents have revenues less than USD 500 million per year, whereas the population includes 80% of such companies.
Many of the survey participants carry out innovation activity: 39% of respondents reported that their companies had launched completely new products between 2008 and 2010, and twice more respondents said that their companies introduced innovative technologies and business processes (73% and 66% of respondents, respectively).

Figure 2. Has your company started producing or implementing innovative products/technologies/business processes in 2008-2010?

R&D spending at more than half of the companies in 2009 ranged between 3% and 10% of annual turnover, while another 30% of the companies spent less than 3%. Most of the companies plan to raise R&D investment in 2010. Only ten percent of respondents intend to spend less than 3% of their annual turnover, while almost seventy percent plan to spend from 3% to 10%. These indicators are generally consistent with international data. According to the latest OECD figures, companies on average invest 1-2% of turnover in innovation, but the figure is higher for large companies at around 5%.
In response to the question on key types of innovation activities on which the company spent money over the past two years, 64% of respondents indicated "R&D", 52% named “procurement of machinery and equipment”, and 40% named “staff training and development”.

However, innovative products, even when they are successfully introduced, usually play a limited role in generating profits. Only one respondent said that they account for more than 50% of his company’s revenues, whereas half of the companies, which introduced innovative products, said that they bring less than 10% of revenues, and one third said that they bring 10-25%.

The same is true for innovative technologies: only one respondent indicated that such technologies accounted for more than half of all technologies deployed by his company, and half of the companies that implement innovative technologies said that they account for less than 10% of operations.

One-third of the respondents state that their companies “are ahead or far ahead” of their immediate competitors in Russia in terms of innovation activity (another 50% feel that they are on a par with competitors). The largest companies, those that are privately owned, and international companies believe that they are more innovative.
Furthermore, some respondents claimed that between 2008 and 2010, they had implemented not merely new, but *globally innovative* products, technologies and business processes. One-third of companies that implemented innovative products (or approximately 14% of the total number of survey participants) believe that one or several of their products were innovative on a global scale, i.e. they were the first in the world to launch these products.
This is in line with answers to another survey question: 10% of respondents claim that they are ahead or far ahead of global industry leaders in terms of innovation, and 23% of the respondents that implemented new technologies (approximately 17% of the total number of companies) consider these technologies to be innovative on a global scale. Some 27% of respondents that implemented new business processes (approximately 18% of all respondents) claim to be global leaders.

At the same time, a considerable share of respondents admit that their products, technologies and business processes were only new to their companies (26%, 27% and 35%, respectively, of all the companies that implemented such innovations).

Our data do not enable us to judge whether the purported global leadership in products, technologies and processes, claimed by the companies, is justified. It is however clear that the need for innovative activities and the desired focus on breakthroughs at global level are now recognized by the management of Russian companies, at least in their rhetoric.

Respondents were asked about their innovation activity with respect to different markets: the global market, CIS countries, Russia, and regional markets within Russia. Respondents were also asked whether their innovation activity (i.e. introduction of new products, new technologies or new business processes) can be treated as innovative only within their company.

The shares of companies that responded positively to these five modifications of the innovation question were, respectively, 18%, 31%, 49%, 53% and 80% of all respondents. It is worth comparing these answers with survey findings from other countries. A few years ago, mid-sized and large companies, which said that they had implemented innovative products and technologies were more than 70% of all those surveyed in Sweden, Denmark, France and Germany, and the share of such companies in Norway, Netherlands and Switzerland ranged from 50-70%.

We assume that these figures for OECD countries can be referred to both national and global markets. So innovation activity of Russian companies on the domestic market is comparable with levels elsewhere in the world, but Russian businesses perform approximately three times worse than companies in developed countries in terms of globally innovative technologies and products.

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14 See: Innovations in Firms. Microeconomic Perspective. OECD, 2009. Data on companies employing more than 250 people; country surveys were conducted in 2002-2004.
15 It should be noted that our sampling has a strong focus on the largest companies; consequently, these results are most probably conservative.
Innovation factors

The survey’s findings reveal that a company’s appetite for innovation activity is driven strongly by its profile. Companies in Russia that launched innovative products between 2008 and 2010 included four times as many private companies as state-owned or partly state-owned enterprises. This effect can be partly explained by differences in the size of government-owned and private companies as well as the industry they represent in our sampling. But econometric analysis, which takes these factors into account, still shows that private companies are at least one-and-a-half times more likely to implement innovative products than state-owned and partly state-owned companies. Other things being equal, the probability of implementing a new technology is 1.7 times less for firms which are 100% state-owned than for partly state-controlled companies.

Table 2. New products, technologies and business-processes by type of ownership, % of respondents.

<table>
<thead>
<tr>
<th>Ownership Type</th>
<th>Products</th>
<th>Technologies</th>
<th>Business Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% privately-owned</td>
<td>52.2</td>
<td>73.1</td>
<td>64.2</td>
</tr>
<tr>
<td>State has up to 25% interest</td>
<td>–</td>
<td>75.0</td>
<td>50.0</td>
</tr>
<tr>
<td>State has 25%-50% interest</td>
<td>20.0</td>
<td>80.0</td>
<td>80.0</td>
</tr>
<tr>
<td>State has over 50% interest</td>
<td>12.5</td>
<td>100.0</td>
<td>75.0</td>
</tr>
<tr>
<td>100% state-owned</td>
<td>12.5</td>
<td>56.3</td>
<td>68.8</td>
</tr>
<tr>
<td>Total number of firms</td>
<td>39 (100%)</td>
<td>73 (100%)</td>
<td>66 (100%)</td>
</tr>
</tbody>
</table>

Table 3. Products, technologies and business-processes that are globally innovative, by type of ownership, % of respondents.

<table>
<thead>
<tr>
<th>Ownership Type</th>
<th>Products</th>
<th>Technologies</th>
<th>Business Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>100% privately-owned</td>
<td>20.9</td>
<td>19.4</td>
<td>23.9</td>
</tr>
<tr>
<td>State has up to 25% interest</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>State has 25%-50% interest</td>
<td>0.0</td>
<td>20.0</td>
<td>0.0</td>
</tr>
<tr>
<td>State has over 50% interest</td>
<td>0.0</td>
<td>25.0</td>
<td>12.5</td>
</tr>
<tr>
<td>100% state-owned</td>
<td>0.0</td>
<td>6.3</td>
<td>6.3</td>
</tr>
<tr>
<td>Total number of firms</td>
<td>14 (100%)</td>
<td>17 (100%)</td>
<td>18 (100%)</td>
</tr>
</tbody>
</table>
State-owned and partly state-owned companies, which participated in the survey, did not implement innovative products that are new to global markets in 2008-2010.

The data suggest that the international companies operating in Russia pursue much more intense innovation activity than local firms. There were twice as many international companies operating in Russia among all companies that implemented new products as there were among local companies, and there were approximately 1.5 times as many international companies as there were local among the companies that implemented new technologies and business processes. Russian companies operating on global markets implement new technologies and business processes as often as international companies. However, they lag significantly behind their international peers in terms of innovative products. This is largely due to the fact that most Russian companies, which have entered global markets, represent the mining industry and the energy sector.

Figure 7  **Innovative products, technologies and business products by type of company**

- **International company, with part of its business being in Russia**
  - Innovative products: 77%
  - Innovative technologies: 92%
  - Innovative business processes: 77%

- **Russian company, with part of its business being on foreign markets**
  - Innovative products: 31%
  - Innovative technologies: 85%
  - Innovative business processes: 79%

- **Russian company operating only in Russia**
  - Innovative products: 35%
  - Innovative technologies: 58%
  - Innovative business processes: 52%
The share of companies that have launched globally innovative products is 15 times higher among international companies operating in Russia than among local companies. The shares of companies that implemented globally innovative technologies and globally innovative business processes are, respectively, 8.5 and 6.5 times higher for international companies than for Russian. For Russian companies that have already entered global markets, these indicators are 2-3 times higher than for Russian companies that are limited to the domestic market. These distinctions remain valid under an econometric analysis, which takes account of impact of specific industries, company size and involvement of international capital (although absolute values of the differences are smaller).

A salient fact when examining industrial breakdown of innovation activities is that machine-building/engineering companies are twice as likely to launch new products as mining companies, retailers and financial institutions, i.e. the sectors which have driven economic growth in Russia over the last decade. However, probability of implementing new business processes in resource industries is 42% higher than in the machine-building/engineering sector.
It is also notable that the largest companies are much more likely to introduce new technologies and new business processes. Other things being equal, companies with annual sales of over USD 1 billion are more likely to introduce new technologies than companies with sales of USD 100-500 million. Probability that the largest companies (with sales of over USD 1 billion) would introduce new business processes is, ceteris paribus, 46% higher compared with companies that have sales of USD 100-500 million.

What are the characteristics of foreign innovative companies? According to the latest OECD survey,16 based on data from different countries, innovative companies have similar features across borders. In all countries, large companies and companies with access to global markets are more likely to pursue innovation. In most countries (except Canada and Norway), probability of innovation is higher for companies that are part of a group.

Figure 9. Innovative products, technologies and business products by company size

16 Innovations in Firms. Microeconomic Perspective. OECD, 2009
Innovation mechanisms

Survey data show that, as a rule, innovation is initiated by company owners, top managers or specialised units/dedicated employees. Top management more frequently initiates innovative products (50% of instances) rather than new technologies. The role of external investors, external advisors, staff of production units, and external R&D organisations is negligible. This is not dissimilar to the situation in foreign companies: in nearly 50% of companies surveyed by BCG, the driving force for innovation was a company CEO or its president.17

The main incentive for implementing innovative products is to outpace competitors, while implementation of new technologies is driven mainly by the need to cut costs. It is worth noting that 35% of the companies surveyed have a top manager responsible for innovations, whereas only 17% of respondents reported that they have special processes for gathering innovative ideas within their companies, and only 7% said that they have an incentive system to encourage staff to engage in innovation activities. The survey found that 55% of respondents have specialized R&D units. There is a correlation between the existence of these mechanisms and probability of implementing innovative products, technologies and business processes. The differences are statistically significant and quite substantial. For example, the existence of a senior manager responsible for innovation increases the probability of innovative products and technologies by 15%, and the existence of a staff incentive system increases the probability of innovative technologies by 29%.

Interestingly, these mechanisms work equally well both for global innovations and for local innovations. However, the existence of a senior manager responsible for innovation increases the probability of globally innovative business processes, and existence of special processes for gathering innovative ideas within a company mainly stimulates local innovation.

Figure 10. What elements of a system for generating innovation are in place at your company? (Multiple answers are possible)

The survey findings justify the important observation that new products and technologies are most commonly developed within the companies that apply them: almost 80% of respondents said that this was the case in their company. A minor share of companies (not more than 20%) engaged external Russian contractors for innovation development, and a handful of companies used foreign contractors. Our respondents said that they hardly ever use such instruments of innovation as acquisition of licences for existing products and technologies, or acquisition of companies that own such intellectual property.

Sample companies usually finance innovation from their own funds (87% of respondents). Only 18% of respondents used funds provided by Russian Venture Company and ROSNANO and a mere 10% used foreign investments. So companies develop innovation by themselves without recourse to external intellectual and financial resources.18 This observation is well correlated with the fact (discussed above) that, in Russia, more intense innovation is the preserve of the largest corporations. Companies with annual sales of USD 1 billion implement innovative products and technologies more often largely because they can afford to develop and finance innovation on their own.

The conclusion to be drawn, therefore, is not that large Russian companies are more innovative by nature than smaller companies, but that smaller companies simply do not have the necessary resources for innovation.

It should be noted that such a gap is also present in developed economies, despite government support for innovation by small and medium-sized business. Surveying of companies in the OECD19 show that innovation activity in companies with more than 250 employees is 1.5-2 times greater than the average for all companies. For example, in France, innovative companies account for about 40% of all firms, whereas the share of such companies among all large businesses is about 70%. The share of innovative companies among all small businesses is negligible in the surveyed OECD countries.

Figure 11. What sources of financing did your company use to develop innovative products? (Multiple answers are possible)

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18 Prevalence of internal financing may also be associated with the period when the survey was carried out: during the crisis (autumn 2008 until the end of 2009), Russian companies had no access to external funding.

19 Innovations in Firms. Microeconomic Perspective. OECD, 2009
Barriers to innovation

Barriers facing companies

Respondents were asked to rate the significance of various barriers that hinder innovation both within their own companies and in the country in general, using a 5-point scale. The list of possible barriers facing their own companies included:

- Lack of “innovation culture” in the company
- Insufficient demand for innovative products
- Shortage of innovation-minded employees
- Excessive bureaucracy (difficulties in certifying new products, etc.)
- Customs-related issues (high customs tariffs on imported components and technologies, complicated procedure of customs clearance)
- Inadequate protection of intellectual property
- Shortage of management personnel capable of implementing innovation projects
- Competitive pressure on the company
- Difficulties raising finance to develop new products and implement new technologies
- Under-development of procedures for assessing investment risks and expected returns
- Issues of commercialisation (technology-to-product transition)

Figure 12. What prevents your company from being more innovative? (Share of respondents awarding a rating of 4 or 5 points)
A score of 5 points was most frequently given to two barriers: “difficulties in raising finance for innovation projects” and “excessive bureaucracy”. These two barriers remain among the most frequently cited if we consider all of the barriers, which merited a score of 5 or of 4 points. However, in this case such factors as “under-development of procedures for assessing investment risks and expected returns”, “insufficient protection of intellectual property” and “customs-related issues” match the first two barriers in significance. Consideration of average scores assigned by all respondents to each of the listed barriers gives the same result.

Econometric analysis identifies statistically significant variations in the answers given by companies of different types. Difficulties in raising finance were rated as more significant by companies with experience of implementing globally innovative products, while bureaucracy is of equal concern for all the companies, irrespective of their industry, presence of the government among shareholders, and previous experience of innovation.

Lack of innovation culture is of more concern to companies that have already implemented innovative business processes in the past. Companies in this category are also more concerned by shortage of management personnel. However, companies which have recently implemented innovative technologies seem to have solved this problem: this barrier is of less significance to them than to other respondents.

Companies in other countries are also concerned by lack of innovation culture. According to the international BCG survey,20 38% of surveyed companies worldwide believed that they were making insufficient effort to promote a culture of innovation. In a vast majority of industries, companies mentioned risk-averse corporate culture as a major factor that impedes growth of returns from innovation.21

Returning to companies in Russia, it is also worth considering differences in the ranking they assigned to innovation barriers associated with lack of suitable personnel. Local companies operating only on the domestic market are less concerned by shortage of innovation-minded employees and of managers capable of implementing innovation projects than international companies and than Russian companies which have entered global markets. This correlates with the finding (see p. 22) that Russian companies, which operate only in the domestic market, rate the shortage of ideas and professionals capable of developing them as the least significant barrier to innovation at the national level. This seems to reflect a widespread belief that “there are plenty of good brains in Russia”, and that obstacles to innovation are to be sought elsewhere.

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**Barriers facing the Russian economy in general**

The list of possible barriers to innovation facing the Russian economy in general included:

- Shortage of “brains” in the country (i.e. of ideas and professionals capable of developing them)
- Difficulties obtaining financing for start-ups and innovation projects
- Excessive bureaucracy
- Heavy dependence of the Russian economy on commodities export
- Significant presence of the state in the economy
- Living and working conditions in Russia are uncongenial for entrepreneurs and the “creative class”
- Underdeveloped legal framework, including insufficient protection of investor rights.
- Insufficient state support for innovation
- Macroeconomic instability.

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**Figure 13. What do you think hinders innovation in Russia? (Share of respondents awarding a rating of 4 or 5 points)**
Respondents rated “difficulties in obtaining financing for innovation projects”, “excessive bureaucracy” and “uncongenial living and working conditions” as the most significant factors in the list (scores of 5), followed by “under-developed legal framework” and “poor access to financing for start-ups and innovative projects”.

Excessive dependence of the Russian economy on export of commodities and heavy presence of the state in the economy are least frequently cited as principal barriers to innovation.

Looking at average scores assigned by all respondents to each of the listed barriers, the problem of bureaucracy is clearly in the lead, followed by under-developed legal framework and uncongenial living and working conditions for creative people and entrepreneurs (the last two barriers have the same average score). Econometric analysis showed that these three barriers are rated equally highly by companies, irrespective of their industry, presence of foreign capital, or previous experience of innovation.

Fostering innovation: proposed policy measures

Respondents were asked to rate policy measures that could be implemented by the government in order to foster innovation, using a 5-point scale. The list of possible measures included:

- Providing tax incentives to innovators (tax exemptions for R&D-related costs, tax holidays for innovation projects, etc.)
- Increasing state funding of R&D at universities and other research organisations
- Attracting highly-skilled foreign professionals (relaxation of visa rules, special recruiting programmes)
- Improving the quality of higher education
- Investing in innovation infrastructure (industrial parks, business incubators)
- Investing in venture funds
- Political support for Russian products on global markets
- Protecting Russian markets from foreign competitors
- Improving legislation (corporate, tax, export & import, migration, etc.)
- Joining the WTO.
The most popular measure (rated at 5 points by 58% of respondents) is “providing tax incentives,” closely followed by “improving legislation” and “attracting highly-skilled foreign professionals.”

Interestingly, if all respondents who gave ratings of 4 and 5 are counted, “attracting highly-skilled foreign professionals” drops out of most popular answers, and its place among the leaders is taken by “improving the quality of higher education” and “increasing state funding of R&D at universities and research institutes.” The least-mentioned measures are “investing in venture funds,” “political support for Russian products on global markets” and “protecting Russian markets from foreign competitors.”

Looking at average scores assigned by all respondents to each of the listed barriers, “providing tax incentives” is again ranked first, “improving legislation” is ranked second, and “improving the quality of higher education” is ranked third. Regression analysis demonstrates that the first of these measures was especially important for companies that have started implementing new business processes.

Protectionist measures – political and organisational support for Russian products in global markets and protection of Russian markets from foreign competitors – are more important to the largest companies and to those Russian companies that operate only on the domestic market. Joining the World Trade Organisation (WTO) is more important to those companies that have already introduced globally innovative products and implemented new business processes. Increasing state funding of R&D at universities and other research organisations is more important to those companies that have already had some experience of implementing innovative products. Investing in venture funds is more important to companies with annual sales of under USD 500 million.
Prospects for innovation in Russia

Many companies are critical of current levels of innovation both in their own industries and in Russia as a whole. Only 9% of the surveyed companies believe that their industries are “ahead” or “significantly ahead” of foreign peers, and just 5% of respondents think that the Russian economy is ahead of leading world economies with respect to innovation. Not a single respondent claimed that the Russian economy is “significantly ahead” of leading economies with respect to innovation. However, looking to the future, 23% of respondents see it as “very likely” that the innovation component of the Russian economy will increase significantly by 2020, and 60% of respondents think that such an increase is “likely” to happen. So only 17% of the respondents are sceptical in this respect. It is noteworthy that companies which have already implemented globally innovative technologies tend to be more optimistic when answering this question.

Figure 15. How would you assess probability of significant growth of the innovation component in the Russian economy by 2020?
ANNEX 1. New products, technologies and business processes by industry, % of the total number of respondents in the industry.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Products %</th>
<th>Technologies %</th>
<th>Business processes %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining and processing of natural resources</td>
<td>25.0</td>
<td>83.3</td>
<td>91.7</td>
</tr>
<tr>
<td>Metals</td>
<td>87.5</td>
<td>87.5</td>
<td>62.5</td>
</tr>
<tr>
<td>Finance and banking</td>
<td>36.4</td>
<td>45.5</td>
<td>45.5</td>
</tr>
<tr>
<td>Retail trade</td>
<td>30.8</td>
<td>61.5</td>
<td>76.9</td>
</tr>
<tr>
<td>Consumer goods and food products</td>
<td>60.0</td>
<td>60.0</td>
<td>46.7</td>
</tr>
<tr>
<td>Engineering/machine-building</td>
<td>58.3</td>
<td>75.0</td>
<td>41.7</td>
</tr>
<tr>
<td>Construction and building materials</td>
<td>57.1</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Transport</td>
<td>20.0</td>
<td>100.0</td>
<td>60.0</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>0.0</td>
<td>75.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Energy</td>
<td>0.0</td>
<td>76.9</td>
<td>69.2</td>
</tr>
<tr>
<td><strong>Total number of firms</strong></td>
<td><strong>39 (100%)</strong></td>
<td><strong>73 (100%)</strong></td>
<td><strong>66 (100%)</strong></td>
</tr>
</tbody>
</table>

ANNEX 2. Globally innovative products, technologies and business processes by industry, % of the total number of respondents in the industry.

<table>
<thead>
<tr>
<th>Industry</th>
<th>Products %</th>
<th>Technologies %</th>
<th>Business processes %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mining and processing of natural resources</td>
<td>0.0</td>
<td>8.3</td>
<td>16.7</td>
</tr>
<tr>
<td>Metals</td>
<td>25.0</td>
<td>25.0</td>
<td>37.5</td>
</tr>
<tr>
<td>Finance and banking</td>
<td>9.1</td>
<td>9.1</td>
<td>18.2</td>
</tr>
<tr>
<td>Retail trade</td>
<td>15.4</td>
<td>15.4</td>
<td>23.1</td>
</tr>
<tr>
<td>Consumer goods and food products</td>
<td>33.3</td>
<td>20.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Engineering/machine-building</td>
<td>25.0</td>
<td>25.0</td>
<td>8.3</td>
</tr>
<tr>
<td>Construction and building materials</td>
<td>14.3</td>
<td>42.9</td>
<td>42.9</td>
</tr>
<tr>
<td>Transport</td>
<td>0.0</td>
<td>0.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Energy</td>
<td>0.0</td>
<td>15.4</td>
<td>0.0</td>
</tr>
<tr>
<td><strong>Total number of firms</strong></td>
<td><strong>14 (100%)</strong></td>
<td><strong>17 (100%)</strong></td>
<td><strong>18 (100%)</strong></td>
</tr>
</tbody>
</table>
ANNEX 3. Barriers to innovation for surveyed companies.

(Each barrier was evaluated by companies using a 5-point scale, where 1 point signifies that a barrier is not serious and 5 points signifies that it is very serious. The table presents average points awarded for each barrier by each type of company).

<table>
<thead>
<tr>
<th>The impact each of the following barriers has on your company’s innovation activity</th>
<th>All</th>
<th>Russian company operating only in Russia</th>
<th>Russian company with part of its business operations being on foreign markets</th>
<th>International company, with part of its business operations being in Russia</th>
<th>USD 100-500 m revenue</th>
<th>USD 500m - 1bn revenue</th>
<th>Over USD 1bn revenue</th>
<th>100% privately-owned</th>
<th>State has up to 25% interest</th>
<th>100% state-owned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of &quot;innovation culture&quot; within your company</td>
<td>Average</td>
<td>3.23</td>
<td>3.02</td>
<td>3.54</td>
<td>3.08</td>
<td>3.29</td>
<td>3.00</td>
<td>3.27</td>
<td>2.97</td>
<td>3.59</td>
</tr>
<tr>
<td></td>
<td>Standard-Error</td>
<td>0.11</td>
<td>0.16</td>
<td>0.17</td>
<td>0.28</td>
<td>0.18</td>
<td>0.34</td>
<td>0.14</td>
<td>0.12</td>
<td>0.25</td>
</tr>
<tr>
<td>Insufficient demand for innovative products</td>
<td>Average</td>
<td>3.32</td>
<td>3.21</td>
<td>3.41</td>
<td>3.46</td>
<td>3.12</td>
<td>3.00</td>
<td>3.57</td>
<td>3.03</td>
<td>3.59</td>
</tr>
<tr>
<td></td>
<td>Standard-Error</td>
<td>0.12</td>
<td>0.19</td>
<td>0.19</td>
<td>0.33</td>
<td>0.23</td>
<td>0.33</td>
<td>0.15</td>
<td>0.15</td>
<td>0.22</td>
</tr>
<tr>
<td>Shortage of employees capable of being innovative</td>
<td>Average</td>
<td>3.22</td>
<td>2.94</td>
<td>3.54</td>
<td>3.31</td>
<td>3.29</td>
<td>2.82</td>
<td>3.31</td>
<td>3.03</td>
<td>3.18</td>
</tr>
<tr>
<td></td>
<td>Standard-Error</td>
<td>0.12</td>
<td>0.18</td>
<td>0.17</td>
<td>0.27</td>
<td>0.23</td>
<td>0.32</td>
<td>0.14</td>
<td>0.14</td>
<td>0.24</td>
</tr>
<tr>
<td>Excessive bureaucracy (difficulties certifying new products, etc.)</td>
<td>Average</td>
<td>3.81</td>
<td>3.88</td>
<td>3.69</td>
<td>3.92</td>
<td>3.76</td>
<td>4.18</td>
<td>3.71</td>
<td>3.73</td>
<td>3.82</td>
</tr>
<tr>
<td></td>
<td>Standard-Error</td>
<td>0.10</td>
<td>0.15</td>
<td>0.15</td>
<td>0.25</td>
<td>0.18</td>
<td>0.16</td>
<td>0.14</td>
<td>0.11</td>
<td>0.25</td>
</tr>
<tr>
<td>Export and customs-related issues (high customs tariffs on imported components and technologies, complicated customs clearance procedure)</td>
<td>Average</td>
<td>3.59</td>
<td>3.38</td>
<td>3.67</td>
<td>4.15</td>
<td>3.41</td>
<td>3.59</td>
<td>3.71</td>
<td>3.54</td>
<td>3.53</td>
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<tr>
<td></td>
<td>Standard-Error</td>
<td>0.09</td>
<td>0.15</td>
<td>0.13</td>
<td>0.20</td>
<td>0.19</td>
<td>0.23</td>
<td>0.11</td>
<td>0.12</td>
<td>0.22</td>
</tr>
<tr>
<td>Insufficient protection of intellectual property</td>
<td>Average</td>
<td>3.59</td>
<td>3.44</td>
<td>3.62</td>
<td>4.08</td>
<td>3.41</td>
<td>3.29</td>
<td>3.82</td>
<td>3.54</td>
<td>3.53</td>
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<tr>
<td></td>
<td>Standard-Error</td>
<td>0.09</td>
<td>0.14</td>
<td>0.13</td>
<td>0.18</td>
<td>0.17</td>
<td>0.25</td>
<td>0.10</td>
<td>0.10</td>
<td>0.24</td>
</tr>
<tr>
<td>Shortage of management personnel capable of implementing innovation projects</td>
<td>Average</td>
<td>3.35</td>
<td>3.04</td>
<td>3.62</td>
<td>3.69</td>
<td>3.26</td>
<td>3.24</td>
<td>3.45</td>
<td>3.16</td>
<td>3.47</td>
</tr>
<tr>
<td></td>
<td>Standard-Error</td>
<td>0.12</td>
<td>0.18</td>
<td>0.17</td>
<td>0.25</td>
<td>0.23</td>
<td>0.30</td>
<td>0.15</td>
<td>0.14</td>
<td>0.25</td>
</tr>
<tr>
<td>Competitive pressure on your company</td>
<td>Average</td>
<td>3.19</td>
<td>3.23</td>
<td>3.21</td>
<td>3.00</td>
<td>3.29</td>
<td>3.06</td>
<td>3.16</td>
<td>3.21</td>
<td>2.65</td>
</tr>
<tr>
<td></td>
<td>Standard-Error</td>
<td>0.13</td>
<td>0.18</td>
<td>0.22</td>
<td>0.41</td>
<td>0.19</td>
<td>0.37</td>
<td>0.20</td>
<td>0.16</td>
<td>0.28</td>
</tr>
<tr>
<td>Difficulties in raising finance to implement innovative products and technologies</td>
<td>Average</td>
<td>3.82</td>
<td>3.81</td>
<td>3.97</td>
<td>3.38</td>
<td>4.06</td>
<td>3.53</td>
<td>3.76</td>
<td>3.67</td>
<td>3.71</td>
</tr>
<tr>
<td></td>
<td>Standard-Error</td>
<td>0.10</td>
<td>0.15</td>
<td>0.16</td>
<td>0.25</td>
<td>0.19</td>
<td>0.20</td>
<td>0.14</td>
<td>0.13</td>
<td>0.23</td>
</tr>
<tr>
<td>Lack of procedures for assessing risk and return on investments</td>
<td>Average</td>
<td>3.45</td>
<td>3.27</td>
<td>3.64</td>
<td>3.54</td>
<td>3.26</td>
<td>3.47</td>
<td>3.57</td>
<td>3.27</td>
<td>3.65</td>
</tr>
<tr>
<td></td>
<td>Standard-Error</td>
<td>0.10</td>
<td>0.17</td>
<td>0.14</td>
<td>0.22</td>
<td>0.23</td>
<td>0.22</td>
<td>0.12</td>
<td>0.13</td>
<td>0.22</td>
</tr>
<tr>
<td>Issues of commercialisation (technology-to-product transition)</td>
<td>Average</td>
<td>3.18</td>
<td>3.15</td>
<td>3.18</td>
<td>3.31</td>
<td>3.29</td>
<td>3.29</td>
<td>3.06</td>
<td>3.00</td>
<td>3.18</td>
</tr>
<tr>
<td></td>
<td>Standard-Error</td>
<td>0.12</td>
<td>0.19</td>
<td>0.17</td>
<td>0.32</td>
<td>0.20</td>
<td>0.33</td>
<td>0.16</td>
<td>0.14</td>
<td>0.28</td>
</tr>
</tbody>
</table>
ANNEX 4. Barriers to growth of innovation in Russia.

(Each barrier was evaluated by companies using a 5-point scale, where 1 point signifies that a barrier is not serious and 5 points signifies that it is very serious. The table presents average points awarded for each barrier by each type of company).

| The impact each of the following aspects has on growth of innovation activity in Russia | All | Russian company operating only in Russia | Russian company with part of its business operations on foreign markets | International company, with part of its business operations in Russia | USD 100-500 m revenue | USD 500m - 1bn revenue | Over 1bn revenue | 100% privately-owned | State has up to 25% interest | 100% state-owned |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Shortage of expertise/skills in the country (ideas and professionals capable of developing them) | Average | 3.68 | 3.35 | 3.95 | 4.08 | 3.38 | 3.71 | 3.88 | 3.55 | 3.71 | 4.19 |
| Standard-Error | 0.12 | 0.20 | 0.14 | 0.32 | 0.21 | 0.34 | 0.16 | 0.16 | 0.23 | 0.10 |
| Start-ups and innovation projects have no access to financing | Average | 3.90 | 3.98 | 3.90 | 3.62 | 3.94 | 3.88 | 3.93 | 3.65 | 4.06 |
| Standard-Error | 0.08 | 0.11 | 0.12 | 0.32 | 0.12 | 0.29 | 0.10 | 0.10 | 0.18 | 0.18 |
| Excessive bureaucracy | Average | 4.14 | 4.23 | 4.00 | 4.23 | 4.26 | 4.35 | 3.98 | 4.15 | 3.88 | 4.38 |
| Standard-Error | 0.08 | 0.10 | 0.14 | 0.21 | 0.12 | 0.15 | 0.12 | 0.10 | 0.17 | 0.13 |
| Commodity-based structure of the Russian economy | Average | 3.48 | 3.23 | 3.74 | 3.62 | 3.26 | 3.06 | 3.78 | 3.39 | 3.41 | 3.94 |
| Standard-Error | 0.10 | 0.17 | 0.12 | 0.30 | 0.20 | 0.26 | 0.12 | 0.14 | 0.22 | 0.06 |
| Substantial state presence in the economy | Average | 3.60 | 3.29 | 3.87 | 3.92 | 3.41 | 3.47 | 3.78 | 3.48 | 3.47 | 4.25 |
| Standard-Error | 0.10 | 0.16 | 0.14 | 0.30 | 0.20 | 0.28 | 0.13 | 0.13 | 0.22 | 0.18 |
| Living and work conditions are uncongenial to entrepreneurs and creative people | Average | 3.96 | 3.71 | 4.18 | 4.23 | 3.82 | 3.94 | 4.06 | 3.91 | 3.88 | 4.25 |
| Standard-Error | 0.09 | 0.14 | 0.12 | 0.21 | 0.18 | 0.19 | 0.12 | 0.11 | 0.20 | 0.20 |
| Imperfect legislative environment, including insufficient protection of investor rights | Average | 3.96 | 3.85 | 4.03 | 4.15 | 3.82 | 4.00 | 4.04 | 4.01 | 3.65 | 4.06 |
| Standard-Error | 0.07 | 0.11 | 0.11 | 0.16 | 0.12 | 0.05 | 0.11 | 0.09 | 0.18 | 0.15 |
| Insufficient state support for innovation | Average | 3.90 | 3.83 | 3.90 | 4.15 | 3.74 | 3.94 | 4.00 | 3.88 | 3.82 | 4.06 |
| Standard-Error | 0.09 | 0.13 | 0.14 | 0.23 | 0.16 | 0.21 | 0.13 | 0.11 | 0.18 | 0.26 |
| Macroeconomic instability | Average | 3.85 | 3.69 | 3.95 | 4.15 | 3.91 | 3.41 | 3.96 | 3.87 | 3.65 | 4.00 |
| Standard-Error | 0.09 | 0.13 | 0.13 | 0.26 | 0.15 | 0.18 | 0.13 | 0.12 | 0.15 | 0.19 |
### Government Policies which Could Stimulate Innovation Activities of Companies

(Each barrier was evaluated by companies using a 5-point scale, where 1 point signifies that a barrier is not serious and 5 points signifies that it is very serious. The table presents average points awarded for each barrier by each type of company.)

| Measures the government should undertake to foster the company’s innovation activity | All | Russian company operating only in Russia | Russian company, with part of its business operations on foreign markets | International company, with part of its business operations in Russia | USD 100-500 m revenue | USD 500m - 1bn revenue | Over USD 1bn revenue | 100% privately-owned | State has up to 25% interest | 100% state-owned |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Tax incentives (tax benefits for R&D activity, tax holidays for innovative projects, etc.)** | | | | | | | | | | | |
| Average | 4.37 | 4.25 | 4.54 | 4.31 | 4.32 | 3.88 | 4.57 | 4.22 | 4.47 | 4.88 | |
| Standard Error | 0.08 | 0.13 | 0.12 | 0.27 | 0.15 | 0.23 | 0.10 | 0.11 | 0.20 | 0.09 | |
| **Increase in state financing of R&D at universities, research institutes and other research organisations** | | | | | | | | | | | |
| Average | 4.07 | 4.15 | 4.10 | 3.69 | 4.15 | 4.06 | 4.02 | 4.00 | 4.18 | 4.25 | |
| Standard Error | 0.07 | 0.11 | 0.10 | 0.25 | 0.13 | 0.22 | 0.10 | 0.10 | 0.16 | 0.15 | |
| **Attracting highly-skilled foreign professionals to Russia (easing of migration laws, special recruiting programmes)** | | | | | | | | | | | |
| Average | 4.02 | 3.98 | 3.95 | 4.38 | 4.15 | 4.06 | 3.92 | 3.87 | 4.06 | 4.63 | |
| Standard Error | 0.10 | 0.15 | 0.17 | 0.22 | 0.19 | 0.27 | 0.13 | 0.13 | 0.22 | 0.21 | |
| **Better quality of higher education** | | | | | | | | | | | |
| Average | 4.10 | 4.19 | 4.08 | 3.85 | 4.24 | 4.00 | 4.04 | 4.13 | 3.94 | 4.13 | |
| Standard Error | 0.08 | 0.12 | 0.13 | 0.20 | 0.11 | 0.27 | 0.11 | 0.10 | 0.21 | 0.13 | |
| **Investments in development of infrastructure (industrial parks, business incubators)** | | | | | | | | | | | |
| Average | 3.96 | 4.00 | 4.03 | 3.62 | 3.85 | 4.24 | 3.94 | 3.97 | 3.76 | 4.13 | |
| Standard Error | 0.10 | 0.13 | 0.14 | 0.36 | 0.18 | 0.21 | 0.13 | 0.11 | 0.23 | 0.31 | |
| **Investments in venture funds** | | | | | | | | | | | |
| Average | 3.62 | 3.50 | 3.82 | 3.46 | 3.56 | 3.29 | 3.78 | 3.54 | 3.82 | 3.75 | |
| Standard Error | 0.08 | 0.11 | 0.14 | 0.28 | 0.12 | 0.21 | 0.11 | 0.10 | 0.18 | 0.15 | |
| **Political and organisational support to promote Russian products on global markets** | | | | | | | | | | | |
| Average | 3.78 | 3.94 | 3.90 | 2.85 | 3.88 | 3.59 | 3.78 | 3.58 | 3.82 | 4.56 | |
| Standard Error | 0.10 | 0.13 | 0.14 | 0.31 | 0.18 | 0.15 | 0.15 | 0.12 | 0.18 | 0.19 | |
| **Protecting the Russian market from foreign competition** | | | | | | | | | | | |
| Average | 3.82 | 3.90 | 4.08 | 2.77 | 4.06 | 3.35 | 3.82 | 3.58 | 3.82 | 4.81 | |
| Standard Error | 0.12 | 0.15 | 0.19 | 0.34 | 0.19 | 0.23 | 0.16 | 0.14 | 0.32 | 0.14 | |
| **Improvements to legislation (corporate, tax, import & export, migration, etc.)** | | | | | | | | | | | |
| Standard Error | 0.08 | 0.11 | 0.13 | 0.25 | 0.14 | 0.18 | 0.12 | 0.10 | 0.19 | 0.06 | |
| **Joining the World Trade Organization (WTO)** | | | | | | | | | | | |
| Average | 3.83 | 3.67 | 4.10 | 3.62 | 3.74 | 3.59 | 3.98 | 3.69 | 3.76 | 4.50 | |
| Standard Error | 0.10 | 0.16 | 0.16 | 0.15 | 0.22 | 0.22 | 0.12 | 0.12 | 0.27 | 0.28 | |
ANNEX 6. The questionnaire.

Barriers to innovative technology processes in Russia

Dear colleagues, PricewaterhouseCoopers (PwC), Russian Economic School (RES), Russian Nanotechnology Corporation (RUSNANO) and Russian Venture Company (RVC) invite you to participate in a survey on issues related to modernisation and innovation in Russian companies. Findings of this survey will be presented at the 14th St. Petersburg International Economic Forum and published. We can guarantee that your information will be treated as confidential. The survey results will be presented in an aggregate form. It will take 15 minutes to complete the questionnaire.
For the survey purposes, we define innovations/innovation activity as company’s shift towards manufacturing products (goods and services), which are new to the market, and/or implementing technologies and production processes, which are new to the company.

Part A. Your company

1. How can you describe your company?
   One response only
   - Russian company operating only in Russia
   - Russian company partly operating on foreign markets
   - International company partly operating on the Russian market

2. What were your company’s revenues in USD in 2009?
   One response only
   - Under 100 m
   - 100-500 m
   - 500 m – 1 bn
   - Over 1 bn

3. Is your company?
   One response only
   - private
   - with state interest
   - 100% state-owned

4. Your company’s core industry is:
   One response only
   - Mining and processing of natural resources
   - Metals
   - Finance and banking
   - Retail trade
   - Consumer goods and food products
   - Engineering/machine-building
   - Construction and building materials
   - Transport
   - Telecommunications
   - Information Technology
   - Energy
   - Chemicals
   - Pharmaceuticals
   - Diversified holding company
   - Other
5. Please estimate the level of depreciation of capital equipment in your company as at the end of 2009?

One response only

- Less than 25%
- 25-50%
- 50-75%
- Over 75%

6. What percentage of revenues did your company invest in modernisation and replacement of the existing equipment in 2009?

One response only

- Less than 5%
- 5% - 10%
- 10% - 20%
- 20% - 50%
- Over 50%

7. How often do you fully replace your capital equipment?

One response only

- Every 2 years
- Every 2-5 years
- Every 5-10 years
- Less than every 10 years

8. Does your company have a cost management and monitoring system in place?

One response only

- No, it doesn’t, and we don’t plan to implement such a system
- No, it doesn’t, but we plan to implement such a system
- Yes, it does

9. Do you receive sufficient information on industry trends to make decisions on implementation of new products, technologies and business processes?

One response only

- There is very little information
- There is some information, but it is insufficient
- The available information is sufficient

Part B. Innovations in your company

Section I. Your company’s innovation activity in developing new products

10. Please indicate whether in 2008-2010 your company started manufacturing products that it had never manufactured before?

One response only

- Yes - please go to question 11
- No – please go to section II

11. Are any of these products innovative?

One response only

- globally (i.e. your organisation was the first company in the world to produce them)
- in the post-Soviet space
- in Russia
- on one of the important regional markets in Russia
- only to your company
12. What sources of finance did your company use to develop these products?

*Multiple responses are possible*

- Own funds
- Foreign investments
- Funds provided by state (RVC, RUSNANO, etc.)
- Venture investments
- Off-budget funds
- Other (please specify)

13. What is the current share of innovative products in your company’s revenues?

*One response only*

- Less than 10%
- 10% - 25%
- 25% - 50%
- Over 50%

14. Please indicate what, above all, prompted your company to launch the most successful innovative product in 2008-2010?

*One response only*

- Direct request from your customers
- Strive to implement the existing internal developments
- Your direct competitors’ example
- Example of companies operating on other markets/global industry leaders
- Ambition to outpace your direct competitors

15. Who was the main initiator and driver of the launch of your most successful innovative product in 2008-2010?

*One response only*

- Top management
- Company owners
- Investors
- Specialised units and/or dedicated employees responsible for innovations
- Line units’ employees
- External consultants
- Russian R&D organisations (universities, R&D institutes)
- Foreign R&D organisations (universities, R&D institutes)

16. Your most successful innovative product in 2008-2010 was developed?

*Multiple responses are possible*

- In-house
- By external Russian contractors on your order
- By external foreign contractors on your order
- Using a production license acquired from a Russian counterparty
- Using a production license acquired from a foreign counterparty
- Due to acquisition of a Russian company-owner of intellectual/tangible property
- Due to acquisition of a foreign company-owner of intellectual/tangible property
Section II. Technology innovations

17. Did your company implement any technologies in 2008-2010 that it had never used before?
One response only
• Yes – please go to question 18
• No – please go to Section III

18. Are these technologies innovative?
One response only
• globally (i.e. your organisation was the first company in the world to use them)
• in the post-Soviet space
• Yes, the business process was innovative in Russia
• on one of regional markets in Russia that is of importance to your company
• only to your company

19. What is the share of innovative technology processes in your company?
One response only
• Less than 10%
• 10% - 25%
• 25% - 50%
• Over 50%

20. What, first and foremost, prompted your company to implement this innovative technology?
One response only
• The need to cut costs
• The strive to implement the existing internal developments
• Your direct competitors’ example
• Example of companies operating on other markets/global industry leaders
• Ambition to outpace your direct competitors

21. Who was the main initiator and driver of the implementation of your most significant innovative technology in 2008-2010?
One response only
• Top management
• Company owners
• Investors
• Specialised units/dedicated employees responsible for innovations
• Line units’ employees
• External consultants
• Russian R&D organisations (universities, R&D institutes)
• Foreign R&D organisations (universities, R&D institutes)
22. Your most successful innovative technology in 2008-2010 was developed:
Multiple responses are possible
- In-house
- By external Russian contractors on your order
- By external foreign contractors on your order
- Due to acquisition of ready-to-use know-how and equipment from a Russian counterparty
- Due to acquisition of ready-to-use know-how and equipment from a foreign counterparty
- Due to acquisition of a Russian company-owner of intellectual/tangible property
- Due to acquisition of a foreign company-owner of intellectual/tangible property

Section III. Business process innovations

Two questions on innovative business processes:

23. Please indicate whether your company implemented any business processes in 2008-2010 that it had never used before?
One response only
- Yes – please go to question 24
- No – please go to Part C

24. Are any of these business processes innovative?
One response only
- globally (i.e. your organisation was the first company in the world to use them)
- in the post-Soviet space
- in Russia
- on one of the regional markets in Russia that is of importance to your company
- only to your company

Part C. Level of innovation activity in your company, industry and in Russia

25. What percentage of the turnover did your company invest in research and development (R&D) activity in 2009? (%)

__________

26. What percentage of the turnover does your company intend to invest in R&D in 2010? (%)

__________

27. What types of innovation activity has your company invested into over the last two years?
Multiple responses are possible
- Research and development
- Acquisition of machinery and equipment
- Acquisition of new technologies
- Acquisition of software
- Staff training
- Market research
- Implementation of new business processes
28. Have you experienced failures in implementing innovative products, technologies or processes?
One response only
- Yes, many times
- Yes, one or two failures
- No failures at all

29. What elements of the innovation generating system does your company have in place?
Multiple responses are possible
- Top-manager responsible for this area
- Special processes for gathering innovative ideas within the company
- Incentives system to encourage staff for innovation activity
- Specialised R&D unit

30. Who are major consumers of your company’s innovative products?
Multiple responses are possible
- State (government agencies, state-owned corporations, unitary enterprises, etc.)
- Large corporations
- Medium and small businesses
- Individual consumers
- Foreign clients

<table>
<thead>
<tr>
<th>One response only</th>
<th>Lagging significantly behind</th>
<th>Lagging slightly behind</th>
<th>On a par with competitors</th>
<th>Outpaces</th>
<th>Significantly outpaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>31. How would you rate your company compared to your direct competitors in Russia in terms of innovation activity?</td>
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<td>32. With global leaders in your industry?</td>
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<td>33. How would you assess the level of innovation activity in your industry in Russia compared to other countries?</td>
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<td>34. How would you assess the level of innovation activity in the Russian economy compared to global leaders?</td>
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Section D. Barriers to growth of innovative activity:

35. What do you think is the major barrier that hinders more intense innovation activity of your company? (Please rate the significance of each of proposed answers on a scale from 1 to 5, where 1 is ‘not significant’, and 5 is ‘very significant’)

<table>
<thead>
<tr>
<th>Potential barrier</th>
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<th>2</th>
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<tbody>
<tr>
<td>Lack of ‘innovation culture’ within your company</td>
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<td>Insufficient demand for innovative products</td>
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<td>Shortage of employees capable of being innovative</td>
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<td>Excessive red-tape (difficulties in certifying new products, etc.)</td>
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<td>Export and customs control-related issues (high customs tariffs on imported components and technologies, complicated customs clearance procedure)</td>
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<td>Insufficient protection of intellectual property</td>
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<td>Shortage of management resources capable of implementing innovation projects</td>
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<tr>
<td>Competitive pressure on your company</td>
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<tr>
<td>Difficulties in raising finance to implement innovative products and technologies</td>
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<tr>
<td>Lack of investments return and risk assessment procedures</td>
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<td>Issues of commercialisation (technology-to-product transition)</td>
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<td>Other (please, specify)</td>
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</table>

36. What do you think is the major barrier to the growth of innovation activity in the country? (Please rate significance of each of proposed answers on a scale from 1 to 5, where 1 is ‘not significant’, and 5 is ‘very significant’)

<table>
<thead>
<tr>
<th>Potential barrier</th>
<th>1</th>
<th>2</th>
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<tbody>
<tr>
<td>Lack of expertise and skills in the country (ideas and specialists capable of developing them)</td>
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<tr>
<td>Start-ups and innovation projects have no access to financing</td>
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<tr>
<td>Excessive red-tape</td>
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<tr>
<td>Commodities-based structure of the Russian economy</td>
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<td>State’s substantial presence in the economy</td>
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<td>Living and work conditions are not attractive to entrepreneurs and creative people</td>
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<td>Imperfect legislative environment, including insufficient protection of investors’ rights</td>
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<td>Insufficient state support to innovations</td>
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<td>Macroeconomic instability</td>
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<td>Other (please specify)</td>
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</table>
37. What do you think are the most effective actions that the state should undertake to foster the growth of innovative activity of your company? (Please rate the significance of each of proposed answers on a scale from 1 to 5, where 1 is ‘not significant’, and 5 is ‘very significant’)

<table>
<thead>
<tr>
<th>Action</th>
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</thead>
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<tr>
<td>Tax incentives (tax benefits for R&amp;D activity, tax holiday for innovative projects, etc.)</td>
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<td>Increase in state financing of R&amp;D at universities, research institutes and other research organisations</td>
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<td>Attracting of foreign highly skilled professionals to Russia (easing of the migration law, special recruiting programmes)</td>
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<td>Improvement of higher education</td>
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<td>Investments in the development of infrastructure (industrial parks, business incubators)</td>
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<td>Investments in venture funds</td>
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<td>Political and organisational support to promoting Russian products on global markets</td>
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<td>Russian market protection from foreign competitors</td>
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<tr>
<td>Improvement of legislations (corporate, tax, export and import, migration, etc.)</td>
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<tr>
<td>Joining the World Trade Organisation (WTO)</td>
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<td>Other (please, specify)</td>
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38. How would you assess the probability of a significant increase in the innovation component in the Russian economy by 2020?

- Very unlikely
- Unlikely
- Likely
- Very likely

39. What is your position in the company?

40. Company name.
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