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All quiet on the innovation front –
the Russian reaction to the economic crisis

Electronic Publications of Pan-European Institute 19/2009

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**Electronic Publications of
Pan-European Institute**

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The authors are grateful for the financial support of
the Russian Foundation for Humanities (grant 07-02-93201 a/F)
and the Academy of Finland (Grant No. 118338).
Assistance of Nikita Lisitsyn (St. Petersburg State University) is gratefully
acknowledged.

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Prologue

“We have so far failed to create a highly technological or technology-intensive economy. We are much dependent on exports of commodities and raw materials. We have a weak innovative component in the economy. We do not have this translation of innovations into the economy. And as a result, this means that the objective of diversification is the utmost priority to our country... ...creating of high technology and innovative economy. This is the top priority at the moment.”

President Dmitry Medvedev on CNBC's "Closing Bell with Maria Bartiromo" (June 4th, 2009)

1 Introduction

The global economic growth and speculations increased the market prices of Russian commodities in early 2000s. This led Russia to remarkable economic growth until the economic crisis arrived from the Wall Street in the last quarter of 2008 (at the latest). As a result of the global slump, the market prices for Russian exports dropped and the Russian economy was hit hard. At last, it became evident also to the Prime Minister Vladimir Putin that the Russian economy could no longer rely on commodity exports; instead it should develop its innovation-based economy (AFP 2009).

President Medvedev has criticised the government's previous measures to reform the economy: "*Technological parks ... Russia's venture capital company ... special economic zones ... all this basically exists only on paper*" (Moscow Times 2009a). State corporation Rusnano has received also its share of the criticism from President Medvedev and Deputy Prime Minister Sergei Ivanov. Medvedev has described Rusnano as a "*large structure that has a lot of money and that still has to understand how to correctly spend it*" (Moscow Times 2009b).

To change the situation, President Medvedev has established the Presidential Innovation Commission to boost economic reforms (Moscow Times 2009c). Surprisingly, Prime Minister Putin is not involved in the Commission. However, most of the government is involved together with participants from the industry and academia. Most (if not all) of the members are, however, Kremlin-loyal and it remains to be seen if the presidential commission has courage to undertake radical reforms – measures which may not be, in fact, in the interest of Russian monopolies and oligarchs. Yet, radical changes are needed, as there are no shortcuts to the diversification of the Russian economy. Innovation policy is a complex set of measures which need to act in harmony. Moreover, it is not the government which creates innovations. It should provide favourable framework for innovations to be developed by companies (in collaboration with others). Thus, the diversification is not only about the policymakers but also very much about the entrepreneurs and industrialists. Particularly, Mikhail Khodorkovsky has criticised the Russian business elite of not coming out with a plan to modernise the economy (Moscow Times 2009d).

The first analyses of the Russian reaction to the economic crisis highlighted the lack of preparedness (Kononenko 2008) and weakening impact of the government's reactions on the competitiveness of the economy (Mallinen 2009). Major reforms were not actually considered necessary as the government had confidence on financial reserves as a buffer for the external shock (Kononenko 2008). Western critics often forget that Russian policymakers do not have similar measures available than their colleagues in the United States or Europe to tackle the crisis and to modernise the economy (Mau 1999; Moscow Times 2009e). Therefore, this paper is written as a part of Russian-Finnish joint research project addressing the views from both sides of the border.

The purpose of the paper is to study the reaction of the Russian government and Russian companies on the economic crisis after one year since the outbreak of the crisis. In the paper, a particular attention is given to the innovative activities in Russia. The aim of the paper is to increase understanding whether the measures taken by the Russian government during the past year are leading Russia out of the economic crisis as a more innovation-oriented economy or whether the economy will continue its reliance on energy and raw material exports also in the near future.

The paper is structured so that firstly Russian innovation system is described in an international context. The following chapters analyse briefly the reactions of the Russian government and companies to the economic crisis. Finally, the conclusions of the study are presented in Chapter 5.

The paper is based on the publications related to government policy and statistics on innovation activity of Russian companies. The findings of the policy analysis are reflected against information from companies. The official statistics fail to provide an overall picture on the reaction of companies to the economic crisis after one year since the outbreak of the crisis in full. Therefore, the direct feedback from companies was considered to be the best source of information for the purpose of the study.

Company-based data was gathered by interviews and by sending a survey to selected companies. Personal interviews were conducted by the researchers in June–July 2009 with the top management of 5 innovative companies with R&D divisions in Moscow and 2 companies registered in Special Economic Zone (SEZ) in St. Petersburg.

Moreover, a survey questionnaire was sent to companies which have registered to technology-innovative Special Economic Zones in Russia. The group of companies was selected as SEZs have been launched as a tool to improve the innovation system in Russia. The authors were interested in how these companies have reacted to the crisis, and to see whether the SEZs might provide them the environment which they need to survive over the crisis. The list of 142 companies registered in the technology-innovative special economic zone in Russia was obtained from the official website of the Federal Agency for Management of Special Economic Zones (www.rusoez.ru). The contact information to these companies was searched by the authors from the internet. Eventually, the search left the researchers with 100 valid email addresses. Out of these 100 companies, 38 responded (response rate 38%) to the survey during June 30th–September 3rd, 2009, roughly one year after it became evident that Russia was not resistant to the global economic crisis. Despite the small sample size, the survey was able to provide supporting evidence to the research findings of the interviews, and ultimately to provide understanding on the Russian reaction to the economic crisis.

2 Russian innovation system in an international context

Russian innovation system is in transition. In comparison with other developing economies the strength of Russian innovation system is in the volume of the resources, especially personnel, involved in R&D, and in the educational system. The weakness is mainly in the quality of governance, i.e. in such characteristics as rule of law, and quality of government regulations. (Dezhina & Peltola 2008.)

By the knowledge economy index (KEI) which the World Bank calculates annually, Russia is in the group of countries with medium-low income. It occupies the 60th position out of 145 countries for which this index is calculated. This is decrease in comparison with 1995 – the year when such index was estimated for the first time.

Among the BRIC countries Russia holds medium position. It is ahead of China and India (see Table 1) but behind Brazil. At the same time Russia is far behind developed countries such as Nordic Countries, the UK and the USA.

Table 1 Knowledge Economy Index (KEI) for Russia and selected countries

| | Position in the rating (total of 145 countries) | KEI | Economic incentive regime | Innovation | Education | ICT |
|---------------|-------------------------------------------------|-------------|---------------------------|-------------|-------------|-------------|
| Denmark | 1 | 9.52 | 9.61 | 9.49 | 9.78 | 9.21 |
| Sweden | 2 | 9.51 | 9.33 | 9.76 | 9.29 | 9.66 |
| Finland | 3 | 9.37 | 9.31 | 9.67 | 9.77 | 8.73 |
| UK | 7 | 9.10 | 9.24 | 9.24 | 8.49 | 9.45 |
| USA | 9 | 9.02 | 9.04 | 9.47 | 8.74 | 8.83 |
| Brazil | 54 | 5.66 | 4.31 | 6.19 | 6.02 | 6.13 |
| Russia | 60 | 5.55 | 1.76 | 6.88 | 7.19 | 6.38 |
| China | 81 | 4.47 | 3.90 | 5.44 | 4.20 | 4.33 |
| India | 109 | 3.09 | 3.50 | 4.15 | 2.21 | 2.49 |

Source: World Bank (2009)

The dynamics of KEI shows that **Russia's ranking has been decreasing since 2005 due to worsening economic incentive regime** (currently 127th) and decrease in some indicators which characterise the educational system. Simultaneously, ICT and innovation activity have been receiving higher scores than ever before (Table 2).

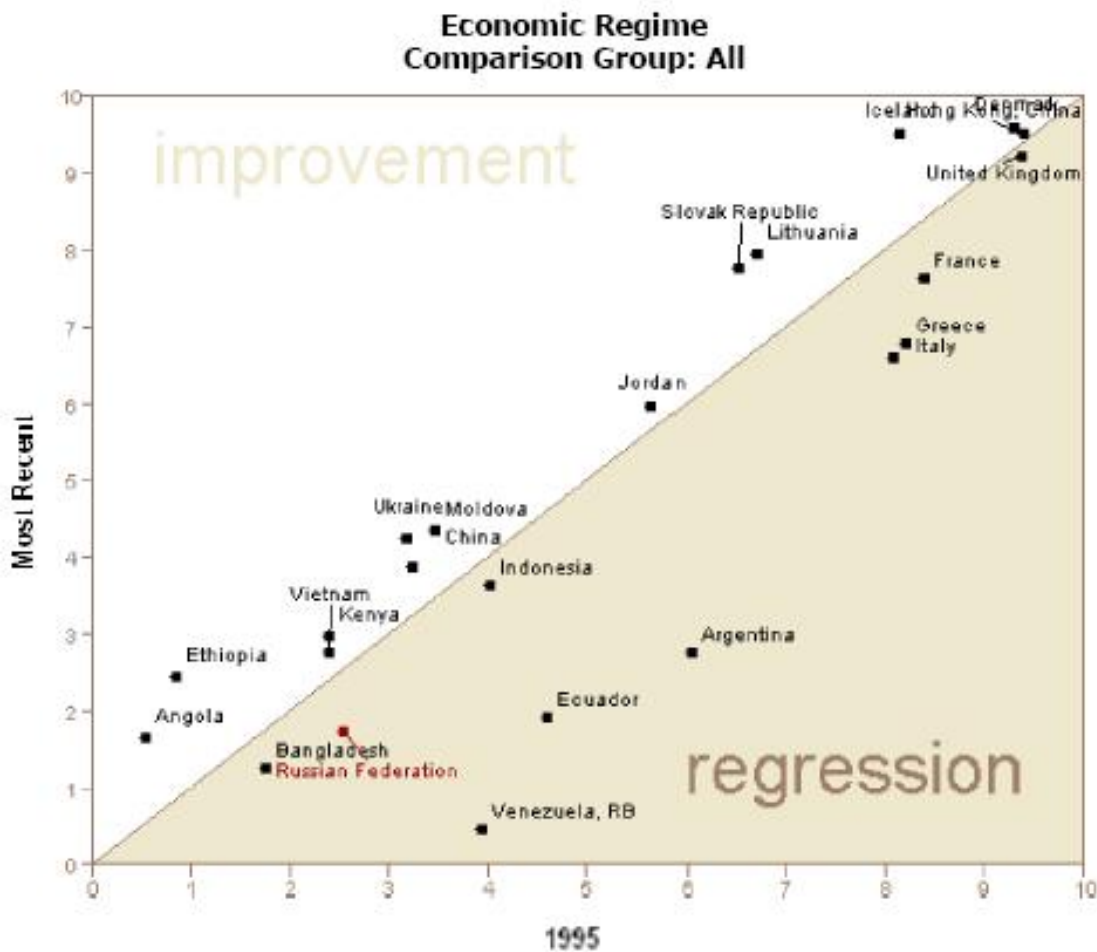
Table 2 Dynamics of KEI and its components for Russia in selected years

| Year | KEI | Economic incentive regime | Innovation | Education | ICT |
|------|------|---------------------------|------------|-----------|------|
| 1995 | 5.73 | 2.55 | 5.64 | 8.12 | 6.60 |
| 2005 | 6.05 | 3.01 | 7.47 | 7.85 | 5.88 |
| 2007 | 5.94 | 2.99 | 6.92 | 7.66 | 6.19 |
| 2008 | 5.40 | 1.55 | 6.89 | 7.09 | 6.08 |
| 2009 | 5.55 | 1.76 | 6.88 | 7.19 | 6.38 |

Source: World Bank (2009)

The data confirms that Russia has resources (research personnel at first place) which are more substantial than in many countries in the world. At the same time economic environment is worsening. This means that the quality of government regulations, including innovation sphere, is becoming crucial for the development of the national innovation system.

Figure 1 Development of economic incentive regime in selected countries, during 1995–2009



More precise look at the parameters which characterise the innovation component of KEI for Russia (Table 3) shows that in 2008 in comparison with 2005 Russia started to buy more technologies (almost three-fold growth in terms of financing) and slightly more to sell technologies (received payments and royalties have grown by 72%). The patterns of patenting abroad have slightly improved as well, and there is a small increase in the indicator of financing R&D from private sources. At the same time export of high-tech products is very low and decreasing.

Table 3 Dynamics of Indicators Characterizing the Russian Innovation System

| Indicators | 2005 | 2008 |
|-----------------------------------------------------------------------------|---------|-------|
| Royalty and License Fees Payments (US\$ mil.) | 711 | 2 002 |
| Royalty and License Fees Receipts (US\$ mil.) | 174 | 299 |
| Researchers in R&D / Mil. People | 3 415 | 3 246 |
| Total Expenditure for R&D as % of GDP | 1,2 | 1,1 |
| University-Company Research Collaboration (rated on a scale from 1 to 7) | 3,2 | 3,2 |
| Scientific and Technical Journal Articles / Mil. People | 109 | 101 |
| Availability of Venture Capital (1-7) | 2,9 | 3,1 |
| High-Tech Exports as % of Manuf. Exports | 8,9 | 8,1 |
| Private Sector Spending on R&D (1-7) | 3,3 | 3,4 |
| Patents Granted by USPTO | 173 | 194 |
| Firm-Level Technology Absorption (1-7) | No data | 4,1 |

Source: World Bank (2009)

The comparison with analogous indicators for other BRIC countries and the most developed countries in the world allows drawing the following conclusions. Russia is behind all the aforementioned countries by all these indicators. It is close to Western countries by the volume of purchasing of patents and licenses but far behind by the volume of their sales. The comparison of indicators also shows that there is no correlation between the volume of resources (such as, for example, number of researchers) and the innovation results. Thus, in Western Europe the share of researchers is higher than in G7 countries. However, the results measured by patenting, volume of high-tech export, and firm-level technology absorption are lower.

The comparison among BRIC countries shows that these countries chose different models for their innovation development and that the gap among these countries is growing. If in 1995 many indicators of patent statistics and publication activity were close for Brazil, China and India, at the present time China and India are far ahead of Brazil. Russia and India may be characterized as countries in which innovations are based on achievements of fundamental science, while China and Brazil base their development mainly on absorption of foreign technologies (Tseng 2009).

Overall, Russia is lacking large science-intensive companies, from one hand, and small innovative enterprises, from the other hand. Moreover, the number of small innovative companies is even diminishing. One of the problems is that at the present time government R&D organizations can be co-founders of private enterprises¹ but they cannot possess founder shares, nor can they possess intellectual property in these new enterprises. Also, there are no regulations concerning double occupation of professors wishing to develop their inventions at small companies.

Small enterprises are among the key actors in the national innovation system because they may bridge research organizations and industrial enterprises and take at their own the risks associated with first stages of commercialization process. In Russia, the dynamics in the number of small innovative enterprises has been negative during the entire post-Soviet period. The decrease in the number of small companies may be explained first of all by the fact that business/innovation infrastructure—tax, capital and financial markets, administrative barriers—inhibit emergence of a vibrant sector of small innovative enterprises. The changes in factors hampering development of small innovative firms in historical perspective are presented in Table 4.

Table 4 Factors hampering the development of small innovative enterprises in Russia

| Surveys of 1999-2000 | Survey of 2003 | Survey of 2005 |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Lack of financial resources for development | Underdeveloped innovative infrastructure | Lack of financial resources for development |
| Economic instability in the country | Flaws in legal and administrative regulations | Flaws in legal and administrative regulations |
| Lack of modern research equipment; limited availability of the Centers of collective use of equipment | Lack of financial resources for development | High level of taxes |

Sources: Fund for Assistance to Small Innovative Enterprises (2009)

Availability of financial resources for development of small innovative firms is limited both in volumes and by variety of sources. The Russian government provides support to small companies in the form of grants on R&D, and a number of accompanying

¹ Article 66, Civil Code, and also article 24, Federal Law “Concerning non-commercial organizations,” No. 7-FZ of Jan. 12, 1996.

activities, including financing of innovation infrastructure. Direct support of R&D at small companies is not large because there is only one government fund which implements such programs – the Fund for Assistance to small innovative enterprises.

One serious reason for low demand on innovations (including R&D) from industry is in inadequate level of competitiveness and monopolization of many Russian enterprises. Then, Russian enterprises were not actively participating in government programs which finance R&D. Thus, according to data from the Ministry of Education and Science, 90% of all R&D supported through this Ministry, were implemented by government research institutes, 4% by universities, and only 6% by private enterprises.

3 Reaction of the Russian government to the economic crisis

The reaction of the Russian government on the economic crisis was first of all in the decrease of the budgetary expenditures on R&D. In 2009, depending on the Agency and type of Programs, the cuts in financing of R&D are between 15–30% (S&T RF 2009). Some of the affected programmes are implemented together with industry – therefore it is expected that by 2010 Russian companies will also diminish their investments in such projects.

In comparison, Western European countries and the USA have chosen strategy to cope with the crisis through increased support for innovations. In the USA, the new President has announced that additional financing will be given to science, including support of fundamental research. At the EU countries, governments plan to apply more proactive indirect measures, such as tax privileges, and stimulating private investments in R&D. The support will be provided on chosen priorities, such as automobile industry and pharmaceuticals – spheres with the highest level expenditures on R&D. In Russia, some remarkable automobile and pharmaceuticals assets have been instead shifted directly under the umbrella of the state corporation Russian Technologies (*Rostekhnologii*). A part of their appetite has also faced criticism, as it remains unclear why the Russian economy could not survive without failed technology companies (Moscow Times 2009f) and car companies with no future (Moscow Times 2009g).

In developing countries (China, India), the crisis is seen as a chance to attract additional financing for R&D from abroad. Thus, governments of these countries put special emphasis on measures which encourage inflow of foreign investment: reconsidering the intellectual property legislation, and giving tax privileges to innovative companies. This, in combination with comparatively inexpensive workforce, indeed attracts foreign investments into local R&D.

Latest (pre-crisis) emphases of the government innovation policy in Russia has been on the measures that should strengthen or establish linkages between R&D organizations and universities and business in order to stimulate knowledge transfer and commercialization of R&D results. One of the major initiatives in this field is to encourage cooperation between R&D sector and private companies through support of joint projects. In the conditions of the crisis the government announced cuts for many

R&D programs, including those where projects are implemented jointly with industry. As a result it is expected that business will also decrease its investments in such projects by the end of 2009.

The Russian government has also emphasized the support of small innovative enterprises through R&D grants and creation of technical infrastructure. Currently, there are some other measures under consideration aimed to support small innovative enterprises, such as 1) realization of programs targeted to creation of small innovative companies with participation of students and graduate students; 2) support of student business-incubators located in university technology parks; 3) support of small innovative companies in regions. At the present time regional administrations receive financing from the federal budget for support of small companies. However, these companies are not innovative ones. The idea is to set a quota for support of innovative firms among all small companies which receive support from regional administrations. The preliminary estimation is that 15% of the total financial support for small companies from the federal budget should be channelled to small innovative firms.

At the same time small companies do not have access to the government orders in practice. According to the assessments made by the Russian Chamber of Commerce and Industry, only about 1% of all small companies (not only innovative ones) have received government orders (Gazeta 2009). Then, because of raising banks interest rate, small innovative companies lost the possibility to take loans for the development of their activity. In these conditions some increase in the volume of direct government financial assistance may barely solve the problem of saving and development of small innovative companies.

The government has also initiated the creation of favourable innovation infrastructure (such as technology parks, special economic zones and financial institutions). Special Economic Zones (SEZs) are also an important part of the new innovation infrastructure in Russia. Particularly, as some of the zones are explicitly designed to attract technological-innovative activities. The benefits of being a SEZ resident are expected to be found in lower initial investment, lower operation costs and network-enhancing image benefits resulting from the status of being registered in the SEZ. Besides creating the infrastructure in which the government gives substantial tax and custom duty relieves to the residents of SEZ. (Kaartemo et al. 2009.)

During the crisis more attention is given to support of prototypes development because this activity is lacked: there is some support for seed projects (through the Fund for Assistance, mainly) and then there is support of larger firms. The “prototype” stage was barely supported before the crisis and the latter stimulated more proactive policy in this respect. The government intends to provide support for prototype stage through innovation-technology centres that were created in Russia. According to expert estimations, among all ITCs only about 10-12 (among more than 60) are really functioning so the idea is to provide support to really working infrastructures. This approach may be quite effective – the federal investments were made in a number of infrastructural projects, but all of them were short-term and as a result the outcome in the form of well functioning infrastructure is so low. The selective support of the best infrastructure may lead to its development. Later regional centres for support of small innovative companies may be created on the basis of these ITCs.

The Russian government has also introduced some indirect measures to improve innovative activity in the economy. Indirect measures (tax and customs benefits or exemptions) were practically non-existent till the recent time in Russia. In average, legal regimes were also more prohibiting than neutral to innovation activity. Thus, industrial enterprises were not allowed to write off their R&D expenditures on primary cost of product in full, in case the conducted R&D did not yield clear practical application (in form of patents or other intellectual property or direct application in new technology).

In 2008, the government started to introduce indirect measures to stimulate private investments in R&D and innovations. In 2009, additional tax incentives were introduced. Selected types of expenditures on R&D will be tax deductible with coefficient 1.5. This is applicable to the R&D aimed to creation of 32 types of technologies (the list of such technologies was approved by the government decree).

The experience with application of tax incentives shows that tax administration is poorly organized, there is lack of enforcement procedures, and as a result some large and medium-sized companies prefer to pay taxes in full rather than to try to prove that they are eligible for tax privileges (S&T RF 2009). The survey of industrial enterprises conducted by the Russian Chamber of Commerce and Industry with a goal to assess the effectiveness of tax incentives for innovations which have been introduced since

2008, has revealed that only about 1/4 of all surveyed enterprises consider these measures as effective. Most of firms expressed concern that these measures are low effective because they are applicable to a very narrow segment of innovation activity (Ippnou 2008). The overall level of tax pressure did not change because the basic taxes – such as united social tax, property tax, land tax did not change.

In the crisis conditions tax regulations may also become less effective because companies experience more severe problems associated with lack of demand on their products at domestic market, economic uncertainty, and high level of bank interest rates. In these conditions tax privileges are becoming less important (S&T RF 2009).

During the economic crisis the government strategic approach was thus not to create new mechanisms but more effectively to use the existing ones, with the emphasis on support of small enterprises, and stimulating demand on R&D from large companies. In fact, to the date most of measures aimed to stimulate and support innovations, are under development; in the background of budget cuts on R&D **the likelihood of the effective implementation of the government's measures is quite low.**

Overall, the government has developed about 100 measures to cope with the crisis which are not directly related to innovations (Simachev et al. 2009). Most of the measures are centred on the support of large companies but not in such areas as technology modernisation, product diversification and such. The implementation of these measures has led to an unequal treatment of companies, and, as a result, to deterioration in competitive environment (Simachev et al. 2009). Further lacking of competition environment is harmful for innovations. Therefore, **there is not only delay in the development of anti-crisis measures to support innovations but those economic measures which were developed and implemented were anti-innovative by their nature** so far. This will most likely lead to even decreasing ranking of Russia in the KEI index in terms of economic incentive regime, in particular.

4 Reaction of Russian companies to the economic crisis

The main impact of the economic crisis has been two-sided for companies: decreasing output due to contracting demand; and tightening of credit constraints, which made it more difficult to attract financial resources. In practice, these consequences have been more or less universal during the crisis.

The influence of economic crisis on Russian innovation system has been the most visible through the indicators of private expenditures on R&D – they started to decrease dramatically.

The share of business enterprise expenditures has been low during the whole post-Soviet period and it fluctuated around 22-24% of the total intramural expenditures on R&D with the noticeable decrease to the end of 2008. R&D is usually financed from the profit, and during the crisis companies have to channel most of the profit to repayment of loans.

Large enterprises, which had the largest expenditures on R&D, have cut investments in research as well as their in-house R&D divisions (RUSAL, Norilsky Nickel, SIBUR, AFK “Systema”). Thus, RUSAL has cut R&D personnel by 80% (S&T RF 2009), Norilsky Nickel has cut expenditures on in-house R&D. The same strategy follows in such companies as SIBUR, United Aircraft Building Corporation (OAK) and some others. By the end of 2008 private firms’ expenditures on R&D had decreased by 80%, business angels financing by 50%, and financing from venture funds by 40% in comparison with the pre-crisis period (Inno 2009).

Evidently, the crisis did not stimulate companies to outsource R&D from the government sector of science. Before the crisis, outsourcing was gradually developing though many companies with large R&D divisions preferred to finance and conduct R&D projects in-house or to buy technologies abroad because this was often cheaper than placing orders to government R&D institutes or universities. But still many former branch institutes (for example, Federal Research Centers) were actively collaborating with private companies. In 2009, the orders to Federal Research Centers were decreased significantly which has become a risk for existence of some of these organisations. Thus, in metallurgy in pre-crisis period orders from industry were

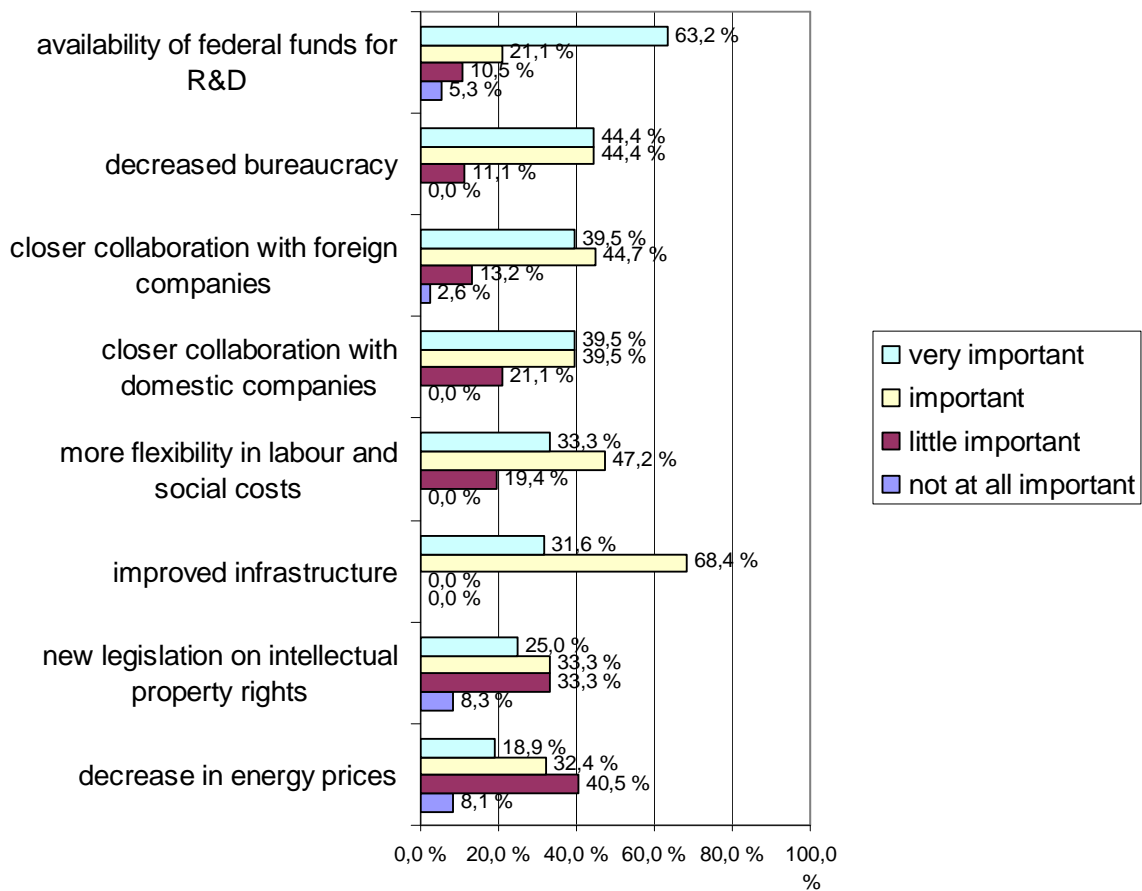
accounting up to 90% of the total R&D budget of Federal Research Centers of this profile (S&T RF 2009). In the interviews, the companies explained the low demand for outsourcing by:

- the workforce problems that exist in government sector of science and in universities (lack of researchers in the most productive age of 35-50 years old);
- problems with the rights on intellectual property, especially the one that was created before the start of the project with industry and should be used during the project implementation;
- slow work of research teams at state sector of science (industry needs much faster results of R&D than state institutes may suggest);
- quality of the results: usually it is accomplished R&D but not technology.

Instead, in the crisis conditions business started to pay more attention to government financing with simultaneous decrease in its own input to the projects developed under Federal Goal-Oriented Programs. Thus, in 2008 non-budgetary co-financing of such projects was € 200 million (and from federal sources – € 300 million). The indicator of the volume of non-budgetary support has exceeded the planned one by 1.5 times. However, in 2009 the Ministry of Education and science envisions that non-budgetary financing will be 60-70% to the planned indicator (S&T RF 2009).

Availability of Federal funds for R&D is found to be very important for Russian companies. As a part of the research, the companies were asked to estimate what kind of changes would have the most profound impact on their business. Nearly 2/3 of the companies considered that the change in the availability of Federal funds for R&D would have very important impact on the future of their company. All companies saw that improved infrastructure would have important/very important impact on their business.

Similarly, decreased bureaucracy was perceived to have important consequences to the companies. Closer cooperation with domestic and foreign companies was perceived important, too. According to the survey, if there were decreases in energy prices or if new legislation on intellectual property rights was launched, these changes would have much smaller impact on the companies in the future.

Figure 2 Perception on the importance of anticipated changes in selected factors on the company's future

There were some differences found between different types of companies. When companies were arranged according to their industry, IT companies (3.44) were found to be more affected by flexibility in labour and social costs than health/bio companies (2.67)². On the other hand, health/bio companies (3.33) considered that decrease in energy prices would have more impact on their business than IT companies (2.10) and other companies in average (2.48). Also companies developing solutions to the energy sector (3.00) perceived depreciation of energy prices more important to their business than IT companies (2.10). The differences are statistically significant (sig.<0.05).

Meanwhile the companies yearn for more federal R&D funds; those companies which are able to develop competitive products have started to be more oriented on foreign

² The companies were asked to evaluate how important they perceive the selected changes for the future of their company on a scale 1–4 (1=not at all important, 2=little important, 3=important, 4=very important).

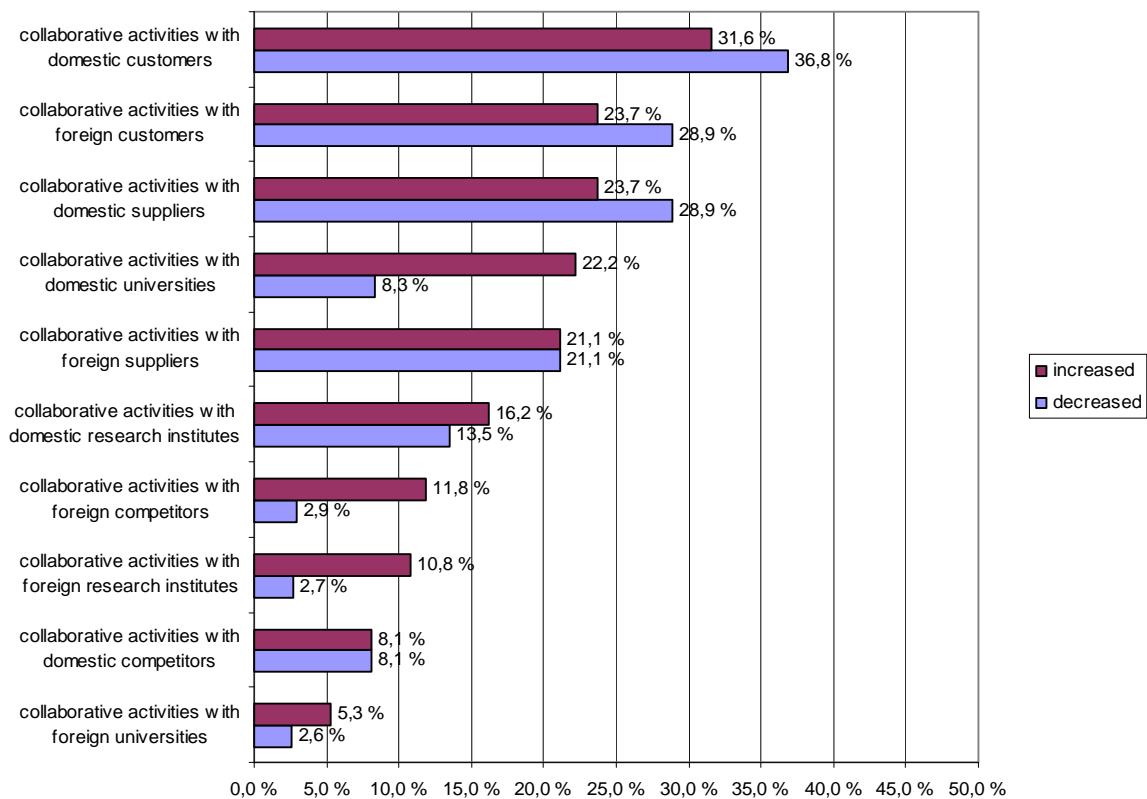
financing. Among all types of companies the enterprises-monopolists turned to be in the most stable position since they have guaranteed government orders. The latter mostly applies to defence industry and health services.

The crisis has also influenced the position of small innovative enterprises. Large and medium companies have not only decreased own expenditures on R&D but they also cut outsourcing of R&D which was mostly implemented by small companies. Simultaneously banks stopped crediting of small innovative companies (S&T RF 2009). All this created very unfavourable conditions³ for small firms which may cause sharp decrease in their number.

The cut-down of resources and availability of funding should also be seen in the possibility of Russian companies to cooperate with their business partners. Particularly, cooperation with customers and suppliers has changed during the past year in most of the companies which participated in the survey. **The frequency of collaborative activities⁴ has changed differently among Russian companies and the impact of economic crisis is controversial.**

³ According to the study by NISIPP institute, the SMEs are currently at their greatest disadvantage since the period before the 1998 financial crisis (BOFIT 2009).

⁴ The companies were asked to evaluate whether the frequency of selected activities had changed in their company during the past year on a scale 1–5 (1=significant decrease, 2=minor decrease, 3=no changes, 4=minor increase, 5=significant increase). The companies were also asked to mark if they did not have such activity.

Figure 3 Changes on the collaborative activities of Russian companies during the past year

There have also been some changes in the amount of collaboration with domestic research institutes and universities. Otherwise, the changes have not been remarkable during the past year, which partially stems from the low level of cooperation in the first place. For instance, the survey revealed that level of collaboration with foreign universities and research institutes remains very rare among Russian companies. More than 2/3 of the companies, which participated in the survey, said that they do not have collaboration with such partners.

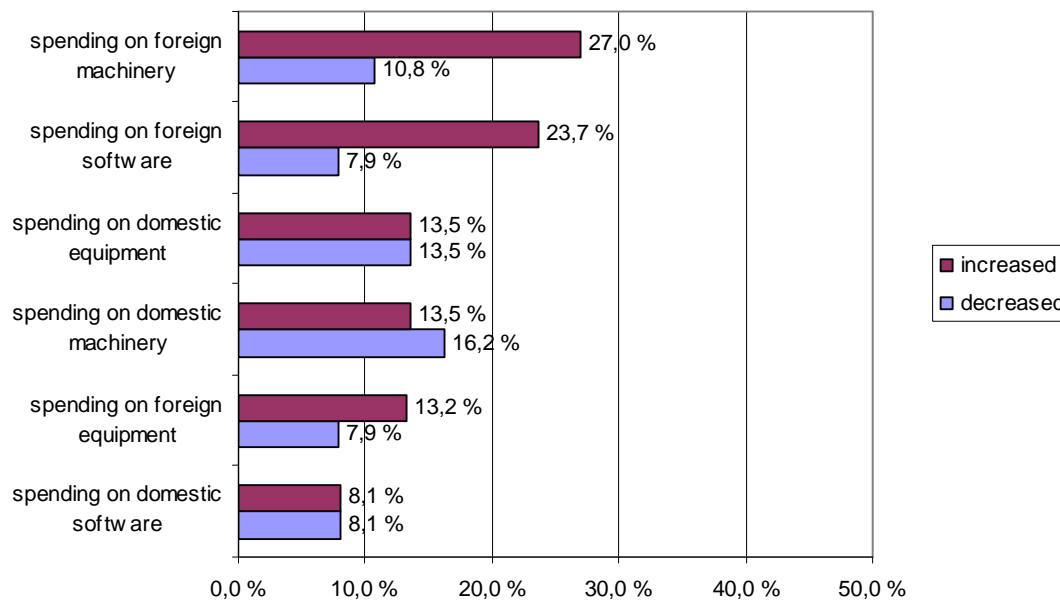
The differences in reactions to the economic crisis among companies may be partially explained by their nature of activities and fields of industry. The survey revealed that IT companies (3.30) have increased collaborative activities with domestic customers during the past year, whereas energy-technology companies have decreased collaboration with their domestic customers (2.00). IT companies (4.50) have also increased collaboration with foreign research institutes, whereas collaboration with them has not changed among other companies (3.00). Health/bio companies (4.00) have instead increased collaboration with domestic research institutes, whereas other

companies (2.81) have reacted to the crisis by decreasing collaboration with them. The differences are statistically significant (sig.<0.05).

Generally, the companies' orientation on imitations in innovations strengthens in crisis conditions. Theoretically speaking, during the economic crisis when the ruble is weak the probability of import substitution should be increasing. This may push enterprises to buy domestic technologies and equipment, which, in turn, may stimulate movement from imitation model of innovative development to a proactive, "high road" strategy of companies behaviour. As stated this has been increasing also before in Russia, and is comparatively high in the country.

Interestingly, there are contradicting results in the survey results on the reaction to the crisis. **Despite the depreciation of ruble, many Russian companies have increased spending on foreign machinery, equipment and software during the past year**⁵ (Figure 3). Thus, the trend on increasing expenditure on foreign technology (Table 3) seems to continue despite the economic crisis. The survey, however, does not reveal the level of foreign technology purchased and how it is used. Generally, foreign technology is considered to be positive for the innovation development in less advanced countries.

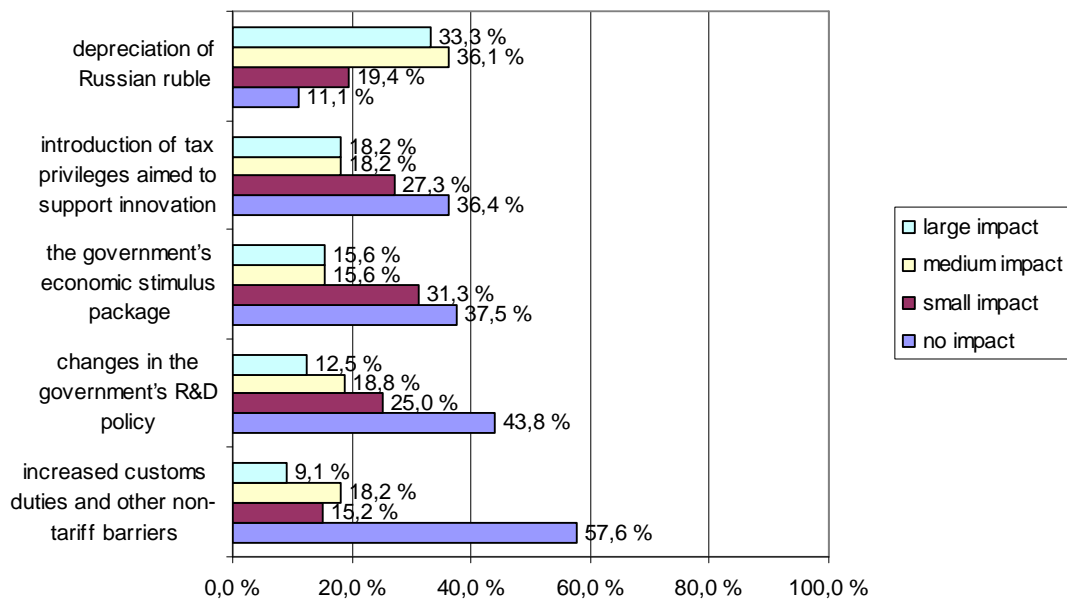
⁵ The companies were asked to evaluate whether the spending on selected articles had changed in their company during the past year on a scale 1–5 (1=significant decrease, 2=minor decrease, 3=no changes, 4=minor increase, 5=significant increase).

Figure 4 Changes on the spending pattern of Russian companies during the past year

The increased purchases of foreign capital goods could be more easily explained if the same companies had also increased purchases of domestic goods during the past year. In fact, it seems like the companies had been particularly interested in foreign products. This might be explained by the poor level of Russian alternatives. Another explanation of this could be the privileged position of the companies which participated in the survey. As residents of a special economic zone these companies get relieves in custom duties. The earlier research has emphasized the importance of foreign machinery, equipment and software, so this may indicate that the lower customs duties in SEZs are contributing to the innovation development in Russia. However, only two of the SEZs (Dubna and Tomsk) have really started to work. In Zelenograd, the activities are developing slowly and in St. Petersburg they have not started activities yet. And in fact, it was interesting to note that there were no statistically significant differences between collaboration with foreign partners and spending in foreign resources between companies from different SEZs. Therefore, SEZs may not be the only reason for changes in the behaviour, and the results may reflect the phenomenon in a larger scale. There were no statistically significant differences on spending patterns on the industrial level either.

The companies were also asked about the impact of changes in selected factors during the past year⁶. Only a minority of companies perceives that the government's R&D policy, stimulus package and tax privileges have had large impact on their activities. All in all, the depreciation of Russian ruble has had most impact on the companies. The depreciation of ruble must have had also influence on the changes in the spending patterns of Russian companies on foreign machinery, equipment and software.

Figure 5 The impact of selected changes on the companies during the past year



Increased customs duties and other non-tariff barriers have had much more impact on health/bio companies (3.50) than to IT companies (1.50) and other companies in average (1.55). There are similar differences in the introduction of tax privileges aimed to support innovation which have had more impact to health/bio companies (3.20) than to IT companies (1.89) and other companies in average (2.00). The differences are statistically significant (sig.<0.05).

⁶ The companies were asked to evaluate the impact of the selected changes on their company during the past year on a scale 1–4 (1=no impact, 2=small impact, 3=medium impact, 4=large impact).

5 Conclusions

- 1 In Russia, innovation potential seems not to be constrained by the availability of resources as such but by the economic environment in which enterprises operate. Particularly, **the Russian government should improve economic incentives for innovations**. The lack of economic incentives is clearly hindering economic development in Russia.

- 2 **The Russian policy-makers proclaim the interest in transition to innovation-based economy but the actions do not support this intention.** In general, innovations are only announced as a priority but in policy implementation the initiatives aimed to support innovations are almost invisible. The Russian government reacted on the economic crisis by introducing variety of measures, mainly to save and support large companies but these measures are barely related to innovation development. Moreover, the implementation of general anti-crisis economic measures has led to unequal treatment of companies. As a result, this has led to deterioration in competitive environment. The measures have only accelerated renationalisation and monopolisation of the economy. Therefore, those economic measures which were developed and implemented may be seen mostly as anti-innovative by their nature so far.

- 3 In innovation area, the government started to develop a set of measures with a general idea that existing mechanisms and infrastructure should be used more effectively. At the same time, the government cut R&D expenditures in federal goal-oriented programs, sometimes by 30% of initially planned allocations. A number of measures are currently under development – to support small innovative enterprises, to create infrastructure for start-up companies, to stimulate demand on R&D. Taking into account general economic environment, and low efficiency of created innovative infrastructure, **the likelihood that these innovation-enhancing measures will be instrumental is low.**

- 4 Consequently, **the Russian economy will remain commodity-dependent after the economic crisis.** Although the crisis could have provided a chance for structural changes, it seems like the state-owned raw material companies will continue to dominate as long as the government continues prioritising

control over competitiveness (Liuhto & Vahtra 2009). With lack of incentives for diversification, large Russian companies have reacted to the economic crisis by cutting their expenditures on R&D. They have not increased outsourcing of R&D from the government sector of science or universities. Instead, they have started to pay more attention to government sources of support for R&D which also has led to worsening competitive position for small private companies.

- 5 **The Russian government should improve the availability of funding for small innovative companies and for university collaboration.** During the crisis the availability of funding and the framework for university collaboration has only deteriorated although on strategies these activities are considered to be of utmost importance for Russian innovation development. Top-down declarations on innovation development are not enough. The key is to solve the problems on the grass-root level to make the Federal measures effective.
- 6 Similarly, **the centralisation of Russian high technology development around the state corporation Russian Technologies (*Rostekhnologii*) seems not to be encouraging innovativeness on a larger scale.** Russian Technologies is mainly involved in the defence sector, which makes it quite distant from civilian innovations. In the long-run, these technologies may however be used to respond to customer needs. The corporation has also recently expanded to other R&D-intensive industries. However, it must be remembered that Russian Technologies, as well as another state corporation *Rusnano*, should not be doomed to failure without further analysis⁷ just because they are backed with Federal funding.
- 7 All in all, **the impact of the government's crisis policy seems to be controversial**, and Russian companies perceive that the measures have not had great impact on them. In fact, the innovative activities may not have been diminished among small Russian companies, as they did not have them enough already before the crisis.

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- 8 **The Russian government should implement means to encourage foreign collaboration.** The importance of foreign collaboration is ranked very high among Russian companies, which proves the importance of the international dimension of the Russian innovation system and the necessity of networking. Depreciation of Russian rouble and increased customs may hinder the international collaboration, and the decision makers should make sure that innovative companies can afford foreign capital goods.
- 9 For future research avenue, **more research is needed on how foreign collaboration could be enhanced in Russia.** This requires analysis of the current status of the Russian innovation system from foreign managerial perspective. It would also be important to study the reaction of foreign companies on the economic crisis in Russia. This would give interesting information on how foreign companies could be better embedded in the Russian innovation system. Another alternative would be to further analyse the impact of SEZs on foreign networking on the innovation front.

⁷ There will be a publication on the innovation activities of Russian state corporations available in the Pan-European Institute's series later this year. An official report outlining the criteria for innovative development programme for state companies is expected to be submitted to the government in December 2009.

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