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Partnering Universities and Companies in Russia: Effects of Matching Grants

The study is supported by the Ministry of Education and Science of the Russian Federation

2013 University-Industry Interaction Conference
University Industry Innovation Network, VU University Amsterdam
the Netherlands, May 27-29, 2013

Motivations

- Since the early 80s there has been growing awareness of the benefits of matching grants for sustainable development in OECD countries
- The matching grants are considered by the WB' experts as a one of the best practices in the innovation policy, particularly for NIC and transition economics
- Russia started up the practice of matching grants for fostering innovations and developing industry-university links in 2010
- The mechanism of matching grants is considered by the Russian policymakers more as a temporary measure (as a new experiment) than a permanent tool of STI policy
- The process of implementing matching grants has highlighted some disadvantages in the Russian politics regarding fostering innovation.

Main topics

- 1. Background on the Russian STI policy**
- 2. Features of matching grants, specifics of this tool in Russia, review of empirical studies on effects of matching grants**
- 3. Methodological approach: tasks for study, initial propositions, empirical base**
- 4. Results of interviews' analysis: motivations of universities and companies, challenges and problems, revealed effects and behavioural changes caused matching grants**
- 5. Conclusions, recommendations and lessons learned from Russian practice of implementing matching grants**

Selected Indicators of Innovation Activity in Russia, 2006-2011

	2006	2007	2008	2009	2010	2011
Gross domestic expenditure on R&D as a per cent of GDP	1.07	1.12	1.04	1.25	1.16	1.12
Federal budget appropriations on civil S&T as per cent of GDP	0.36	0.40	0.39	0.56	0.53	0.58
Government expenditure in the total on R&D, %	61.1	62.6	64.7	66.5	70.3	67.1
Business expenditure in the total on R&D, %	28.8	29.4	28.7	26.6	25.5	27.7
Enterprises engaged in technological innovation as per cent of enterprises total	9.4	9.4	9.6	9.4	9.3	9.6
Expenditure on technological innovation as per cent of total sales	1.4	1.2	1.4	1.9	1.5	1.5
Innovative goods and services as per cent of total sales	5.5	5.5	5.1	4.6	4.9	6.1

Sources: HSE. (2012). Science. Innovations. Information-oriented Society: 2012. Higher School of Economics, Moscow; HSE. (2012). Science and Technology Indicators in the Russian Federation. Higher School of Economics, Moscow; HSE. (2012). Indicators of Innovation in the Russian Federation. Higher School of Economics, Moscow.

- **Macro level: there is a weak business demand for R&D, the budget expenditure prevail over private expenditure**
- **Micro level: about 60% of companies did not finance R&D in 2010, and only 15% of the companies had R&D investments that exceeded 1% of revenue (Simachev, Kuzyk, Ivanov, 2012)**

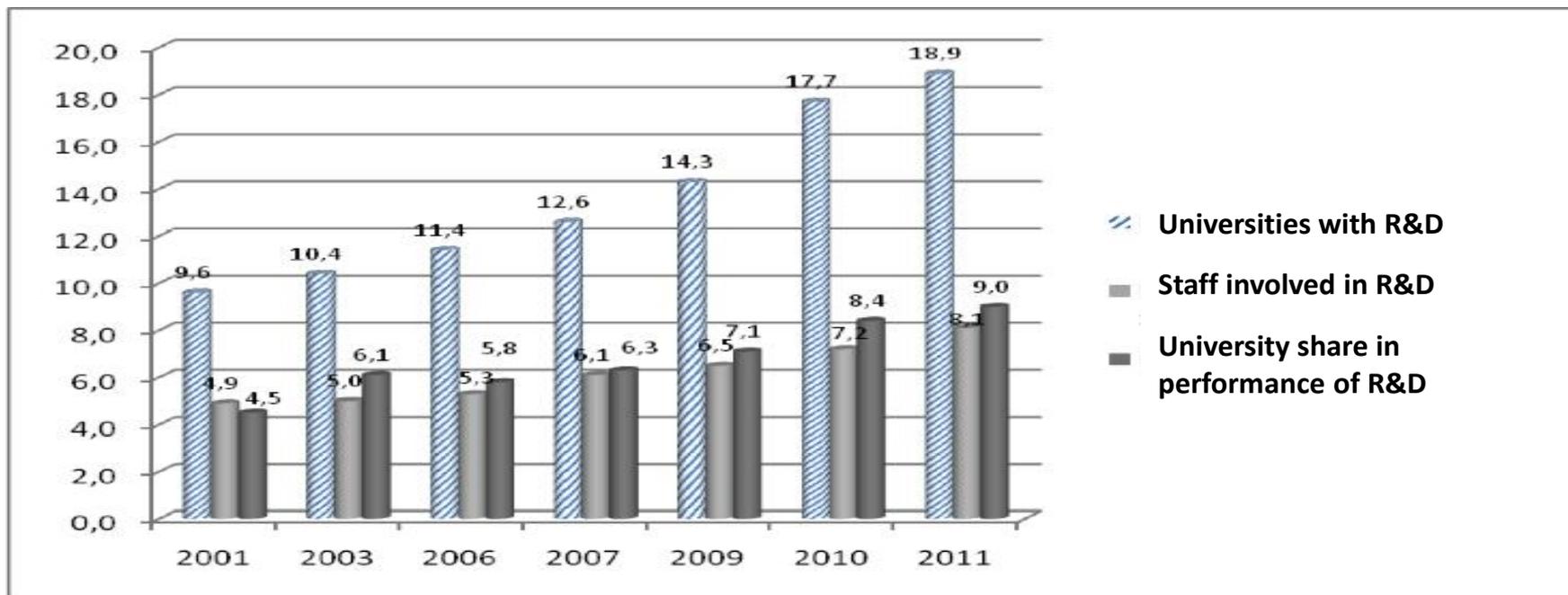
Selected Indicators of the Level of Development of Russian Innovation System, 2010

Indicator	USA	UK	Germany	France	Japan	China	Russia
Private Sector Spending on R&D	5.4	4.6	5.7	4.7	5.9	4.1	3.2
University-Company Research Collaborations	5.8	5.6	5.2	4.0	4.9	4.6	3.7
Value Chain Presence	5.1	5.3	5.7	5.9	5.2	4.0	3.0
Availability of Venture Capital	3.8	3.0	2.8	3.2	2.8	3.3	2.3
Intellectual Property Protection	5.1	5.5	6.3	5.7	6.3	4.0	2.6

Source: On the basis of Knowledge Economy Index, World Bank (data for 2010) http://info.worldbank.org/etools/kam2/KAM_page3.asp

- One of the main disadvantages of Russian innovation system is a weak “connectivity” among actors in innovation system

Universities in the Russian R&D Sector



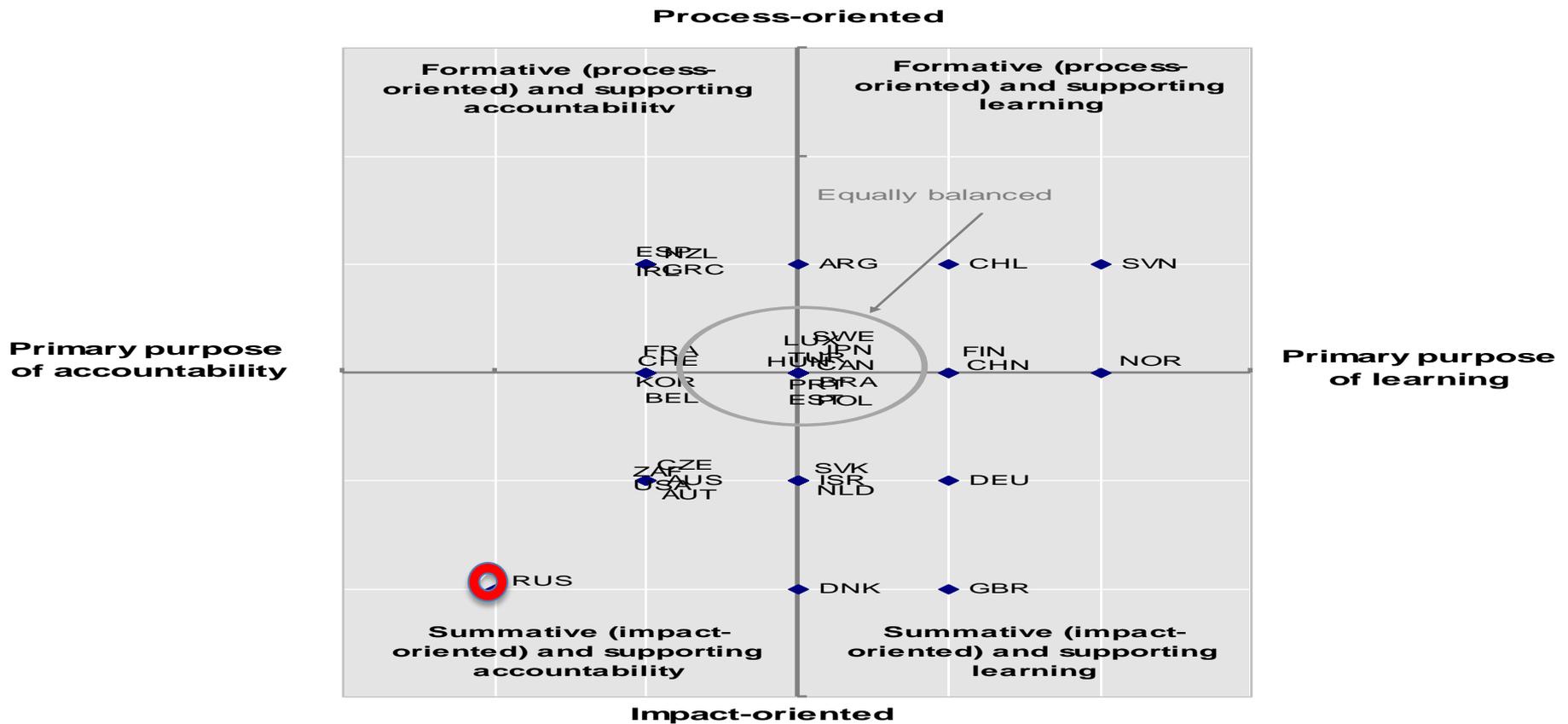
Sources: Russian Science in Figures: 2008. Stat. Coll. Moscow, CSRS, 2008; Science, Technology and Innovation in Russia: 2011. Short Statistical Book. M., ISS RAS, 2011. Science, Technology and Innovation in Russia: 2012. Short Statistical Book. M., ISS RAS, 2012

- **The universities have low influence on the Russian R&D sector – in 2011 share of university sector in performance of R&D was only 9%**
- **The Russian government is implementing a set of the tools to develop university sector and its research activity, especially skills and facilities for applied research**
- **Situation is changing for the better: in 2011 roughly a every fifth university financed R&D, while in 2001 - only a every tenth university**

The Peculiarities of the Russian STI Policy in Post-Crisis Period

- In recent years the Russian innovation policy has made a significant progress, its 'tool kit' has been considerably developed
- Now a feature of the Russian STI policy is the growing attention to
 - (1) development of cooperation among the major actors of the innovation process,
 - (2) support of networks and partnerships,
 - (3) and fostering of research activity within universities
- A lot of experiments in the Russian innovation policy have been carried out, but the learning process is very weak
- Budget constrains make it necessary to search for the most effective instruments for STI policy, but the Russian evaluation system isn't comprehensive

Russian System of Evaluating of STI policy



Source: STI Outlook, OECD, 2012

- The Russian evaluation system is too summative and underestimates indirect effects

Some Facts of Implementing Matching Grants in Russia

- In the Russian STI policy there was initiated the first instrument conceptually similar to the “matching grants” - on April 9, 2010, the RF Government adopted decree # 218 on financial support for developing cooperation between Russian universities and companies who jointly implement R&D projects aimed at development of high-tech manufacturing
- Total budget funding for matching grants was set at 19 billion rubles (approximately 0.6 billion USD) in 2010-2012
- In 2010 in accordance with the decree there were selected 112 projects (109 companies and 77 universities) for public support by matching grants. However, in two years there were only 93 projects (89 companies and 64 universities) because 9 projects were terminated
- New round of matching grants was started in 2013

The Main Parameters and Rules of Matching Grants in Russia

- *A competition based support from the federal budget* – subsidy recipients are selected on the basis of an open competition;
- *The commercial nature of projects* - realization of an project aimed at creating a high tech production is supported;
- *Support of partnerships and stimulating demand of companies on R&D.* The project is carried out jointly by the company and university. The recipient of the subsidy is the enterprise which uses the funds to finance R&D conducted by the university within the framework of the joint project;
- *A substantial research component in the project.* The subsidy is provided for a period of one to three years in the amount of 100 million rubles (approximately 3.3 million USD) annually to finance R&D conducted by the Russian higher education institute;
- *Co-financing and distribution of risks.* The production enterprise should invest into the project amount of money equal to at least 100% of the subsidy.
- *Essential duration of the project and its monitoring.* The production enterprise shall provide information on high tech products developed under the project during at least 5 years after the closure of the subsidy contract.

The Features of Matching Grants in Russia

- Only higher education institutes are allowed to be R&D partners for business in order to obtain matching grants
- There is no emphasis on support of private business projects. There are a number of barriers for participation of small and rapidly growing companies
- No regular (permanent) procedures for the evaluation, selection and support of innovation projects by matching grants
- In case of Russia the matching grants are considered more as an instrument for encouraging universities to cooperate with business than an instrument for stimulating business demand for R&D
- The Russian R&D sector is in process of transformation to university model. The main research skills are allocated in academic sector of science (not in university sector)
- In fact, this mechanism is considered by the Russian government as a way for universities to learn and adapt to the business demand for innovations

The Advantages and Disadvantages of Matching Grants to Support R&D (empirical studies in OECD and NIC)

- rent seekers' behaviour among economic agents - David, Hall, Toole (2000)
- crowding out private financing - Klette, Moen, Griliches (2000), Wallsten (2000)
- R&D expenditures of the companies are higher, however the effectiveness of these expenses is lower (with regards to product innovations) - Catozzella and Vivarelli (2011)

- ☑ in comparison with tax incentives public financing of R&D at business sector results in more long-term effects - Guellec, y Van Pottlesberghe (2003); the potential for companies to “compensate” market uncertainty - Czarnitzki and Toole (2007)
- ☑ the firms receiving grants are more often innovators of an international level and are more successful in commercialization as compared with recipients of tax incentives - Berube and Mohnen (2007); increasing R&D financing and growing number of patents - Cerulli and Poti (2010)
- ☑ matching grants are extremely important for startups and for firms that have launched innovation programs; positive behavioral changes, a much more active approach by the owners of these firms to innovations and broadening of foreign cooperation - Hall, Maffiolly (2008)
- ☑ large firms demonstrate more often positive changes in their behavior – Falk (2006); young, small, and technologically specialized firms are much more ready to change their behavior - Wanzenbock, Scherngell, Manfred (2011)
- ☑ the importance of the learning effects; inter-organizational interaction stimulated behavioral changes - Clarysse, Wright, Mustar (2009)

- ??? The review of empirical micro-level studies: 48 cases have confirmed the hypothesis of crowding in, but in 15 cases there were effects of crowding out, and in 13 cases there were no clear effects - Alonso-Borrego, Galan-Zazo, Forcadell, Zuniga-Vicente (2011)

The Main Tasks of the Study

- 1. What are the main motivations of the universities and companies to participate in the projects based on matching grants mechanism?**
- 2. How has the importance of various problems changed in the process of project implementation? Which problems are temporary and which are of long-term nature?**
- 3. What are the main effects of matching grants? What does the behavioural additionality include?**
- 4. What lessons can we learn from matching grants for Russian STI policy?**

The Empirical Data

- **in-depth interviews**
- **with respondents from universities and companies for cross-analysis**
- **with representatives at different levels of responsibility**
- **conducted twice with 1-year interval for evolution-analysis**
- **in total 40 interviews, including 28 - with representatives of 15 universities and 12 - with representatives of 8 companies**
- **covering 30 projects which were selected in 2010 for matching grants**

Some Initial Propositions

- 1.** Universities are primary initiators to apply for matching grant. Business is more interested in the engineering services than in R&D.
- 2.** There's a risk that traditional interest groups can try 'to catch up' the new tool and to distort it.
- 3.** The substantial behavioural additionality is based on the transition of control over the research results from the government to the company-recipient of the subsidy.
- 4.** The interaction between universities and companies reveals additional positive affects due to mutual and complicated influence of scientific and educational activities.
- 5.** The matching grants provides the most substantial demonstration effect for the universities since they are better prepared to accumulate and spread the results.

Results (1): Motivations

1. The major motivations for matching grants from universities are:

- (1) university could receive substantial resources for research project with serious results (despite the fact that many universities have sufficient financial resources they are nevertheless limited in financing R&D);
- (2) receiving practical tasks from business, identifying necessary directions for the development of research and engineering competences;
- (3) establishing or restoring cooperation with business, strengthening reputation of the university among potential business clients;
- (4) opportunities to get additional federal support for university.

From side of companies:

- (1) most companies are not ready to invest into R&D, particularly at the pre-competitive stage, they are more interested in dealing with technological and engineering tasks;
- (2) it is important for business to use modern technological university equipment within the framework of the project (in recent years the technological and testing facilities in a number of universities have been improved impressively);
- (3) smaller companies are highly motivated by prospects to strengthen their human capital due to cooperation;
- (4) large companies (especially state-controlled) are aimed at demonstrating their activity and loyalty to new governmental initiative .

Results (2): Challenges

2. The challenges for university-industry partnerships are:

- (1)** not just R&D is required, but companies need in getting modern technologies and solving engineering problems;
- (2)** there is a fundamentally different client – not a state agency but a private company with different and fairly rigid requirements to what must be made; respectively, principles of conducting R&D in universities should change significantly and become more business-oriented;
- (3)** the research project is quite large and long, university has to maintain a specific management of such a project with control of the terms and constant interaction with the company;
- (4)** business and universities need to share the intellectual property rights and to define the conditions of its use.

Results (3): Problems

3. The significance of the problems is constantly being re-evaluated in the process of project implementation. There is a gradual decrease in the importance of some issues such as over-reporting to the state, excessive number of indicators for control, strict monitoring, difficulties of planning.

At the same time, some issues become more important, such as:

- (1) distribution of intellectual property rights, principles of their use;
- (2) providing significant demonstration and synergetic effects;
- (3) development of university management system for effective integration of scientific and educational activities,
- (4) solution of possible conflicts between different interest groups in the universities.

Companies and universities are mostly in a positive conflict in the process of project implementation. Some friction between companies and universities is based, first of all, on different mentalities and values of businessmen and scientists. Such difficulties tend to be overcome and do not lead to termination of projects.

Results (4): Effects

4. We have found out the essential behavioural effects of matching grants. The effects are generated by the new conditions of state support when company and university have new roles.

We have found out the positive effects of the mechanism of matching grants:

- (1) increased commitment of universities and their teams to solving practical problems in which the business is interested, increased motivation of scientists (especially young ones);**
- (2) institutionalization of the relationship between universities and business in innovation sphere, expansion of R&D cooperation, formation of consortia;**
- (3) selection of best specialists and departments in universities,**
- (4) clarification of missing skills and competences, modernization of educational programs in line with business needs.**

The presence of this effects is to a large extent due to the process of mutual learning, transfer of skills within the project partnership. Sometimes this learning is connected with moving of staff between business and universities during the implementation of projects.

Conclusions

- 1.** Compared with other countries where the instrument of matching grants has been used over a long period of time, for Russia it is a fundamentally new tool that significantly modifies the practice of fostering innovation.
- 2.** Relatively little time has passed since the beginning of application of matching grants in Russia – not more than 3 years. It would be wrong to say now that the impact of matching grants was positive or vice versa. However, the mechanism of matching grants created the premises for behavioural changes in innovation behaviour for both companies and (especially) universities.
- 3.** The most important results of matching grants: (1) the general orientation of universities and companies to the further development of cooperation, not necessarily with the same partner, but in the format ‘company-university’; (2) this tool has allowed to “spur up” universities and to make companies focus on new opportunities of partnerships with universities.
- 4.** Now the Russian government is intensively implementing a set of mechanisms of supporting university development. In this context, the scale of changes depends on the ability of universities to provide a synergic effect of all support tools used by them but the progress in this direction is very poor. Moreover, positive effects are still localized even within universities.

Recommendations

- ✓ Now the matching grants is more important for the development of applied research and engineering skills at the universities. This instrument must be as close as possible to the actual demand from companies, but at the same time it should inspire business to invest more in R&D.
- ✓ This mechanism would be more effective if to ease participation of SME and rapidly growing companies. It would be worthwhile to examine the possibility of creation of companies' consortia under matching grants. Such consortia may be established, for example, in innovative clusters.
- ✓ So far this instrument is intended for a demonstration effect, in order to ensure stable and positive results it should be applied during a longer period of time. Therefore it is important to stimulate the “transition” of this instrument to the category of permanent measures of government support of innovation activity.
- ✓ It is essential to examine the possibility of applying the mechanism of matching grants by various state development institutes in order to implement a continuous cycle of search, evaluation, selection, and monitoring of innovative projects.

Some Lessons from the Russian Practice of Using Matching Grants

First, the Russian government is focused on getting direct positive effects of the taken measures. The desire of rapid achievements leads to a risk of imitating positive results.

Second, the Russian practice of evaluating STI instruments is limited, as not including behavioral changes. As result, even efficient incentive mechanisms sometimes look less advantageous if there's a lack of analysis of behavioral addionality.

Third, from many experiments in innovation policy we need to move to the evaluation of the best practice. The base for that is independent assessments of effects. Moreover, the results of such assessments and the original data should be available to researchers affiliated with different interest groups.

Fourth, it is important to refocus from the selection of potentially best projects to the selection of successfully implemented projects, terminating some unsuccessful projects.

Fifth, now some positive demonstration effects are attracting companies to interact with universities. What final experience will be formed in practical interaction (positive or negative) depends on the future STI policy, its predictability and consistency, as well as on the initiatives and the ability of universities to adapt to new 'rules of play'.