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Public-Private Partnerships in R&D: The Russian Situation

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Abstract: The researchers have studied aspects of sustainable development of economic systems and come to a conclusion that a public-private partnership is one of the viable instruments ensuring sustainability. This is especially important for the R&D sphere which is a driver of development and achievement of goals of sustainable development. Russia makes use of international experience in establishing a system of public-private partnerships, nevertheless there are problems hindering the process. The present article gives a comparative analysis of the forms of partnerships, key problems of their development in Russia and the ways of their improvement in the near future.

Key words: Public-private partnerships, R&D, innovation, matrix of strategic activities, Russia, sustainability

INTRODUCTION

The rationale of studying forms and models of Public-Private Partnerships in the R&D sphere (PPPs in R&D) is first of all due to the fact that knowledge and innovations in postindustrial economy become a separate branch of industry. The impact of this branch on sustainable development of economy is very important, because "the product" in the form of new technologies, technical solutions, models of interaction of participants facilitates the implementation of Sustainable Development Goals. The main competitive advantage of countries and enterprises is not the access to raw materials and cheap labor power but the capability to create efficient institutes for development and infrastructure for reproduction of knowledge and innovations.

Under such conditions, it is important to find a mechanism of interaction of the following three actors: government, business and science which can by mutual efforts create efficient institutes and infrastructure. The search for the optimum mechanism which takes into account interests of all three actors and at the same time minimizes transaction costs is a very important research and practical task.

For the time being there is no balance between these interests in Russia. According to the statistical data, the budgetary financing of R&D increases every year but the share of government expenditures on science in GDP remains insignificant (Table 1). This means that often private investments leave the research sphere, primarily, from civil R&D.

In Russia, all elements of the innovation research system including policy, laws and regulations, institutes, are elaborated. Nevertheless, the results of R&D commercialization and implementation of innovations do not meet the expectations either of the Russian government or the World Bank.

Table 1: Comparative analysis of the main forms of PPPs in Russia and EU countries

Criterion	Russia	EU countries
Sharing of R&D intellectual property rights	Available but many controversial points	Available
Share of direct government participation in financing	High, more than 60%	Not more than 35%
Tax privileges through budgetary financing	Profit funds; tax abatements	VAT; property; profit
Crediting through guarantee funds	Available	Available
Participation financing of projects	Available	Available
Informal interaction of private investors with the government and financial system	Weak (due to "the crisis of confidence")	Available
Technologies transfer	Available	Available

The problems and prospects of the development of PPPs in R&D are studied by researchers of all countries, who take into account the peculiarities and level of the development of the economy and society. In Europe, the public-private partnerships will be implemented through open calls under Horizon 2020, the new EU Programme for Research and Innovation for 2014-2020. In Russia there is no National Strategy for the PPPs development.

MATERIALS AND METHODS

Comparative analysis of PPPS models in R&D in Russia and other countries: In OECD countries public/private partnerships can be classified according to the types and characteristics of the actors involved including:

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university-industry partnerships; government (including laboratories) industry partnerships research institute industry partnerships and a combination of the above, such as partnerships linking multiple government research institutes to one another and to industry. With regard to the first category, the OECD secretariat provides a detailed typology of the various mechanisms for university-industry partnering from general grants and fellowships through specific contract research, collaborative research and consortia agreements, to training, mobility and networking schemes (Anonymous, 2015a, b).

In Russia, PPPs are considered as a legally instituted for a certain period of time cooperation of a public partner, on the one part and a private partner on the other part which foresees pooling of resources and distribution of risks and is based on the agreement on a public-private partnership. Its objective is to attract private investments into the economy, to ensure accessibility and quality increase of goods, researcher, services for consumers within the powers of the bodies of the public authorities and local self-government.

PPPs are considered as concrete projects implemented jointly by public authorities and private companies at the facilities belonging to the federal, regional and municipal property. Business uses its capital and managerial potential for the implementation of such projects in accordance with the set time frame and budget. The public sector bears responsibility for the solving of social problems and affects positively upon the economic development and the growth in the quality of life of the population.

In the general case, PPPs combine the following two types of activities: investments into the infrastructure facilities; provision of services using such facilities or operating them (Engel *et al*., 2008). The forms and directions of the development of PPPs in R&D have their peculiar features which are worth special studying.

Since 2007, the following main types of public private partnerships in R&D were developed in Russia: programme financing of science it foresees the development of the Federal Special Purpose Programmes (FSPP) with the condition of co-financing of projects from non-budgetary sources for example, FSPP on the priority directions of the development of the science and technology complex of Russia for the period of 2007-2012 which supposes that private investments into the project should be from 25-70% and also financing through the public and public-private foundations; creation of a "hard" infrastructure (business-incubators, techno-parks, resource centers) in order to ensure the access to state-of the-art equipment and technologies, educational resources. Research and development contracts in accordance with the priority directions of the development of the science and technology complex (including those under orders of the business with the leading role of universities). Cooperation agreements and research and innovation cooperation agreements (R&D agreements).

The following existing models of PPPs in R&D were used in Russia for establishing its national system: National Science Foundation (NSF, USA) with the programme of partnership for innovations this model was used as the basis for the establishing of the Russian Foundation for Basic Research (RFBR). Small Business Innovation Research (SBIR) the experience of this model was used in Russia by Bortnik's Foundation (the Start Programme).

Small Technology Transfer Research (STTR) with the programmes of partnerships between small-scale innovation companies and Universities in Russia this model was implemented in the "PUSK" Programme (partnership between a University and a company). Innovation Researches Assistant Programme (IRAP, Canada) it is used at the stage of the practical design, after the R&D stage (Burger and Hawkesworth, 2011).

In all these partnerships, the role of the government is substantial due to the fact that these partnerships are created with the support of the government resources. The research institutes (The Research Institutes of the Russian Academy of Sciences), Universities and enterprises act as R&D actors. The comparative analysis of the forms of PPPs in R&D is shown in Table 1. Controversial points are due to imperfect legislation, necessity to align interest between parties under the PPP agreement, when selecting how to share R&D rights.

The main problems in the PPPs development in Russia: The key problem of the PPs development in Russia is a low level of interest of business in projects, especially in the R&D sphere. It should be mentioned that in general the expenditure on R&D in GDP of Russia takes a small share (Table 2).

Table 2 drawn up on the basis of the data of the World Bank and Eurostat, shows that the key actors on the R&D market are Israel, South Korea and Japan. Among the European countries, the largest share in GDP in 2013 was observed in Finland (3.31%), Sweden (3.30) and Denmark (3.06%). The share of the government expenditures on R&D in GDP is above 2% in Austria, Belgium, France and Germany. In Russia the share of the government expenditures does not exceed 1.13%.

At the same time, the percentage share of the expenditures of business in GDP is substantially smaller

Table 2: Gross domestic expenditure on R&D, 2010-2013 (% of GDP)

Variables	2010	2011	2012	2013
EU-28	1.93	1.97	2.01	2.01
EA-19	1.99	2.04	2.09	2.09
Israel	-	4.10	4.25	4.21
China (except Hohg Kong)	1.76	1.84	1.98	2.01
Japan	3.25	3.38	3.34	3.47
South Korea	3.74	4.04	4.03	4.15
United States	2.74	2.77	2.81	-
Russia	1.13	1.10	1.13	1.11

Table 3: Gross domestic expenditure on R&D by Sector, 2008 and 2013 (% of GDP)

	Business enterprise sector		Government sector		Higher education sector	
Variables	2008	2013	2008	2013	2008	2013
EU-28	1.17	1.28	0.24	0.25	0.43	0.47
EA-19	1.19	1.33	0.26	0.28	0.42	0.47
China	1.08	1.51	0.27	0.32	0.12	0.15
Japan	2.72	2.60	0.29	0.28	0.40	0.45
South Korea	2.53	3.09	0.41	0.47	0.37	0.41
United States	1.97	1.96	0.31	0.35	0.37	0.39
Russia	0.66	0.68	0.31	0.34	0.07	0.10

Table 4: Gross domestic expenditure on R&D by source of funds, 2008 and 2013 (% of total)

	Business enterprise sector		Government sector		Abroad	
Variables	2008	2013	2008	2013	2008	2013
EU-28	54.8	55.0	33.8	32.8	8.8	9.7
EA-19	56.3	56.9	34.6	33.4	7.2	7.8
China	71.7	74.0	23.6	21.6	1.2	1.0
Japan	78.2	76.5	15.6	16.4	0.4	0.5
South Korea	72.9	73.7	25.4	24.9	0.3	0.2
United States	63.5	59.1	30.4	30.8	-	3.8
Russia	28.7	28.2	64.7	67.6	5.9	3.0

in comparison with that in the developed European countries and USA (Table 3). Table 4 vividly demonstrates the low interest of the Russian business in financing R&D; table presents the structure of investments by sectors (The World Bank Group, 2016).

As Table 4 shows the model of public financing of the R&D sector still prevails in Russia. The low interest of the business in financing R&D is caused by the following reasons: mentality, the Russian business prefers to work in the frameworks of short-term objectives thus minimizing risks in many ways, due to the level of the economic development when it is difficult to get long-terms resources for the development (we do not take into account public corporations which "function by other laws" and have better access to resources); competences of the top management of many enterprises not all heads of enterprises take for granted that a stable growth means leadership in innovations, strategies, marketing, production and organization not always enterprises have a coherent business model with its constituents: market segment, cost proposal, value chain, costs/profit mechanism, value network, competitive strategy elaboration motivation of business and science the majority of universities continue their R&D activities without taking into account the market and potential demand while generating knowledge they do not add them an applied character and do not interact with business.

At the same time, the management in research organizations and universities often do not meet the requirements of the R&D commercialization. Still the process approach is preserved in the paradigm of research studies, i.e., the longer the process is financed, the better. The project approach oriented to planning of works and experiments, obtaining of concrete results of the certain quality within a certain period of time and allocated resources is slightly used.

Due to the mentioned above facts, the motivation of business and science are differently directed because business has other target settings (United Nations, 2015).

RESULTS AND DISCUSSION

Ways to improve PPPs in Russia basing on international experience: The international experience shows that the key factors of the PPPs successful development are the following aspects: partners confidence stability and predictability of the state policy openness and transparence of the cooperation conditions and the project results.

Table 5: Matrix of strategic activities

Variables	Direct activities	Indirect activities
To level risks	Provision of the guarantees system to adherence to terms for investors	Strengthening of the legal and regulatory support
To form government orders	Implementation of the concept "Sustainable Procurement" in R&D	Formation of institutional and legal and regulatory support
To attract professional managers	Formation of supervisory councils at universities with the participation of business	Integration of educational and vocational standards at universities
To develop a market of innovations	Economic measures aimed to enhance the living standards of the population and growth of the home market capacity	Policy of import substitution. Promoting the national innovation system
To invite representatives of busines	Widening of the structure of experts councils at foundations and techno-parks	Fundraising at universities with the formation of the pool of experts from business and consulting companies
To soften taxation	Wage tax exemption in R&D	Elaboration of a stimulation system for researchers taking into account their contribution to R&D
Sharing of intellectual property rights	Detailed elaboration of the contacts content concerning issues of the sharing of intellectual property rights	Development of a market of intellectual property. Creation of a single federal market monitoring system

In this connection, the researchers see the following ways to improve PPPs in R&D in Russia: to level risks of changing conditions of financing and implementing of projects in the course of their realization to form government orders for development and production (this especially applies to high-technology products, innovation pharmaceutical products) such an order requires clear defined objectives of investigations and developments the government order reduces the cost of innovations because it gets the business of the market promotional costs of a new product to attract professional managers, representatives of the business to the management of universities and research organizations with the aim to form their entrepreneurial spirit up to now in science and business, there is no unity of objectives and tasks, so often, the trajectories of their development do not intersect; the role of the government as the founder of research organizations and universities is very important in solving this problem to strengthen the role of universities and researchers in the system of public-private partnerships introducing of royalties to researchers/developers of novel ideas and innovations to develop a market of innovations the process from the generation of knowledge to the technologisation and commercialization should become continuous and refinanced a single federal market monitoring system to develop forms of seed financing from the existing institutions for development and foundations for the time being, foundations finance predominantly less risky and more profitable things to invite more actively representatives of business to expert councils for more objective assessment of ideas and projects, growth of their results implementation into practice to soften taxation for private partners and universities project partners in the framework of PPPs this is especially important for the wage tax, because highly intellectual labor is used in the R&D sphere and labor costs of the research elite are high to solve the problem connected with the sharing of intellectual property rights (like production sharing) clear and transparent definition who is the owner of the developments, obtained using the funds of the federal budget. Taking into account the proposed ways to improve PPPs in R&D, the authors have elaborated a matrix of strategic activities (Table 5).

CONCLUSION

The studies demonstrated that in Russia there is still a problem of imbalance in interests of the state and business in R&D financing. Contrary to EU countries, the classification of partnerships is narrower thus reducing the number of contracts signed, first of all, between universities and industry. In combination with the programme approach to R&D financing this determines a high share of the state and low interest of private investors. Besides, there are other reasons of low interest of business to the R&D sphere (mental, market, managerial reasons).

The international experience can be used to determine ways of PPPs improving in Russia, presented in the Matrix of Strategic Activities. The main ways are the following: to level risks to strengthen the role of universities in PPPs to improve tax policy to solve controversial issues connected with the sharing of intellectual property rights.

The introduction of these innovations would contribute to the balancing of interests between the state, business and science, PPPs development as an efficient instrument ensuring sustainable development.

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