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R95 **RUSSIAN ECONOMY IN 2017. TRENDS AND OUTLOOKS** / [Alexander Abramov etc.; Doctor of sciences (economics) Sergey Sinelnikov-Murylev (editor-in-chief), Doctor of sciences (economics) Alexander Radygin]; Gaidar Institute for Economic Policy. – Moscow: Gaidar Institute Publishers, 2018. – 544 p. – ISBN 978-5-93255-530-9.

The review “Russian economy in 2017. Trends and outlooks” has been published by the Gaidar Institute since 1991. This publication provides a detailed analysis of main trends in Russian economy, global trends in social and economic development. The paper contains 6 big sections that highlight different aspects of Russia's economic development, which allow to monitor all angles of ongoing events over a prolonged period: the socio-political issues and challenges; the monetary and budget spheres; financial markets and institutions; the real sector; social services; institutional changes. The paper employs a huge mass of statistical data that forms the basis of original computation and numerous charts confirming the conclusions.

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Mikhail Kuzyk, Yuri Simachev

6.4. Government promotion of scientific research and innovative activity at higher educational institutions: the main instruments of support, its scale and beneficiaries[1]

6.4.1. Scientific research and innovative activity at universities: the current situation and development trends

One typical feature of Russia's science sector, inherited from the Soviet period, is the predominant role in its research and development (R&D) activities of the 'traditional' scientific research organizations, represented by the research institutes operating under the system of government-funded academies of sciences (academic science), as well as by the research institutes and R&D bureaus subordinated to branch ministries and government departments (sectoral science); meanwhile, the role of higher educational institutions (HEE) in those activities was rather modest. At the same time, since the early 2000s, the volume of R&D projects launched in Russia by higher educational institutions and the number of researchers participating in them, has been increasing at a stable rate both in absolute and relative terms (*Fig. 8*). As a result, over the last one-and-a-half decades, the number of researchers involved in the higher education sector increased more than 1.5 times, the sector's relative share in the total number of researchers and total internal R&D costs[2] nearly doubled, and the corresponding costs incurred by higher educational institutions in constant prices increased more than 4-fold.

The growth rates were highest over the period 2009–2011, when in face of post-crisis recovery across the Russian economy, the government, in an attempt to achieve 'new quality' economic growth on the basis of the experiences gained during the crisis, was looking for and developing, among other things, new growth drivers. Universities were chosen to be one of those drivers, and they were assigned the role of scientific research and innovation centers in addition to their educational role; this goal, in its turn, significantly increased government involvement in the scientific research and innovation activity of higher educational institutions (more on that later).

[1] This section is written by Mikhail Kuzyk, IAC, RANEPA; Yuri Simachev, NRU HSE, RANEPA.

[2] Hereinafter, internal R&D costs are understood as the actual costs incurred in the course of implementing R&D projects in RF territory, with no regard for their actual source of funding (i.e., including those funded from abroad). Internal R&D costs include both operating costs (salary and wage expenses, supplies and materials, maintenance costs, etc.) and capital costs (those incurred on the purchase of land, on the construction or purchase of buildings, on the purchase of equipment classified as capital assets, etc.). (For more details see, e.g., *Gorodnikova N.V., Gokhberg L.M., Ditkovsky K.A. et al*. Science and technology indicators in the Russian Federation: HSE Data Books. Moscow. 2018).

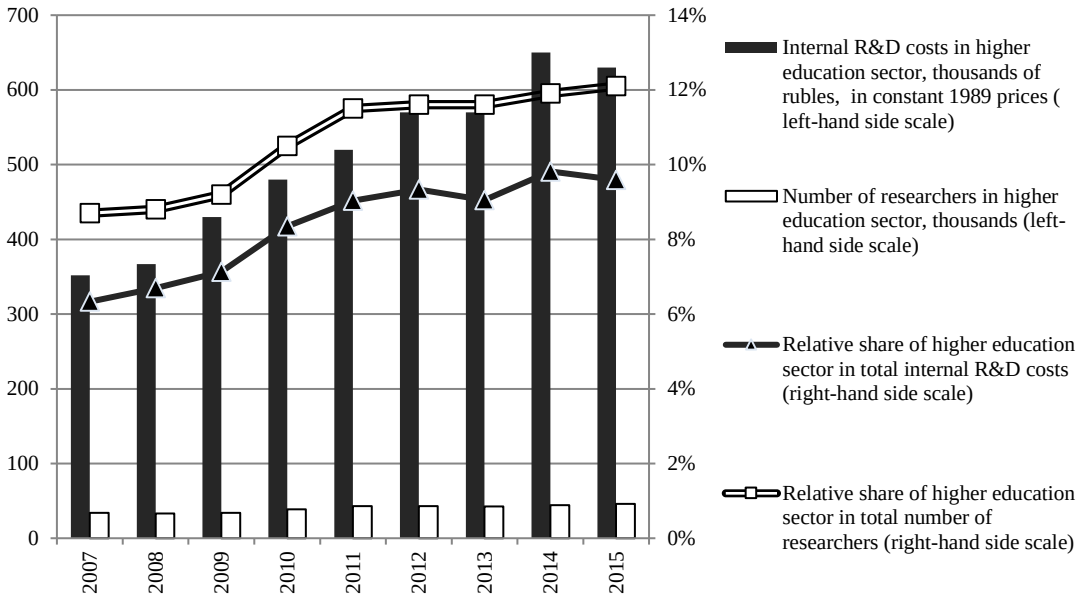


Fig. 8. Scientific research activities in Russia's higher education sector in 1995–2015

Sources: data released by NRU HSE; own calculations.

Growth of the R&D costs of higher educational institutions was boosted in the main by the increased funding allocated to applied studies, and their volume (in comparable prices) over the period from 2002 through 2015 more than tripled. At present, applied studies account for nearly a half of the total scientific research expenses in the higher education sector, whereas in the early 2000s their share amounted to about a third (*Fig. 9*). Interestingly, the relative share of the 'intermediate' category – the practical implementation phase of applied R&D studies – over the same period notably shrank.

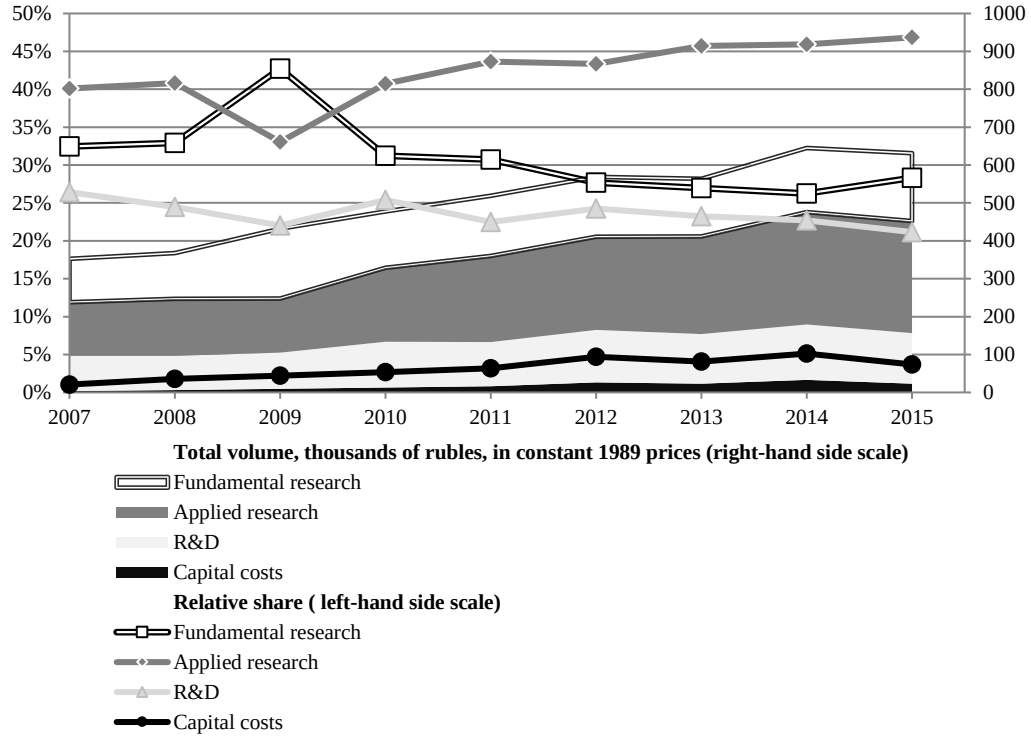


Fig. 9. Internal R&D costs in Russia's higher education sector in 2002–2015

Sources: data released by NRU HSE; own calculations.

The bulk of R&D projects implemented by universities (more than 70 percent) belong to the category of natural and technical sciences. However, since the early 2000s, the relative share of the latter has shrunk, while that of research in the field of social sciences and humanities, on the contrary, notably increased (*Fig. 10*).

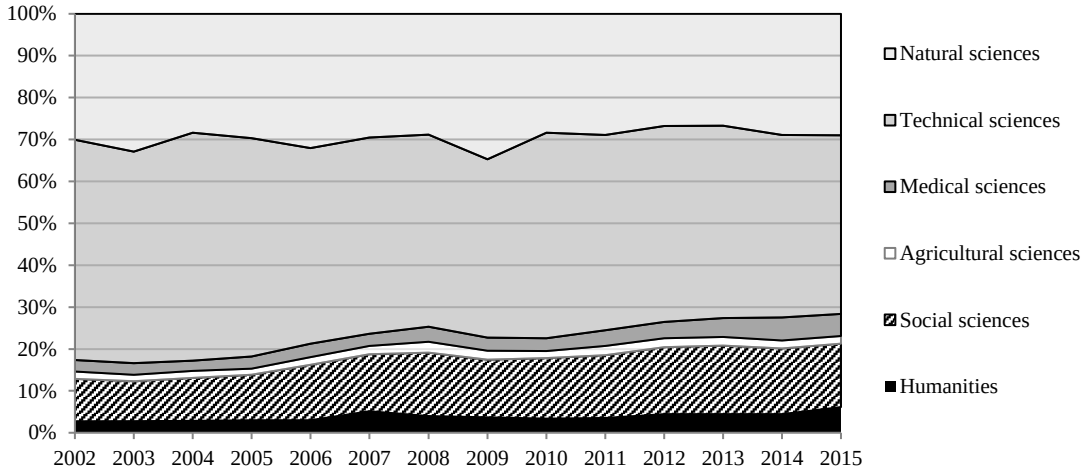
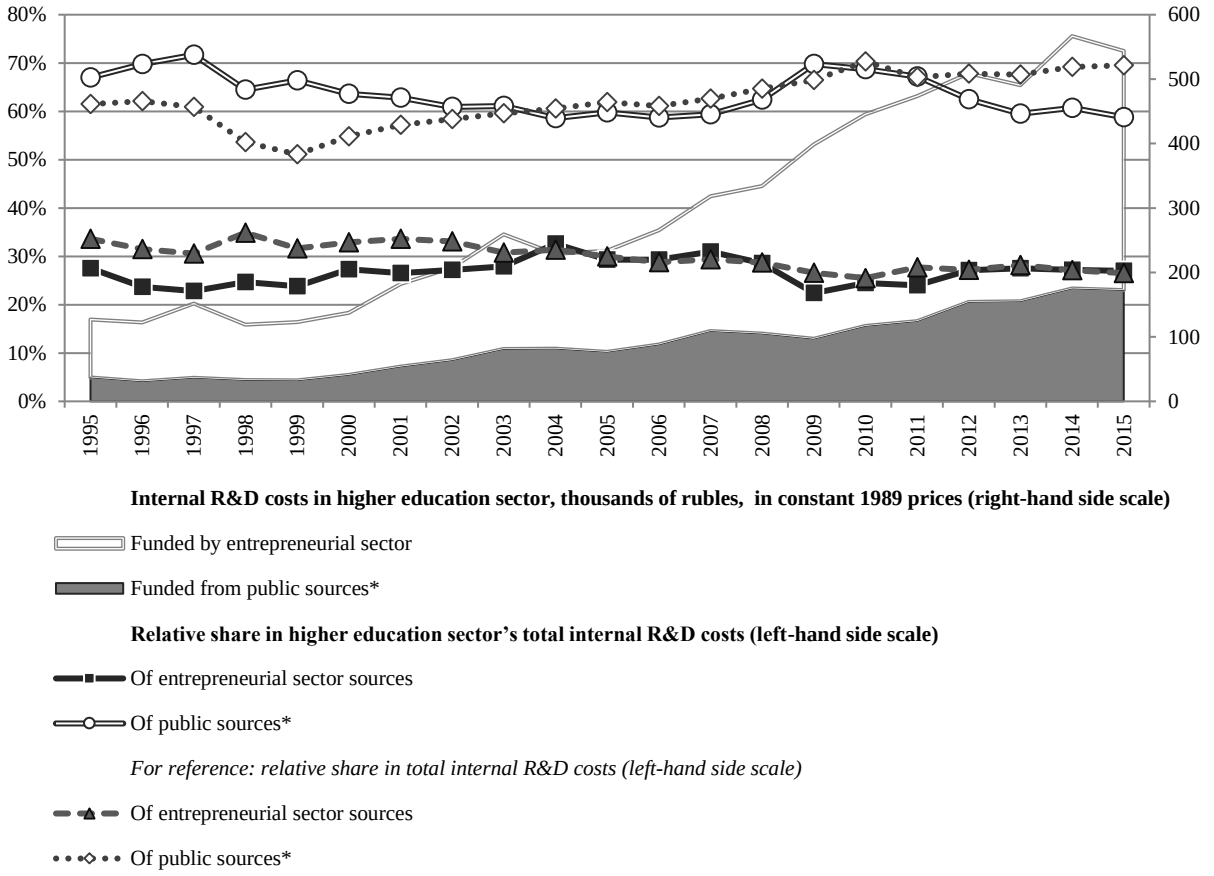


Fig. 10. The structure of internal operating R&D costs in Russia's higher education sector, by branch of science, in 2002–2015

Sources: data released by NRU HSE; own calculations.

It is important to note that, in spite of the sufficiently stable growth rate, displayed approximately since the early 2000s, of the volume of scientific research funded by the entrepreneurial sector, its relative share in the total internal R&D costs of the higher education sector was not demonstrating any more or less distinctly visible upward trend, varying in the interval between 23 and 33 percent, and from 2010 onwards became stabilized at 27 percent, while the relative share of public sector funding allocated to research projects launched by higher educational institutions (including the funding provided by companies operating in the public sector) was demonstrating, over the period 2010–2015, a downward trend[1] (however, when taken in absolute terms, the volume of public funding was increasing – see *Fig. 11*). Meanwhile, for Russia's science sector in general, the overall picture appears to be even less optimistic: since the early 2000s, there has been stable growth in the relative share of the volume of public funding allocated to R&D projects, and shrinkage of funding from the entrepreneurial sector.



*Including the organizations belonging to the public sector.

Fig. 11. The share of internal R&D costs in the higher education sector covered by the entrepreneurial sector and the public sector in 1995–2015

Sources: data released by NRU HSE; own calculations.

[1] In fact, this trend was offset by the increasing funding of R&D projects by higher educational institutions from their own sources.

As far as the innovative activity of universities is concerned, its results traditionally have been estimated by the scale of influence of the higher education sector on the innovation products actually implemented by commercial companies. The available official statistics provide information neither on the number of higher educational institutions cooperating with the business sector, nor on the number of enterprises tapping on the higher education sector as a source for implementable innovations; nevertheless, these data still make it possible to follow the quantitative movement of joint scientific research projects launched by industrial enterprises together with higher educational institutions, as well as the relative share of innovative companies involved in this type of cooperation (*Fig. 12*). The available data point to the existence of a weak but sufficiently stable positive trend in the development of cooperation of industrial companies with higher educational institutions in the R&D field over the past decade (in contrast to their cooperation with the sector of 'traditional' science, where no growth trend is visible).

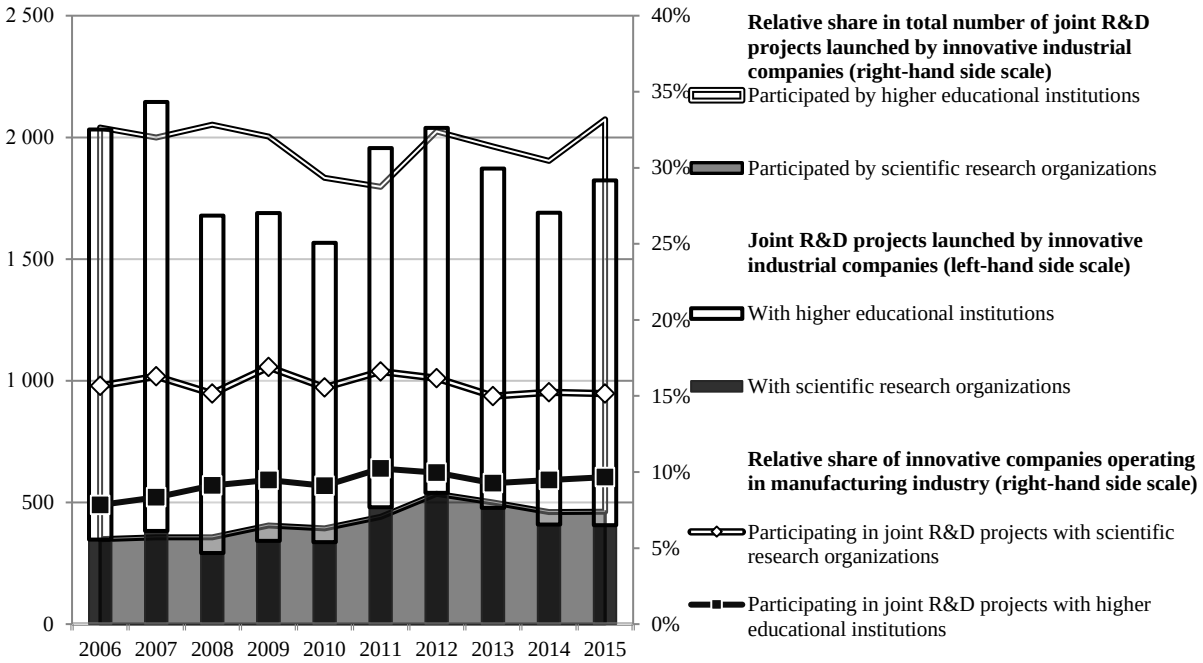


Fig. 12. R&D projects launched by industrial companies jointly with higher educational institutions and scientific research organizations in 2006–2015

Sources: data released by NRU HSE; own calculations.

An important index (which has been in high demand in recent years, including in the sphere of Russian government administration, of which more will be said later) reflecting the competitive capacity of the national higher education sector is the hierarchy of Russia's leading universities in the global ranking. In order to analyze the scientific research aspect of the activity of Russian universities, it will be worthwhile to look at the annual data collected in accordance with QS World University Rankings Methodology, where the highest weighting is allotted to each institution's *Academic Reputation* score.[1] Lately, the positions of Russian universities in

[1] This metric, with weighting of 40 percent, is based on *Academic Survey* dataset (for reference: in Russia's *Three University Missions* ranking, the academic component of a university's activity has weighting of 25 percent). The other five metrics utilized by QS in evaluating universities, are Citations per faculty (20 percent); Faculty/Student

that ranking have been gradually improving, and this happens mostly due to the better scores gained by the higher educational institutions of the 'second wave', and not the leading universities (*Fig. 13*).

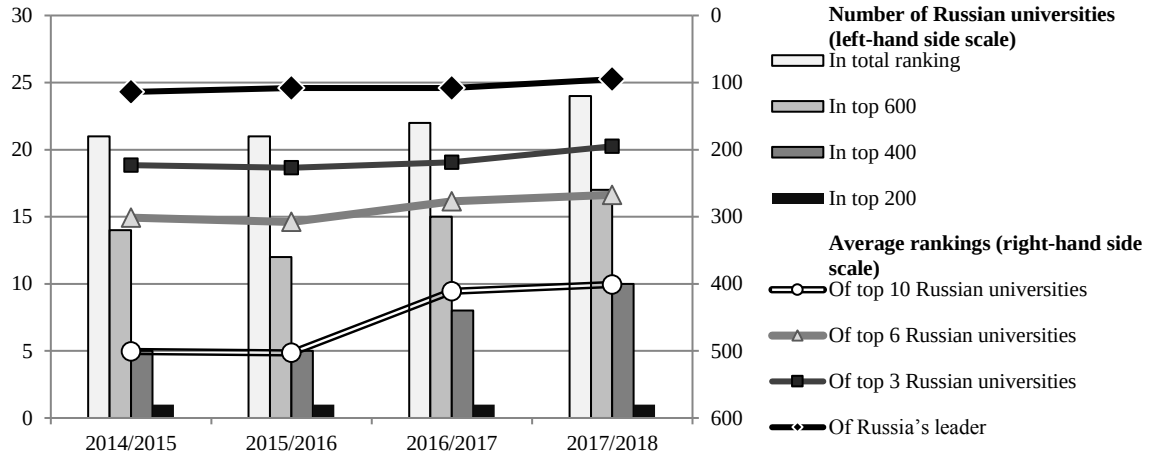
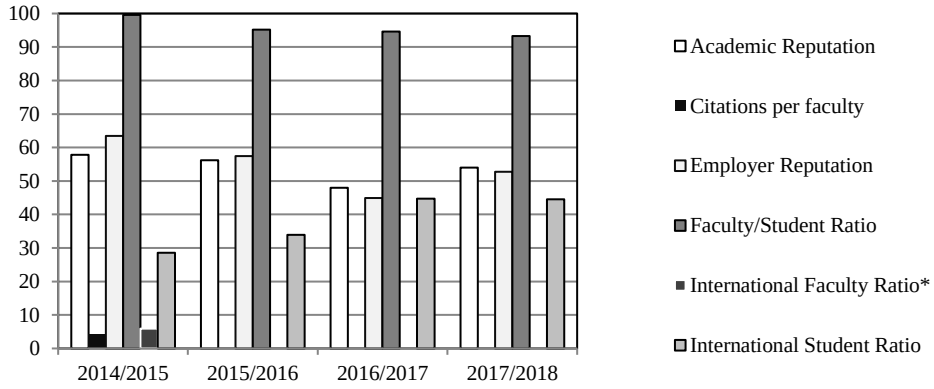


Fig. 13. Russian universities in QS World University Rankings

Source: own calculations based on QS World University Rankings.

While looking at the main metrics used to compile the QS score, it is worthwhile to note that many of the Russian universities included in the ranking – and not only the leading ones – have a high score on their *Faculty/Student Ratio*. The weakest point of those Russian higher educational institutions are their *Citations per Faculty* and *International Faculty Ratio* scores (*Fig. 14*).



*In the ranking results for 2015/2016, 2016/2017, and 2017/2018 there are no relevant scores for leading Russian universities.

Fig. 14. The average scores of Russia's top three universities included in QS World University Rankings

On the whole, in spite of the growing activity of universities in the scientific research field, Russia has still failed to join the group of leaders in terms of the relative share of R&D projects

Ratio (20 percent); Employer Reputation (10 percent); International Student Ratio and International Faculty Ratio (5 percent each). For further details, see QS World University Rankings Methodology. URL: https://www.topuniversities.com/qs-world-university-rankings/methodology

implemented by higher educational institutions, falling behind not only the developed industrial countries, but also some of the newly emerged industrial powers, as well as quite a few of the post-socialist states and former USSR republics (*Fig. 15*).

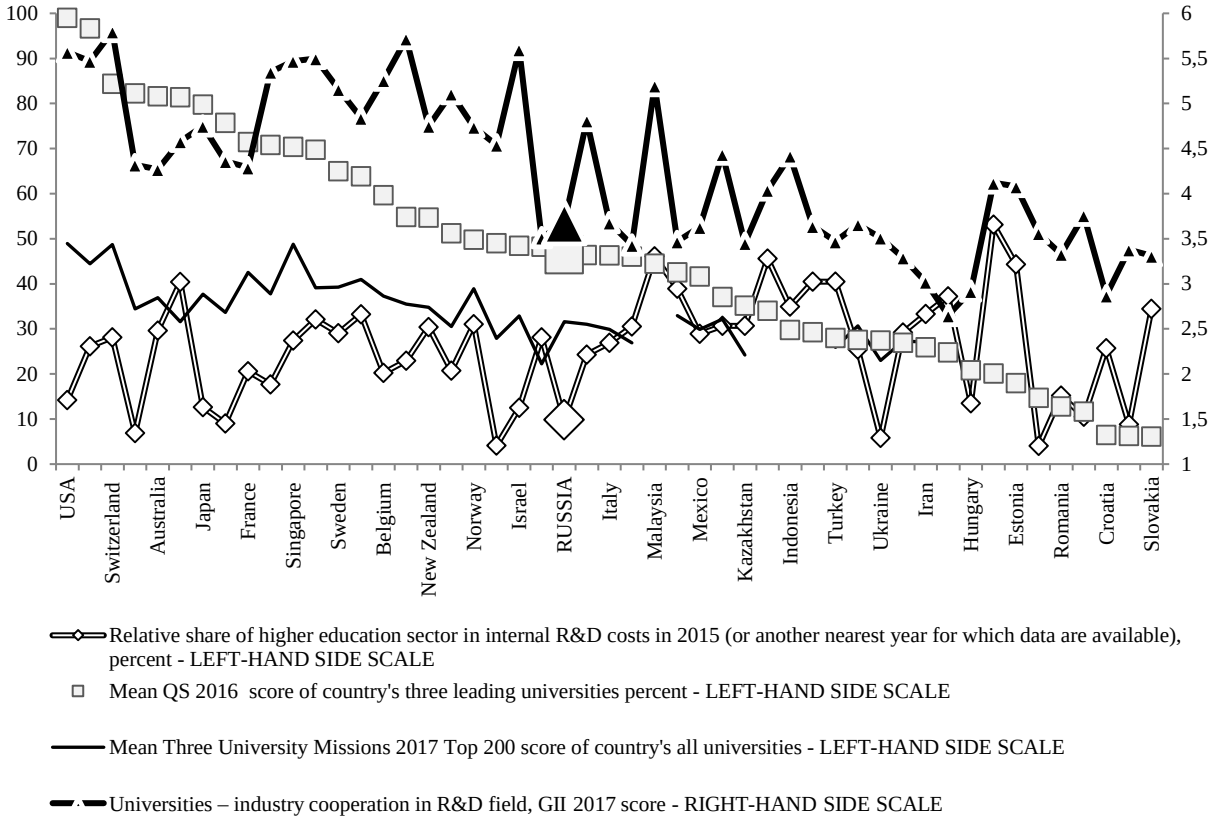


Fig. 15. The scientific research and innovative activity indices of higher educational institutions; the international competitive capacity indices of leading universities – by-country comparison

Sources: own calculations based on data released by NRU HSE, Global Innovation Index 2017, and *Three University Missions*.

The same pattern can be observed with regard to the cooperation of Russian universities with industry in the R&D field: although by her Global Innovation Index ranking,[1] Russia is ahead of a majority of her former socialist-camp partners and post-Soviet states, she lags significantly behind both the traditional and newly emerging leaders in innovative development, including the Republic of Korea, Singapore, China, and Malaysia. And finally, if we choose to speak of the international competitive capacity of a country's leading higher educational institutions in the terminology of global university rankings, Russia in this respect falls far behind not only the recognized world leaders in higher education like the USA, the UK and Switzerland, but also some other countries like China and Singapore. This conclusion is fully supported not only by Russia's scores assigned by foreign agencies (like the already cited QS World University

[1] The Global Innovation Index 2017. URL: https://www.globalinnovationindex.org/gii-2017-report

Rankings), but also by one Russian agency (*Three University Missions,*[1] which is frequently criticized for its excessive partiality to Russian higher educational institutions.[2]

Thus, it should be admitted that, in spite of the progress achieved in recent years, both Russia's higher education sector as a whole and some of its leading representatives still have a long way to go before they win high scores, on a global scale, in terms of their scientific research and innovative activity indices.

6.4.2. The main instruments employed by the government in promoting the scientific research and innovative activity of higher educational institutions[3]

Beginning from somewhere in the middle of the past decade, the government began to pay much more attention to developing scientific research and innovative activity at higher educational institutions (HEE). One of the first measures undertaken in that direction (and the first one to be truly wide-ranging) was the support for and development of ***centers for shared use of scientific equipment (CSU)*** set up on the basis of higher educational institutions, as well as scientific research organizations. These centers, in addition to the conduct of studies, tests and measurements, were also charged with the task of participating in training specialists and other staff with university-level qualifications.[4]

Centralized federal budget funding has been allocated to the creation and development of centers for shared use of scientific equipment since 2005, to the total value of RUB 15 million RUB (RUB 1.1 million per annum on the average); in this connection, no less than 80 percent of that sum must be spent on purchases of expensive equipment items (to the value of more than RUB 1 million).[5] As of end year 2017, as total of 578 centers were established throughout

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[1] *Three University Missions.* Moscow international ranking. URL: https://mosiur.org/

[2] Suffice to say that only two Russian universities are among the Top 200 in QS World University Rankings – Lomonosov Moscow State University and Saint Petersburg University, whereas in *Three University Missions'* Top 200, as many as 13 Russian higher educational institutions are included.

[3] In this section, we discuss the government support measures and instruments that are initially designed (in full or predominantly) specifically for higher educational institutions, with a significant emphasis on the development of their research and/or innovative activity. For this reason, we do not consider here the funding earmarked for research projects implemented in the framework of federal targeted programs (such as the FTP *Research and Development in the Priority Areas of Development of the Russian Scientific and Technological Complex*); the grants issues by the Russian Science Foundation and the Russian Foundation for Advanced Research Projects, etc., when universities are treated on equal terms with all the other recipients of government support. We do not analyze here some of the specialized instruments applied by the RF Ministry of Education and Science by way of promoting educational activities (the programs Cadres for the Regions, New Cadres for the Defense-Industrial Complex; the status of a *federal innovation site*). Besides, we do not discuss here some financial instruments intended for higher educational institutions that channel small amounts of support (in objective terms, relative to the size of the entire university (e.g., some spending items earmarked for individual and collective research projects in the framework of FTP *Scientific Research and Educational Cadres for Innovative Russia* for на 2009–2013 and the Program PUSK (Partnership of Universities and Businesses) launched by the Innovation Promotion Foundation). And finally, in general, we do not discuss the basic channel for funding the activity of universities in the form of government assignment because, strictly speaking, this is not government support in its traditional understanding (optional and selective).

[4] The procedure for setting up a federal center for shared use of scientific equipment (approved by Order No 1351 of the RF Ministry of Education and Science, dated March 11, 2011).

[5] This requirement is stipulated in the FTP *Research and Development in the Priority Areas of Development of the Russian Scientific and Technological Complex for 2014–2020*, whereby the government funding of the centers is regulated. Previously, it was regulated in the framework of the Federal Research and Technology Target Program *Research and Development in the Priority Directions of Development of Science and Technologies* for 2002–2006,

the territory of Russia, more than half of them (282) being based at higher educational institutions[1]; however, the actual number of recipients of the relevant government support was 152, because many higher educational institutions included in the program set up several centers at once. The absolute champions in this respect are two universities in the south of Russia – Stavropol State Agrarian University and Southern Federal University, which received federal government funding for the creation of 10 and 14 centers respectively.

In 2006–2008, among the activities funded in the framework of the National Priority Project *Education* through government support channels were ***innovative educational programs (IEP)*** implemented by higher educational institutions. Each of these programs was expected to offer a set of measures designed to develop and implement new and upgraded technologies, methods and forms to be employed as part of the teaching process in order to ensure not only fine quality education, but also its integration with science and innovative activity, and to provide the alumni with professional skills capable of ensuring their high competitive potential in the labor market.[2]

It is important to note that the criteria for selecting those higher educational institutions that were to become the recipients of government support included not only the quality of their innovative programs (the expected results and changes to be achieved in the fields of scientific research and education, their sustainability, availability of resources, including extrabudgetary funding sources, efficient program management, etc.), but also their overall performance level in each field (scientific research, innovative and educational activity), as well as their intellectual potential and material base.[3]

The recipients of government support from the federal budget under these programs, in the total amount of RUB 30 billion, were 57 higher educational institutions; so, each of them was allocated slightly above RUB 500 million (or approximately RUB 260 million per annum). Meanwhile, the actual amount of support received by higher educational institutions varied rather widely – from RUB 220 million (St. Petersburg Mining University) to nearly RUB 1 billion (Lomonosov Moscow State University and Saint Petersburg State University). The bulk of budget funding received by these higher educational institutions was spent on purchases of laboratory equipment[4].

An upshot of this support for innovative educational programs implemented by higher educational institutions was, quite logically, the introduction of a new institution category in the higher education sector – that of ***national research university (NRU)***. In this connection, it was planned from the very start, and moreover, stipulated in legislation, that these universities were to implement educational programs and engage in fundamental and applied scientific research in a broad spectrum of fields,[5] and do it all with equal efficiency. In fact, that is why the name of this category included the word 'research'.

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and the FTP *Research and Development in the Priority Areas of Development of the Russian Scientific and Technological Complex for 2007–2013*.

[1] Web portal *Modern Research Infrastructure of the Russian Federation*. URL: http://ckp-rf.ru/ckp/

[2] The procedure and criteria for the selection procedure, through a tender, of higher professional education institutions implementing innovative educational programs (approved by Order No 44, dated March 2, 2006, of the RF Ministry of Education and Science).

[3] Ibid.

[4] Education in Russia [Information and analytical data]: Federal Reference Book. V. 5. Moscow: Strategic Partnership Center, 2008. (In Russian)

[5] Federal Law No 18-FZ, dated February 10, 2009, 'On the Introduction of Alterations to Some Legislative Acts of the Russian Federation with Regard to Issues Associated with the Activity of Federal Universities'. It should be added that at present, that norm is no longer in force. Instead it is established that the activity of NRUs (at least in

As was the case with innovative educational programs, the support to NRUs was provided in the framework of special university development programs, and the candidates were selected, as a rule, on a competitive basis (one exception was the two NRU set up by a special Presidential Executive Order as a pilot project). The factors to be taken into consideration were the level of a given higher educational institution (its human resources potential, educational and scientific research infrastructure, performance level in the fields of education, scientific research and innovations, international and national recognition), and the quality, substantiation for, and expected results of its development program.[1] To assess the efficiency of program implementation, a list of more than 20 indices was drawn up, these indices describing not only the activity in the educational and scientific research fields, but also innovative activity;[2] it should be added that the currently applied version of the list no longer contains these indices.[3]

Initially it was established that the status of a NRU should be granted to universities for a 10-year period (later on, this restriction was abolished). However, budget funding for their development programs was to be provided only during the first 5 years, on condition that they must also attract co-funding from extrabudgetary sources in the amount of 20 percent. The possible areas for spending these budget resources were purchases of laboratory and scientific research equipment, personnel training in order to improve their qualification, curricula elaboration, database development, and improvement of education and scientific research quality management systems. [4]

Over the period 2008–2010, the status of a NRU was granted to 29 universities, 23 of which previously had been receiving government support for their innovative educational programs. The total amount of budget funding allocated to the NRU development programs was approximately RUB 50 billion RUB, or about RUB 1.7 billion per university, or RUB 360 million per annum. About a half of this amount was earmarked for the development of the universities' material and technical base. The highest amount of budget funding – RUB 1.8 million – is to be received by three higher technical educational institutions situated in Moscow: National Research Nuclear University (MEPhI), National University of Science and Technology (MISIS), and Bauman Moscow State Technical University; the lowest – RUB 540 million – is allocated to the development program launched by St. Petersburg Academic University (the nanotechnology scientific research and education center of the Russian Academy of Sciences).

On the whole, we must note the obvious continuity between the NRUs and the previously existing innovation support programs (the list of support recipients, the principles of their selection, the support targets, and even the corresponding amount of budget allocations). At the same time, while the programs were more oriented to the development of educational activities, the NRUs (at least in accordance with the initial idea of their creation) were to develop equally their activities in the educational and scientific research fields.

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the framework of programs receiving government support) should be aimed at providing the priority directions in the development of science, technology, machinery, relevant sectors of the economy, and the social sphere with human resources, and at developing and implementing hi-tech projects (Federal Law No 273-FZ, dated December 29, 2012, 'On Education in the Russian Federation').

[1] The Provision on the selection, through a tender, of university development programs included in the category *national research university* (approved by Decree of the RF Government No 550, dated July 13, 2009).

[2] Approved by Order No 296, dated July 29, 2009, of the RF Ministry of Education and Science.

[3] Approved by Order No 1038, dated September 22, 2015, of the RF Ministry of Education and Science.

[4] Ibid.

Alongside the status of a NRU, another 'status' category for higher educational institutions was introduced in Russia – that of a ***federal university (FU).***[1] The basic functions assigned to such universities, beside the implementation of innovative educational programs, training the personnel needed for the region's comprehensive socio-economic development, and ensuring systemic modernization in the field of professional education, were the conduct of fundamental and applied studies across a broad spectrum of fields, and integration of science, education and industry – among other things, by practically implementing their intellectual products.[2]

The organization of federal universities was based on a territorial principle, and involved, as a rule, the enlargement of the already existing higher educational institutions. As was the case with NRUs, for each of the universities its own specific development program was approved. Each of these programs envisages educational and scientific research activities, as well as innovative activities; however, no precise targets are established for the latter. It is interesting to note that 8 out of 10 programs envisage the allocation of budget funding. The total volume of budget allocations in the framework of these programs is RUB 40 billion – in the amount of about RUB 5 billion per university, or RUB 1 billion RUB per annum.

In late 2009, the status of a ***leading classical university (LCU)*** was approved in its present form, and it was legislatively consolidated to Russia's two major universities – Lomonosov Moscow State University and Saint Petersburg State University, these being unique scientific research and educational complexes of paramount importance for the future progress of Russian society. The leading classical universities differ from the other higher educational institutions in that their scientific research and educational complexes may incorporate not only structural subdivisions, but separate legal entities, e.g., research institutes. Besides, Lomonosov Moscow State University and Saint Petersburg State University are endowed with the right to independently establish the educational standards for their curricula.[3] Similarly to the other 'status' categories established for universities, the leading classical universities are assigned their own special development programs where innovative activities are stipulated alongside educational and scientific research activities, but without any specific targets. The total volume of budget funding allocated in the framework of university development programs for 2010–2016 was RUB 15.8 billion – on the average RUB 1.1 billion per university per annum; in this connection, the bulk of these resources – approximately 85 percent – was earmarked for the development of universities' material and technical base and infrastructure.

In the same year (2009), the set of instruments to be employed in the support for the scientific research and innovative activities of higher educational institutions (which previously included in the main special programs and 'status' categories), was augmented by yet another tool - a ***small innovative enterprise set up by a higher educational institution (SIE)***, its goal being the implementation of intellectual products. Initially, budget-funded higher educational institutions (and research institutions) were granted the right to create such enterprises without previously

[1] To be more precise, the first federal universities were established back in 2006 – two years before their status was formalized in legislation.

[2] Federal Law No 18-FZ, dated February 10, 2009, 'On the Introduction of Alterations to Some Legislative Acts of the Russian Federation with Regard to Issues Associated with the Activity of Federal Universities'. It should be noted that by now, that norm has been abolished, and the role assigned to federal universities in existing legislation is reduced to developing human resources needed for comprehensive socio-economic development of the subjects of the Russian Federation (Federal Law No 273-FZ, dated December 29, 2012, 'On Education in the Russian Federation').

[3] Federal Law No 259-FZ, dated November 10, 2009, 'On Lomonosov Moscow State University and Saint Petersburg State University'.

obtaining the approval of an empowered government body.[1] From 2011, the rights of budget-funded institutions to dispose of their property[2] were significantly expanded, and so it became easier for them to create the charter capital of their enterprises set up with the purpose of intellectual product implementation. Besides, they were granted the right to lease out their premises to their newly created small enterprises without open tender,[3] and the small enterprises were allowed to operate under a simplified taxation system,[4] as well as to apply reduced rates to their insurance contributions to government extrabudgetary funds (until 2019).[5]

At present, the official follow-up database of small innovative enterprises operating in the science and innovation sector contains information on 2,600 enterprises, their founders being approximately three hundred higher educational institutions[6] – about a third of their total number, or (this being a more illustrative figure) more than half (55 percent) of all state and municipal higher educational institutions, and the latter are, in fact, the target of this particular support mechanism. The obvious leaders in this respect are Belgorod State Technological University and South Ural State University, as they hold stakes in the capital of 84 and 63 SIEs respectively.

It is essential to note in this respect that the number of project-implementation companies was used as one of the targets in the development programs implemented at some federal universities, as well as in the innovative infrastructure development programs of higher educational institutions (for more details about this mechanism, see later); in this connection, 76 higher educational institutions are the founders of half of all the project-implementation companies (PIC). This fact has led to the assumption that sometimes, the creation of a SIE, at least during the initial phase, was purely formal and enforced, and this, in its turn, had a negative effect on the viability of such enterprises.[7]

In 2010, against the backdrop of post-crisis recovery in the national economy and the increasing focus of the government on the potential sources of stable growth, there was also a noticeable surge in the policies oriented to innovations, scientific research and technical

[1] Federal Law, dated August 2, 2009, No 217-FZ 'On the Introduction of Alterations to Some Legislative Acts of the Russian Federation Concerned with Issues in the Creation, by Budget-funded Scientific and Educational Institutions, of Economic Societies for the Purposes of Practical Application (Introduction) of the Results of Intellectual Activity.' Somewhat later, this norm was extended to include autonomous institutions in accordance with Federal Law No 273-FZ, dated December 29, 2012 'On Education'.

[2] Federal Law No 83-FZ, dated May 8, 2010, 'On the Introduction of Alterations to Some Legislative Acts of the Russian Federation in Connection with Improvement of the Legal Status of State (Municipal) Institutions.'

[3] Federal Law No 22-FZ, dated March 1, 2011, 'On the Introduction of Alterations to Article 5 of the Federal Law 'On Science and Government Policy in the Field of Science and Technology' and Article 17.1 of Federal Law 'On the Protection of Competition.'

[4] Federal Law No 310-FZ, dated November 27, 2010, 'On the Introduction of Alterations to Article 346.12 of Part Two of the Tax Code of the Russian Federation.'

[5] Federal Law No 272-FZ, dated October 16, 2010, 'On the Introduction of Alterations to Federal Law "On Insurance Contributions to the Pension Fund of the Russian Federation, the Social Insurance Fund of the Russian Federation, the Federal Compulsory Medical Insurance Fund and Territorial Compulsory Medical Insurance Funds", and Article 33 of the Federal Law "On Compulsory Pension Insurance in the Russian Federation"'.

[6] SRI FRCEC: Registration and monitoring of small innovative enterprises of scientific and educational sectors. URL: https://mip.extech.ru/index.php. Strictly speaking, the number of higher educational institutions – founders of enterprises was initially somewhat higher, but some of them have by now been reorganized by way of merger with other higher educational institutions.

[7] See, e.g., *Ruposov V.* Economic activity analysis of ISTU small innovation enterprises. Proceedings of Irkutsk State Technical University. 2014. No 4; Sterligov, I. A third of all small businesses based at higher educational institutions exist only on paper. Science and Technology of the Russian Federation STRF.ru. 2011. URL: http://www.strf.ru/material.aspx?CatalogId=221&d_no=41450#.VNqByeY0Enh

development, and one of their priorities *de facto* was a boost given to the scientific research and innovative activity of universities. At the same time, only one of the instruments included in the government package was shaped in accordance with the tradition that had emerged over the previous years, as government support for a special program that addressed an entire higher educational institution, – the ***innovative infrastructure development program of a higher educational institution***. The budget funding received in this way could be spent by higher educational institutions specifically on the development and proper equipment of innovative infrastructure units (business incubators, technoparks, innovative technology and engineering centers, certification centers, technology transfer centers, centers for shared use of scientific equipment, etc.), as well as on the valuation and legal protection of intellectual products, training abroad and continuing education courses for their staff, creation and implementation of educational programs in the field of small innovative entrepreneurship, consulting services associated with technology transfer, and creation and development of SIEs.[1]

The selection of infrastructure development programs by open tender, where the bidders were required to conduct fundamental and applied studies in the priority fields that were relevant for the development of science and technology, and to efficiently launch educational programs and the set of measures needed to ensure the development of innovative infrastructure. As was the case with other similar tenders, the choice of winners depended not only on the content of their submitted programs, but also on the overall scientific research, education and innovative potential of a given higher educational institution.

The winners in the two tenders were the innovative infrastructure development programs of 78 higher educational institutions (76 of which are currently operating as independent legal entities). The total volume of budget allocations in the framework of this support program over the period 2010–2012 amounted to RUB 9 million, or approximately RUB 115 million per program.

The second support instrument, launched in 2010, envisages co-funding, by the government, of innovative projects aimed at creating hi-tech industries and implemented jointly by higher educational institutions[2] and businesses. In this connection, the direct recipients of budget subsidies are the business companies, which use this funding to pay for the R&D products created by the higher educational institutions in the framework of the joint projects. In the course of a tender, the factors that are primarily considered are the experience of the bidding company in the field addressed by the proposed projects or in related fields, in the implementation of R&D projects, and in the cooperation with higher educational institutions as their customer.[3] It was intended that in the elaboration of R&D products ordered in the framework of a given project, undergraduate and postgraduate students should be involved, and

[1]Provision on the government support of innovative infrastructure development, including the support of small-scale innovative entrepreneurship, at federal higher professional educational institutions (approved by Decree of the RF Government No 219, dated April 9, 2010).

[2] From 2012 onwards, in order to outsource their R&D projects, commercial companies may also commission state research institutions.

[3] Rules for the allocation of subsidies by way of providing government support to the development of cooperation between Russian higher educational institutions, and state research institutions and organizations implementing comprehensive projects aimed at creating hi-tech industries, in the framework of the subprogram Institutional Development of the Scientific Research Sector of the Government Program of the Russian Federation Development of Science and Technology for 2013–2020 (approved by Decree of the RF Government No 220, dated April 9, 2010).

the corresponding target was stipulated in the agreement between the government body and the business company.[1]

This mechanism is still being actively applied, and in fact, it has become the mainstream channel of financial support for the cooperation between higher educational institutions and businesses, both in terms of the number of participants and in terms of the volume of budget allocations. Over the period 2010–2017, support was provided to a selection of more than 400 projects, participated by over a hundred of higher educational institutions. Most often, the recipients of government support are leading multidisciplinary universities and higher technical educational institutions like Lomonosov Moscow State University (14 projects), Moscow Institute of Physics and Technology (MIPT) (14 projects), and National University of Science and Technology (MISIS) (12 projects). The total volume of budget funding allocated to the projects is almost RUB 50 billion, or RUB 140 million per project

And finally, one more instrument, also launched in 2010, envisages ***support, in the form of grants, for studies conducted at higher educational institutions[2] under the guidance of eminent scientists***, Russian or foreign, with a position of authority in one or other field of science. To conduct such a study, the scientist should put together a scientific research team, which should include, as a mandatory requirement, the undergraduate and postgraduate students of a given higher educational institution.[3] As is the case with co-funding of joint projectsов, this support instrument is still being applied. The recipients of this form of support have been 60 higher educational institutions implementing 159 scientific research projects. Once again, the leaders in terms of the number of received grants have become Lomonosov Moscow State University and Moscow Institute of Physics and Technology (MIPT) (12 and 9 supported projects respectively), as well as Novosibirsk State University (10 grants) and Saint Petersburg State University (9 grants). The total volume of government funding allocated over the period 2010–2017 amounted to approximately RUB 26 billion, or about RUB 130 million per grant.

The ***programs of innovative development of biggest companies in the public sector,*** launched from 2011 onwards, were designed, among other things, to promote the cooperation of such companies with higher educational institutions. One of the inalienable components of these programs is the set of measures aimed at boosting cooperation with leading higher educational institutions in a variety of forms, including joint studies, participation in curricula improvement, organizations of internships and on-the-job training courses, etc. However, these measures, when implemented in actual practice, did not result in a significantly increased scale of cooperation between biggest companies and higher educational institutions, at least during the initial phase of implementation of the innovative development programs. [4]

In 2012, the government once again resorted to its habitual and traditional practice of supporting higher educational institutions through special programs, which this time were

[1] Order of the RF Ministry of Education and Science No 904, dated November 7, 2012.

[2] From 2012 onwards, government support has also been extended to academic research institutions and state research centers.

[3] Provision on the allocation of grants by the Government of the Russian Federation by way of providing government support to scientific research conducted under the guidance of leading scientists at Russian higher educational institutions, research institutions subordinated to the Federal Agency for Scientific Organizations, and state research centers of the Russian Federation in the framework of the subprogram Institutional Development of the Scientific Research Sector of the Government Program of the Russian Federation Development of Science and Technology for 2013–2020 (approved by Decree of the RF Government No 220, dated April 9, 2010).

[4] *Gershman M., Zinina T., Romanov M*. et al. The programs of innovative development of companies with state stakes: intermediate results and priorities. / Ed. L.M. Gokhberg, A. N. Klepach, P.B. Rudnik et al. Moscow. NRU HSE, 2015

named the ***strategic development programs of higher educational institutions***. The main declared goals of government support were to improve the administrative performance of higher educational institutions, to create strategic management institutions, and to coordinate the structure and content of curricula with the labor market demand, the goals and strategies of socio-economic development of the regions and industries, and the most promising direction of science and technology development. In this connection, it was expected that the programs will conduce to the improvement of the educational, scientific research and innovative activity of higher educational institutions, as well as their competitive capacity on the national and global level, ensure sustainable development of human resources, implementation of innovative methods and hi-tech learning techniques in the educational process, improve the infrastructure employed in the educational process and scientific research, and promote modernization of their laboratories and experimental base. In the final analysis, each of those programs was expected to shape a state-of-the-art higher educational institution capable of providing hi-tech industries or the social sphere with human resources, performing sophisticated academic studies and implementing R&D projects on the basis of highly performing principles and forms of integration of science, education and the business community.[1]

The area designated for implementing that instrument was from the very start limited to higher educational institutions subordinated to the RF Ministry of Education and Science. Besides, the recipients of budget subsidies earmarked for the implementation of strategic development programs could not be those higher educational institutions that in 2012 were the beneficiaries of other program-oriented government support instruments; thus, the universities with a special status were automatically excluded from the group of potential recipients of support (for each of them, an individual development program was approved). In the course of a tender bidding, as was the case with the other program-oriented forms of support, a number of factors apart from the quality of prepared programs were taken into consideration, namely the educational, scientific research and innovative potential of higher educational institutions, as well as their financial stability[2].

Over the period from 2012 through 2014, the government provided support to 55 strategic development programs launched by higher educational institutions. Most of these programs were geared towards the budget expenditure ceiling established for this funding instrument – RUB 300 million (RUB 100 million per annum).

A new phase of active government policy in the higher education sector was initiated by one of the May 2012 Presidential Executive Orders,[3] which set as one of the basic government policy targets in the sphere of education and science that no less than five Russian universities should by 2020 be ranked among the world's top hundred.[4] To achieve this target, in 2013, a new mechanism of ***government support for Russia's leading universities designed to improve their competitive capacity relative to the other world leading research and education centers*** was launched, better known as ***Project 5-100***. In order to qualify for government support, a higher educational institution was to be included in at least one of the three top global university rankings, as well as to comply with a number of formal criteria, including the mean Unified

[1] Provision on the support, by open tender, of the strategic development programs of state higher professional educational institutions, dated November 11, 2011.
[2] Ibid.
[3] The Presidential Executive Orders addressing the issue of improving some basic directions of government policy, issued in May 2012, at the start of the current electoral cycle.
[4] Presidential Executive Order No 599, dated May 7, 2012, 'On Measures Aimed at the Implementation of Government Policy in the Field of Education and Science'.

State Examination score of its enrolled first-year students; the number of undergraduate students studying under budget-funded tuition programs; the relative number of postgraduate students; the volume of spending on R&D projects; publication activity; and the number of foreign students or faculty members (scientific research and education personnel, SREP)[1].

Project 5-100 receives the most traditional form of support available for higher educational institutions, which envisages budget funding allocated in the framework of special programs, titled 'the programs designed to improve the competitive capacity of higher educational institutions among the world's leading scientific research and education centers'. These programs include, among other things, measures designed to boost the academic mobility of SREP in the form of participation in internships and on-the-job training courses, involvement of young staff members with an experience of scientific research or tutoring activities in the projects launched by leading educational or scientific research organizations, implementation of joint educational programs with the participation of such organizations, attraction of foreign students, implementation of research studies and R&D projects under the guidance of eminent scientists, and in collaboration with leading scientific research organizations or hi-tech companies.[2]

In 2013, 15 universities were selected for participation in the project; in 2015, on the basis of a second tender bidding, their number increased to 21. All the project participants, without exception, enjoy the status of federal or national research universities (and so receive the government support pertaining to their status), or previously were the recipients of support in the framework of another program-based instrument – an innovative education program. The total volume of budget funding allocated to higher educational institutions in the project's framework over the period 2013–2017 amounted to more than RUB 50 billion, or RUB 577 million per university per annum. Meanwhile, the relevant budget funding has been distributed unevenly between the universities: while the leaders like NRU HSE, MIPT, MEPhI, and ITMO received in excess of RUB 800 million in per annum terms, the majority of the universities of the 'second wave' were allocated less than RUB 150 million.

A kind of supplement to Project 5-100, oriented in the main to promoting the educational and scientific research activity of universities, was the program of ***financial assistance to projects for establishing and developing engineering centers (EC),*** launched in 2013. This mechanism is aimed at creating, on the base of and in collaboration with higher educational institutions, a network of specialized centers providing engineering services to organizations operating in the real sector, developing the best available technologies, promoting innovative scientific research and R&D projects, and supervising the training of personnel in the engineering field. In this connection it is important to note that in each given year, the tenders held in order to select the best engineering center projects were emphasizing different aspects of their activity. Thus, in 2016, the focus was on import substitution in industry and Russia's lower dependence on imports; in 2017, it was on the Arctic zone and on promoting the production of civilian and dual-use technologies by enterprises belonging to the defense-industrial complex.[3]

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[1] Order of the RF Ministry of Education and Science No 296, dated April 22, 2013.

[2] Rules for the distribution and allocation of subsidies by way of providing government support to the leading universities of the Russianoй Federation in order to improve their competitive capacity among major global scientific and educational centers (approved by Decree of the RF Government No 211, dated March 16, 2013).

[3] Provision on an open public tender for government support of projects aiming at the creation and development of engineering centers on the basis of higher educational institutions subordinated to the RF Ministry of Education and Science, dated October 12, 2016 (fifth bidding) and September 27, 2017 (sixth bidding) respectively.

An interesting feature of this instrument is that from the very start, it has been an interdepartmental undertaking: the corresponding measures are included in the Government Program *Development of Industry and Its Competitive Potential*, supervised by the RF Ministry of Industry and Trade, while the actual management of government support is executed by the RF Ministry of Education and Science. At the same time, the recipients of subsidies may only be the higher educational institutions subordinated to the RF Ministry of Education and Science and oriented to R&D projects and training of engineering personnel.

As is the case with many other support mechanisms discussed here, one necessary attribute of government support is the existence of a special program – the strategic engineering center development program. Interestingly, in order to become eligible for government support, a higher educational institution must create a separate legal entity – an engineering center proper. However, it is not the latter that becomes the recipient of government funding – it is allocated to the higher educational institution; meanwhile, the main index of support efficiency is the volume of services provided by the engineering center to companies operating in the real sector. No less (and in recent years, more) than half of the funding allocated by the government must be spent on purchases of equipment, software and intangible assets.[1]

Over the period from 2013 through 2017, the government subsidies earmarked for the creation and development of engineering centers were received by 49 higher educational institutions. Their total volume was more than RUB 4.5 billion – approximately RUB 100 million per higher educational institution.

A new phase (and so far the last one) in the evolvement of government policy aimed at the development of universities, with a distinct emphasis on the 'peripheral' regions, started in 2015, when the government launched one more specialized program-based financial support instrument in the form of a new status that could be granted to a higher educational institution – that of a ***core university***. The declared goal of that instrument is the socio-economic development of Russia's regions through the creation of university centers for their innovative, technological and social development. For that reason, the formal requirements established for the potential recipients of government funding clearly focus not only, and not so much, on regional universities, but on those higher educational institutions that have never received government financial aid on the federal level, or received it on a very limited scale. In the first round of tender bidding in late 2015 – early 2016, the candidates for government support could not be federal universities, Project 5-100 participants, or higher educational institutions situated in Moscow and St. Petersburg (this requirement automatically removed from the candidate list the leading classical universities – Lomonosov Moscow State University and Saint Petersburg State University, and a number of other higher educational institutions receiving substantial government support (see below)). In the second round (2017), this limitation also included national research universities. Besides, for a more even distribution of core universities across Russia's territory, it is envisaged that two higher educational institutions belonging to that category cannot be situated in one and the same municipal formation. It is also important to note that in the first round, the mandatory requirement to the higher educational institutions applying for the status of a core university was their enlargement by way of merger with one or

[1] Ibid.

several other educational institutions, while in the second round, that condition no longer applied.[1]

Similarly to the other program-based government support instruments, the criteria for selecting the recipients of budget funding were based not only on the content of core university development programs, but also on the assessment of the actual situation at the higher education institutions posing as candidates for government support. However, this time the highest score was gained not on the basis of the actual indices displayed by the higher educational institution, but depending on the quality of its submitted program. The latter must include measures designed to achieve modernization of its educational, scientific research, and innovative activity, its material and technical base, its social and cultural infrastructure, its administration system, as well as measures aiming at the development of local community, urban and regional environment. As for the indices of higher educational institutions on which the choice of appropriate candidates is made, these are the number of undergraduate and postgraduate students, the number of taught disciplines and specialties, employment opportunities for the alumni, the volume of R&D projects, the number of faculty staff with academic degrees, the amount of aggregate income from all sources and that generated by scientific research, and the citation index.

On the basis of the results of the first tender, government support was allocated to 11 higher educational institutions. The total amount of federal budget funding allocated to their development programs in 2016 was RUB 1.2 billion, or approximately RUB 110 million per higher educational institution. In the second round, 22 higher educational institutions were additionally selected, for 8 of which support is to be allocated from the federal budget, and for the other 14 – from regional budgets, while the cost of methodological and consulting support is to be covered by the RF Ministry of Education and Science.

And finally, the latest government initiative aimed at developing the scientific research and innovative activity of higher educational institutions is the Priority Project *Higher Educational Institutions As Centers of Innovative Space*,[2] its most important component being the ***creation of university centers for innovative, technological and social development of the regions*** with the purpose of involving universities in dealing with the issues of sustainable socio-economic development of the Russian Federation and its subjects. It should be noted that although there are some very obvious similarities with the targets designated in the program for core universities, this priority project envisages the creation of a unit with a different status, which will function, in effect, as a superstructure relative to the already existing support instruments. The university applying for the creation of a university center must participate in Project 5-100; have the status of a federal or core university; or answer several formal requirements, i.e., the mean Unified State Examination score of its enrolled first-year student; the volume of R&D projects; the amount of income; and the relative shares of different categories of students, and these indices, it should be added, are not the same for different groups of regions. Besides, the

[1] Provisions on the procedure of selection, by open tender, of higher educational institutions to be recipients of financial support from the federal budget for their federal state higher educational institution development programs, dated October 16, 2015 and February 17, 2017.

[2] It should be noted that is it specifically in the framework of this project that the financial support of the leading universities – participants in the 5-100 Project – has been provided since 2017.

status of a university center is by definition unobtainable for the higher educational institutions situated in Moscow, St. Petersburg, Moscow Oblast, and Leningrad Oblast. [1]

The spectrum of declared goals of the newly established university centers is very broad, and it differs for the centers oriented to innovations, technologies, and the social sphere. The common goals for all types of centers are the capitalization of the educational, scientific research, and technological results achieved in various sectors of a region's economy; the creation of appropriate conditions for the implementation of project-oriented educational programs covering a complete project life cycle; harmonization of the themes of applied R&D projects with the *Strategy for Scientific and Technological Development of the Russian Federation*; participation in activities oriented to systemic cooperation with scientific research organizations and businesses through the creation of chairs addressing fundamental fields, joint implementation of educational programs and scientific research projects; participation in activities oriented to the creation of proper conditions for continuing education, improving informational, financial and legal literacy of the population, and the improvement of faculty professional competence. The centers for innovative development of the regions, alongside all these goals, must also develop innovative ecosystems conducive to increasing the income generated by universities from the commercial use of their intellectual products, and involve both students and faculty in innovative and entrepreneurial activities. The specific tasks assigned to the centers for technological development of the regions are the creation of sectoral engineering centers capable of providing the infrastructure needed by businesses in order to implement their projects in accordance with the directions of the *National Technology Initiative (NTI) Strategy* and to promote their innovative R&D ideas; the implementation of project-oriented Master's Degree programs in the fields of technological entrepreneurship and management of technological projects, with the involvement of companies operating in the real sector; promotion of students' technological entrepreneurship, creation and development of startup accelerators and innovative entrepreneurship support programs with the participation of development institutions. And finally, the university centers for social development of the regions are expected to ensure the implementation of project-oriented Master's Degree programs in the fields of social entrepreneurship and social project management, with the involvement of companies operating in the real sector, including welfare-oriented non-profit organizations, and to promote the development of students' social entrepreneurship, creation and development of startup accelerators and social entrepreneurship support programs with the participation of development institutions, including for the purpose of creation, by students and alumni, of welfare-oriented non-profit organizations.[2]

Traditionally, the creation of university centers involves elaboration of a specialized document package – the program of university's reorganization into a university center. However, the set of required targets for program implementation reflects rather accurately the stipulated goals of university centers - while, generally speaking, this is not typical of the majority of other government support instruments employed in the development of universities. It is noteworthy that the selection of higher educational institutions to serve as university centers initially was not expected to depend on federal budget funding (while the possibility of such obligations emerging at some point in the future cannot be ruled out). However, the approved

[1] The model and parameters of monitoring the university centers for innovative, technological and social development of the regions (annex to the RF Ministry of Education and Science's Letter No LO-1754/05, dated August 31, 2017).
[2] Ibid.

format of the reorganization programs does envisage public funding from regional and local budgets.[1]

In late 2017, a total of 51 higher educational institutions were officially recognized to be university centers for innovative, technological and social development of the regions. An overwhelming majority in that group was represented by federal or national research universities, Project 5-100 participants, or (at least) core universities. Over the next few years, it can be expected that this status will become more widespread, one reason for that assumption being the fact that, in the Priority Project *Higher Educational Institutions As Centers of Innovative Space*, it is stipulated that in 2019, there should be 70 university centers, and in 2025 – no less than 100 university centers.[2]

The main formal and content-related features of the mechanisms employed in promoting the scientific research and innovative activities of higher educational institutions are shown in *Table 25*.

On the whole, the government support policy targeting the scientific research and innovative activities of higher educational institutions, in contrast to many other areas of government activity, is evidently systematic and has an internal logic, even if it may be considered to be somewhat disputable. Thus, the 'broader' measures (those designed to increase the number of newly created small innovative companies, support the projects aimed at setting up centers for shared use of scientific equipment and cooperation projects) have been applied alongside with support instruments targeting a small the number of leading higher educational institutions (the development programs of national research universities, federal universities, and leading classical universities; and Project 5-100). It is important to point out the continuity between different measures. Thus, for example, the large-scale but short-lived support program targeting the innovative educational activities of higher educational institutions evolved into a permanent status or category being assigned to some of them; the participants in Project 5-100 were for the most part federal and national research universities, while the participation in that project, together with the status of a federal or core university, makes it easier for a higher educational institution to gain official recognition in the capacity of a university center for the development of a region.

One question of paramount importance arising in the course of discussion of any direction or instruments of government policy is the actual positive effect produced by government efforts. Available official data and materials not only fail to provide any exhaustive answer to that question, but do not make it possible even to get near to any coherent answer at all. On the one hand, over the entire period when the government was supporting higher educational institutions in their scientific research and innovative activity, the latter were demonstrating a trend towards growth. On the other, growth of the relevant indices had begun prior to the onset of massive-scale government support for higher educational institutions, and then it happened against the backdrop of the positive movement of many other basic macro indices.

[1] The requirements as to the content and structure of the application for participating in the selection of higher educational institutions by university centers for innovative, technological and social development of the regions; Comments on the conduct of and selection conditions for the creation of university centers for innovative, technological and social development of the regions (annex to the RF Ministry of Education and Science's Letter No 05-18062, dated September 7, 2017.

[2] Certificate of the Priority Project *Higher Educational Institutions As Centers of Innovative Space* (approved by Presidium of the Presidential Council for Strategic Development and Priority Projects, protocol No 9, dated October 25, 2016).

Generally speaking, in order to generate the necessary 'body of evidence' confirming the results of government policy, one must identify the effects produced specifically by the acts undertaken by the government, which could not have been achieved in absence of such acts. In this connection, one must take into consideration not only the results of government support, but also the indirect effects, including changes in the behavior of the beneficiaries of support and their contractors.[1] It should be noted that the direct, the indirect, and in particular the behavioral effects often appear with a significant lag of up to several years. Today, the Russian government administration system lacks any practical experience of such assessments. Strictly speaking, this circumstance makes it impossible to draw any well-substantiated conclusions or make any definite statements, not only specifically of the results produced by government policies in the higher education sector (and in other sectors as well), but also of the sustainability of the ongoing positive changes, and whether they will survive if the support is discontinued.

In principle, considering the length of the period of government support, its systemic character, and its rather massive scale (more on this later), we believe that, most probably, it did produce a significant positive influence on the development of scientific research and innovative activity at higher educational institutions; however, we cannot say this with absolute certainty.

Table 25

The main instruments of government support for scientific research and innovative activity of higher educational institutions

Direction (instrument) of support	Period of use	Support character	Goals and tasks	Scope	Specificities, focus
Support for projects aimed at creation and development of CSUs	From 2005	Budget funding for projects	Implementation of interdisciplinary scientific research projects in priority science and technology development fields in Russian Federation, including in collaboration with world's leading research centers. Participation in personnel training at university level, on basis of CSUs	Support for 578 CSUs, including 282 CSUs in higher education sector based at 151 HEEs. Total volume of budget funding is approximately RUB 15 billion	No less than 80 percent of funds should be spent on purchasing cutting-edge scientific research equipment
Innovative educational programs of higher educational institutions	2006–2008	Budget funding for programs	Application of cutting-edge educational technologies & methods. Provision of high quality education, high competitive capacity of alumni on labor market. Integration of educational, scientific-research & innovativeой activities	Support for programs launched by 57 HEEs. Total volume of budget funding RUB 30 billion	Selection criteria included not only program quality, but also financial etc. situation of bidding HEEs. Allocated budget funding was spent mostly on equipment
Federal universities	From 2006	Status (category); in most cases – budget funding for development programs	Implementation of innovative educational program integrated into global educational space. Systemic modernization of professional education. Personnel training based on cutting-edge educational technologies for comprehensive socioeconomic development of region. Wide-range fundamental & applied studies; integration of science,	10 federal universities were created based on reorganization of approximately 30 higher educational institutions Total volume of budget funding allocated in 2010–2016 was RUB 36 billion	Federal universities were formed on command basis – without open tenders. Federal universities were set up based on existing HEEs; in most cases, by enlargement through merger with other HEEs and secondary educational institutions.

[1] One example of such an approach being applied in Russia can be found in *Simachev Yu., Kuzyk M., Zudin N.* The Impact of Public Funding and Tax Incentives on Russian Firms: Additionality Effects Evaluation // New Economic Association. 2017. No 2. P. 59–93.

Direction (instrument) of support	Period of use	Support character	Goals and tasks	Scope	Specificities, focus
			education & industry, including by implementing intellectual products		Budget funding was envisaged in only 8 development programs. Main budget-fund expenditure item was development of material & technical base and infrastructure of universities – more than 40 percent of total volume
National research universities	From 2008	Status (category); budget funding for development programs (for 5 years)	Personnel supply for priority directions of development of science, technologies, equipment, branches of economy, and social sphere. Development of hi-tech products and their implementation in industry	Category NRU was assigned to 29 higher educational institutions. Total volume of budget funding for development programs in 2009–2014 amounted to approximately RUB 50 billion	Initially, to qualify for NRU category, HEEs were to equally efficiently implement educational programs and conduct wide-range fundamental and applied research. Selection criteria were primarily university's characteristics, its potential and efficiency, followed by quality of its submitted program. Approximately half of budget funds allocated to these programs was spent on logistics development
Leading classical universities	From 2009 (formalized in legislation)	Status (category); budget funding for development programs (for 10 years)	Formal legitimization of special status of 2 biggest Russian universities as unique scientific research complexes, of immense significance for Russian society's development	Status granted to Lomonosov Moscow State University and Saint Petersburg State University. Total volume of budget funding for development programs in 2010–2016 amounted to approximately RUB 16 billion	Scientific research-educational complexes of leading classical universities may include legal entities like research institutes, etc. Universities may establish their own educational standards for their curricula. Major part (approximately 85 percent) of budget funds allocated to these programs was spent on logistics and infrastructure development
Stimulating creation, by government & municipal HEEs, of SIEs	From 2009	Possibility of creating SIEs and endowing them with property. Possibility for SIEs to use simplified system of taxation. Lower rates of contributions to government funds for SIEs	Implementation of intellectual products, all rights thereto belonging to founding HEEs	Official registration of 2,600 SIEs set by 289 operating HEEs	Half of SIEs were created by HEEs, to meet corresponding targets
Support for projects launched jointly by HEEs and businesses, to promote hi-tech industries (Decree No 218)	From 2010	Budget subsidies to business companies, to fund R&D products developed by HEEs as part of projects	Support for cooperation between HEEs and businesses; elaboration of financial, organizational and normative mechanisms, promotion of sustainable public-private partnership in implementation of complex joint projects of launched	Support for approximately 400 projects Total volume of budget funding in 2010–2017 amounted to	State's direct contractor is not HEE (final recipient of support), but company actually implementing project. Result achieved in each project should be creation of new of

Direction (instrument) of support	Period of use	Support character	Goals and tasks	Scope	Specificities, focus
			by universities and industrial companies. Identification of existing 'stepping stones' for future research, and identification of institutes or groups of researchers capable of creating science-intensive products. Implementation of cutting-edge organizational & managerial principles in applied studies and R&D projects launched by HEEs in relevant fields. Curricula upgrades by HEEs in accordance with existing technology market demand	approximately RUB 50 billion	upgraded hi-tech product. Undergraduate and postgraduate students must be involved in R&D projects
Programs of innovative infrastructure development at HEEs (Decree No 219)	2010–2012	Budget funding for development programs	Creation of innovative environment. Development of cooperation between HEEs and industrial enterprises. Support for SIEs set up by HEEs	Support for 78 programs launched by 76 operating HEEs. Total volume of budget funding was RUB 9 billion	To qualify for support, HEEs should conduct fundamental and applied studies in priority fields of science and technology, efficiently implement educational programs and measures designed to develop innovative infrastructure. Selection, by open tender, depended not only on quality of submitted programs, but also on scientific research, educational and innovative potential of HEEs. Support directions, relative to programs: • development of innovative infrastructure units at HEEs (businesses incubators, technoparks, innovative technological and engineering centers, certification centers, technology transfer, CSUs, etc.), provided with cutting-edge equipment and software; • legal protection & valuation of intellectual products, all rights thereto belonging to HEEs; implementation and elaboration of training and refresher programs for personnel involved in small innovative entrepreneurship; • internship and refresher courses, for personnel of HEEs, in innovative entrepreneurship and

Direction (instrument) of support	Period of use	Support character	Goals and tasks	Scope	Specificities, focus
					technology transfer at foreign universities; • consulting services of foreign and Russian experts pertaining to technology transfer, creation and development of small innovative companies
Support for scientific research studies under supervision of leading scientists (Decree No 220)	From 2010	Budget grants for studies	Integration of HEEs in training highly qualified personnel. Involvement of undergraduate and postgraduate students in advanced scientific research under supervision of leading scientists. Improvement of higher education quality, training of highly qualified scientific research personnel. Improvement of professional opportunities for young talent, their anchoring in Russian science. Improvement of scientific research personnel qualification. Assistance to integration of Russian science in global scientific research space; increased mobility and circulation of scientific research personnel. Growth of international scientific research cooperation. Development of science and innovations at HEEs. Boosting activity of HEEs in relevant scientific research field, development of scientific research potential of HEEs. Achievement of scientific research results of world standards. Creation of competitive scientific research laboratories. Growth of citation index and/or patent index	In 2010–2017, 159 grants were issued to 60 HEEs. Total volume of budget funding is RUB 26 billion	Leading scientist should display mastery specific field of science. Research team must include undergraduate and postgraduate students of HEEs
Measures designed to promote cooperation with leading HEEs under innovative development programs targeting biggest state corporations	From 2011	Administrative-command stimulation	Creation of demand by biggest state corporations for R&D products created by HEEs.	Innovative development programs of 60 companies were approved and launched	Selection of core HEEs, research subjects (science, technology), and scope of joint scientific research or R&D projects. Elaboration of scientific research programs with HEEs, envisaging, e.g., technological and marketing information exchange mechanisms, collaboration in science and technology development forecasts, creation at HEEs of scientific research and R&D management systems targeting expected demand of businesses and industry. Implementation, in coordination with HEEs, of programs designed to improve education quality and personnel

Direction (instrument) of support	Period of use	Support character	Goals and tasks	Scope	Specificities, focus
					training for hi-tech industries, and education plan and curricula improvement in collaboration with businesses; involvement of companies' employees as tutors; development of internship and on-job practice systems for undergraduate and postgraduate students, faculty and scientific research personnel of HEEs; development of continuous personnel training courses for businesses. Formation of organizational mechanisms for interaction of businesses with HEEs, including mutual participation of personnel in collegiate managerial and consultative bodies
Strategic development programs of HEEs	2012–2014	Budget funding for development programs	Improvement of administration efficiency of HEEs, development of management best practices and formation of strategic management institutes to answer labor market demand and goals of socioeconomic development of regions, and promising science and technology fields. Adaptation of professional education structure to suit labor market requirements and socioeconomic development strategy of region or branch of industry. Sustainable development of HEEs: their human resources, educational and scientific research infrastructure, performance in fields of education, scientific research, and innovations. Improvement of competitive capacity of HEEs, at national and international levels. Active implementation of new methodologies and technologies in educational process; modernization of laboratory and experimental base; formation of resource base in accordance with each HEE's development priorities	Support for 55 programs. Total volume of budget funding is approximately RUB 16 billion	Support recipients were limited to HEEs subordinated to RF Ministry of Education and Science. Support recipients could not be HEEs receiving budget funding for implementation of other development programs
Support for leading universities to increase their competitive capacity (Project 5-100)	From 2013	Budget funding for development programs. Status of project participant	No less than 5 Russian universities to be ranked, by 2020, among the world's top hundred. Development of leading universities to improve their competitive potential compared with world's leading scientific research and educational centers	Participated by 21 universities, nearly all of them with status of NRU or FU. Total volume of budget funding allocated to HEEs in 2013–2017 is	Support recipients were universities already included in world rankings and answering some special formal requirements (their number of undergraduate and postgraduate students,

Direction (instrument) of support	Period of use	Support character	Goals and tasks	Scope	Specificities, focus
				in excess RUB 50 billion	R&D expenditures, publication activity, etc.)
Support to projects for creation and development of engineering centers based at HEEs	From 2013	Budget funding for projects (2–3 years)	Formation, on basis and with participation of HEEs, of network of centers providing engineering services to organizations operating in real sector, personnel training courses in engineering field, and implementing best available technologies, and promoting innovative scientific research and R&D projects	Government subsidies were received by 49 HEEs. Total volume of support is RUB 4.7 billion	Example of successful inter-departmental cooperation between RF Ministry of Education and Science, and RF Ministry of Industry and Trade. Support recipients were limited to HEEs subordinated to RF Ministry of Education and Science. To qualify for support, HEEs must be oriented to R&D projects and personnel specialization in engineering services. In different years, engineering center creation projects were selected with focus of different aspects of their activity. Mandatory requirement for support recipients was elaboration of engineering center strategic development program. To qualify for support, HEEs must create legal entity, its main target indicator being volume of services provided to real sector. However, actual recipient of support is not engineering center, but HEE itself. No less than half of budget funding must be spent on acquisition of equipment, software, and intangible assets
Core universities	From 2016	Federal budget funding for some development programs. Funding for other development programs from regional budgets	Core university status. Socioeconomic development of regions, including through creation of university centers for innovative, technological and social development	33 universities were selected; 19 received federal budget for development programs, 14 were funded from budget of each region. In 2016, total volume of support for 11 development programs of ‘first wave’ core universities was RUB 1.2 billion	Support recipients are limited to federal state HEEs. Support recipients cannot be federal or national research universities, Project 5–100 participants, or HEEs situated in Moscow and St. Petersburg One municipal formation should house not more than one core university. In first round of bidding for core university status, mandatory requirement for applicants is that they must undergo

Direction (instrument) of support	Period of use	Support character	Goals and tasks	Scope	Specificities, focus
					reorganization by way of merger with one or several educational organizations. Selection criteria focus not on character of HEEs, on their program development quality. Core university development programs should include measures designed to modernize educational, scientific research and innovative activities, logistics, and social and cultural infrastructure, university administration systems, and also development of local community and urban and regional environments, with emphasis on regional development.
University centers for innovative, technological and social development of regions	From 2017	Special status. Funding for reorganization programs from regional budgets	Involvement of universities in issues of sustainable socioeconomic development of Russian Federation and RF subjects. Capitalization of educational, scientific research & technological products in region's industries; creation of appropriate conditions for implementation of projects-oriented educational programs covering complete project life cycle. Harmonization of applied R&D projects with *Strategy of Scientific and Technological Development of the Russian Federation*. Participation in activities oriented to systemic cooperation with scientific research organizations and businesses through creation of chairs addressing fundamental fields of science, joint implementation of educational programs and scientific research projects. Participation in creating proper conditions for continuous education courses, improvement of informational, financial legal literacy, and professional competence of educators Centers of innovative development of regions must develop innovative ecosystems conducive to increasing universities' income generated by their intellectual products, and involve students and faculty in innovative and entrepreneurial activities. Specific tasks assigned to centers for technological development of regions are: creation of sectoral engineering centers capable of	51 HEEs are officially recognized as university centers	Diversification of newly created university centers, at least by type of their tasks. Formally declarative procedure for recognizing HEEs to be university centers, though rather rigid 'filtration': applicant HEE must be Project 5–100 participant, federal or core university, or satisfy some formal requirements

Direction (instrument) of support	Period of use	Support character	Goals and tasks	Scope	Specificities, focus
			providing infrastructure needed by businesses to implement their projects in accordance with *National Technology Initiative (NTI)* and to promote innovative R&D; implementation of projects-oriented Master's Degree programs in technological entrepreneurship and management of technological business projects in real sector; involve students in technological entrepreneurship; create and develop startups accelerators and innovative entrepreneurship programs with participation of development institutions. Centers for social development of regions must ensuring implementation of project-oriented Master's Degree programs in social entrepreneurship and social project management involving companies operating in real sector, including welfare-oriented non-profit organizations, and involve students in social entrepreneurship, create and develop startup accelerators and social entrepreneurship programs with participation of development institutions, including creation, by students and alumni, of welfare-oriented non-profit organizations		

Source: own compilation based on normative legal acts, methodological and reporting documents and materials of the official websites of state authorities, projects, programs and instruments of support.

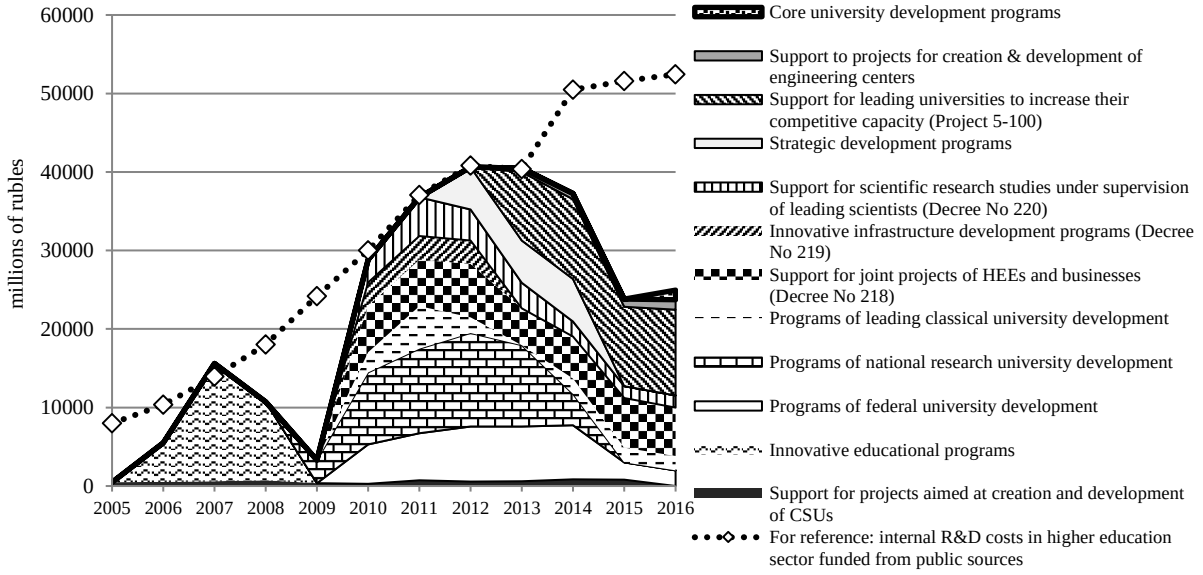
6.4.3. The key directions, scope and specificities of current government policy aimed at promoting scientific research and innovative activities of higher educational institutions

On the whole, among the government measures designed to promote scientific research and innovations in the higher education sector, the prevailing ones are program-oriented support instruments that require the recipient higher educational institution to be granted a special status or a special category. Besides, this direction of government policy, similarly to some other directions (in particular, industry and innovations[1]), relies mostly on financial instruments.

The total volume of federal budget funding allocated to higher educational institutions through these support instruments over the period 2005-2017 amounts to nearly RUB 300 billion, which is comparable with the total amount of government investment, over the same period, in the major state development institutions of the innovation sphere: RUSNANO Corporation, Skolkovo Foundation, Russian Venture Company (RVC), and the *Innovation Promotion Fund.* During that period, the volume of government support peaked (to approximately RUB 40 million per annum) in 2011–2014, when the government, on the one

[1] See, e.g., *Kuzyk M.*, *Simachev Yu*. Russia's Innovation Promotion Policies: Their Evolution, Achievements, Problems and Lessons // Russian Economy in 2012. Trends and Outlooks. Issue 34. Section 6.4. Moscow: Gaidar Institute. 2013. P. 521–571; *Simachev Yu.*, *Kuzyk M.*, *Kuznetsov B.*, *Pogrebnyak E*. Russia on the Path Towards a New Technologcal Industrial Policy: Exciting Prospects and Fatal Traps // Foresight. 2014. V. 8. No 4. P. 6–23.

hand, was preoccupied with searching and 'fostering' new drivers of sustainable economic growth, universities designated to be one of those drivers, and on the other, it was not yet setting any new goals in response to political and economic changes in the global arena, like that of making the national economy's main sectors to be less dependent on imports. It should also be noted that over the major part of the period under consideration, the volume of government support was comparable to the amount of internal R&D costs in the higher education sector covered from public sources – budgets of all levels and state corporations (*Fig. 16*). Moreover, during the 'inter-crisis' period from 2010 through 2013, these government support instruments were totally (or almost totally) determining the character of internal R&D costs covered from public sources, and in 2007, when the process of innovative educational program implementation was at its highest, even exceeded the latter.[1]



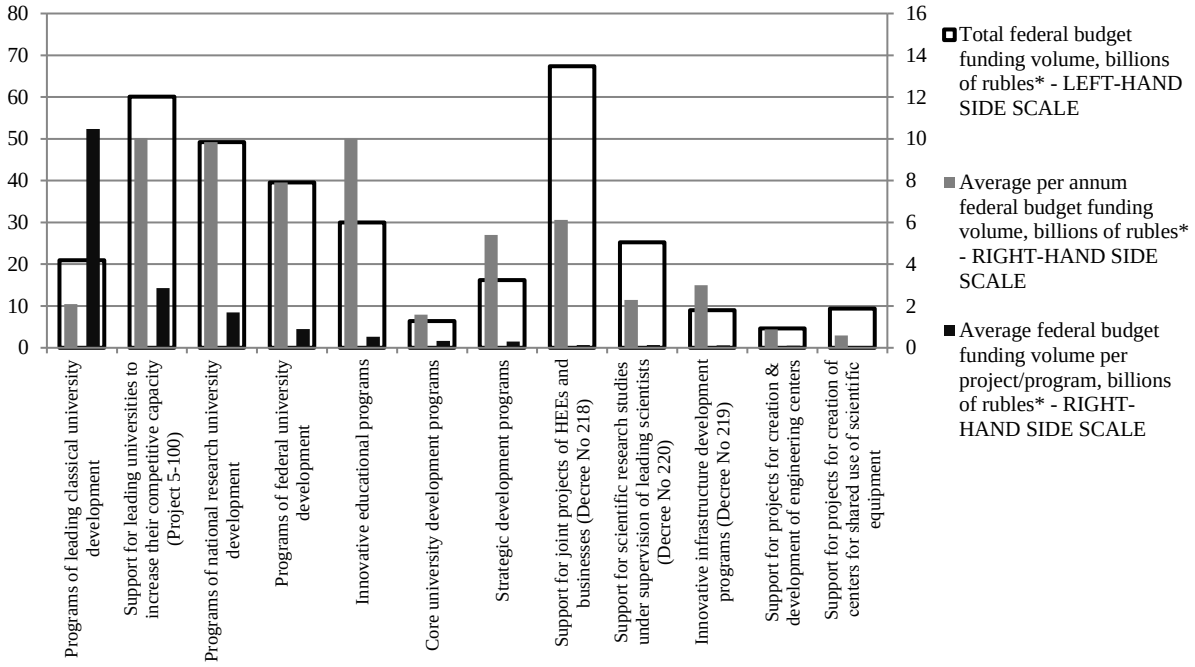
*Budget of all levels and public sector organizations.

Fig. 16. The volume of federal budget funding received by higher educational institutions through government support instruments in 2005–2016.

Sources: own compilation based on normative legal acts, reporting documents and materials published at the official websites of government agencies, projects, programs, and support instruments, as well as statistical data released by NRU HSE.

If each support instrument is to be taken separately, the highest total volume of budget funding allocated to higher educational institutions (with due regard for the approved budget obligations) was channeled by way of supporting the projects launched by higher educational institutions jointly with businesses in the framework of RF Government Decree No 218 dated April 9, 2010, followed by Project 5-100 and the development programs of NRUs and federal universities (*Fig. 17*). The last three mechanisms also boast of the highest per annum volume of budget funding, together with the innovative educational programs of higher educational institutions. At the same time, if we look at the amount of budget funding channeled through one implemented project or program, the obvious leader will be the category of leading classical universities and their development programs.

[1] In fact, this is not surprising because, generally speaking, such programs envisaged funding for both the scientific research and educational activities of higher educational institutions.



*With the amount of approved budget obligations.

Fig. 17. The volume of federal budget funding distributed through the government support instruments targeting the scientific research and innovative activities of higher educational institutions

Source: own compilation based on normative legal acts, reporting documents and materials published at the official websites of government agencies, projects, programs, and support instruments.

The main direction of government financial support was the development of the material and technical base and infrastructure of higher educational institutions – some of these instruments were from the very start oriented to the relevant targets (support for the creation of centers for shared use of scientific equipment and engineering centers; innovative infrastructure development programs), while others revealed their focus *de facto* at a later stage (innovative educational programs, the programs for development of federal universities, national research universities, and leading classical universities). Targeted funding of R&D projects is assigned to only two instruments, although in a sizable amount: matching grants,[1] earmarked for supporting the cooperation between higher educational institutions and businesses (RF Government Decree No 218); and the grants earmarked for the conduct of studies under the guidance of eminent scientists (RF Government Decree No 220).

As for the 'scope' of the various measures and instruments of government support applied in the higher education sector, assessed by the number of actually involved higher educational institutions, an absolute leader in this respect is the instrument envisaging the creation of small innovative companies charged with the task of practically implementing R&D products: by late 2017, approximately 300 higher educational institutions had set up such subsidiaries. Among the financial instruments, the widest 'audience' was benefited by the support for the creation

[1] The term *matching grant, which* is a rather widespread instrument in many countries, means that state or local governments designate funds to go to particular types of projects.

and development of centers for shared use of scientific equipment – over slightly more than a decade, that instrument encompassed more than 150 higher educational institutions.

Overall, the government policy of promoting the scientific research and innovative activities of higher educational institutions has been evolving across two distinctly visible planes. One of them is horizontal and involves measures oriented to a very broad range of recipients; it is characterized by a relatively modest volume of support allocated to each program or project (or at least it appears to be modest by comparison with that the amount of funding allocated to the second category of support instruments), and also, typically, by the extension of government support to those higher educational institutions that have not been receiving it previously. The second plane is vertical and involves sizable financial support allocated to a rather narrow group of eligible universities (*Fig. 18*). Somewhere halfway between these two categories of government support measures are the instruments launched in 2016–2017 – core universities and university centers for innovative, technological and social development of the regions. Still, the first support instrument is nearer to the horizontal plane, because the selection procedure established for core universities is clearly oriented to the attraction of new 'players', previously overlooked by the massive-scale government support measures. By contrast, the creation of university centers is, more likely, a vertical measure, because those higher educational institutions that have already been 'filtered' through the selection procedures established for other government support instruments (which are mostly vertical), have the highest chance of acquiring the status of a university center.

And finally, considering the situation with regard to government support measures designed to promote science and innovations in the higher education sector relative to each representative of that sector, we should note, first of all, the very uneven pattern of support distribution. Thus, over the period from 2005 through 2017, only slightly more than a third (37 percent) of all higher educational institutions were actually targeted by one or other support instrument, while only a quarter of them were recipients of financial support (*Fig. 19*).

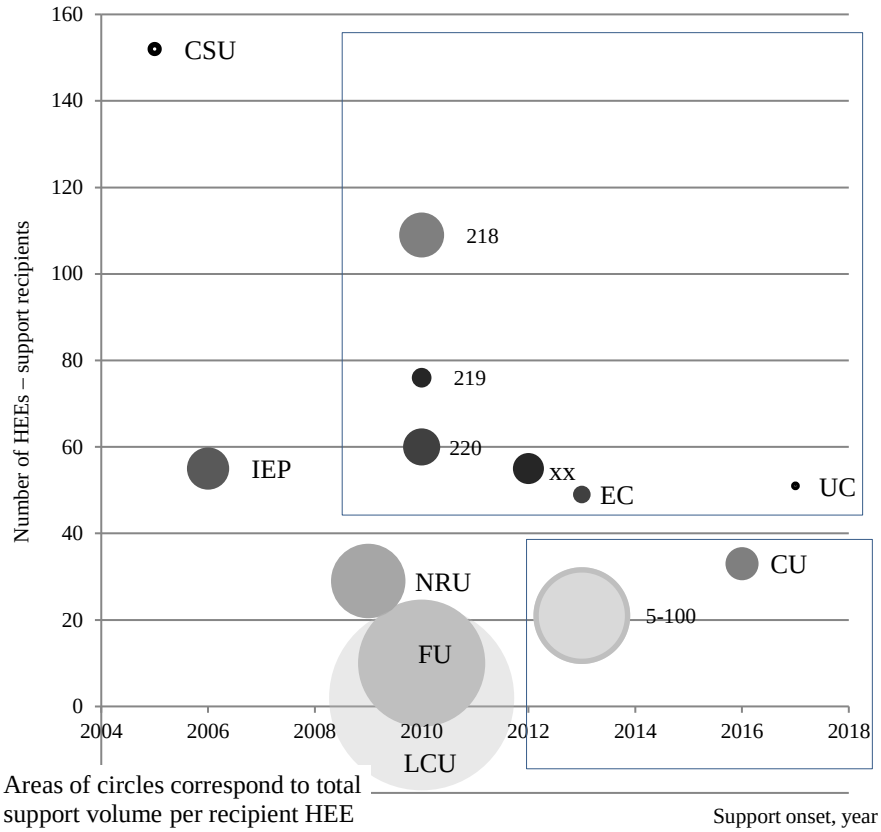


Fig. 18. The distribution of financial support instruments targeting the scientific research and innovative activities of higher educational institutions, by launch year and by number of support recipients, as of end year 2017

Source: own compilation based on normative legal acts, reporting documents and materials published at the official websites of government agencies, projects, programs, and support instruments.

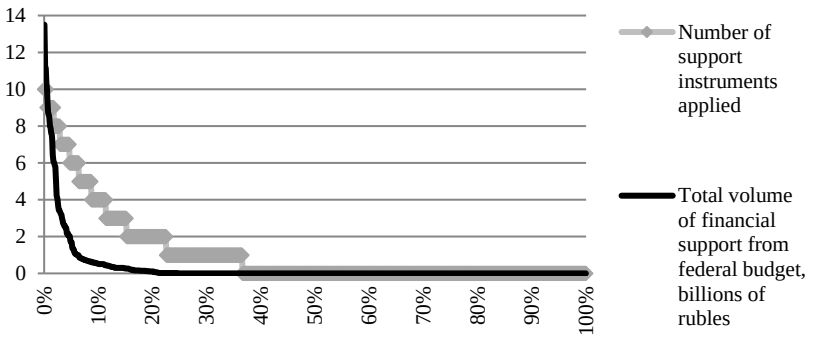


Fig. 19. The distribution of higher educational institutions by number of support instruments and by volume of federal budget funding in 2005–2017

Source: own compilation based on normative legal acts, reporting documents and materials published at the official websites of government agencies, projects, programs, and support instruments.

Sizable chunks of budget funding – no less than RUB 200 million in total over the entire period under consideration – were received by 16 percent of higher educational institutions.

Another, even more vivid, evidence of high concentration of support is that 4 percent of universities accounted for ¾ of budget funding, while half of it was allocated to 2 percent, represented by the 'chosen few' with the status of a leading classical university, federal university or national research university, or at least a participant in Project 5-100.

The leaders in terms of the number of directions of government support are not the higher educational institutions situated in Moscow or St. Petersburg, but major regional universities: Tomsk State University, Tomsk Polytechnic University, Samara University, and Ural Federal University. The group of higher educational institutions boasting of having the most comprehensive set of government support instruments at their disposal consists in the main of the habitués of global university rankings; however, there are also several higher educational institutions that are less known, either in Russia or abroad: Altai State University and Petrozavodsk State University.

If we look at the volume of financial support received by higher educational institutions over the period 2005–2017, the topmost positions, quite predictably, will belong to two leading classical universities – Lomonosov Moscow State University and Saint Petersburg State University, both of them also topping the list of Russian universities in QS World University Rankings; and also Ural Federal University and Far Eastern Federal University, also on this list, but with a significantly lower ranking (also compared with the other Russian universities).

On the whole, the pooled data on the volume of financial support received by leading Russian universities and their scores in QS World University Rankings do not provide a definite answer to the question as to whether government support has indeed helped in boosting their competitive capacity on a global scale (at least in terms of that particular ranking). On the one hand, the universities included in the rankings are receiving, as a rule, government support in amounts that look impressive against the general background, while several higher educational institutions, having received sizable support over recent years (primarily in the framework of Project 5-100), notably improved their total ranking score. However, on the other hand, quite a few of Russia's representatives in QS World University Rankings have received a relatively modest volume of financial support through these specific instruments (at least compared with the leaders), while some other higher educational institutions, after receiving sizable budget allocations, still failed to gain a ranking score.

In our opinion, the assumption that government support has a positive effect on the global ranking scores of Russia's higher educational institutions is, at least, not unrealistic, and given that its effect, as noted earlier, oftentimes becomes visible with a significant lag, the successes of those higher educational institutions that have not been included in the rankings, or included with a near-bottom score, may well happen in the nearest future. However, in absence of a comprehensive practical assessment methodology, capable of decomposing a wide spectrum of government support effects on the performance of higher educational institutions and clearing them of other factors, the opposite may also be assumed – that all those measures have helped little in boosting the competitive capacity of Russian universities on a global level, and that their progress in gaining ranking scores has to a certain extent resulted from a favorable combination of circumstances, and also, possibly, from estimations based on artificially generated indices and other parameters necessary for getting that score.

* * *

The competitive potential of a national economy at present strongly depends on the activity of higher educationей educational institutions. The modern leading universities not only perform their educating function, but also actively generate new knowledge and innovations. In the developed industrial countries, for at least two decades already, the trends towards strengthening the role of universities as a source of commercial technology products for businesses have become increasingly visible.[1]

In Russia, the 'university sector' has traditionally displayed a relatively modest scale of scientific research and innovative activity. At the same time, for at least a decade, the government has been investing a lot of effort in the development of scientific research and innovative activity at higher educational institutions, and these efforts became increasingly pronounced after 2009, by way of learning lessons from the experiences of the crisis and attributing 'new quality' to economic growth.

In the framework of the government science and innovation promotion policy targeting higher educational institutions, we can distinguish two different, almost perpendicular, directions. The first one envisages substantial support to be granted to a small group of higher educational institutions (the leaders); the new instruments applied in the framework of this direction frequently become an extension of the already existing ones, both in practical and in formal terms, because their launch sometimes requires the participation of higher educational institutions in the previously launched support mechanisms. It is interesting to note that the most notable surge in the development of the relevant set of instruments occurred during the 'inter-crisis' period – from 2010 through 2013. The second direction from the very start was oriented to a broad range of beneficiaries and implied the extension of government support to new 'players', that is why some of its mechanisms impose restrictions on the participation of those higher educational institutions that have previously been involved in other support schemes.

As far as the outcome of the government efforts of promoting scientific research and innovative activity in the higher education sector is concerned, the question has so far remained open. At the same time, one evident (although not totally indisputable) confirmation of the positive results of the first (vertical) plane of government support has been the notable progress of several actively supported higher educational institutions in their global university ranking scores. Meanwhile, the high concentration of government support, and especially its financial component, its repeated pattern, and the small number (relative to the size of the higher education sector) of its constant recipients is indicative, at least, of the insufficient performance of its second (horizontal) plane, oriented to the broadest possible range of recipients. No doubt, the sparse distribution pattern of the formally 'massive-scale' government support instruments among Russian higher educational institutions is the upshot of the weakness and passivity of many of them. However, such a situation has also been caused by the existing restrictions on the ability to get government support, both formal ones, having to do with the form of ownership of a given higher educational institution, its subordination to a certain government department, etc., and also with some informal restrictions, the most important of them being the well-known

[1] See, e.g., *Henderson R., Jaffe A., Trajtenberg M*. Universities as a source of commercial technology: A detailed analysis of university patenting // Review of Economic and Statistics. 1998, 80(1). P. 119–127; *Caloghirou Y., Kastelli I., Tsakanikas A*. Internal capabilities and external knowledge sources: complements or substitutes for innovative performance? // Technovation. 2004, 24 (1). P. 29–39.

Matthew effect, when the fact of having received government support once increases the organization's chance to gain access to it in the future.[1]

On the whole, in spite of a certain growth, over recent years, displayed by the scientific research and innovative activity indices of Russia's universities, this country is still lagging significantly behind the global leaders. In this connection, judging by the results of our analysis of government policy in that sphere, we can note that, although the government support aimed at developing the potential of the national leaders is undoubtedly important, the greatest success in boosting the competitive capacity of higher educational institutions, including their scientific research and innovative activities, can be achieved through promoting the activity of the Russian higher education sector 'at large'. Meanwhile, as demonstrated by the results of previous studies, the budget funding mechanisms traditionally prevailing among the government support measures aimed at higher educational institutions, as well as in some other directions of government support policy, are good for achieving targeted and focused effects, while massive-scale effects are better achieved by means of fiscal instruments, standardization measures, and properly tuned activities of the development institutions, such as the support of innovative startups by the *Innovation Promotion Fund*, or the development of micro-funding infrastructure for small business by MSP Bank.[2]

[1] For more details see, e.g., *Crespi F*., *Antonelli C*. Matthew effects and R&D subsidies: knowledge cumulability in high-tech and low-tech industries. University 'RomaTre'. Departmental Working Papers of Economics, 2011, No 0140.

[2] See, e.g., *Ivanov D*., *Kuzyk M*., *Simachev Yu*. Fostering Innovation Performance of Russian Manufacturing Enterprises: New Opportunities and Limitation // Foresight. 2012. V. 6. No 2. P. 18–41; *Simachev Yu*., *Kuzyk M*., *Ivanov D*. Russian Financial Development Institutions: Are We on the Right Way? // Voprosy Ekonomiki. 2012. No 7. P. 4–29.