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The State and Academic Community: the Russian Model[*]

Abstract

Since the beginning of a transition period to market economy in 1992 problems related to the appropriate scope of scientific research and the way it should be organized have been in the focus of numerous discussions. More or less common view emerged only in the beginning of the XXI century when general attitude towards the perspective model for the Russian economy was finally formed. Understanding that Russia needs multilaterally, developed scientific potential now constitutes the basis of practical measures taken by the government. It has also become clear that the principle of self-government by the academic community should be intact. Among other things this means that the federal government has to finance the Russian academy of sciences, as well as the branch academies, „at the arm's length" respecting their full autonomy with regard to distribution of funds among different areas of research. Academies of sciences also maintain the privilege to found, reorganize and dismantle scientific institutions, which are under their auspices. Now serious steps are being made to restore Russian potential in basic science on these very principles.

[*] The paper is a Power point presentation delivered at the Conference.

Main Topics

- Russian Academy of Sciences and its role in the R&D today
- Focus of discussions in Russia concerning organization and financing of basic research
- What reforms are needed?

Russian Academy of Sciences and its Role in the R&D Sector Today

Composition of the R&D Sector in Russia

- State research institutions (incl. Institutions of State Academies)
- Research organizations of the entrepreneurial sector
- Non-profit private research organizations
- Organizations of higher education, which do research

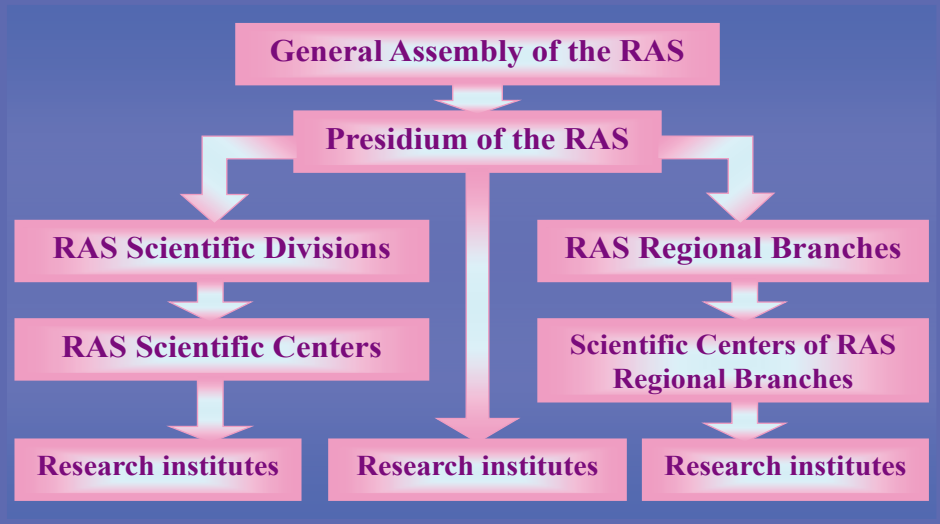
What is Russian Academy of Sciences?

- An assembly of outstanding scientists and scholars - members of the Academy
  - 505 Full members of the Academy ("academicians")
  - 758 Member-correspondents of the Academy
- A set of organizations
  - 448 research institutions with more than 90 thousand personnel, incl. nearly 50 thousand researchers
  - Dozens of institutions and enterprises of the so-called "servicing sector"
- The legal entity ("Presidium of the Academy") which is in charge of governing the current activity of organizations belonging to the Academy

Relative Dimentions of The Component Parts of the R&D Sector in Russia (2007)

	Number of Organizations	R&D Personnel	Number of Researchers	Domestic R&D Spending (Mln. Rubles)	Fixed Capital (Mln. Rubles, Average per Year)
Total	100,0%	100,0%	100,0%	100,0%	100,0%
State Research Organizations	30,4%	34,0%	35,2%	29,1%	49,0%
Academic Sector	20,3%	17,8%	20,5%	15,0%	29,0%
RAS	10,5%	12,1%	14,4%	11,9%	20,7%
Research Organizations of the Entrepreneurial Sector	55,6%	59,7%	55,9%	64,2%	32,7%
Non-Profit Private Research Organizations	1,2%	0,2%	0,2%	0,3%	0,3%
Organizations of Higher Education Doing Research	12,8%	6,1%	8,7%	6,3%	18,0%

Structure of the Russian Academy of Sciences



Russian Academy of Sciences

Divisions

Division of Mathematical Sciences	Division of Physical Sciences	Division of Nano- and Information Technologies
Division of Power, Mechanical Engineering, Mechanics and Control processes	Division of Chemistry and Materials	Division of Biological Sciences
Division of Earth Sciences	Division of Social Sciences	Division of History and Filology

Russian Academy of Sciences

Scientific Centres

Bodies of Self-Government of the Academy at the Highest Level

- New members of the Academy are elected by secret ballot by the acting members after a multi-step procedure beginning at the level of research and higher education institutions
- Members of the Academy along with a number of representatives of research institutions form General Assembly – the highest governing body of the Academy
- General Assembly of the Academy elects by secret ballot the President, Vice-Presidents and other members of the Presidium of the Academy, which carry out the current governance of the system

Bodies of Self-Government of the Academy at the Mid and Lower Level

- General assemblies of the Divisions of the Academy consist of members of the Academy working in the respective scientific field and a number of representatives of research institutions. They elect by secret ballot Academician-Secretaries, their deputies and other members of presidiums of the Divisions
- Regional Divisions – embracing Ural, Siberia and Far East – and Regional Centers consist of members of the Academy working in the respective region and a number of representatives of research institutions. They form their presidiums headed by Chairs
- Scientific councils at the level of research institutions are elected by scientific personnel by secret ballot

What is Self-Governed?

Academy fulfils the following functions:

- Plans its activity in research as well as in all other areas
- Sets up, liquidates and restructures its organizations
- Distributes funds received from the federal budget among directions of research and organizations
- Determines the system of remuneration of its personnel

Focus of Discussions in Russia Concerning Organization and Financing of Basic Research

I. How Should State Finance Basic Research?

Two opposing "marginal" solutions:

- To distribute funds among small mobile groups of researchers on a competitive basis
- To distribute funds among research institutions on the basis of financial estimates of their needs

Advantages and Disadvantages of Competitive Financing

- Main advantages:
  - Flexibility
  - Financing is target-oriented
- Main problems: temporary character of research group makes it difficult to form "scientific schools" and to train young researchers

Financing of Research Organizations on the Basis of Estimates of Their Needs

- Advantages:
  - Freedom of scientists to determine directions of research
  - Favorable conditions for development of "scientific schools"
- Main deficiency: there exists a risk of opportunistic behavior of scientists, which can lead to ossification of the institution and reduction of its efficiency

II.Efficiency of Research: the View of the Academy

- A universal direct measure of research efficiency does not exist in principle
- Monitoring of indicators characterizing different aspects of research efficiency (number of publications, quotations etc.) is absolutely needed, because it provides with "raw material" for expert assessment of the real state of affairs
- But direct link between the level of financing and these or those indicators of research efficiency would be a mistake, which can produce serious distortions

What Reforms are Needed?

Strategic Targets

- Everybody agrees now that in order to realize formulated strategic targets Russia needs developed scientific potential
- On the demand side it is necessary:
  - To create conditions for business to be interested in innovations;
  - To integrate organically the strive for innovations in industrial policy
- On the supply side it is necessary:
  - To restore applied science sector, which could function predominantly on commercial conditions
  - To modernize the basic research sector

Radical Reformation

- To concentrate basic science in the higher education sector financing it exclusively by means of grants and other mechanisms based on competition of different groups of researchers
- The costs:
  - Academic community as a whole is deprived of the possibility to influence the overall development of research
  - Negative influence on the destiny of "scientific schools"
  - Huge costs of transformation

Modernization of the R&D sector: RAS Vision

- Improving the state of the academic sector (provision of modern equipment, making research attractive for young people, looking for optimal combination of financing on the basis of estimates and by means of competitive mechanisms)
- Development of basic research within higher school institutions, mainly on the basis of grants
- Improving co-operation between researchers from state academies, high school and government managed research institutions
- Creating efficient infrastructure for utilizing innovative potential of researchers from the academic and higher school sectors

Annual Salary Accrued to Personnel of Organizations in Different Fields of Economic Activity
(Roubles)

	2005	2006	2007
Researchers of RAS (Central Part) from Federal Budget	6025	10019	18941
All RAS (Central Part) Personnel from Federal Budget	5235	8517	13923
All RAS (Central Part) Personnel from All Sources	8691	13897	21145
Economy – Total	8554,9	10633,9	13527,0*
Processing Industries	8420,9	10198,5	12934,0*
Construction	9042,8	10869,2	14154,0*
Scientific Research and Development	11000,7	14010,7	18647,0*

*Preliminary estimate

Distribution of RAS Researchers by Age

	Up to 40 years		40 - 60 years		More than 60 лет	
	Number of Researchers	Percentage of Total	Number of Researchers	Percentage of Total	Number of Researchers	Percentage of Total
On 1.12.2005	14353	25.8%	25040	45.1%	16140	29.1%
On 1.12.2006	13780	26.5%	22220	42.8%	15908	30.6%
On 1.12.2007	13263	26.7%	20096	40.4%	16324	32.9%