

XV INTERNATIONAL ACADEMIC CONFERENCE
“FORESIGHT AND SCIENCE, TECHNOLOGY
AND INNOVATION POLICY”



**Session 4. STI Policy: Approaches to Its
Analysis and Evaluation**

Behavior of Research Organizations on the Background of S&T Support Policy Tools

Speaker:

Stanislav Zaichenko, Leading Research Fellow, PhD

Co-authors:

Leonid Gokhberg, First Vice Rector, Dr.

Dirk Meissner, Laboratory Head, Dr.

Mikhail Gershman, Director, PhD

National Research University Higher School of Economics

Institute for Statistical Studies and Economics of Knowledge

Moscow, 13.11.2025



“Doing Science in Russia”: S&T business climate survey

Nationwide 2024 survey

719 observations (1/5th of the general population)
369 variables representing the respondents' estimations:

- 1) Parameters of organizational operation and conditions (actual and expected)
 - Human, financial and tangible resources
 - ICT and digitalization
 - STI cooperation
 - R&D performance and commercialization
 - Openness to society
- 2) Institutional environment conditions
 - Quality of governance and regulations
 - Administrative load
- 3) Application of support policy tools (experience and effectiveness)
 - 47 actual policy tools in 11 functional groups
- 4) Strategic management style
 - R&D management tools and routines
 - Strategic orientation

	Number of organizations	Share, %
Type of organization		
Non-profit research institutions	327	46
Commercial research institutions	151	21
Universities	241	34
Field of S&T		
Natural sciences	375	52
Engineering and technology	402	56
Medical sciences	195	27
Agricultural sciences	114	16
Social sciences	174	24
Humanities	181	25
Type of R&D activity		
Basic research	515	72
Applied research	611	85
Development	420	58
S&T services	344	48

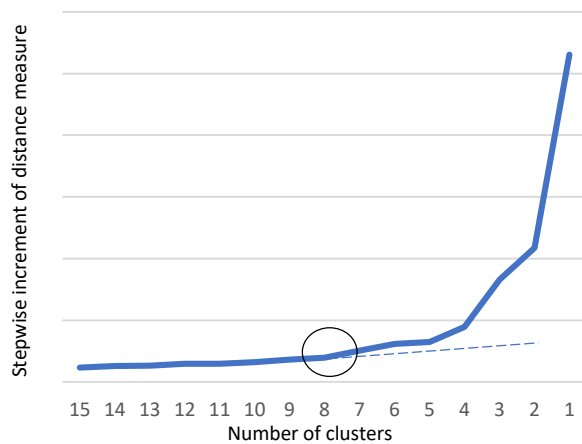
Towards a policy mix classification: Shaping the empirical mixes

Policy tools

47 total → 27 correlated



- Hierarchical cluster analysis; Ward's method.
- Measure: squared Euclidian distance.
- Defining the number of clusters: "elbow" method.



Policy (27 tools)	Distribution of policy use by clusters, %							
	1	2	3	4	5	6	7	8
Number of observations	90	56	103	125	81	59	144	61
3. Programme "Priority 2030"								
4. Government assignment								
6. Russian State Foundation grants								
7. World-level research centers								
11. Reduced income tax for R&D activities								
12. Zero income tax for educational organizations								
13. VAT exemption for IPR realization								
14. VAT exemption for publicly-funded R&D								
15. VAT exemption for business contracts on R&D								
16. Regional exemptions								
17. Financial support to young researchers								
21. University startup studios								
22. Student entrepreneurship acceleration programmes								
25. Support for CCUs and USIs								
28. "USIS R&D" system								
29. "DB RD RO" system								
30. CCUs and USIs portal								
31. Provision of access to S&T information								
32. World-class research and education centres (WECs)								
33. High-tech production projects ("Resolution 218")								
34. University-based engineering centres								
42. Support for the National Technology Initiative								
43. Foundation for assistance to innovation								
44. Personal support for R&D staff (prizes, grants, etc.)								
45. Tax exemptions (special zones; investment tax tools)								
46. Financing of regional S&T infrastructure								
47. Financing of regional innovation infrastructure								

Organization category	Distribution within each cluster, %							
	1	2	3	4	5	6	7	8
University								
Research organization								
Company								

Discipline	Distribution within each cluster, %							
	1	2	3	4	5	6	7	8
Natural sciences								
Engineering								
Medical sciences								
Agricultural sciences								
Social sciences								
Humanities								

Type of activity	Distribution within each cluster, %							
	1	2	3	4	5	6	7	8
Basic research								
Applied research								
Development								
S&T services								

STEP 1:

(a) Selection of correlated policies + (b) cluster analysis + (c) setting the N of clusters

STEP 2:

Considering clusters as policy mixes; describing each mix in terms of tools config.

STEP 3:

More detail to describe mixes (not used in clustering); labelling the mixes.



Towards a policy mix classification: Describing the empirical mixes

- Pairwise correlation analysis; Kendall's tau-b measure (correspondence between cluster membership and estimation by criterion).
- Significance thresholds (two-tailed): (a) $p \leq 0.050$; (b) $p \leq 0.010$.
- Correlation thresholds: (a) $|\tau_b| \geq 0.100$; (b) $|\tau_b| \geq 0.200$; (c) $|\tau_b| \geq 0.300$.

Criteria for description and interpretation:

- Common tools of R&D management applied within the organization
- Factors and orientation of strategic R&D planning agenda within the organization
- Cooperation activities
- Human capital
- Availability of financial resources
- Availability of tangible resources
- Availability of ICT and information resources
- Performance
- Openness
- Environment and governance conditions
- Sovereignty

Current state estimations
+
Nearest future expectations (next 3 years)



Towards a policy mix classification: Describing the empirical mixes (charts)

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for human capital								
Consistency of R&D management with the organization								
Strategy of R&D financing								
Cost/RD performance RPI								
Regular market and competitor monitoring								
R&D assessed feedback loop								
Outreach financing from R&D								
R&D project management skills								
Using official "white list" of journals								
Factors and conditions of strategic R&D planning agents within the organization								
Task assignment								
Organizational architecture plans								
Clear leading edge R&D agenda								
Researcher's interests and competences								
Clear role profiles of R&D development								
Definition of business								
Global challenge								
Interdisciplinary economic systems								
Interdisciplinary technology								
Public evaluation of R&D								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for human capital								
Sufficiency of young researchers								
Sufficiency of funding sources								
Sufficiency of infrastructure								
Level of graduate qualifications								
Level of researcher digital skills								
Level of researcher AI skills								
Level of researcher foreign language skills								
Level of researcher project management skills								
Level of researcher skills in communication with customers and partners								
Level of researcher soft skills								
Ability to attract the leading foreign researchers								
Ability to increase researcher salaries								
Ability to provide performance based incentives to researchers								
Ability to support young researchers by non-funding of organization								
Ability to ensure participation of non-researchers in scientific events in Russia								
Ability to ensure participation of non-researchers in scientific events in Europe								
Ability to support award the publication activity of researchers								
Ability to support the academic mobility of researchers by non-funding of organization								
Ability to maintain joint research with foreign partners								
Ability to finance the social package for the R&D staff								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for availability of ICT and information resources								
Task assignment								
Task competitive engineering								
Domestic funding grants								
Foreign funding grants								
Outreach								
Regional funding								
Funding from state corporations								
Business enterprise funding								
Foreign funding								
Near-term (next 3 years) expectations for availability of physical resources								
Task assignment								
Task competitive engineering								
Domestic funding grants								
Foreign funding grants								
Outreach								
Regional funding								
Funding from state corporations								
Business enterprise funding								
Foreign funding								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for availability of ICT and information resources								
Specialized R&D software								
Task assigned R&D software								
Access to R&D research database								
Quality of open scientific library								
Near-term (next 3 years) expectations for availability of ICT and information resources								
Specialized R&D software								
Task assigned R&D software								
Access to R&D research database								
Quality of open scientific library								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for openness								
Application of R&D culture in education								
Organization of open public scientific events								
Visibility in media and social networks								
Independence of scientific objectives								
Near-term (next 3 years) expectations for openness								
Application of R&D culture in education								
Organization of open public scientific events								
Visibility in media and social networks								
Independence of scientific objectives								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for cooperation abilities								
R&D projects partnership with business								
Joint R&D centers with business								
Joint R&D chairs with business								
Joint projects, shared centers with R&D and research organizations								
Network projects								
Open policy ethics								
International R&D cooperation								
Near-term (next 3 years) expectations for cooperation abilities								
R&D projects partnership with business								
Joint R&D / R&D centers with business								
Joint R&D chairs with business								
Joint projects, shared centers with R&D and research organizations								
Network projects								
Open policy ethics								
International R&D cooperation								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for availability of financial resources								
Sufficiency of young researchers								
Sufficiency of funding sources								
Sufficiency of infrastructure								
Level of graduate qualifications								
Level of researcher digital skills								
Level of researcher AI skills								
Level of researcher foreign language skills								
Level of researcher project management skills								
Level of researcher skills in communication with customers and partners								
Level of researcher soft skills								
Ability to attract the leading foreign researchers								
Ability to increase researcher salaries								
Ability to provide performance based incentives to researchers								
Ability to support young researchers by non-funding of organization								
Ability to ensure participation of non-researchers in scientific events in Russia								
Ability to ensure participation of non-researchers in scientific events in Europe								
Ability to support award the publication activity of researchers								
Ability to support the academic mobility of researchers by non-funding of organization								
Ability to maintain joint research with foreign partners								
Ability to finance the social package for the R&D staff								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for availability of financial resources								
Modern laboratory equipment								
Modern computer equipment								
Library/computer								
Test production facilities								
Supercomputers								
Working areas								
Access to external R&D infrastructure								
Condition of buildings and facilities								
Near-term (next 3 years) expectations for availability of financial resources								
Modern laboratory equipment								
Modern computer equipment								
Library/computer								
Test production facilities								
Supercomputers								
Working areas								
Access to external R&D infrastructure								
Condition of buildings and facilities								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for performance								
Publication activity in international journals								
Participation in international scientific events								
Ability to launch international scientific works								
RPI registration in Russia								
RPI registration abroad								
RPI commercialization in Russia								
RPI commercialization abroad								
International RPI management system								
Spin-offs and startup creation / development								
Near-term (next 3 years) expectations for performance								
Publication activity in international journals								
Participation in international scientific events								
Ability to launch international scientific works								
RPI registration in Russia								
RPI registration abroad								
RPI commercialization in Russia								
RPI commercialization abroad								
International RPI management system								
Spin-offs and startup creation / development								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for openness								
Application of R&D culture in education								
Organization of open public scientific events								
Visibility in media and social networks								
Independence of scientific objectives								
Near-term (next 3 years) expectations for openness								
Application of R&D culture in education								
Organization of open public scientific events								
Visibility in media and social networks								
Independence of scientific objectives								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for cooperation abilities								
R&D projects partnership with business								
Joint R&D centers with business								
Joint R&D chairs with business								
Joint projects, shared centers with R&D and research organizations								
Network projects								
Open policy ethics								
International R&D cooperation								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for availability of financial resources								
Modern laboratory equipment								
Modern computer equipment								
Library/computer								
Test production facilities								
Supercomputers								
Working areas								
Access to external R&D infrastructure								
Condition of buildings and facilities								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for performance								
Publication activity in international journals								
Participation in international scientific events								
Ability to launch international scientific works								
RPI registration in Russia								
RPI registration abroad								
RPI commercialization in Russia								
RPI commercialization abroad								
International RPI management system								
Spin-offs and startup creation / development								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for openness								
Application of R&D culture in education								
Organization of open public scientific events								
Visibility in media and social networks								
Independence of scientific objectives								
Near-term (next 3 years) expectations for openness								
Application of R&D culture in education								
Organization of open public scientific events								
Visibility in media and social networks								
Independence of scientific objectives								

	Max 1	Max 2	Max 3	Max 4	Max 5	Max 6	Max 7	Max 8
Concrete estimators for cooperation abilities								
R&D projects partnership with business								
Joint R&D centers with business								
Joint R&D chairs with business								
Joint projects, shared centers with R&D and research organizations								
Network projects								



Mix 1: Tax reduction

Criteria		Characteristics
Policy mix composition		Indirect incentives (national and regional) and digitization tools.
Target group profile	Institutional profile	Not applied to companies. Not sensitive to disciplines.
	Management	Underdeveloped project management, orientation towards state assignments and official priorities.
	Cooperation	No relation to cooperation; a slight intention towards policy advice.
Target group resources estimations	Human capital	Present and future: access to young and leading researchers, good language skills and ability to maintain joint international research projects.
	Financial resources	Present and future: domestic foundation grants; future: improvement with the state assignment.
	Tangible resources	Not sensitive to the future. Present: better access to external R&D infrastructure.
	ICT and information	Not sensitive.
Target group performance estimations	Performance	Present and future: better national and international publication activity and IPR registration in Russia. Future: better ability to launch international events.
	Openness	Present: openness to education. Present and future: more visibility and open events.
Environment condition estimations	Governance	Present and future: equipment availability, favorable performance observation and evaluation practices. Future: better labor interactions and IPR regulation.
	Sovereignty	Not sensitive



Mix 2: VAT reduction

Criteria		Characteristics
Policy mix composition		Strong focus on VAT reduction at national and regional levels; visible importance of digitalization tools. Unlikely support of SIC and weak assistance from development institutions.
Target group profile	Institutional profile	Not applied to companies; research organizations are more likely to be supported, than universities. Not sensitive to disciplines.
	Management	More probable absence of any development strategy.
	Cooperation	Present and future: any cooperation with business is less likely.
Target group resources estimations	Human capital	Present and future: worse ability for social support.
	Financial resources	Present: lack of national foundation grants. Present and future: worse availability of own funds and regional funding.
	Tangible resources	Present and future: more probable problems with computers / supercomputers, lab equipment and buildings / facilities.
	ICT and information	Present: less available patent data. Future: lack of specialized R&D software, including domestic programs.
Target group performance estimations	Performance	Less success in commercialization currently and in future.
	Openness	Not sensitive.
Environment condition estimations	Governance	Currently and in future: more problems with R&D equipment purchasing, reporting load.
	Sovereignty	Not sensitive.



Mix 3: Sparse assistance A

Criteria		Characteristics
Policy mix composition		The majority of support tools are almost neglected. Especially - financial support (direct, indirect) and digitalization.
Target group profile	Institutional profile	Strongly focus on companies; not applied to universities or research organizations. More focused on engineering and more likely for monodisciplinary R&D. Less associated with basic research.
	Management	The majority of R&D management tools and orientations are less likely to be used; but using own funds for R&D and orientation towards the demand from business are more probable.
	Cooperation	Strong cooperation with business; unlikely cooperation with academic or government institutions.
Target group resources estimations	Human capital	The target institutions have better ability to attract researchers by social support, but face more deficit of leading and skilled researchers; especially they lack AI and language skills, and ability for foreign contacts. No improvements are expected, but further problems with getting the skilled professionals.
	Financial resources	Currently and in future the target group should have enough own funds to finance their R&D, but other resources are significantly less available.
	Tangible resources	Problems with equipment, consumables, computers and buildings / facilities are significantly less likely, but there is a typical problem with the access to external infrastructure.
	ICT and information	The typical problems for all periods are access to AI-based R&D tools and to the Russian datasets. Own scientific libraries are also underdeveloped.
Target group performance estimations	Performance	Publications and conferences are a weak side, but IPR commercialization goes significantly better.
	Openness	Any forms of openness (currently and in future) are significantly unlikely.
Environment condition estimations	Governance	Generally worse conditions currently and in future (especially, state assignment availability, performance evaluation, labor interaction, IPR regulation, etc.)
	Sovereignty	More positive estimations for overcoming the foreign publishers' canceling, data access restrictions and unavailability of foreign researchers (for present and future).



Mix 4: Competitive assistance

Criteria		Characteristics
Policy mix composition		Emphasis on direct competitive support to both, institutions and individuals, active application of VAT exemptions and digitalization tools.
Target group profile	Institutional profile	Companies are excluded; universities are more likely to be supported than research organizations. Not sensitive to disciplines.
	Management	Not sensitive to most management elements; orientation towards official state priorities is expected in future.
	Cooperation	Beneficiaries feel better in network projects, no changes in future.
Target group resources estimations	Human capital	A little lesser ability to increase researchers' salaries and pay for their participation in events.
	Financial resources	Relying more on business enterprise funding than on own funds.
	Tangible resources	More problems with computer and test production equipment.
	ICT and information	Satisfactory access to research data in Russia and good condition of its own scientific library.
Target group performance estimations	Performance	A bit better international publication activity currently, but not in future.
	Openness	Only current openness of R&D in terms of integration with education and open events.
Environment condition estimations	Governance	Not sensitive.
	Sovereignty	Problems with overcoming the restrictions of access to data and imported equipment / consumables; future concerns about foreign publishers' cancelling.



Mix 5: Total assistance

Criteria		Characteristics
Policy mix composition		Majority of support tools are actively used (mostly in combination).
Target group profile	Institutional profile	University-centered mix. Encourages multidisciplinary performance and diversification of activities (types of research).
	Management	Applying all possible R&D management mechanisms, but only three strategic directions: business demand, national technological sovereignty, and official S&T priorities. State assignment is not a priority.
	Cooperation	All possible cooperation in present and in future.
Target group resources estimations	Human capital	All positions of human capital are in significantly better condition.
	Financial resources	Significantly better situation by all kinds of financial resources.
	Tangible resources	Significantly better situation by many aspects of tangible resources.
	ICT and information	Significantly better situation by all kinds of ICT / information resources.
Target group performance estimations	Performance	Significantly better situation by most of R&D output aspects, but publication activity could be better.
	Openness	Open in terms of volunteer science and public visibility.
Environment condition estimations	Governance	Satisfied by most of conditions, but expect better performance measurement tools.
	Sovereignty	Suffer most of all from international cancelling and isolation from international knowledge and labor force.



Mix 6: Conservative mix

Criteria		Characteristics
Policy mix composition		Significantly lacking university-related excellence support (academic excellence and leadership, university labs and startups, fellowships, etc.) and assistance to innovation.
Target group profile	Institutional profile	This mix is oriented towards companies, and to a lesser extent to research organizations.
	Management	Not sensitive.
	Cooperation	Try to cooperate with universities; lacking international cooperation.
Target group resources estimations	Human capital	Problems with access to specialists with high qualification and international interaction; no future changes expected.
	Financial resources	Better situation with the competitive state funding and own funds; significantly worse – business and grant funding. No future improvement.
	Tangible resources	Advantage in test production facilities. Expected future improvement in computer equipment.
	ICT and information	Problems with AI tools and access to datasets; bad condition of own S&T libraries. No future improvements.
Target group performance estimations	Performance	Problems with publications and scientific events; future problems with spin-offs.
	Openness	No openness, especially in integration of science and education and public events.
Environment condition estimations	Governance	Problems with performance evaluation and foreign labor force.
	Sovereignty	Overcoming the problems with publications and data access.



Mix 7: Human capital development

Criteria		Characteristics
Policy mix composition		Stronger individual support (initiative R&D projects), vis-a-vis visible deficit of other (especially indirect financial) support. This mix is highly . Not sensitive to disciplines.
Target group profile	Institutional profile	Specialized for research organizations; some universities are also engaged; companies are mostly excluded.
	Management	Project management is unlikely; often insist on their own "white list" of journals.
	Cooperation	Weak cooperation, especially with business.
Target group resources estimations	Human capital	Considerably better positions in terms of high-skilled and leading scientists
	Financial resources	Problems with most sources of funds, especially own funds, business sources, and state competitive funding.
	Tangible resources	No typical issues except lack of test production facilities and some concerns about the condition of buildings.
	ICT and information	Not sensitive in the present, but show negative expectations on access to AI, software and publication/patent databases in future.
Target group performance estimations	Performance	Better self-evaluation in terms of publications and events, but certain concerns with commercialization, IPR management and spin-offs.
	Openness	Relatively more success in integration of education and science and public events.
Environment condition estimations	Governance	Not sensitive.
	Sovereignty	Not sensitive.

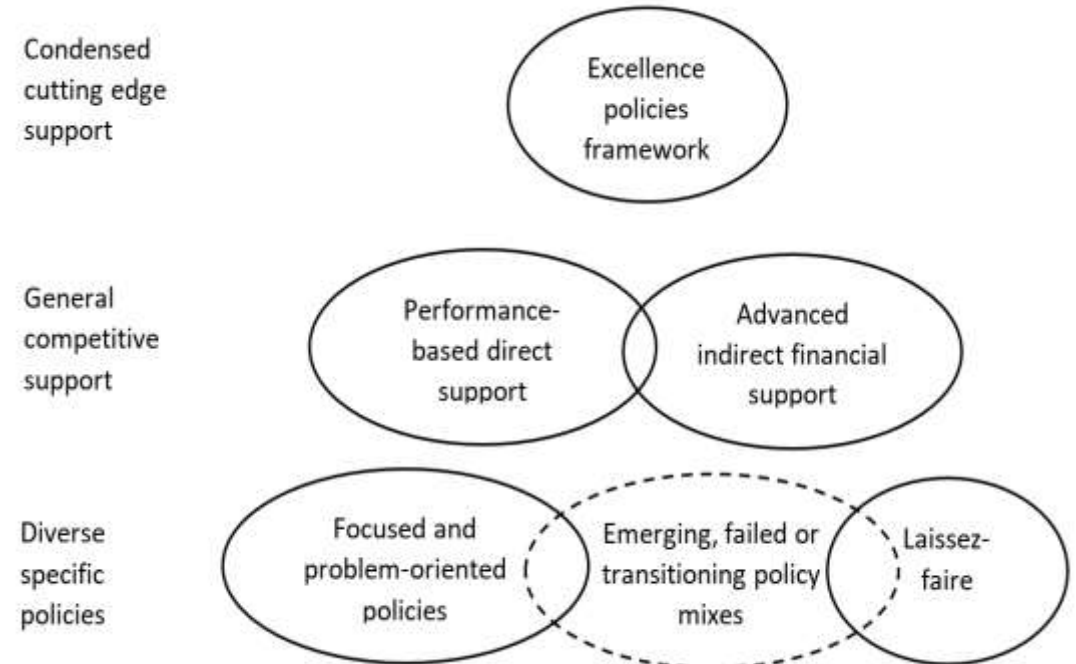


Mix 8: Sparse assistance B

Criteria		Characteristics
Policy mix composition		The majority of support tools are almost neglected (including indirect financial support, assistance to HEIs and regional tools).
Target group profile	Institutional profile	More focused on monodisciplinary research organizations and mostly not applicable to companies or universities.
	Management	R&D project management is unlikely, as well as competitors monitoring or own long-term projects.
	Cooperation	Weaker cooperation with business.
Target group resources estimations	Human capital	Problems with access to both young and skilled researchers.
	Financial resources	Main funding advantages are related to the state assignment. Unlikely availability of own funds or foundation grants.
	Tangible resources	Not sensitive.
	ICT and information	Some minor concerns about access to software and datasets.
Target group performance estimations	Performance	Visible problems with international publications. Some concerns about IPR registration, commercialization and management.
	Openness	Not sensitive.
Environment condition estimations	Governance	Not sensitive.
	Sovereignty	Not sensitive.

Conclusion

Category by targets	Empirical mixes	Policy consistency	Institutional focus	Current condition estimated	Future expectations	Selectivity (competitiveness)
"Policy gaps"	3. "Sparse assistance A"	Very low	Companies	Very weak	No improvement	No selection
	8. "Sparse assistance B"	Very low	Research institutions	Quite weak	No improvement	No selection
"Specific targets"	2. "VAT reduction"	Low	Research institutions	Quite weak	No improvement	Formal selection
	6. "Conservative mix"	Low	Companies	A bit weak	No improvement	No selection
	7. "Human capital development"	Low	Research institutions	A bit weak	No improvement	Individual selection
"Competitiveness"	1. "Tax reduction"	High	Research institutions and HEIs	Mostly neutral	Higher than neutral	Formal selection
	4. "Competitive assistance"	High	HEIs	Mostly neutral	No improvement	High selectivity
"Excellence"	5. "Total assistance"	Very high	Top HEIs	Very strong	Highly positive	High selectivity





Thank you!

**National Research University Higher School of Economics
Institute for Statistical Studies and Economics of Knowledge
Moscow, 13.11.2025**

This presentation was prepared within the framework of the Basic Research Program of the HSE University.