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Assessing the impact of public funding and tax incentives in Russia: recipient analysis and additionality effects evaluation

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This study was inspired by the existence in Russia of a quite imperfect and unbalanced innovation policy evaluation system which is characterized by:

(1) excessive emphasis on the outputs instead of outcomes;
(2) lack of attention to drawing lessons process;
(3) “fragmented” character of the evaluation literature.

We’ve tried to use the additionality framework in relation to Russian innovation policy aspiring that our actions would stimulate the development of a sound evaluation system in Russia.

1 **Theory and literature overview**

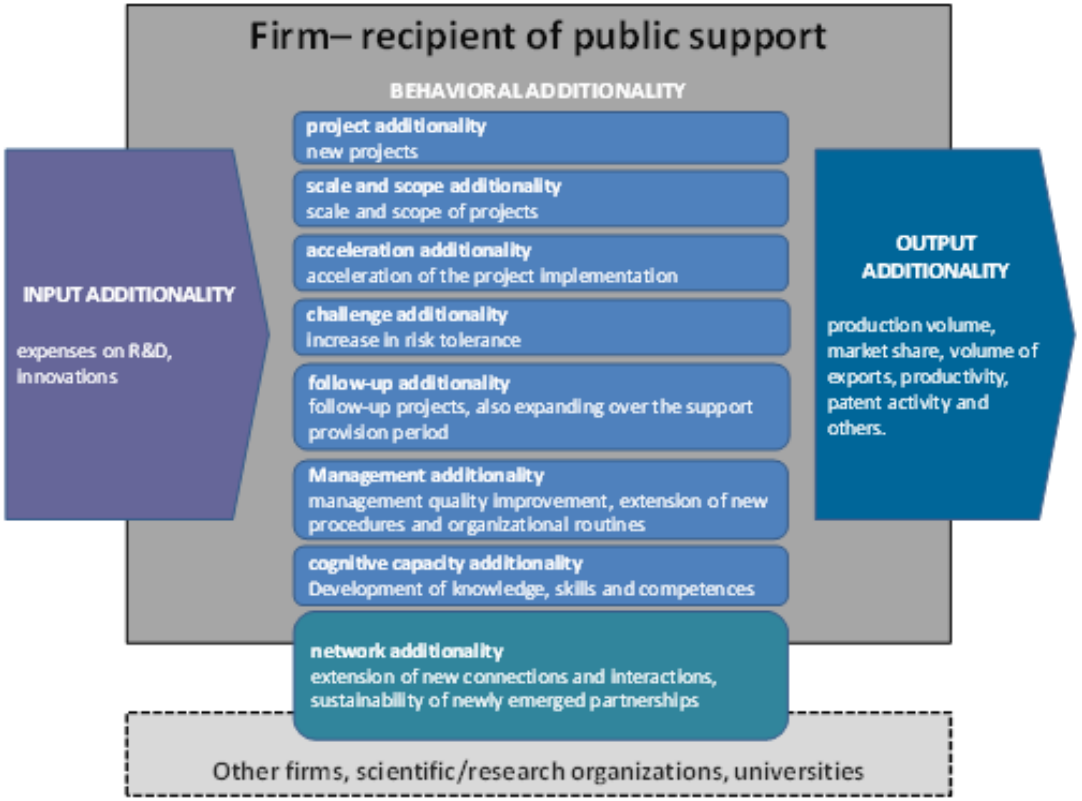
2 Methodology

3 Emperical evidence

3 Conclusion

Additionality concept

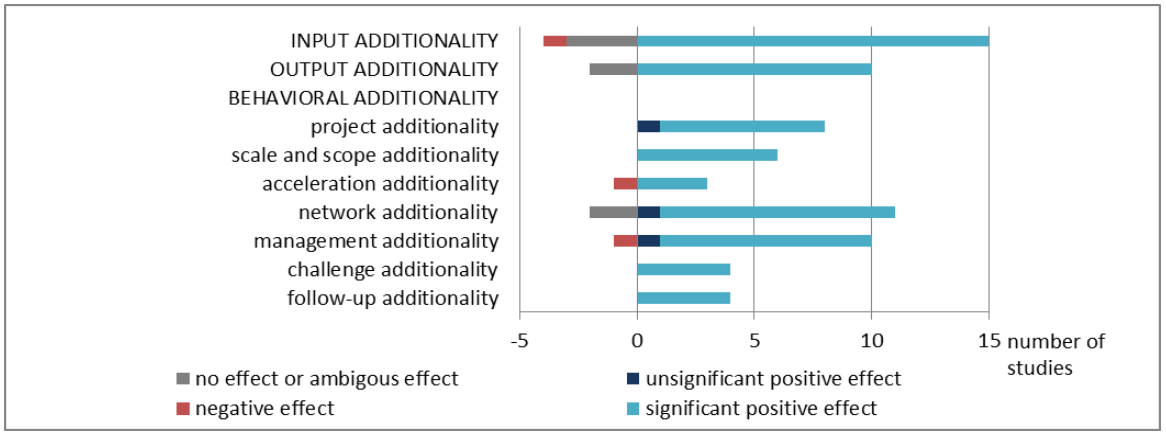
Types of additionality



- The notion of additionality involves comparison of the real situation of receiving government support with a hypothetical scenario of what would have happened if no support had been provided
- There are several advantages of this approach:
  - “clean” evaluation;
  - a wide range of considered effects, including behavior and networking;
  - direct and indirect public influence assessment;
  - on-going, terminal and post support period coverage.

A considerable number of studies assessing the additionality of the innovation policy has taken place and generally there IS positive additionality

Financial support. Additionality evaluation studies overview

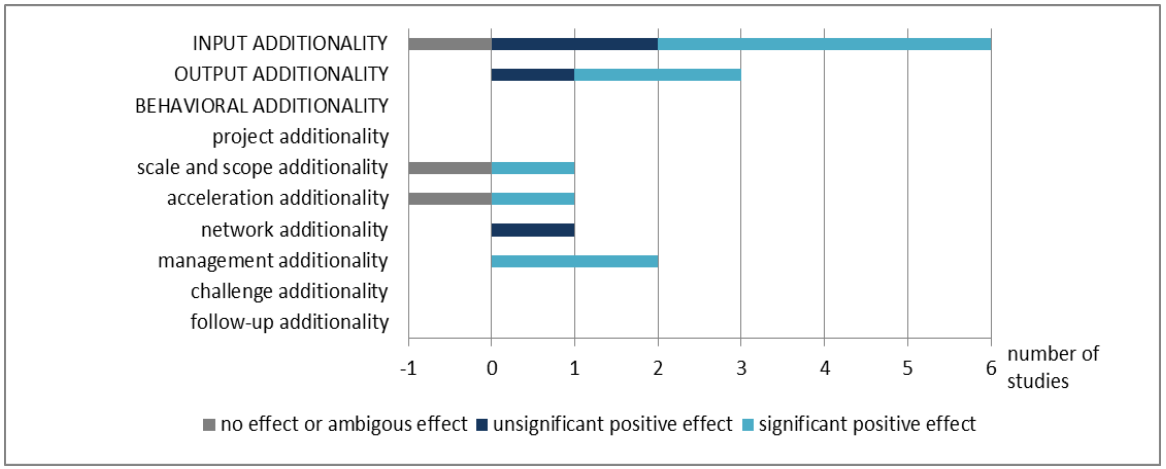


- Mostly there IS additionality of different kinds for direct funding.
- But there are important reverse examples:

(1) Marzucchi, Montresor (2013), (Montmartin et al. 2015) – presence on the national level but absence on the regional level;

(2) Lohmann (2014) – project prolongation is actually positive.

Tax incentives. Additionality evaluation studies overview



- Tax incentives are les frequently observed in terms of additionality effects
- As a rule, researchers only considered the input additionality and obtained an empirical evidence of its presence
- (Montmartin et al. 2015) – positive effect for the region is offset by the negative effects for other regions

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Direct funding and tax incentives are traditionally viewed as the key elements of the national innovation policy. The aim of our study is to perform an evaluation of Russian innovation policy focusing on these two main instruments

Objectives

1. identify the “typical profile” of the firms-beneficiaries of the government support policy as a whole and direct funding and tax incentives in particular;

2. consider the basic input, output and behavioral additionality effects;

3. analyze the “relative” additionality of fiscal support and tax incentives.

Method

- Recipient profile - frequency and regression analysis;
- Additionality – frequency analysis of the data from the question survey
- “Relative” additionality – propensity score matching;

*Relative additionality refers to the additionality of a concrete instrument for a particular firm relative to all other used instruments. This enables us to highlight additionality effects inherent precisely to tax and financial instruments distinguishing them from the “background” of all other elements of the innovation policy toolbox.

Data

- Questionnaire survey of top executives of Russian manufacturing firms
- September-October 2015
- Stratification of the sample by industry
- Target variable – receiving public support
    - More firms from high tech industries
    - More large and middle firms
- Full sample – 658 firms, received public support – 222 firms
- More details – see Annex 1

Research limitations

- The opportunity to interview only one person in a company and CEOs were chosen;
- We analyze the generalized directions of the public support: direct budget funding and tax incentives leaving out he specifics of selected support instruments;
- We do not distinguish between federal and regional support.

We have tried to cover a wide range of additionality effects related to all its “classical” types with the exception of management and follow-up additionality

Effect	Additionality
volume of company’s investment in new equipment based on its own or borrowed funds has increased	input
volume of company’s spending on innovation based on its own or borrowed funds has increased	
volume of company’s spending on R&D based on its own or borrowed funds has increased	
company’s revenue has increased	output
company’s market share on the domestic market has increased	
company’s market share on the external market has increased	
production volume of new (improved) products has increased	
profitability of core company’s activities has improved	
company’s general competitiveness has increased	
import dependence of the company has been reduced	*import substitution*
a promising new project (projects) was launched	project
public support has allowed to implement a larger project (projects)	scale and scope
public support has allowed to implement (projects) with a longer payback period	
public support accelerated implementation of the project	acceleration
public support enabled to reduce risks of project implementation	challenge
development (strengthening) of the company’s linkages within the scientific and industrial cooperation has occurred	network
public support has allowed to redistribute part of company’s funds towards the other areas not related to the subject of support	—

Reducing import dependence of the companies (was included in the scope of the analysis due to the active implementation of the ISI policy in the Russian industry) directly does not correspond to any of the "classic" types of additionality and for this reason we regard it as a separate category.

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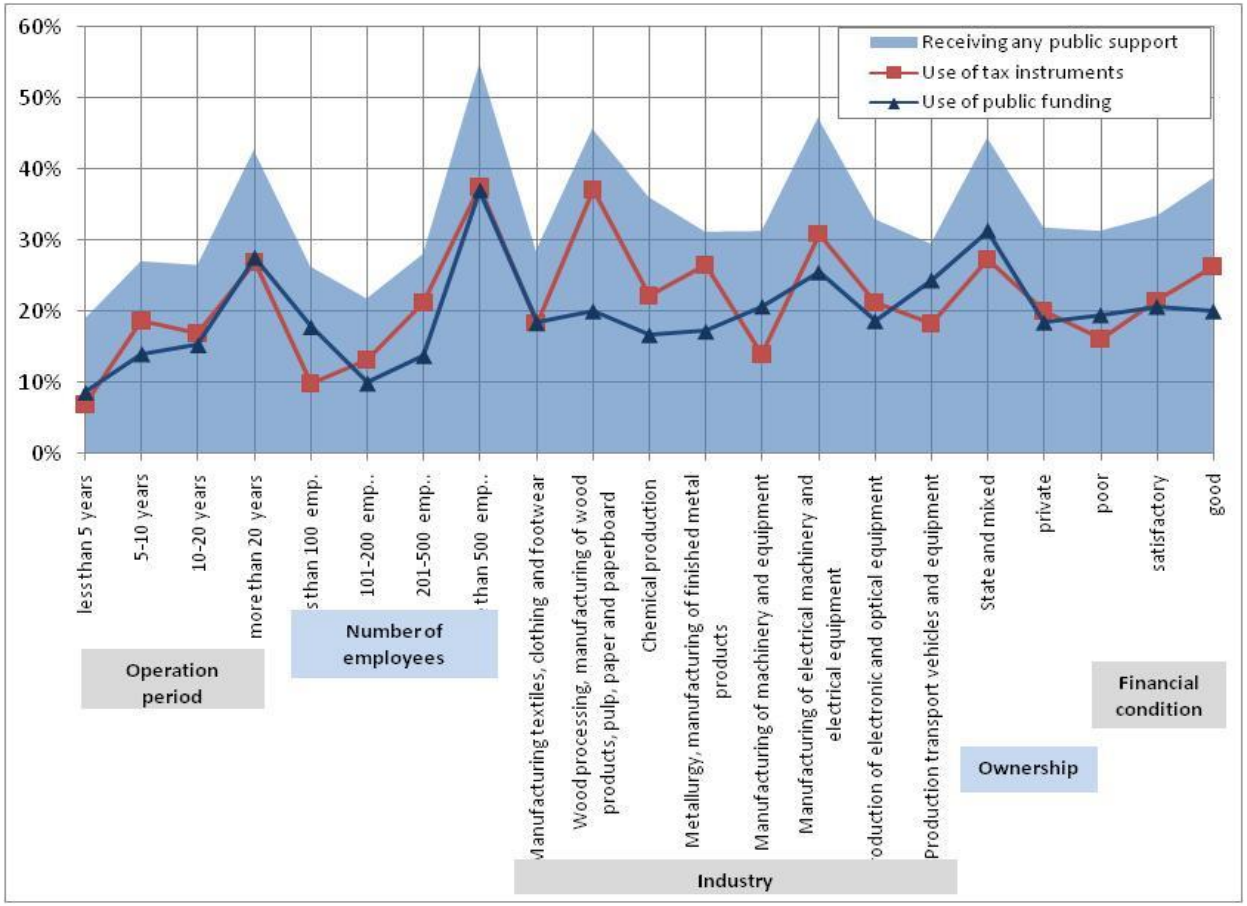
Typical profile of the recipients of the financial support and tax incentives



Frequency and regression* analysis allowed us to reveal the profile of the recipients

Tax incentives:

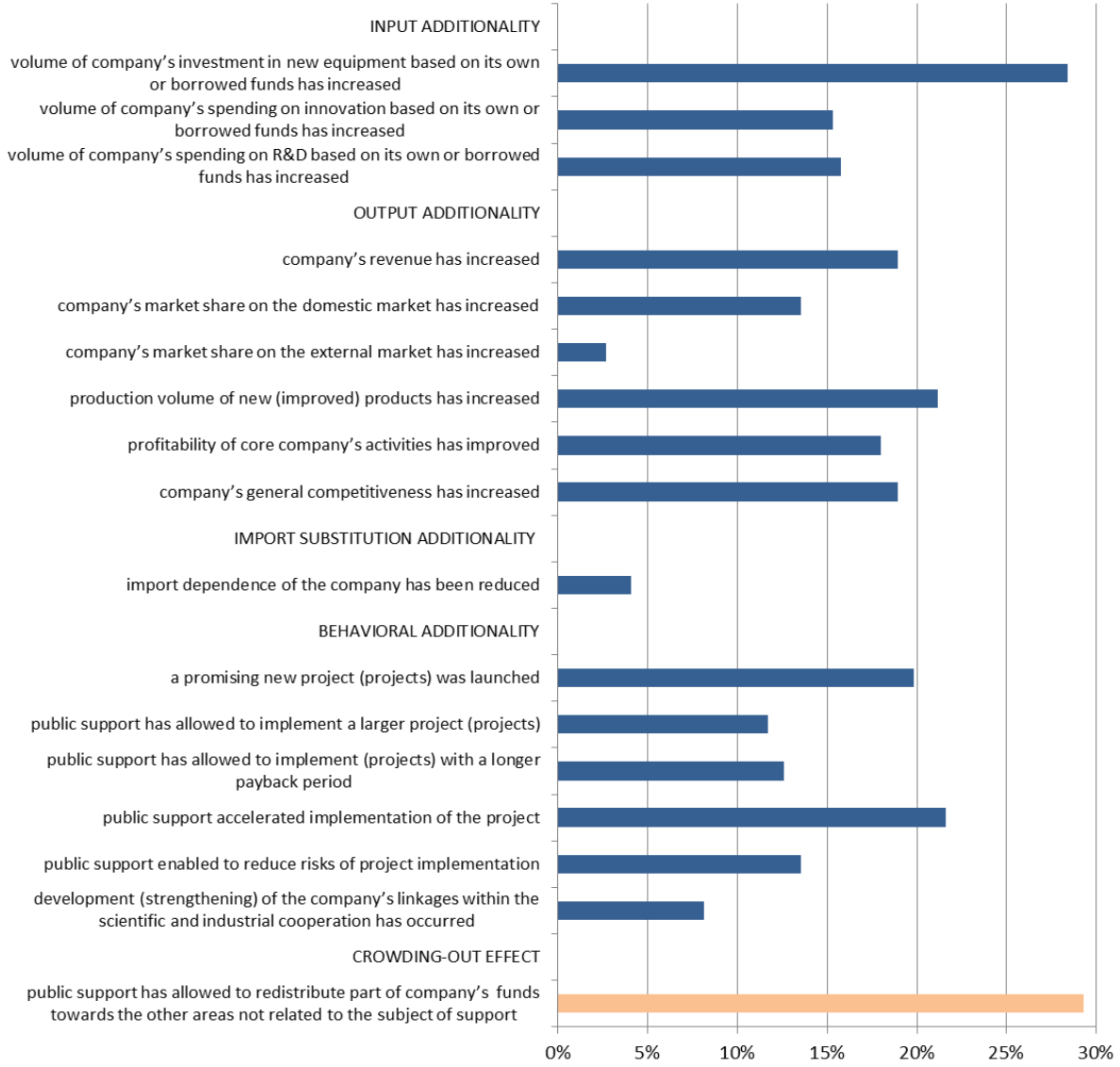
- typical for large companies
- unusual for SMEs (not more than 200 employees).

Financial support::

- Large and long-operating companies
- Small firms

*See Annex 2.

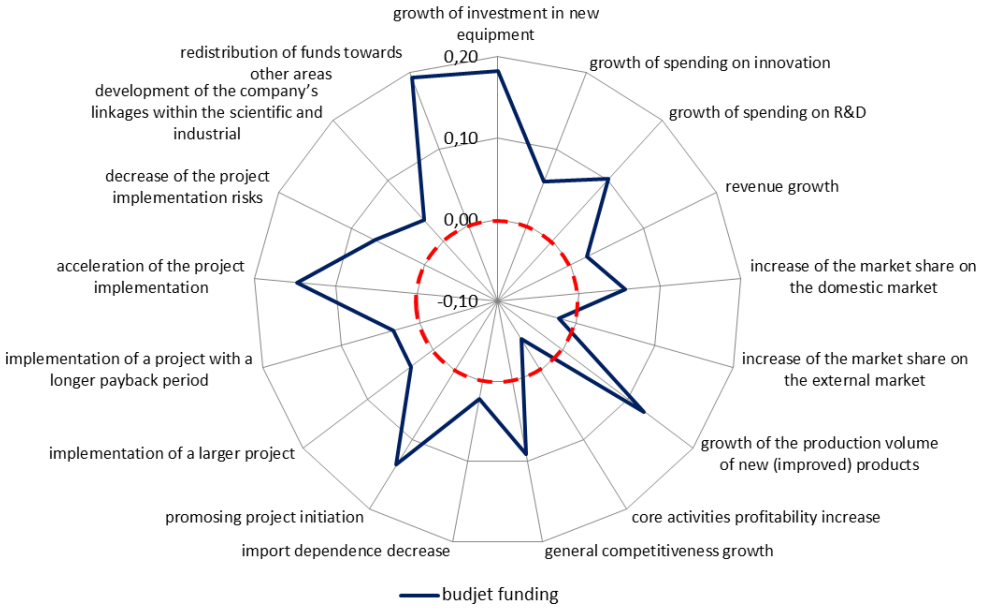
Additionality effects of the general public support for innovation

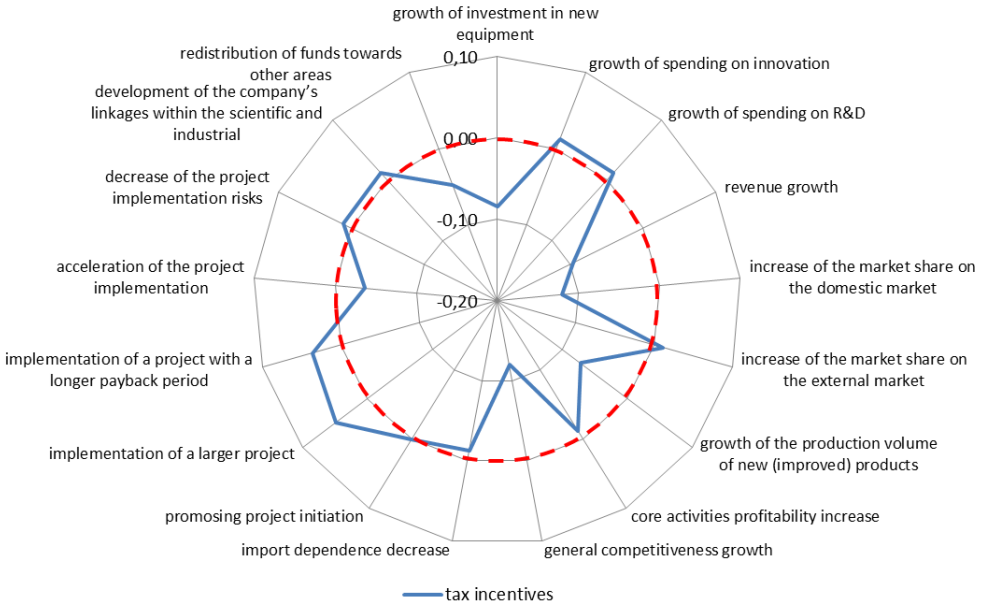


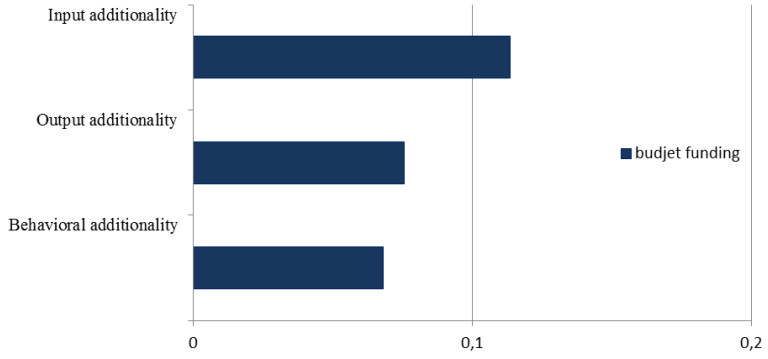
Important remarks:

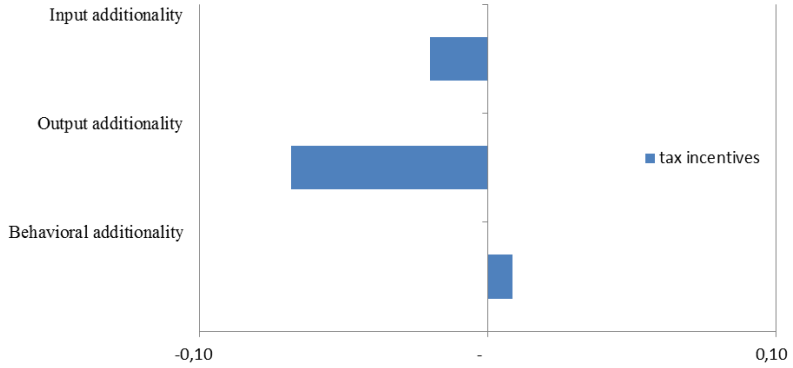
- Small network additionality – quite surprising regarding considerable effort of Russian support system
- Big crowding-out effect

Evaluation results indicate that across almost all considered “relative” additionality effects the impact of financial measures exceeds the tax incentives









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(1) The ongoing public policy to stimulate firms' development with a substantial variety of instruments and measures applied, conditions for granting support and, consequently, the potential recipients is characterized by a strong emphasis on the development of *sufficiently large and long-operating companies.*

(2) Tax and financial instruments of the government support de facto have differential target audiences: the use of tax incentives is not likely for small firms, whereas medium-sized companies relatively rare appear to be the recipients of the financial support.

(3) The relatively small impact of government support on science-business cooperation seems to us quite unexpected (abroad, this effect is among most frequently observed, especially in the case of financial support – e.g. Pegler (2005); Busom, Fernandez Ribas (2008); Idea Consult (2009); Marzucchi, Montresor (2013)).

(4) Our empirical analysis as well as a significant number of earlier studies has confirmed the importance of the financial support in providing all main kinds of additionality. The main input effect is the increase of investment in new equipment; output - the increase of production of new and improved products, behavioral – the initiation of new perspective projects and an acceleration of project implementation.

(5) Unlike financial instruments, tax incentives almost do not provide significant results in terms of additionality concept. The most considerable “failure” is observed in relation to such effects as the increase in the firms’ competitiveness, the growth the domestic market share and the increase of investment in new equipment.

Detected: Financial instruments compared to tax incentives look better in most additionality effects
BUT: Tax instruments are potentially available for a wider range of recipients than direct funding instruments, do not involve government intervention in market mechanisms and to a substantially less degree produce a crowding out effect
Future: Tax incentives in Russia need "setting up“ but should not be improved through its "enrichment" with features and attributes of financial mechanisms as it eliminates the key benefits of tax incentives: the availability for a wide range of companies and low costs of use and administration.

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Annex 1. Sample structure

Characteristic		Share in the sample
Industry	Manufacturing textiles, clothing and footwear	7,45%
	Wood processing, manufacturing of wood products, pulp, paper and paperboard	5,32%
	Chemical production (excluding pharmaceutics)	6,23%
	Manufacturing of pharmaceutical products	4,71%
	Metallurgy, manufacturing of finished metal products	9,73%
	Manufacturing of machinery and equipment (except for machine-tools)	18,84%
	Manufacturing of machine-tools	3,95%
	Manufacturing of electrical machinery and electrical equipment	8,36%
	Manufacturing of computer technology, equipment for processing information, radio, TV and telecommunication	9,42%
	Manufacturing of medical equipment	4,86%
	Manufacturing of control and measuring devices	3,65%
	Automobile production	4,56%
	Shipbuilding	4,10%
	Manufacturing of railway rolling stock	4,86%
	Manufacturing of aircraft	3,95%
Operation period	less than 5 years	8,81%
	5-10 years	16,26%
	10-20 years	26,90%
	more than 20 years	48,02%
Ownership	state and municipal (including the ownership of state-owned corporations)	9,27%
	mixed	5,78%
	private	84,95%
Number of employees	less than 100 emp.	24,77%
	101-200 emp..	22,95%
	201-500 emp..	24,32%
	more than 500 emp..	27,96%
Financial condition	poor	17,93%
	satisfactory	69,91%
	good	12,16%

Annex 2. Recipent profile. Regression analysis

Independent variables (dummy)		Dependent variables (dummy)		
		Receiving any public support	Use of tax instruments	Use of public funding
Industry	Manufacturing textiles, clothing and footwear	*control*		
	Wood processing, manufacturing of wood products, pulp, paper and paperboard	+*	+**	
	Chemical production			
	Metallurgy, manufacturing of finished metal products			
	Manufacturing of machinery and equipment			
	Manufacturing of electrical machinery and electrical equipment	+*		
	Production of electronic and optical equipment			
	Production transport vehicles and equipment			
Operation period	less than 5 years			
	5-10 years			
	10-20 years	*control*		
	more than 20 years	+**		+**
Ownership	State and mixed			
	private	*control*		
Number of employees	less than 100 emp.		-**	+*
	101-200 emp..		-*	
	201-500 emp..	*control*		
	more than 500 emp..	+***	+**	+***
Financial condition	poor			
	satisfactory	*control*		
	good			
Chi-square		78,39***	66,98***	65,44***
N		658		