The tax component of innovative activity assessment in the Russian Federation

Marina Orlova and Ajgul Khafizova

Kazan (Volga region) Federal University, Institute of Economics and Finance, Butlerov str., 4, Kazan, 420012, Russia
Email: orlovamarina64@mail.ru

Abstract. The present paper investigates innovative development problems of worlds economies, techniques used to assess the level of country's innovative development. We identify particulars of applying tax benefits in order to stimulate parties involved in innovative process. The article focuses on the possibility of extension tax benefits in Russia taking into account innovative process characteristics and also authorities and taxpayers interaction ways, which are related to efficiency assessment of tax benefits for innovation in terms of tax administration system reform.
[Orlova M., Khafizova A. **The tax component of innovative activity assessment in the Russian Federation.** *Life Sci J* 2014;11(11):328-333] (ISSN:1097-8135). http://www.lifesciencesite.com. 52

Keywords: innovations, innovative activity, R&D, tax benefits, tax benefits for innovation, tax preferences item, tax benefit efficiency, lost income, B index

Introduction

Innovations play a great role not only in individual firms development, but also in ensuring the national economy competitiveness leveling up the population life and improving social welfare. Little experienced in market economy countries are able to develop by joining world innovative process. Effective system of state regulation and business entities support, particularly tax innovation support, is one of the most important factors which lead to successful innovative development. Involving parties in innovative process by tax incentives is used by almost all counties. But the question is how to assess the efficiency of tax incentives applying and what their influence on economic growth both states and individual organizations is.

Russia's place in innovative development of world economy

Transition to the innovative model of development has become a fait accompli in many developed countries. As international experience shows any state is able to be one of the leading economies due to comprehensive innovative development even without having abundant natural resources reserve. According to the Organization for Economic Cooperation and Development, Israel, South Korea, Japan, the USA and Sweden are the top 5 countries in terms of aggregate R & D expenditures (Table 1) [1]. The main indicator showing innovative development level is a global innovation index, developed jointly by the Boston Consulting Group (BCG), the National Association of Manufacturers (NAM) and the Manufacturing Institute (MI) , an independent research center affiliated with NAM [2].

Table 1. R&D expenditure level by countries

Country	R&D expenditure level in 2010, $ millions	Gross Domestic Product in 2010 (according to IMF), $ millions	R&D expenditure level in proportion to GDP, %
Israel	9921	202101	4,91
South Korea	41742	929124	4,49
Japan	147801	4910692	3,01
The USA	398086	14441425	2,76
Sweden	12901	478961	2,69
Finland	6551	271867	2,41
China	102331	4327448	2,36
Germany	71789	3673105	1,95
Canada	25050	1499551	1,67
The UK	41448	2680000	1,55
France	42757	2866951	1,49
Russia	31233	2230956	1,40
Spain	19547	1601964	1,22
Hungary	1823	155930	1,17
Norway	4497	451830	1,00

The Russian Federation is inferior to the first five countries in R&D expenditures almost three times. Two thirds of GDP of developed countries is got by innovative manufacturing base. However, despite the lag in GDP and R&D proportion from such countries as Israel, Japan, the USA and the others named in table 1, the scale of R&D activity investment in Russia stays high enough at point of 1.4 %. It should be noted that existence of such a lag can be explained by present sectoral structure of Russian economy: a country whose economy is based mainly on the exploitation of natural resources is expected to have lower rates of involvement in research and innovation.

Low private investment share presents itself as a negative factor in the analysis of investment to innovative industries. According table 1it comes obvious that government involvement share in innovative activity is significantly higher than

average by OECD. Thus, the ratio of innovation financing between public and private sources is at the level of 70% to 30% in Russia, while 40% to 60% in majority of developed countries [3]. At the same time the Federal State Statistics Service of Russia reports that equities share in technological innovation cost structure in industrial production was 69.6 % in 2011 and - 73.3 % in 2012 [4].

Table 2. Funding sources ratio in R&D activity, 2011

Country	A share of private funding for R&D, %	A share of public funding for R&D , %	The other sources of funding for R&D, %
Australia	58,3	37,3	4,40
The UK	47,2	29,5	23,30
Germany	67,9	27,7	4,40
Israel	77,2	15,9	6,90
Italy	42	44,3	13,70
Canada	47,5	33,1	19,40
China	70,4	24,6	5,00
Norway	45,3	44,9	9,80
Poland	30,5	59,8	9,70
The USA	67,3	27	5,70
Finland	68,2	24,1	7,70
France	50,5	39,4	10,10
Sweden	64	22,2	13,80
South Korea	73,7	24,8	1,50
Russia	28,7	64,7	6,60
Japan	77,7	15,6	6,70

Comparing to rapidly developing countries the share of private funding for innovation is insufficient in Russia. Indirectly, it indicates a need of changing the stimulation mechanisms of private innovation to stay in touch with international practice. The analysis of private innovative activity shows that only 10% of Russian companies have R&D departments while innovative products percentage is just over 5% of country's output.

Tax benefits for innovation in the Russian Federation

Tax incentives to innovative development of countries and regions are defined by the researchers as the absolute benefits and put on a par with such a measure as the availability of natural resources [5]. The tax incentives mechanisms for innovation vary in depending on country specification and innovation level. Boosting efficiency is a top priority in the development of any economic system. Creating a trouble-free Russia is impossible without innovative socio-economic development, effective implementation of demographic programs, creating quality jobs, effective social control, effective guarantees for the protection of property and fulfilling contracts, the competitiveness of key factors for running a business, the efficiency of state power, combating corruption and a number of other crucial factors [6]. For the development of innovative Russia along with other factors you need an effective tax administration system. In Russia, the concept of innovative activity still has no any place in tax law; also there aren't benefits for organizations engaged in this type of activity. However, with tax system formation in Russia in 1999 some tax benefits were created. They regulated certain stages of the innovative cycle, mostly applicable to the first half of it, particularly to scientific and technical activities. At the moment it is possible to talk about the evolution of the tax legislation in terms of stimulating innovative research. Thus, last 5 years tax benefits provision approach was upgraded and benefits number was substantially expanded. Tax benefits offered by Russian tax law are more relevant for research stage of organization activity but don't cover the whole innovative cycle. There are some benefits to implement innovative activities. There are no benefits associated with the stimulation of attracting financial resources (investments) in innovation and commercialization of results. Table 3 shows innovative advantages types provided to Russian taxpayers.

Table 3.Types of innovative advantages provided to taxpayers in the Russian Federation

Type of tax	Innovative advantages	Innovative activity stage
Corporate income tax	Parties involved in "Skolkovo" project are free of taxation, introduction activity in innovative technological areas are applied with zero rate taxation	Research Introduction Commercialization
	Reduced tax rate application in accordance with subnational laws	Research Introduction
	The possibility of modeling innovative expenditures(including increase): R&D fund formation, using multiplying factor – 1,5 % during R&D;	Research
	Using investment tax credit for corporate tax income	Research Introduction
Property tax	Benefits are applicable to residents of special economic zones during 10 years after registration, to innovative center "Skolkovo" residents, to organizations are using high efficient energy objects, public research centers	Research Introduction Commercialization
	Reducing tax rates on subnational law level; tax exemption	Research
Value added tax	Free of taxation: sale operations on exclusive rights on inventions, utility models, industrial computer program samples; R&D sale operations within the territory of the Russian Federation, which are run on the base of economic agreements and through the budgets and specially created funds, and also R&D for new products and technologies creation.	Research Introduction

Unfortunately, the majority of this tax law advantages are not designated as benefits and are not allocated to individual groups of articles. This fact complicates the possibility to percept the conditions of getting tax benefits. Many tax benefits used in the Russian Federation are based on foreign experience. Review of tax incentives and research their effectiveness in different countries show that the developing countries in order to attract investment minimizes the corporate income tax rate, used tax holidays, investment credits, which reduced the tax revenues of the budget system [7], [8]. However,

Russia is not typical for the maximum reduction in the tax rate on income tax. Zero rate, as shown in Table 3, is used only in special areas of technical innovation, and subjects of the Russian Federation shall have the right to reduce the tax rate only to a certain level. This will not affect the formation of the tax revenues of the budget system, unlike indicators in developing countries [9]. Win decreased income tax expense in 2012 amounted to 4.3 percent.

It becomes possible to imagine the scale of using tax benefits only after learning shortfall in income amount for individual taxes. Figure 1 shows shortfall in income when applying tax benefits for corporate income tax.

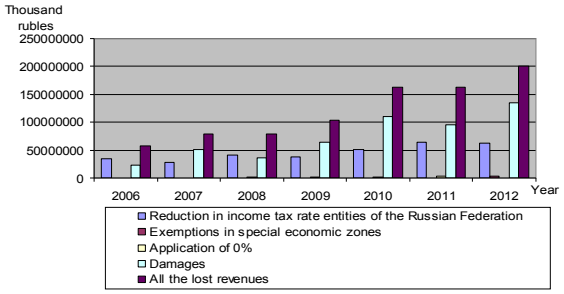

Fig. 1. Shortfall in income caused by applying corporate income tax benefits in the Russian Federation

It should be noted that in Russia in the sphere of innovation is almost never used the investment tax credit, although the legal basis of this instrument at the federal level and the regions of Russia, created a long time ago. Studies show that the effect of using the investment tax credit is ambiguous. He has the greatest impact on innovative activity, when the firm is in a stagnant stage and the least impact when the firm is in a growth stage. Researchers insist that the R&D tax credit has the greatest impact on innovative activity when the firm is in the stagnant stage and the least impact when the firm is in the growth stage [10].

The analysis shows that tax reporting of the Federal Tax Service doesn't include detached article for tax benefits for innovation. Organization's tax reporting also doesn't provide the transcription most of benefits offered. Tax advantages monitoring is not actualized because of partial declaring benefits. Finding solution of this problem seems to be possible only after changing tax reporting content and also after revision of tax benefits interpretation. Analyzing the reporting of the Federal Tax Service of Russia concerning property tax a problem with detaching innovation benefits is faced as well. Only since 2011 the information about kinds of tax benefits has been available. Uncollected share of property tax associated with the use of tax benefits in 2012 amounted to 66 % [11]. 96% of uncollected property tax are the subfederal level of benefits, including reduced tax rate . Development of tax benefits administration system and its deepening is important above all because of necessity to determine lost budget incomes on the one hand and to stimulate the development of intensive economy by taxpayers on the other hand. One thing is not to break the law while reducing the tax base or increasing costs , the other is how these actions will influence on the renewal of taxpayer's fixed assets , on the introduction of new technologies and products. The meaning is not just minimization of benefits and tax liabilities but getting result.

Tax incentives assessment model for innovative activities in the Russian Federation

The most famous innovative development ratings of counties are The European Innovation Scoreboard (EIS), The International Innovation Index(III), The Global Competitiveness Index(GCI), The Global Innovation Index (GII). At the regional lever innovative development monitoring is carried out by European Union (Regional Innovation Scoreboard, RIS) and the USA (Portfolio innovation index, PII).

According to the methods for innovative regional activity assessment used in EU (Regional Innovation Scoreboard(EC)) tax incentives factors are not included to the list of factors which influence on innovation (at the same time , the list of factors "finance and support" includes allocations from the budget(in % of GDP), venture and private capital(in % of GDP)). Russian assessment model also do not contain the assessment of tax preferences. Economic research on this question has developed certain understanding of the possible approaches to quantify the effect of the benefits introduced. The methods proposed can be divided into empirical (case students) and analysis - correlation and regression analysis of data for statistical or tax authorities.

The B index is used in the world practice to estimate tax incentives for R&D produced in different counties. To obtain exact analysis result about tax benefit influence on innovative activity we propose using the B index, developed by J. Warda. This index gives us the opportunity to estimate the tax incentives role in innovative process of Russia. The B index is calculated by the formula:

$$B\ index = (1-A) / (1 - t), \quad (1)$$

where: A- net present value of tax benefits (including tax deductions, amortization discounts, special

discounts on the purchase of fixed assets for R & D) , i.e. after-tax cost of expenses for research activities; t - corporate tax rate.

Initially , in order to calculate the B index for Russia such components as law changes from 1992 to 2011, innovative companies' cost structure with current and capital component detaching, tax benefits structure and total value of corporate income tax rates were used. After calculating the conclusion is that b index has negative dynamic. B index was above one till 2007. It means that till that year organizations had to pay income tax per 1 ruble of R&D investment (everything above one at the figure 3) that had disincentive impact on innovations. But from 2007 the B index became less that 1 because it was decreased by tax benefits. This is due to the fact that in 2007 some of the most generous tax breaks for innovative companies were introduced to the Tax Code of Russia. Thus, benefits for writing of the costs of successful and unsuccessful R&D projects during the reporting period had impact of reducing tax burden for innovative companies.

Nevertheless, a high level of index should be analyzed through the prism of real influence on the development of private innovation. To assess the effect of tax preferences on innovation development in Russia it was suggested the following econometric model called "An Influence of tax stimulation mechanisms on innovative expenditures". Statistics data about private expenditures for innovation is approximated by R&D costs index and called PRD. It was obtained on the basis of business sector share in total domestic expenditure on research and development. This index was corrected due to the prices of 1995 based on deflator calculation to be objectively evaluated. The following indicators were selected as determinants:

- The level of governmental expenditure on R & D (GOVRD);
- Science funding from the federal budget (SCIENCE);
- Gross domestic product (GDP);
- The amount of tax incentives for innovation expressed by index calculated as 1 – B index (BINDEX).

The level of governmental expenditure on R & D (GOVRD) can be calculated based on the share of state funds in total internal costs for research and development. Using calculated deflator GOVRD was corrected to price level of 1995 to be comparable. Total amount of science funding from the federal budget (SCIENCE) was corrected due to the prices of 1995 as well. The next determinant, which influence on the volume of domestic expenditure on research and development is GDP. This fact matched against statement that innovative activity expends with the total level of economic activity. Finally, previously obtained derivative index from B index was implemented in the framework of the model. By dint of assessment of index impact on R&D private costs it becomes possible to conclude how tax benefits and benefits for innovative activities impact on the innovation development of Russia in whole.

For analyzing factors listed above we used a linear dependence model. General multifactor regression model has the form:

$$PRD=C+a_1*GDP+a_2*GOVRD+a_3*SCIENCE+a_4*BINDEX+\varphi , \quad (2)$$

where: C- constant reflecting the non-functional relationship between the result variable and factors;
GDP - gross domestic product ;
GOVRD – governmental expenditures on research and development;
SCIENCE - science funding from the federal budget;
BINDEX – the amount of tax incentives for innovation expressed by index 1 – B index;
a1, a2 , a3, a4 - coefficients of dependent variables defined by statistical treatment of numerical data ;
φ - stochastic (probabilistic) error .

According to the econometric analysis the regression model for private R & D costs has the form:

$$PRD = 0{,}000611 * GDP + 0{,}491511 * GOVRD - 0{,}4441599 * SCIENCE + 4560{,}853 * BINDEX + 2150{,}087 \quad (3)$$

Present model has high value of the R-squared; it means that the dependent variable is explained by the selected factors on 98.85 %. Despite the high R-squared rate of the resulting econometric regression, determinants multicollinearity is detected by subsequent analysis. In particular, the parameter SCIENCE is strongly correlated with the parameter GDP that shows a general trend of increasing research expenditures in times of economic growth and the reverse process during periods of recession. Parameter GOVRD is also strongly dependent on GDP.

The next evidence of multicollinearity is a high model parameters correlation. The correlation matrix is showed in Table 4. High correlation coefficients confirm the presence of multicollinearity. The lowest correlation is between private R & D expenditures and the parameter of public expenditures on science as well as parameter of tax benefits granting.

Table 4. Correlation matrix of multiple regression parameters

	BINDEX	GDP	GOVRD	PRD	SCIENCE
BINDEX	1.000000	0.956775	0.915711	0.864032	0.908500
GDP	0.956775	1.000000	0.956236	0.886738	0.944620
GOVRD	0.915711	0.956236	1.000000	0.961134	0.889917
PRD	0.864032	0.886738	0.961134	1.000000	0.748213
SCIENCE	0.908500	0.944620	0.889917	0.748213	1.000000

Having analyzed paired regression we find out the following relationships: private R&D expenses are heavily dependent on government spending on R & D, they have average depending degree on the size of GDP and low degree of dependence on the B index and governmental expenses on science. Thus, despite the high degree of tax preferences granting for innovation recognized in high B index rate private R&D expenditures are poorly correlated with B index that display a low degree of benefits usage and also barriers existence.

Accordingly, the improvement of tax incentives mechanisms for innovation should be focused not only on the introduction of additional tax breaks but on improvement the application of existing tax incentives. Despite the fact that lately there has been progress in enhance the nominal tax preferences granting for innovative industries the exemption of tax preferences granting for innovation has insufficient impact on the innovative processes activation. We can say that the tax system of preferences granting of innovative companies is not coherent in Russia and is characterized by the number of separate mechanisms. As well efficiency is partly lost because of difficulties while using benefits granted. All this determines the need to improve tax management in sphere of innovative activity.

Conclusion

Russian tax law provides innovation tax benefits which can be got by organization. For income tax there is full exemption or rate reduction for science research; for property tax there is a removing research companies from the taxation list or also rate reducing. We suppose tax benefits system for innovation doesn't consider the whole innovative cycle in Russia. In order to improve the effectiveness of innovation tax regulation tools have to be chosen accounting to all innovative activity steps but not only for the beginning (scientific research and technology introduction) as it is now. So four groups of innovative activity subjects can be distinguished: organizations that create innovation, organizations that introduce innovation to the economic turnover or innovative organization, innovative infrastructure organizations (business angels), organizations - innovative product consumers.

Tax benefits for individuals engaged in scientific and inventive activities, in particular persons receiving patents in key areas of innovative economic development are not exist in Russia. We believe it is possible to introduce tax breaks in the form of tax refund as a stimulation tool (establishing by the law amount of income that is not taxed). Period during which the tax bonus will be used depends on the income level of the inventor. The mechanism of applying these benefits may include an agreement with the tax authorities about the tax bonus getting fact and about granting it to the tax agent for deducting.

Tax incentives for innovative organizations who involve highly qualified specialists are thought to exist by reducing the tax rates on social payments in terms of labor costs of persons involved in scientific research with positive result as well as participating in the innovative introduction to the turnover.

To promote innovation in a real business financial resources and investment are required. Russian tax law contains the possibility to classify contributions to specially created state funds at the level of government departments as a income tax costs. It encourages the development of public-private partnership in innovation financing. Tax incentives for the formation of private partnership to finance innovation are not provided. We consider possible extension of tax benefits for innovation for private investors by including this investment to costs of corporate and personal income tax.

Tax benefits efficiency indicators aren't used in techniques of assessment of country's innovative activity. The analysis of tax benefits effectiveness based on the general economic indicators led to the conclusion about their impact on of innovative activity by increasing it. Nevertheless, under current reporting system (tax and statistic) it is impossible to monitor and analyze tax incentives. Tax authorities are able to estimate lawfulness of tax benefits with tax audit only. There is no information about the specific use of tax incentives for innovation in tax authorities' reporting. In order to deepen the analysis of tax benefits for innovation it is advisable to provide the reporting forms for tax benefits usage. It will become possible with the development of electronic flow of documents between tax authorities and taxpayers.

Corresponding Author:
Dr.Orlova Marina
Kazan (Volga region) Federal University
Institute of Economics and Finance
Butlerov str., 4, Kazan, 420012, Russia
Email: orlovamarina64@mail.ru
tel: +79063242444
+7(843)2211-369

References

1. Innovation indicators: 2011. Statistical compilation// Moscow, State University – High School of Economics, 2011, pp:156.
2. Comparing practices in R&D tax incentives evaluation. European Commission, October 31, 2008. http://ec.europa.eu/invest research/pdf/download_en/rd_tax_incentives_expert_group_report2008_rtd_final1.pdf
3. Inozemtsev. Modern postindustrial society: nature, contradictions, prospects. Available at: <http://postindustrial.net/books/sovremennoe-postindustrialnoe-obshhestvo-priroda-protivorechiya-perspektivy/>
4. Official website of Federal State Statistics Service [online]: Technical innovation cost structure of industrial production and sources of its formation.- Available at: <http://www.gks.ru/free_doc/new_site/business/nauka/ind_2020/pril3.pdf>
5. Julien, P.-A. , Lachance, R. Volume 20, Issue 3, 2001. Dynamic regions and high-growth SMEs: Uncertainty, potential information and weak signal networks. Human Systems Management, 3: 237-248.
6. Demyanova, O.V., Mahmutovich Valitov, S. Volume 25, Issue 5, 2013. A Multidimensional assessment of the efficiency of the Russian economy. World applied sciences journal, 5: 760-767.
7. Van Parys, S.a, James, S.b Volume 17, Issue 4, 2010. The effectiveness of tax incentives in attracting investment: Panel data evidence from the CFA Franc zone. International Tax and Public finance, 4: 400-429.
8. Klemm, A. Volume 17, Issue 3, June 2010. Causes, benefits, and risks of business tax incentives. International Tax and Public finance, 3: 315-336.
9. Abbas, S.M.A.a , Klemm, A.b Volume 20, Issue 4, August 2013. A partial race to the bottom: Corporate tax developments in emerging and developing economies. International Tax and Public finance, 4: 596-617.
10. Chiang, S.a, Lee, P.b, Anandarajan, A.c Volume 14, Issue 4, 2012. The effect of r&d tax credit on innovation: A life cycle analysis. Innovation: Management, policy and practice, 4: 510-523.
11. Official website of Federal Tax Service of the Russian Federation [online]: Summary reports for the Russian Federation in a whole and for subjects of the Russian Federation.- Available at: <http://nalog.ru/rn63/related_activities/statistics_and_analytics/>

6/28/2014