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## **An Investigation into the Advisability of Using Concessional Taxation to Galvanize Innovation-Driven Economic Development**

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**Abstract:**

*To ensure the effective operation of its enterprises and its economy as a whole, Kazakhstan needs innovations. Galvanizing innovation-driven development through tax incentives requires active input on the part of the state.*

*However, creating favorable conditions for innovation-driven development in the country through tax incentives may require exploring the actual advisability of employing them, as making ill-reasoned decisions about the issue may result in undesirable consequences.*

*This paper analyzes some of the key indicators of innovation activity in enterprises in Kazakhstan and examines the experience of stimulating R&D via tax incentives in the US and the countries of Europe.*

*The work puts forward a set of recommendations on using tax incentives to drive innovation activity in Kazakhstan.*

**Keywords:** *Innovation activity, stimulation of R&D, tax incentives, galvanizing innovation-driven development.*

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## **1. Introduction**

A key factor for the competitiveness of a nation's economy in the global arena and the level of its economic development is not so much its natural resources and production volumes as the ability of its businesses to generate and implement innovations. These processes are quite risky and cost-intensive. For this reason, many national governments are keen on establishing and employing economic incentives in the form of budgetary funding and indirect methods of support.

Kazakhstan has yet to firmly embrace the use of tax incentives to drive innovation-focused economic development, which for now remains limited and fragmentary in the republic. Also, open in Kazakhstan remain argumentative issues as to relevant conceptual foundations and specific regulatory standards which, by way of adapting best practices employed by economically advanced nations, must help ensure the implementation of these tools of state innovation policy in the republic. With this in mind, there is relevance in investigating the actual advisability of using tax incentives within the Kazakh economy as a tool in the state's regulatory policy for galvanizing innovation-driven economic development (Oshakbaev, 2017).

By area of use in various spheres of activity, innovations that are implemented in practice as a result of R&D activities can be research/development, technical or product, technological, information/communications, marketing, logistical, organizational/managerial, social/economic, etc. Thus, innovation-driven economic development is closely linked with the concept of R&D, which, while being not the only source of innovations, is regarded to be a crucial element in the innovation system (Kuur, 2015).

Kazakhstan ranked 78<sup>th</sup> among 127 countries in the 2017 Global Innovation Index, having dropped three spots from its 2016 position, while the OECD nations were ranked within the top 30. In 2017, the government allocated to R&D just 0.13% of GDP (0.01% less than in 2016), which was below the indicator which was recommended for nations with a similar level of economic development (1%–1.5% of GDP), while expenditure on R&D in the OECD countries was 2.4% of GDP. The author is convinced that implementing R&D tax incentives will help boost spending on R&D in SMEs engaged in implementing innovations, and, consequently, increase the percentage of revenue received from new products from today's 28% to 40%.

An analysis of Kazakhstan's legislation on R&D tax incentives has produced the following findings. The nation's new Tax Code contains Articles 254 and 255, which regulate deductions on expenditure on R&D, acquisition of exclusive rights to intellectual property items, and provision of funding for the Innovative Technology Park innovation cluster (for subsoil users) (Ministry of the National Economy of the Republic of Kazakhstan, 2018). Following Kazakhstan's entry into the WTO, a portion of the mechanisms of financial support for national innovation-focused enterprises and technology related to a policy of protectionism (subsidies and high

customs duties on certain goods) were discarded as misaligned with the principles of free trade. However, Kazakhstan, just like the rest of the WTO member states, is still in a position to facilitate the development of national innovation activities via state regulation. One of the possible tools to regulate innovation-driven development through taxes is tax concessions, which primarily are aimed at minimizing the taxpayer's tax obligations, including deferral and installment payment plans and investment tax credit programs.

Based on the above, the purpose of this work is to analyze innovation-driven development in the Republic of Kazakhstan, explore the prospects for implementing R&D tax incentives in the country, and systematize these incentives based on the way they are employed in the US and the countries of Europe to galvanize innovation-driven economic development – with a view to investigating the advisability of identifying and employing some of the best practices most suited for Kazakhstan.

The study's hypothesis is that the international experience on tax incentives must serve as a reference in developing the nation's own system of measures for galvanizing innovation-driven economic development, by reference to the characteristics of the operation of the Kazakh economy.

## **2. Methodology**

To achieve the objective set and confirm the study's hypothesis, the author carried out an analysis of relevant statistical data and conducted an expert survey that featured experts in the area of taxation and innovation activity related to R&D (50 individuals). The sample had the following characteristics:

- experts' specialization: specialists in the area of taxation – 30%, specialists focused on research into implementing R&D – 40%; managerial personnel at companies engaged in R&D – 30%;
- form of company ownership within the area of R&D implementation (from the perspective of specialist researchers and managerial personnel): public sphere – 60%, private sphere – 40%.

In conducting a dynamic analysis of statistical data from the period 2014–2016, the author obtained a set of findings on the nation's innovation activity as a whole and some of the key characteristics of companies in Kazakhstan engaged in R&D, including their workforce potential, expenditure on R&D, and efficiency in terms of R&D activity.

The experts were presented with a number of questions related to the further development of the mechanism of tax incentives aimed at driving innovation-driven development, as well as to some of the key types of tax incentives on R&D and innovation employed in foreign countries.

### 3. Results

Based on the findings from the author's analysis of some of the key indicators of innovation activity in companies (Table 1), the level of activity in the area of innovation on product and process innovations is quite low at the moment, with just 8-9% of the overall number of enterprises in Kazakhstan being engaged in innovation activity, while the share of total innovation output in GDP was less than 1% in 2016.

**Table 1. Key Indicators of Innovation Activity in Companies in Kazakhstan**

	2014	2015	2016	2017
Number of companies	24,068	31,784	31,077	31,246
among them				
those with product and process innovations	1,303	1,781	1,743	1,813
level of activity in the area of innovation on product and process innovations, %	5.4	5.6	5.6	5.8
those with innovations on all types of innovation	1,940	2,585	2,879	3,024
level of activity in the area of innovation on all types of innovation, %	8.1	8.1	9.3	9.7
those with no innovations	22,128	29,199	28,198	28,222
level of passiveness in the area of innovation, %	91.9	91.9	90.7	90.3
share of innovation output in GDP, %	1.46	0.92	0.95	1.05

*Note:* Data from the Statistics Committee at the Ministry of the National Economy of the Republic of Kazakhstan (2017).

Table 2 lists the characteristics of organizations engaged in R&D activity across the key sectors of activity.

**Table 2. Number of Organizations and Staff Engaged in R&D in Kazakhstan (across the Key Sectors of Activity)**

	number of organizations				number of staff			
	2014	2015	2016	2017	2014	2015	2016	2017
Total	392	390	383	386	25,793	24,735	22,985	22,081
including								
public sector	101	94	100	101	7,608	7,157	7,643	7,665
higher vocational education sector	105	103	103	99	10,961	10,623	9,791	9,411
business sector	149	154	149	146	5,786	5,258	4,222	4,062
nonprofit sector	37	39	31	31	1,438	1,697	1,329	1,061

*Note:* Data from the Statistics Committee at the Ministry of the National Economy of the Republic of Kazakhstan (2017).

Table 3 lists expenditure on R&D in Kazakhstan, including internal expenditure across the key sectors of activity, types of work, and branches of science respectively.

**Table 3. Expenditure on R&D in Kazakhstan, million tenge**

		2014	2015	2016	2017
External expenditure on R&D		7,208.0	17,270.0	22,909.7	23,589.4
Internal expenditure on R&D		66,347.6	69,302.9	66,600.1	68,884.2
including across the sectors of activity	public sector	21,695.6	20,325.8	18,640.4	19,357.2
	higher vocational education sector	14,706.5	13,485.0	11,532.1	10,743.3
	business sector	24,337.6	27,790.9	28,872.7	31,800.9
	nonprofit sector	5,607.9	7,701.3	7,554.9	6,982.8
including across the types of work	basic research	15,260.7	15,838.8	13,809.2	13,915.1
	applied research	38,394.7	36,959.0	35,841.1	37,235.7
	experimental development	12,692.1	16,505.1	16,949.8	17,733.4
including across the branches of science	natural	23,556.7	25,334.2	23,496.2	22,997.0
	engineering development and technology	26,864.2	29,618.2	30,193.4	33,248.5
	medical	2,795.1	2,735.4	2,277.9	2,476.8
	agricultural	7,331.7	7,602.4	6,884.6	7,132.3
	social	1,486.2	850.4	1,072.2	935.2
	humanities	4,313.5	3,162.1	2,675.8	2,094.4
including internal current expenditure on R&D	total	60,950.9	63,778.0	61,110.8	62,648.2
	expenditure on payroll	34,968.1	35,730.0	31,889.9	32,532.8
	expenditure on services (for own projects)	6,860.7	7,328.5	8,122.7	8,272.0
	other current expenditure (consumables, raw materials and equipment, rent, etc.)	19,122.1	20,719.5	21,098.2	21,843.4
including capital expenditure on R&D	expenditure on fixed assets (machinery, equipment, buildings, etc.)	5,396.7	5,524.9	5,489.3	6,236.0
GDP, billion tenge		39,675.8	40,884.1	46,971.2	51,966.8
Share of internal expenditure on R&D in GDP, %		0.17	0.17	0.14	0.13

*Note:* Data from the Statistics Committee at the Ministry of the National Economy of the Republic of Kazakhstan (2017).

As is evidenced by the above data, the average share of internal expenditure on R&D in the nation's total GDP is less than 0.2%, which is quite low. In this regard, the experts agreed that there was a need to further develop and enhance the nation's mechanisms of provision of R&D tax incentives. The experts proposed a number of measures on R&D tax incentives for the economy's business sector, including total exemption from corporate income tax for enterprises, the principal line of activity of which was R&D. In addition, it was proposed to introduce a 200% tax deduction for eligible expenditure on R&D performed by the company itself or third-party companies. Plus, the experts proposed exempting from VAT technological equipment acquired for R&D.

According to experts, these variants of tax incentives should help reduce costs, as well as boost innovation activity and drive technological modernization. As far as tax incentives on R&D and innovation in foreign countries, many of the experts who took part in the survey stated that these measures were given a significant amount of attention by the governments of most nations around the world.

With that said, the experts noted that, when it came to support for innovation-driven development, the object of tax incentives in most countries was corporate R&D activity, as well as investment in new equipment and new technology. It was also proposed to introduce certain special incentives with respect to resolving local objectives, like encouraging interaction between businesses and R&D organizations and stimulating companies to patent the outcomes of R&D and commercialize them.

Special attention, in the experts' view, ought to be devoted to support for small innovation-focused enterprises – mainly, in the form of tax holidays for newly-formed or science-driven companies, increased rates of research tax credits, as well as cash refunds on taxes incurred while carrying out R&D activity. In many countries, the government may entitle a company to concessions for depreciation provided that funds that are freed up will be invested in new high-tech equipment, which, too, helps galvanize innovation activity in industrial enterprises. Table 4 lists the key types of tax incentives on R&D and innovation employed in foreign countries.

***Table 4. Key Types of Tax Incentives for R&D and Innovation in Foreign Countries***

Tax incentive	Characteristics	Country
Tax incentives on stepped-up expenditure on R&D	Research tax discounts /credits (incremental, volume, and mixed)	USA, Norway, UK, Australia, France, Hungary
Tax incentives for small and medium-sized science-driven firms	Providing reimbursements for expenditure on R&D; providing tax holidays on tax on profits	USA, Norway, UK, Australia, France

Tax incentives on stepped-up expenditure associated with the purchase of state-of-the-art equipment	Writing off/providing reimbursements for expenditure associated with the purchase of equipment in the form of depreciation deductions, accelerated amortization deductions, and special depreciation allowances	USA, UK, Hungary
Tax incentives on investment in new technology (above all, venture capital investing)	Providing concessions in the event of purchase of new technology – tax deductions (discounts), tax write-offs, and investment tax credits	USA, Hungary
Tax incentives on creating special economic zones (including technology parks)	Providing concessions on tax on profits, land tax, VAT, and customs duties to participants in technology parks and special economic zones	USA

#### 4. Discussion

The findings from the author's study indicate that today virtually all nations around the world employ concessions that can stimulate investing in research and development. With that said, the type and size of concession and the method for providing it vary depending on the initial share of knowledge-intensive services in a nation's GDP and the objectives its government is setting – be it stimulating a sharp increase in private expenditure on R&D, maintaining high levels of this kind of expenditure, reimbursing innovators for so-called irretrievable costs, rewarding innovatively active companies, etc.

Despite the fact that certain kinds of concessions are being reproduced successfully all across the world, their types and characteristics vary significantly. They are put together, implemented, and enhanced by reference to the specific characteristics of the national tax system.

The author's study of practices related to stimulating innovation through tax incentives has found that, depending on the characteristics of the development of the national economy, different sets of concessions are used today to provide support for particular stages in the innovation process, including research tax discounts and credits, special tax regimens for the activity of technology parks, accelerated depreciation, as well as concessions that stimulate cooperation between colleges and the production sector and those for enterprises, above all SMEs, that manufacture energy- and resource-saving equipment.

Among the concessions employed in the various stages of the innovation process, the most popular ones are research tax credits. In addition, within the frame of tax on profits, foreign nations may employ accelerated depreciation, concessions for companies that reinvest their profits in the development of science and innovation,

and concessions that stimulate increases in demand for innovative products. Therefore, the greatest potential for galvanizing innovation-driven development is offered by concessions on tax for company profits, computed as per IAS 12 Income Taxes, as, it is revenue that is the primary source of funding for innovation-related expenditure, which may be utilized in Kazakhstan as well – within the frame of corporate income tax. Tax concessions on personal income, VAT, and excises supplement the schemes for tax incentives within the frame of special tax regimens for the activity of technology parks or small science-driven enterprises. This helps boost the target-orientedness of the state’s regulatory measures.

Historically, the system of tax incentives for innovation began to develop in the US, which has been enhancing it since 1954, and has served as a reference in the development of similar systems around the world. In addition, the US is a world leader in funding for corporate R&D, with US investment exceeding one-third of global R&D spending. Currently, the US employs a mixed system that lets recipients choose between the research tax credit (20% of the increase in qualifying expenditure on R&D as opposed to the average expenditure across the previous four years) and the so-called alternative incremental credit at a differentiated rate, which provides significant gains from major expenditure on R&D. Despite its title, in reality the alternative incremental credit is volume-based, but there is a system of differentiated rates in place. During the initial stages of employing the scheme in the US, little to no significant success was recorded. However, the share of private investment in the R&D sphere was gradually growing, and in the early 2000s it exceeded state expenditure by double (Rashkin, 2007).

Norway’s SkatteFUNN, a scheme that implies providing tax concessions to companies that invest in R&D, has been in effect since 2002. In 2007, Norway was the only nation within Northern Europe that employed a tax system to stimulate R&D. This is a classic research tax discount which is provided based on volume, i.e. the amount directly depends on the size of “qualifying expenditure” on R&D activities carried out in the previous period. If the size of the calculated tax discount exceeds the firm’s tax obligations, the remainder is paid to the firm in cash. If the firm has no tax obligations, the entire amount on the concession is paid in cash.

Computing the size of the concession based on “qualifying expenditure” provides the grounds to grant concessions only on activity aimed at obtaining new knowledge, information, and experience, which may be regarded as useful for the firm in conjunction with the development of new or improved products or processes. The various types of expenditure on R&D subsumed under “qualifying expenditure” may also influence the stimulating value of concessions. Thus, for instance, a 25% concession that is applied to smaller expenditure may have much smaller significance than a 10% incentive applied to a more extensive array of expenses (Research Council of Norway, n. d.).

In Australia, the law permits subtracting from a firm's taxable income 125% of its expenditure on R&D. If the firm increases this expenditure within the year to get its volumes to exceed the average figure across the previous three years, it may be entitled to a reduction in its taxable income to the tune of 175% of its expenditure on R&D. That is, the scheme implies a combination of the volume and incremental (growth-based) methods for providing concessions. Small companies, also, may be entitled to cash reimbursements for tax on profits, although that only works with R&D conducted in Australia and cannot exceed \$1 million per year (The Australian Government, 2007).

Hungarian legislation, too, provides for a variety of tax incentives aimed at galvanizing research activity. Among the key ones are reduced taxes on company profits and tax credits. This kind of tax incentives is available to taxpayers investing at least 100 million forints in projects related to R&D. Based on the nation's present-day regulations, a company is entitled to a reduction in tax on profits (a maximum of 80% of its tax obligation) in accordance with how much it has invested. Another form of tax support that is prescribed by Hungarian legislation is a special discount on funds associated with R&D: the obligation to pay tax on company profits (up to 70% of the tax is reduced via the other types of tax concessions) in the current year and the next three years can be reduced by 10% in relation to pay for software developers as direct expenditure on basic and applied research and experimental development. For SMEs this concession is 25%. This type of tax incentives is employed regardless of whether or not one uses the possibility of reducing basic taxes.

The Hungarian experience is, clearly, of interest in terms of stimulating companies for the industrial implementation (commercialization) of R&D, as entities that hold the ownership right to R&D solutions developed and patented by them are allowed to deduct from the tax base 50% of the revenue received from entities with material rights to those solutions (those engaged in the industrial assimilation of an R&D solution). In addition, if R&D activity is conducted by way of cooperation based on an agreement entered into with institutions set up by the universities or the Hungarian Academy of Sciences, the company may be entitled to a three-fold refund of funds expended on R&D – as an additional reduction in the tax base in the amount of up to 50 million Hungarian forints. The same kind of tax rebate is possible for a company if it enters into a cooperation agreement with a similar organization from the European Economic Area (Ryumina, 2012).

In France, any company can get an assessment of its expenditure on R&D from the tax authorities. The types of activity that entitle a firm to tax incentives must be aligned with the international definition of R&D provided in the Frascati Manual. Note that the Frascati Manual is just a framework document that is not prescriptive in nature. It is up to national governments to select a set of expenses that would entitle a firm to tax incentives. In some countries this array is quite narrow covering just researchers' pay, while in others it is quite extensive and may cover not just

payroll and overhead expenses but capital expenditure as well (Organisation for Economic Cooperation and Development, 2002).

France is ranked 1<sup>st</sup> among the OECD nations which spend the most on tax support for R&D activity. Based on the latest estimates, the size of this support for R&D has reached €3 million per year. Tax stimulation is implemented in France in the form of a research tax credit (le crédit d'impôt recherche (CIR)), which covers 30% of all R&D expenses up to €100 million, and 5% above this threshold. Expenditure on protecting intellectual property (patenting the outcomes of R&D) is subsumed under expenditure to which the tax credit applies. For companies entering the scheme for the first time, the applicable rate is 50% the first year, and 40% the second year (Savina, 2011).

The UK long refrained from the use of tax incentives within the innovation sphere, but in 2000 the government introduced an increased rate for writing off expenditure on R&D – 150% for SMEs and 125% for large enterprises (introduced in 2002) (Vylkova and Pokrovskaya, 2016).

Accelerated depreciation figures prominently among other special-purpose tax incentives aimed at driving innovation, as it also helps reduce companies' tax obligations. Thus, for instance, in respect of research equipment, Article 179 of the Tax Code of the United States of America provides for instant write-off of expenditure on purchasing it in a company's financial report. In addition, the law provides for increased write-off of expenditure on charitable assistance for that type of activity.

Normally, when this type of assistance is provided, the donor company receives tax deductions equal in size to the value of the assets provided as a gift. To facilitate the wide spread of high-tech equipment, the law provides for increased tax deductions for corporations that provide charitable assistance by way of equipment for R&D (qualified research contributions) and donate computers and software to educational institutions and libraries (qualified computer contributions). In this respect, corporations are allowed a deduction in the amount equal to the least of the following two: 1) the book value of the equipment plus half of its appraised value and 2) the two-fold book value of the equipment (National Association of Manufacturers, 2014).

Concessions that stimulate demand for innovative products include those related to the implementation of energy- and resource-saving technology and processes in industry, acquisition of efficient transportation vehicles by the population, etc. Thus, for instance, along with accelerated depreciation, in the US corporations engaged in innovation activity can enjoy tax incentives in the form of investment tax credits and tax discounts and deductions for the purchase of computer equipment and software. These concessions help reduce the size of taxable income or tax obligations on condition that companies make an intended use of the funds they have saved.

Tax incentives aimed at stimulating the acquisition of state-of-the-art, energy-saving, and eco-friendly types of transportation and other machinery that are provided for private individuals in the US help maintain high levels of demand for relevant products and, consequently, facilitate innovation-driven development. Thus, for instance, the Energy Policy Act of 2005 introduced a tax credit of up to \$3,400 for the purchase of a hybrid transportation vehicle – the so-called hybrid tax credit. This concession is part of a government program for facilitating the transition to the use of efficient transportation vehicles. An efficient transportation vehicle uses two or more different sources of energy to move. Most often, this term is applied to hybrid electromobility that use an internal combustion engine and one or more electric engines. Therefore, in the US the object of tax incentives is all of the stages in the innovation process – from basic and applied research to implementing innovations and selling a product (Vylkova, 2015).

Worthy of separate consideration are tax incentives for small innovation-focused enterprises. The special nature of innovation activity, associated with great entrepreneurial risk and the need to minimize the time lag between making a decision and implementing it, makes SMEs particularly effective. In the US, a key way to stimulate their interest in engaging in R&D is providing them with increased rates of research tax discounts and credits employed in taxing profit, as well as cash payments within the range of concessions provided – in the event the company carried out research but did not make a profit.

In France, to galvanize innovation activity within the private sector, the government employs two major schemes for tax incentives. The first one is geared toward new companies operating within the sphere of high technology, the expenditure on research and scientific/technical activity of which does not exceed 15% of gross revenue. These companies are exempt from tax on profits during the first three years. The second scheme is intended to incentivize entrepreneurs investing in new innovation projects. In this case, small enterprises can benefit from the research tax credit, whereby at the end of the first year in operation a company can be reimbursed for its expenditure on R&D through receiving a certain amount of funding in cash (in the event there is no profit made) (Palazzi, 2011).

## **5. Conclusion**

Increases in the relative share of tax incentives aimed at driving innovation-driven economic development is a common global trend, which prompts the need for Kazakhstan to continually enhance its system of provision of tax incentives for entities engaged in innovation activity, above all SMEs. Tapping into the extensive array of tax measures developed around the world may help select a solution that is best suited to the current economic situation and domestic realities. At the same time, the above examples are testimony to the lack of a single ready-to-use solution as to the choice of appropriate tax incentive mechanisms.

Consequently, international best practices may serve merely as a reference in developing the nation's own system of measures for stimulating innovation activity. These measures may include the following:

- providing SMEs that turn out innovative products with the ability to reduce their taxable earnings by their total expenditure in an accounting period on innovation and scientific/technical activity;
- increasing the rate of research tax discounts and credits in taxing SMEs' taxable earnings;
- subtracting from the tax base of an enterprise that holds the ownership right to a solution developed and patented by it a portion of the revenue received from an enterprise that is engaged in commercial exploitation of that solution;
- providing tax discounts and deductions for purchases of computer equipment and software in SMEs;
- exempting from corporate income tax, for a certain period of time, new SMEs operating within the sphere of high technology, the expenditure of which on R&D exceeds a certain portion of their gross revenue. In addition, it may also be worth implementing a monitoring system that would help study and assess potential positive and negative effects from implementing this kind of tax concessions.

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