Technique of Tax Rates and Customs Duties Updating as the Tool of Enterprises Innovative Activity Stimulation

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Abstract
Purpose: one of the actual economic science problems is the study of the tax loading influence to the economic activity of the managing subjects which are carrying out an innovative activity. Thus an innovative activity of a business is one of the basic factors capable to provide the innovative development of the country as a whole. The article purpose is the study of the approaches directed to the decrease of the managing subjects’ tax loading.

Methods: in the course of the research the comparative analysis methods and the statistical methods of research were used. Results: Firstly, on the results of the research conducted the algorithm of the taxes and duties sums calculation was developed on the basis of the tax and customs rates updating taking into account the admissible limits establishment of their change depending on the activity efficiency of the innovatively active managing subjects promoting their activity activization at the expense of the effective utilization of labor, financial, industrial resources at all stages of the innovations life cycle. Secondly, the universal complex technique of the tax rates and the customs duties updating was offered allowing operating the rates of federal, regional, local taxes and also the export and import customs duties depending on the efficiency activity results of the innovatively active managing subjects at scientific, technical, technological and operational stages of the innovations life cycle.

Keywords: innovatively active managing subjects, tax rates, innovative activity

1. Introduction
1.1 Especially Innovative Development
The National innovative system formation of the Russian Federation is one of the key priority directions in the development of the country. Thus the most number of the enterprises possess a low level of an innovative activity. The principal reasons constraining the innovative development are the disinterest of the state and business structures in the realization of the innovative activity; the lack of the own financial resources; high innovative risks, etc. The important factor is also the level of the tax loading to the innovatively active managing the subjects which makes the essential impact to the efficiency of their activity.


1.2 Ways of the Tax Stimulation Activity Innovative Enterprises
Analysis of the impact of the tax burden on businesses represented in the works Ananiashvili Y. (Ananiashvili, 2010), Laffer A. (Laffer et al., 2008), Canto V. (Canto et al., 1983), Ebrill, L. (Ebrill, 1999).

There are various ways of the enterprises innovative activity tax stimulation used in the domestic and the foreign practice as well. For example, in the foreign countries the tax privileges are more often applied to the research and developmental works (SRECW) in the form of the discounts from the expenses of the company for these purposes (Laffer et al., 2008).

Further it is necessary to note the tax credit as one more of the most widespread forms of the innovative activity stimulation. The given credit is easier and cheaper in a registration and it is widely used in France and the USA (Ananiashvili, 2010). Also the tax deductions which can be based on the sum of the company expenses for the
research and development and on the gain of expenses for the research and development for the last years (the faster they grow the more the discount) are widespread in many world countries (Ivanova, 2009). Thus, in our opinion the use of the tax stimulation various methods of the managing subjects should directly depend on the efficiency of their activity.

2. Methods

One of the basic problems of the innovative activity realization of the managing subjects is the absence of the sufficient financial resources. Thus the existing system of the taxation does not create the stimulus for the increase of the innovative activity efficiency of the enterprises by means of the money resources economy at the taxes payment in the case of the improvement of the activity indicators in the current period in comparison with the previous one. In turn, the released funds can be invested in the activity of the innovatively active managing subjects and it will promote the annual improvement of the enterprises activity indicators.

2.1 The Algorithm of the Taxes and Duties Sums Calculation at the Tax and Customs Rates Updating

For the decision of the described problem we offer the algorithm of the tax rates change taking into account the establishment of the minimum admissible limits of their reduction depending on the efficiency of the innovatively active managing subjects’ activity which is presented on Figure 1.
Figure 1. The algorithm of the taxes and duties sums calculation at the tax and customs rates updating taking into account the minimum admissible limits establishment of their reduction depending on the activity efficiency of the innovatively active managing subjects.
Where:

- $K_{fr}$: factor of the vehicle replacement
- $K_{fr}$: Factor of effective ground resources utilization
- $R_{fr}$: the rate of the tax provided by the legislation of the Russian Federation, in shares
- $R_{fr}$: the rate of the tax
- $S_{fr}, S_{fr}$: tax sum
- $S_{fr}$: the taxable base
- $E_{fr}, E_{fr}$: the economy sum of the transport tax
- $E_{fr}$: the economy sum of the tax
- $t_w$: water consumption factor
- $t_w$: tax sum
- $R_{fr}$: the rate of the tax
- $C_w$: value
- $S_{fr}$: tax sum
- $C_w$: the amount of VAT
- $E_{fr}$: the economy sum of the tax
- $K_{gpr}$: Adjustment factor of import VAT
- $K_{gpr}$: the ratio of fixed assets depreciation
- $K_{gpr}$: Adjustment factor of the import duty on BM import
- $R_{fr}$: the rate of the tax
- $S_{fr}$: sum of the import duty
- $S_{fr}$: tax sum
- $C_{fr}$: value of imports
- $E_{fr}$: the economy sum of the tax
- $R_{fr}$: the rate of import duty
- $K_{tipr}$: Capital intensity factor
- $R_{fr}$: the rate of the tax
- $R_{fr}$: the rate of the tax
- $S_{fr}$: tax sum
- $R_{fr}$: the rate of the tax
- $S_{fr}$: the economy sum of the tax
- $K_{per}$: Estimation factor of manpower use efficiency
- $K_{per}$: period previous to the reported one
- $R_{fr}$: the rate of export duty
- $t$: current period
- $S_{fr}$: the amount of customs duty
- $t - 1$: period previous to the reported one

The developed algorithm of the tax rates change taking into account the minimum admissible limits establishment of their reduction allows at the expense of the lowering tax rate factors application reflecting the dynamics of the managing subjects activity economic indicators to increase their own financial resources needed for the realization of the innovative activity.

3. Results

One of the basic ways of the managing subjects’ innovative activity energization and the increase of its efficiency is the rates updating of all tax types paid by the legal bodies based on the application of the various
factors reflecting the efficiency of the enterprises activity. Besides, the possibility of the guaranteeing the import of the essential equipment for activity of the innovatively active managing subjects in the case of the domestic analogues absence and the creation of more favorable economic conditions for the export of the enterprises production is important. The complex technique of the tax rates updating which is developed for the decision of these problems is stated below.

3.1 Correction Coefficients of Tax Rates

Correction coefficients of tax rates to be applied for each stage of innovations life cycle separately. The life cycle includes four stages of innovation: Scientific, Technical, Technological, Operational. We analyzed the following types of taxes and customs duties: payments to off-budget means, the organizations property tax, transport tax, land tax, vat, profit tax, customs duties, water tax. For all types of taxes and customs duties are determined correction factors for the respective stages of the life cycle of innovation.

Thus the basic factors used for the tax rates and the customs duties updating are presented in table 1.

<table>
<thead>
<tr>
<th>Taxes (duties)</th>
<th>Employed factors</th>
<th>Factor calculation</th>
<th>Stages of innovations life cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payments to off-budget means</td>
<td>Estimation factor of manpower use efficiency</td>
<td>( K_{\text{per}} = \frac{\text{volume of manufactured production}}{\text{mid-annual number of employees}} )</td>
<td>Technological - Operational</td>
</tr>
<tr>
<td>The organizations property tax</td>
<td>Deterioration factor of basic means (BM)</td>
<td>( K_{\text{deter}} = \frac{\text{deterioration of BM}}{\text{initial cost of BM}} )</td>
<td>Scientific - Technical</td>
</tr>
<tr>
<td></td>
<td>Capital intensity factor</td>
<td>( K_{\text{f}} = \frac{\text{mid-annual cost of the basic means}}{\text{gain}} )</td>
<td>Scientific - Technical</td>
</tr>
<tr>
<td>Transport tax</td>
<td>Factor of vehicles replacement (V)</td>
<td>( K_{\text{tr}} = \frac{\text{cost of the V with drawn as a result of deterioration}}{\text{cost of V obtained again}} )</td>
<td>Scientific - Technical - Technological - Operational</td>
</tr>
<tr>
<td>Land tax</td>
<td>Factor of effective ground resources utilization</td>
<td>( K_{\text{g}} = \frac{\text{not used ground area}}{\text{the general ground area}} )</td>
<td>Scientific - Technical - Technological - Operational</td>
</tr>
<tr>
<td>VAT</td>
<td>Adjustment factor of import VAT</td>
<td>( K_{\text{VATO}} = \text{legislatively established} )</td>
<td>Scientific - Technical - Technological - Operational</td>
</tr>
<tr>
<td>Profit tax</td>
<td>Factor of industrial costs (factor of expenses operation)</td>
<td>( K_{\text{prof}} = \frac{\text{(prime cost+operational expenses)}}{\text{gain}} )</td>
<td>Scientific - Technological - consumption</td>
</tr>
<tr>
<td>Customs duties</td>
<td>Adjustment factor of the import duty on BM import</td>
<td>1 - ( K_{\text{intO}_1} )</td>
<td>Scientific - import - unturnable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 - ( K_{\text{intO}_2} )</td>
<td>Technical - import - unturnable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 - ( K_{\text{intO}_3} )</td>
<td>Technological - import - unturnable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 - ( K_{\text{intO}_4} )</td>
<td>Operatioal - import - unturnable</td>
</tr>
<tr>
<td></td>
<td>The correcting factor on finished goods export</td>
<td>( K_{\text{profIEG}} = \frac{\text{factor of industrial costs (factor of operation of expenses)}}{\text{prime cost+operational expenses}} )</td>
<td>Technological - Operational</td>
</tr>
<tr>
<td>Water tax</td>
<td>Water consumption factor</td>
<td>( K_{\text{wt}} = \frac{\text{actual expense of water by water consumed unit}}{\text{norm of water consumption}} )</td>
<td>Scientific - Technical - Technological - Operational</td>
</tr>
</tbody>
</table>
Let’s examine the abovementioned technique on the example of the transport tax and the customs duties at the finished goods export.

3.2 The Rate of the Transport Tax Updating at All Stages of the Innovations Life Cycle

Let’s calculate under the formulas the factor of the vehicles replacement in the current (reported) period \( t \) (1) and the period previous to the reported one \( t-1 \) (2):

\[
K_{tr_t} = \sum_{i=1}^{n} \frac{P_{t,i} \left(1 - \frac{j}{L_j}\right)}{\sum_{i=1}^{n} CP_{t,i}}
\]

\[
K_{tr_{t-1}} = \sum_{i=1}^{n} \frac{P_{t-1,i} \left(1 - \frac{j}{L_j}\right)}{\sum_{i=1}^{n} CP_{t-1,i}}
\]

Where: \( K_{tr_t} \) - factor of the vehicle replacement (V) in the current period; \( K_{tr_{t-1}} \) - factor of replacement of V in the period previous to the current period; \( P_{t,i} \) - initial cost of V; \( CP_{t,i} \) - cost of the obtained vehicles in the current period; \( L_j \) - term of useful use of V; \( j \) - year of V use; \( \pi \) - quantity of the V; \( T \) - the considered period, in years.

Calculation of the transport tax rate taking into account the correcting factor (CF) is made under the formula (3). CF rates of the transport tax are calculated under the formula (4):

\[
R_{tr_{k,i}} = R_{tr_t} \cdot K_{tr_{t,i}}
\]

\[
K_{tr_{z,t}} = \frac{K_{tr_t}}{K_{tr_{t-1}}}, \quad K_{tr_{z,t}} = \frac{K_{tr_t}}{K_{tr_{t-1}}}
\]

Where: \( R_{tr_t} \) - the rate of the tax provided by the legislation of the Russian Federation, in shares; \( R_{tr_{k,i}} \) - the rate of the transport tax taking into account the correcting factor; \( K_{tr_{z,t}} \) - CF rates of the transport tax of the current (reported) period.

If \( \frac{K_{tr_{z,t}}}{K_{tr_t}} > k \), then \( K_{tr_{z,t}} = k \); if \( \frac{K_{tr_{z,t}}}{K_{tr_t}} < \frac{1}{k} \), then \( K_{tr_{z,t}} = \frac{1}{k} \), where k - increase / reduction degree of the admissible rate of the transport tax (according to p. 1 of item 361 TC the Russian Federation the rates of the transport tax can be increased / reduced but no more than in 10 times. In this connection \( k = 10 \)).

Thus the total sum of economy (over-expenditure) of the transport tax for all period of CF application will be defined under the formula:

\[
E_{tr_t} = \sum_{t=1}^{T} \left( \sum_{i=1}^{n} \left( N_{t,i} \cdot R_{tr_{t,i}} \cdot K_{tr_{t,i}} \right) - \left( \sum_{i=1}^{n} \left( N_{t,i} \cdot R_{tr_{t-1,i}} \cdot K_{tr_{t-1,i}} \right) + \sum_{t=2}^{T} \sum_{i=1}^{n} \left( N_{t,i} \cdot R_{tr_{t-1,i}} \cdot K_{tr_{z,t}} \right) \right) \right)
\]
Where: \( E_{tr} \) - the economy sum of the transport tax \( N_i \) - the taxable base of the transport tax (the tax base is defined whether as the capacity of the engine of a vehicle in horsepower’s or as the gross tonnage in register tons; or as vehicle unit).

The given mathematical model allows calculating the total sum of economy (over-expenditure) on the transport tax payment for all period of CF application.

### 3.3 Customs Duties updating at the Finished Goods Export

Let's calculate under CF formulas the rates of the customs duties at the finished goods export to the current (reported) period \( t \) (6) and the period previous to the reported one \( t-1 \) (6):

\[
K_{ex_{t-1}} = \sum_{i=1}^{n} \left( \frac{Q_i + V_i}{G_i} \right)
\]

\[
K_{ex_{t-1}} = \sum_{i=1}^{n} \left( \frac{Q_i + V_i}{G_i} \right)
\]

Where: \( K_{ex_{t-1}} \) the factor of the industrial costs in the current period; \( K_{ex_{t-1}} \) the factor of the industrial costs in the period previous to the current period; \( Q_i \) - the cost price of the exported production; \( V_i \) - the operational expenses; \( G_i \) - a gain; \( n \) - the quantity of the exported production types.

The calculation of the export customs duties rate taking into account CF is made under the formula (7). CF rates of insurance payments are calculated under the formula (8):

\[
R_{edk_{i,j}} = R_{ed_{i,j}} \times K_{ex_{i}}
\]

\[
K_{ex_{i}} = \frac{K_{ex_{t-1}}}{K_{ex_{t-1}}}
\]

Where: \( R_{ed_{i,j}} \) the rate of the export customs duties applied to corresponding type of the exported production; \( R_{ed_{i,j}} \) - the rate of the export customs duties taking into account the correcting factor applied to the corresponding type of the exported production; \( K_{ex_{t-1}} \) CF of the export customs duties on the finished goods export.

Thus the total sum of the economy (over-expenditure) from payment of the export customs duties for all period of CF application will be defined under the formula:

\[
E_{ex} = \sum_{t=1}^{T} \sum_{i=1}^{n} \left( C_{ex_{i,j}} \times R_{edk_{i,j}} \right) - \left( \sum_{t=1}^{T} \sum_{i=1}^{n} \left( C_{ex_{i,j}} \times R_{edk_{i,j}} \times K_{ex_{i}} \right) + \sum_{t=2}^{T} \sum_{i=1}^{n} \left( C_{ex_{i,j}} \times R_{edk_{i,j}} \times K_{ex_{i}} \right) \right)
\]

Where: \( E_{ex} \) the sum of the economy (over-expenditure) on payment of the export customs duties; \( C_{ex_{i,j}} \) - the cost of the exported finished goods.

The given mathematical model allows calculating the total sum of the economy (over-expenditure) on payment of the export customs duties for all period of CF application.
4. Discussion

One of the most important long-term challenges Russia is strengthening the innovation component of their economic development. Transition to the innovative economy - the only way to recovery and development of the economic potential of Russia. However, the implementation of innovative development in practice, essentially blocked the same branches as a result of failure to take necessary decisions to stimulate innovative activity.

In all countries where there are processes of transition to a post-industrial information society, the structural changes were not immediately and not for the entire territory, and the first - in the regions, the most prepared for the restructuring. In the United States such areas were primarily Silicon Valley (near San Francisco) and District Highway 128 (Boston and area adjacent to the north-east). In Japan, similar changes occurred in the industrial belt of Tokyo - Osaka in France - in the department of Hilda-France, the bulk of which is Grand Paris; in the UK - in the "corridors" London, Liverpool, Edinburgh and Glasgow; in China - in the coastal free economic zones, etc. Such a focus of high-tech exhibited rapid growth of industrial production, employment, standard of living, in stark contrast with the regions is in decline of traditional industries, where there were mass unemployment and other crises.

From a wide arsenal of measures developed in this area of the world practice, it is necessary to select the appropriate current situation and Russian specifics. The selection coefficients for adjustment of tax rates we analyzed in the works Atkinson R., Ezell S. (Atkinson and Ezell 2012), Folomev A., Revazov V. (Folomev and Revazov 2001), Gadzhiev U., Akopov V., Styrov M. (Gadzhiev et al., 2009), Gluschenko I. (Gluschenko, 2009), Kamenskaja O. (Kamenskaja, 2011), Lenchuk E. (Lenchuk and Vlaskin, 2005), Zaikina N. (Zaikina, 2010).

The most important are the three main methods: tax incentives, incentives through depreciation policy (not as part of the fiscal policy, but as an independent mechanism), direct budget subsidies to companies developing new products.

5. Conclusion

Thus, the offered algorithm and the technique of the tax rates are one of the basic ways of the enterprises activity. The developed algorithm of the tax rates change determines the minimum admissible limits establishment of their reduction. Moreover our algorithm allows to increase financial resources for the innovative activity enterprises at the expense of the application of the lowering tax rate factors. The change in tax rates should depends on the dynamics of the economic indicators of the managing subjects activity.

The universal complex technique of the tax rates updating allows stirring up the innovatively active managing subjects activity. This is possible due to the annual to changes in the sum of payment on all types of tax depending on the results of activity enterprises.

Besides, the given technique creates more favorable economic conditions for the import of the necessary equipment for the enterprises innovative activity (in the case of the domestic analogues absence). This is possible due to changes in the rate of customs duty at the import of BM and VAT at the actives import.

Also the given technique creates more favorable economic conditions for the finished goods export of the innovatively active managing subjects at the expense of the modified export customs duties application.

It is necessary to specify the number of the given work restrictions. Firstly, nowadays there is no common opinion concerning the efficiency of those or other tools application for the tax stimulation. Secondly, we use only one updating factor in the offered algorithm and the developed technique for each type of tax.

In connection with the above-stated the possible prospects of the further researches can be connected with the system of the interconnected correcting factors taking into account the branch specificity of the enterprises.

References


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