THE OPTIMIZATION OF THE TAX SYSTEM, AS ONE OF THE DETERMINING FACTORS OF PRODUCTION GROWTH

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Abstract. Legal tax optimization is an element of an organization's financial management. It enables increasing the efficiency of economic activities of enterprises. At the same time, it is important to take into account the economic interests not only of taxpayers, but also of the States in whose markets enterprises operate. The article discusses the issues of optimizing the tax burden of an enterprise by constructing a diagram reflecting the dependence of the total amount of taxes and the amount of profit received. The analysis option proposed by the authors will make it possible to identify enterprises with an excessively low tax burden, thereby providing an opportunity for regulatory authorities to more clearly determine the objects of inspections. The proposed method can be used as an instrument of fiscal policy. The purpose of this research was to create a graph-analytical method that would evaluate various options for optimizing taxation and find options that meet the needs of both the state and taxpayers. The novelty of this study lies in the creation of a universal method that would rationally and reasonably combine the necessary criteria for taxation optimizing and achieve parity in the "justice - efficiency" system and, thereby, ensure maximum efficiency of state regulation.

Keywords: taxes, tax system; fiscal policy; discretionary fiscal policy; non-discretionary fiscal policy

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1. Introduction

Taxes are one of the most difficult to optimize items of expenditure of economic entities and at the same time the main source of revenue for the state budget. Improving the financial condition of an enterprise by optimizing taxation is often either not carried out, or is carried out without assessing the consequences of these actions in the long term. Moreover, qualified improvement of the financial state of the enterprise using a set of measures, including tax optimization, is not always implemented. The economic well-being of a country or society, based on the experience of developed countries, has shown that appropriate fiscal policy should be formulated and implemented for positive market dynamics. It will create favorable conditions for business and will help to attract investment, as well as ensure investment security (Krasniqi, 2013; Baltgailis, 2019; Chehabeddine, Tvaronavičienė, 2020; Vigliarolo, 2020).

In particular, as regards the issue of the policy responsiveness to economic fluctuations – which is often referred to as "cyclical sensitivity" – the standard approach in the fiscal policy literature is to estimate fiscal policy rules linking (levels or changes of) cyclically adjusted fiscal variables, as measures of the discretionary component of

fiscal policy, to business-cycle indicators (generally, the output gap) and other explanatory variables, such as, in particular, the public debt (Agnelloa and Cimadomo, 2012; Tarman, 2016; Popok et al., 2019; Zhuravlev et al., 2019). Tax optimization is a tool used by many countries to legally reduce the tax burden of a certain segment of taxpayers.

Research objectives: to create a graph-analytical method that allows you to evaluate various options for taxation optimizing, find options that are acceptable to both the state and taxpayers, and assess the impact of various approaches to taxation on business.

Research tasks: conducting theoretical research and building combined charts to assess and predict the optimal revenue side of the budget, taking into account the interests of the state and taxpayers.

2. Literature review

In order to resolve the contradictions of justice and efficiency, various studies were conducted, during which it was noted that when the State has no other opportunity to improve the position of some taxpayers without simultaneously worsening the position of others, they speak of achieving Pareto optimality or achieving Pareto efficiency (Stiglitz, 1987).

The concept of “utility” is used in the specialized literature on optimal taxation, no less, and maybe even more often, than the concept of “income”. K. Heidi specifically investigated this phenomenon (Heidi, 2001).

The concept of proportional taxation of income is widespread as meeting the criteria for optimal taxation. J. Mirrlees considered it axiomatic that earned income of industrial and labor origin for reasons of public welfare should not be taxed on a progressive scale (Mirrlees, 1971). However, the optimal taxation of the total income in any system of social criteria according to J. Bentham and according to J. Rawls should be progressive (Andrushchenko, 2000). If, from the point of view of J. Mirrlees, the maximum proportional tax rate can reach 60%, then in the opinion of his compatriot J. Merly - no more than 20%. Obviously, from the standpoint of the priority of efficiency, the state should choose a proportional, or even better, lump-sum tax, but there is no question of any fairness in this case. Tax evasion distorts expected effect of tax system and therefore hinders achieving social goals (Luzgina, 2017; Vandina et al., 2018; Osipov et al., 2018).

3. Materials and Methods

In the course of the study, the authors studied regulations, as well as scientific papers in the field of tax burden optimization. As research tools, methods of system, complex, and retrospective analysis, as well as economic and mathematical, and statistical methods, trend analysis, and coefficient analysis are used; for constructing tax prism models we used: expert assessment methods, absolute, relative and average methods, regression analysis and multiple ANOVA regression analysis, statistical significance analysis, data standardization for determining the significance of regressors, mathematical modeling method, as well as geometric similarity methods, mathematical analysis, including methods of graphic differentiation and integration.

4. Results

Fiscal policy is the basis of financial policy and is an integral part of the economic policy of any state. According to Keynes, the essence of fiscal policy is to manage aggregate demand by manipulating taxes and government spending. Modern economic science distinguishes two types of fiscal policy: discretionary and non-discretionary (automatic) fiscal policy.

Discretionary fiscal policy uses a method of solving economic problems, which is that individuals, as well as decision-makers, act mainly at their own discretion, depending on their vision of economic conditions. Regulators manipulate public spending and taxes to manage aggregate demand for the purpose of incentive or restrictive policies (Ivanova et al., 2019; Shatunova et al., 2019; Derkho et al., 2019; Vertakova et al., 2019).

Restrictive policy is a reduction in public procurement and an increase in taxes. Incentive policy – implies growth of public procurement and reduction of taxes.

The inclusion of rising public expenditure in aggregate demand causes the aggregate expenditure curve to shift upwards and leads to an increase in the net national product (NNP). There is also an inverse relationship when the NNP with the reduction of public expenditure in aggregate demand (Fig. 1).

The increase in taxes causes a reduction in spending, and hence a decrease in consumer spending and savings (in this case, there is also an inverse relationship). The size of the reduction is determined by the value of the marginal propensity to consume and save (MPC and MPS, respectively).

Discretionary fiscal policy has a significant drawback. It operates with a time lag (delay), because the budget is approved once a year, but the situation can change greatly over the year. Therefore, in such a situation, an automatic policy, i.e. a policy of “immediate response”, is desirable.

Figure 1. Discretionary fiscal policy

Source: authors' research

Non-discretionary fiscal policy provides the introduction of changes in the level of public spending and taxes through the so-called “built-in stabilizers”. The size of automatic stabilizers is commonly approximated by the ratio of general government expenditure to GDP (Debrun and Kapoor, 2010). One of them is tax stabilizer. Its action is based on the fact that the state establishes tax rates, but cannot set the amount of tax revenues, because these revenues, in addition to the tax rate, also depend on the tax base.

Analysis of dependencies, shown in Fig. 2, leads to the conclusion that – public expenditure is set for the current year ($G = \text{const}$) and is independent of the NNP, taxes revenues vary in the same direction as the NNP. The graph shows that the economy itself creates a stabilization effect (Fig. 2).

Figure 2. Non-discretionary fiscal policy

Source: authors' research

If there is a rise in the economy (recorded growth of the NNP and inflation), the tax system increases the exemptions, i.e., a restrictive policy. If a recession occurs (recorded decrease of the NNP), then the withdrawals are automatically reduced, i.e. a stimulating policy is applied. Thus, the built-in stabilizers, regardless of strong-willed intervention, automatically maintain such a level of state revenue and expenditure, which is desirable at this stage of the cycle. However, in practice, built-in (automatic) stabilizers tend to only mitigate the severity of economic fluctuations, but do not eliminate unwanted changes in production volumes.

There are different theoretical approaches to tax policy. The Keynesian approach relies on strong government regulation of the economy and requires large tax revenues, but this depends on a certain phase of the cycle. In the classical theory, economists believe that in order to stimulate investment, it is necessary to lower taxes. At the same time, it is necessary to abandon the system of progressive taxation, since the recipients of large incomes are traditionally leaders in the renewal of production. When rates are reduced, the tax base eventually grows. High rates reduce the base from tax revenues to the state budget. The transition from Keynesian tax policy to conservative policy is linked to tax reform.

In the framework of Keynesian theory, the Laffer curve model is considered, in which it is assumed that the excess of income over the value of total autonomous costs is taxable, i.e. the tax revenue function is: $T = t(D - E_a)$, where t is the marginal tax rate, $E_a = C_a + I_a + G - MPC * T_a$ is the autonomous expenditure.

Then, under balance conditions, the Laffer curve is given by the formula $T(t) = t(M * E_a - E_a)$, или $T(t) = MPC * E_a (t * t_2) / (MPS + MPC * t)$. When the marginal tax rate is 0 or 1, the tax revenue is 0. The optimal rate is called (t_0) , at which tax revenues are optimal. Tax revenue increases with the marginal rate if it is less than the optimal rate and decreases if it is greater than the optimal rate.

It is worth noting that to assess the impact of certain changes on the economy, it is not enough to evaluate only the correlation between the indicators of interest. In the United States of America, the right firmly believes that low taxes are the key to economic success, but in practice, when assessing the correlation between the share of taxes in GDP and unemployment, it turns out that in years when the share of taxes could be called high, unemployment was low and vice versa. This shows that it is necessary to take into account not only the “dry” figures of individual indicators, but also the overall economic situation and the factors affecting their formation to avoid the appearance of a false correlation, an example of which was given above (Krugman, 2012). It is also worth noting that

sometimes developed countries face a “problem” when there is no political constituency for paying more in tax (Friedman, 2012; Shebashev et al., 2019).

When optimizing the taxation system, it must be remembered that this task will always face the opposite of taxpayer and state requirements, because the taxpayer always seeks to minimize the amount of deductions to the state, while the state, in turn, seeks to maximize fees while not making the taxpayer to seek tax shelters. The second part, unfortunately, is not always performed. The State benefits from the increase in revenue due to taxes. This will allow for a painless increase in government expenditure to stimulate the growth of the economy and employment, creating new jobs. Moreover, it should not ruin taxpayers. Taxpayers benefit from the lowest tax rate. Withdrawal from a taxpayer of a significant amount of income (about 40-50%) is the limit beyond which incentives for entrepreneurial initiative and the expansion of production are eliminated. Entire groups of taxpayers, engaged in the search for methods of avoiding taxation and striving to concentrate financial resources in the shadow sector of the economy, are being formed. A clear answer to the question “what effective bid value is critical?” does not exist. The introduction of certain taxes and the establishment of their size is a complex multifactorial task. Attempts to achieve the necessary and mutually acceptable solutions by trial and error leads to significant costs and most often does not give the necessary result. However, among all possible tax options there should be one (or a group of those) that would meet the requirements of the taxpayer and the needs of the state. The tax prism method can be used to determine these options. (Leontyev and Verovska, 2017; Fedulova et al., 2019; Valentim et al., 2019).

The tax prism is a geometric figure, the volume of which corresponds to the volume of taxes received by the state in the current (reporting) period, and the side corresponds to the total amount of taxes (Verovska and Leontyev, 2018). For the convenience of research, it can be divided into state-oriented and business-oriented, but in this research is described only a general concept.

Based on the described concept of the tax prism and the Laffer curve (when the Laffer curve came on the scene in the 1970s, it seemed very new. But it quickly became apparent that it was not an original idea at all. Its antecedents date back hundreds of years (Bartlett, 2012), the graphs are created, (Fig. 3,4,5,6,7). It is a graphical interpretation of the tax prism, which allows to assess and predict the impact of possible tax changes on the tax situation of the enterprise.

Table 1. Options for matching the level of tax burden and profit for the taxpayer

Taxpayer's situation	Tax burden	Profit
A ₀	None	None
A ₁	None	Maximum
B	Minor	Significant
C ₁ -C ₂	Optimal level	Optimal level
D	Significant	Less than optimal level
E	Very high	None
After point E	Exorbitant	Loss

Source: Compiled by the authors

Figure 3. Tax prism and its graphical interpretation (option A₁)

Figure 4. Tax prism and its graphical interpretation (option B)

Figure 5. Tax prism and its graphical interpretation (option C)

Figure 6. Tax prism and its graphical interpretation (option D)

Figure 7. Tax prism and its graphical interpretation (option E)

Source: authors' research

Let's consider every situation. While the taxpayer is at point A₀ (Fig. 3), there is no tax burden, as well as there is no profit. This initial provision indicates that at the time of the study the subject of taxation does not conduct any activity. In this case, the tax prism does not exist. If the taxpayer moves to point A₁ (Fig. 3), it means that the volume of profit is not taxed, or the studied subject applies illegal methods of the tax optimization. Either way, it should provide interest to regulators. At point A₁, the tax prism also does not exist, it degenerates into a plane (i.e., there is no height, which characterizes the value of the tax burden).

When moving to point B (Fig. 4), the tax burden will be negligible. The area marked in pink (tax zone) represents the amount of tax burden, and the area marked in green (profit zone) shows the amount of profit after payment of all taxes established by the current legislation. The position B on the graph will correspond (in general) to the tax prism with a small height and a significant base.

The points C₁ and C₂ (Fig. 5) mark the boundaries of the "optimal corridor" in which the level of tax burden allows the state to perform its functions, and the taxpayer – to be interested in continuing activities in the territory of the state without the use of illegal ways to reduce the tax burden. Point C is one of the variants of the optimal ratio of the tax zone and the profit zone. The tax prism corresponding to this position on the graph will also be optimal, representing one of the best combinations of height and base.

At point D (Fig. 6) the tax burden begins to exceed the upper limit of the optimal corridor and, as a result, there is a decrease in business motivation. At the same time, the subject of taxation begins to look for ways to reduce the tax burden to return to the zone of optimality C₁-C₂. In the absence of legal ways to reduce tax costs, the search for criminal solutions begins. In this situation (point D) the tax prism will have a significant height and a small base. Point t on the graph indicates a "turning point" when due to the tax burden the taxpayer has no profit, including for its refinancing, aimed at the continuation of the current activities of the enterprise.

When the taxpayer reaches point E (Fig. 7), the profit for the accounting period tends to zero, the tax burden will be the maximum in comparison with all previously considered situations. The tax prism in this case will degenerate into a straight line passing through the applicative axis. This will entail the closure of enterprises, capital outflow or withdrawal of business to the shadow economy.

Consider the falling portion of the curve, located to the right of the point t does not make sense, because the tax burden on this side continues to grow, and, at the same time, the company instead of profit has a loss. The base of the prism with this approach will go into the area of negative values of the adopted coordinate system.

Each option on the curve corresponds to its own unique tax prism, which will be individual for each individual enterprise.

Discussion

It should also be noted that the tax conditions of the enterprise are directly affected by its financial conditions and its financial stability. In the considered variants of the tax prism, it was believed that the enterprise conducts effective activities. If the company has problems, the size of the base of the tax prism will differ from the analyzed models. It is known that financial stability is the ability of an enterprise to finance its activities in the required amounts at the expense of its own or borrowed capital.

The financial stability of the legal entity in the framework of this study will be considered its capacity to maintain the ability to continue its main activity on the same scale after payment of all taxes. The subject of taxation with good financial stability, when changing any external conditions (when it is exposed to various shocks from the outside) should, first of all, stay afloat and have a margin of safety that does not allow the termination of its normal functioning. Financial stability is one of the elements of the enterprise's viability, since its loss is associated with the most severe consequences – violation of the current rhythm of the enterprise, staff reduction, inability to fulfill its obligations to creditors.

All this has a negative impact not only on individual economic entities associated with this enterprise, but also on the entire economy as a whole, so ensuring financial stability is one of the most important tasks for both the enterprise and the state. A set of measures to maintain financial stability should be provided at all stages of the existence of the enterprise.

Conclusion

The combination of justice and efficiency of tax policy is a serious problem, which until now does not have a final solution, which complicates government regulation of the economy. The state should carry out an objective analysis of individual industries included in industrial production. In order to establish the most effective tax regime and stimulate industrial production, segregation can be carried out on a different basis or simultaneously on a group of criteria (for example, on a subject of the Federation). It is possible to determine the position of a certain percentile from all enterprises that fall under the specified criteria. This analysis can be carried out for each individual tax paid by the enterprise, which will allow more effective adjustment of the tax system. The state, on the basis of forecasts of the budget expenditure, establishes requirements for the tax burden. On the basis of the analysis of the financial and tax conditions of the enterprise (or enterprises belonging to the industry), the search of the optimal tax burden zone is carried out. In the case of irremediable incompatibility of claims, it is advisable to use the method of successive concessions. This approach will make it possible to more clearly define the permissible limits of the tax burden on a group of enterprises, minimizing the desire of managers to move to the shadow sector of the economy or stop investing (and/or this type of activity) due to excessive tax burden.

Also, the proposed version of the analysis will identify enterprises with an excessively low tax burden, which will enable the regulatory authorities to more clearly identify the objects of inspections. When using the option with discrete consideration of taxes, it becomes possible to identify the area of activity of the enterprise in which it carries out tax evasion. The proposed method can be used as a tool of fiscal policy. Depending on the final purpose of application, it can act as both a discretionary and non-discretionary tool.

References

- Agnelloa, L., & Cimadomo, J. (2012). Discretionary Fiscal Policies over the Cycle: New Evidence Based on the ESCB Disaggregated Approach. *International Journal of Central Banking*, June 2012, pp. 43-85.
- Baltgailis, J. 2019. The issues of increasing the effectiveness of teaching comparative economics. *Insights into Regional Development* 1(3): 190-199. [https://doi.org/10.9770/ird.2019.1.3\(1\)](https://doi.org/10.9770/ird.2019.1.3(1))
- Bartlett B. (2012). The Laffer Curve, Part 1. *Tax Notes*, 136(3), 2 299-301. Available at SSRN: <https://ssrn.com/abstract=2155974>
- Chehabeddine, M., Tvaronavičienė, M. 2020. Securing regional development. *Insights into Regional Development*, 2(1), 430-442. [http://doi.org/10.9770/IRD.2020.2.1\(3\)](http://doi.org/10.9770/IRD.2020.2.1(3))
- Debrun, X., & Kapoor, R. (2010). Fiscal Policy and Macroeconomic Stability: New Evidence and Policy Implications. Bank of Italy Occasional Paper, pp. 69-101.
- Derkho, M. A., Gritsenko, S. A., Vilver, D. S., Sereda, T. I., & Fomina, N. V. (2019). Thyroid hormone role in metabolic status and economic beneficial features formation in replacement gilts of different breeds. *Periodico Tche Quimica*, 16(31), 472-483.
- Fedulova, I., Ivanova, V., Atyukova, O., & Nosov, V. (2019). Inclusive education as a basis for sustainable development of society. *Journal of Social Studies Education Research*, 10(3), 118-135.
- Friedman, B. M. (2012). Monetary policy, fiscal policy, and the efficiency of our financial system: lessons from the financial crisis. *International Journal of Central Banking* 8(suppl. 1): 301-309.
- Göndöra, M., & Özpençeb, Ö. (2014). An Empirical Study on Fiscal Policy in crises time: Evidence from Romania and Turkey. *Procedia Economics and Finance* 15 (2014), 975-984.
- Ivanova, V., Atyukov, I., Vinogradova, N., Shatin, A., & Ivanov, S. (2019). Natural risks and economic vulnerability. *Journal of Environmental Management and Tourism*, 10(7), 1486-1494. [https://doi.org/10.14505/jemt.v10.7\(39\).06](https://doi.org/10.14505/jemt.v10.7(39).06)
- Krasniqi, M. (2013). Fiscal Policy, Taxes and Their Impact on Economic Development. *Academic Journal of Interdisciplinary Studies*, 2(8), 463-469.
- Krugman, P. (2012). End This Depression Now! United States: W. W. Norton & Company; 1 edition.
- Leontyev A., & Verovska L. (2018). Creation of the optimal tax part of the budget by using the tax prism method. International Scientific Symposium "Economics, Business & Finance", proceedings 2018, Latvia, pp. 5-14.
- Luzgina, A. (2017). Problems of corruption and tax evasion in construction sector in Belarus. *Entrepreneurship and Sustainability Issues*, 5(2), 263-282. [http://doi.org/10.9770/jesi.2017.5.2\(8\)](http://doi.org/10.9770/jesi.2017.5.2(8))
- Osipov, G.V., Glotov, V.I., Karepova, S.G. (2018). Population in the shadow market: petty corruption and unpaid taxes. *Entrepreneurship and Sustainability Issues*, 6(2), 692-710. [http://doi.org/10.9770/jesi.2018.6.2\(16\)](http://doi.org/10.9770/jesi.2018.6.2(16))
- Popok, L., Karpenko, E., Voronkova, O., Kovaleva, I., Zavyalov, M., & Fedorov, B. (2019). Improving state economic policy in the context

of the transition to green growth. *Journal of Environmental Management and Tourism*, 10(7), 1658-1666. [https://doi.org/10.14505/jemt.v10.7\(39\).22](https://doi.org/10.14505/jemt.v10.7(39).22)

Shatunova O., Anisimova T., Sabirova F., Kalimullina O. (2019) STEAM as an Innovative Educational Technology. *Journal of Social Studies Education Research*. Vol. 10 (2), 131-144.

Shebashev, V., Andrianov, Y., Nizova, L., & Andreeva, E. (2019). Engineers as an object and subject of the development of innovative entrepreneurship at the mesoeconomic level. *Journal of Applied Engineering Science*, 17(2), 251-255.

Tarman, B. (2016). Innovation and Education. *Research in Social Sciences and Technology*, 1(1). Retrieved from <http://ressat.org/index.php/ressat/article/view/3>

Valentim, L. C. G., Lucena, H. D. A. N., Amaral, I. B. C., Couto, L. C., & Reis, A. B. (2019). Short fiber fluff cellulose industry: Economic viability and energy potential. [INDÚSTRIA DE CELULOSE FLUFF DE FIBRA CURTA: VIABILIDADE ECONÔMICA E POTENCIAL ENERGÉTICO] *Periodico Tche Química*, 16(31), 49-58.

Vandina, O., Mkrtchyan, Z., Denisov, I., Vechkinzova, Y. (2018). The tax mechanism of managing the process of formation of information economy in modern Russia. *Entrepreneurship and Sustainability Issues*, 6(2), 830-839. [https://doi.org/10.9770/jesi.2018.6.2\(24\)](https://doi.org/10.9770/jesi.2018.6.2(24))

Verovska, L., & Leontyev, A. (2017). Use of the Tax Prism Method When Forming Tax Part of the Budget. *Economics and Culture*, 14(1), 128-135.

Vertakova, Y., Mkrtchyan, V., & Leontyev, E. (2019). Information provision of decision support systems in conditions of structural changes and digitalization of the economy. *Journal of Applied Engineering Science*, 17(1), 74-80.

Vigliarolo, F. (2020). Economic phenomenology: fundamentals, principles and definition. *Insights into Regional Development*, 2(1), 418-429. [http://doi.org/10.9770/IRD.2020.2.1\(2\)](http://doi.org/10.9770/IRD.2020.2.1(2))

Zhuravlev, P., Poltarykhin, A., Sharagin, V., Vorobyeva, V., Bezveselnaya, Z., & Khodos, D. (2019). Economic aspects of human capital development in the context of renewable energy. *Journal of Environmental Management and Tourism*, 10(7), 1678-1686. [https://doi.org/10.14505/jemt.v10.7\(39\).24](https://doi.org/10.14505/jemt.v10.7(39).24)

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