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Мойсеєнко Ірина Павлівна,
доктор економічних наук, професор
професор кафедри фінансів та обліку
Львівського державного університету внутрішніх справ
Ривак Наталя Орестівна
кандидат економічних наук
Фінансовий аналітик Viva Vox School

МЕТОДИЧНЕ ЗАБЕЗПЕЧЕННЯ ІНСТИТУЦІОНАЛЬНОГО БАЗИСУ ЕКОНОМІЧНОЇ БЕЗПЕКИ

В статті описано методичний підхід до вибору параметрів податкового стимулювання підприємництва для забезпечення економічної безпеки держави. Визначені особливості використання параметрів ефективності податкового навантаження та впливу податкового навантаження на процеси розвитку економіки. Запропоновано: модифікувати перелік показників системної моделі визначення рівня економічної безпеки підприємництва; використати функціональний поділ податків для аналізу їх впливу на макропоказники та визначення напрямів стимулювання економічного розвитку. Сформульовано методичні основи використання інструментів фіскального стимулювання підприємництва як інституціонального базису економічної безпеки держави.

Ключові слова: фіскальне стимулювання, регресійний аналіз, системна модель економічної безпеки, інструменти інституціонального базису, економічна безпека держави

Methodological Support of Institutional Basis of Economic Security

The first priority strategic imperative for Ukraine at present stage is the need to implement the strategy and ensure economic security, which must be accompanied by the high rate of economic growth. Achievement of the strategic goal requires reaching of general tactical targets (economic growth, restriction of inflation, employment growth) and optimization of the deformed structure of tax burden and the distorted tax base structure, restriction of the negative effect of macroeconomic and transformation factors that continued to exist in practice of the latest period.

Ukraine has a rather long list of problems in the tax domain that require the quickest possible solution as there is a threat to the economic security of the state. The level of tax burden in the European nations is a lot higher than in Ukraine, the low level of GDP per-capita in our country restricts the possibility of conducting a quality social policy. The growth of macroeconomic indicators of economy growth and economic security is directly related to the establishment of a favorable investment climate for the development of business activity.

Thus, of great current interest is the scientific quest for the ways of improvement of tax burden effectiveness and the use of stimulating function of taxes to ensure economic security of Ukraine.

Scientific problems of the tax burden were studied by such Ukrainian scientists as V. Andrushchenko, V. Valihura, O. Danilov, L. Demydenko, T. Yefymenko, Yu. Ivanov, S. Koretska, A. Krysovatyy, I. Lunina, I. Lyutyy, V. Melnyk, V. Oparin, N. Kondratenko, A. Sokolovska, V. Sanina, O. Tymchenko, V. Fedosov, N. Frolova, N. Yarova and others.

The scientists and practitioners have made a significant contribution to the study of the issues of tax burden, particularly, the issues of exposing its content, methodology of assessment, influence on business activity and fulfillment of tax obligations. However, the pressing need for the practical application of scientific research results is: 1) the use of a system approach to understanding the essence and choice of the structure of tax burden indices; 2) setting criteria for the assessment of tax burden effectiveness; 3) selection of the routes of changes in tax burden depending on functional distribution of taxes and fiscal encouragement.

Achievement of the goals of fiscal incentives (FIB) is determined by the two groups of factors; on the one hand these are the formal norms that have to stay in line with the objectives of tax incentives, limitation or redistribution and, on the other hand, these are macro social factors determined by the state of economic development and appear to be the result of the use of government revenues of the preceding period and the consequence of the redistribution processes. To such factors we shall attribute real earnings of the households, their differentiation,

correlation with the GDP growth, real consumer standards, level of corporate profits, their correlation with the individual earnings and the share of the latter in GDP. It is this group of factors that determines the need and effectiveness of implementation of the formal norms that are in line with relevant goals of macroeconomic policy [1,2,3].

The performed analysis of macroeconomic factors proved their correspondence to the conditions of development stimulation. At the same time dynamics of the macroeconomic processes shows the need for stepping up the redistributional subfunction of taxes to restrict the existing excessive differentiation of income [4,5,6].

A complex of indices and coefficients characterizing various aspects of economic relations arising in the functioning of taxes is used for the all-round analysis of the fiscal effectiveness of tax regulation, such as revenue and its share in the earnings and tax returns of the consolidated budget of Ukraine; share of taxes in GDP and their elasticity in GDP. Elasticity coefficients of direct and indirect taxes permit to determine effectiveness of the tax stimulation of the demand and supply of financial flows [7,8,9].

Keeping up during a lengthy period a relatively low level of the direct capital taxes inelasticity demand (with the growth of both, tax revenues and relevant economic index to be determined, the latter at a higher rate) or a relatively low supply elasticity (the growth of the share of taxes in the source of their payment does not prevent a sufficient growth of GDP and GVA) can be regarded as a positive factor for the economy. On the contrary, keeping up during a lengthy period the value of demand elasticity coefficient at the level over one, the supply elasticity coefficient at the level well below one can be regarded as a negative factor. This testifies to the unproductive growth of the tax burden, inability of the existing tax system to mobilize for the budget a sufficient volume of tax revenues even with the growth of economic indices through the high level of tax burden and evasion of enterprises from taxation. A natural reaction of the state to the above

[1] *Moiseienko I. P., Ryvak N. O. Determining the Effectiveness of Tax Regulation. Formation of Market Economy in Ukraine. Collection of scientific works of LNU named after Ivan Franko 2017. Vol. 37. Part 2. P. 25-31.*

[2] *Skrypnyk A. V. State regulation of transformation economy (aspects of modeling): monograph. Irpin: Academy of State Tax Service of Ukraine, 2002. 312 p.*

[3] *Moiseienko I. P., Demchyshyn M.Y. Determination of Tax Incentives for Entrepreneurship Development. Scientific Herald of Lviv State University of Internal Affairs. Economic series: a Collection of Scientific Works. Lviv: Lviv State University of Internal Affairs. 2017. Vol 1. P. 56-67.*

[4] *Sanina I. S. Estimate of the Level of Tax Burden in Ukraine. URL: http://www.vestnik-econom.mgu.od.ua/journal/2015/13-2015/48.pdf*

[5] *Melnyk V.M. The Fiscal Policy of the State in the Conditions of the Financial Crisis. Finance of Ukraine. 2008. №11. P. 11-17.*

[6] *Tsymbalyuk I. O., Vyshnevska N. V. Tax Burden as a Criterion of Effectiveness of Tax Policy. URL:*

http://www.nbuv.gov.ua/old_jrn/Soc_Gum/Evu/2012_19_1/Tsymbaly.pdf

[7] *Skrypnyk A. V. State regulation of transformation economy (aspects of modeling): monograph. Irpin: Academy of State Tax Service of Ukraine, 2002. 312 p.*

[8] *Pakhnenko O.M., Semenog A.Y. The Main Principles of Tax Policy in the EU Countries at the Present Stage. Effective Economics. 2016. № 12*

[9] Melnyk V.M. The Fiscal Policy of the State in the Conditions of the Financial Crisis. Finance of Ukraine. 2008. №11. P. 11-17.

negative tendencies in the economy must be taking appropriate measures to reduce the tax burden, improve the taxation system structure, review tax concessions, raise the level of payment of taxes and other steps to enhance effectiveness of the existing taxation system.

The higher is the share of direct taxes in GDP (GVA), the higher, under other equal conditions, is elasticity of the state's demand for financial resources that means:

- a greater tax burden with all the negative consequences if it is above the limit of the bite of taxes;

- a higher probability of the declining growth rate and absolute amounts of tax revenues not only from the standpoint of mass attempts to evade taxation, but also from the standpoint of the effect of the principal rule of elastic demand – a reduction of tax returns with the growth of relative prices of services (the share of taxes in GDP or GVA).

Thus, the said demand elasticity factor of direct business taxes must be necessarily taken into account when establishing the tax regime and the tax burden.

Summing up the above it is fair to say, that the common thing for Ukraine is the process of a steady evasion from the system of the automatic tax regulation, explained by the need of never ending interference of the legislative and executive branches with the process of tax policy formation by way of constant adjustment of the tax rates, expansion of the number of tax concessions and their users, changing the administration regime, etc. Indirect taxes can play the role of the tools of automatic regulation as the ―built-in stabilizers‖ provided only, that all these shortcomings are eliminated.

The main factor of the motivation mechanism for the development of economy has to be an improved taxation system with the active stimulating and regulating functions. Of high priority is the theoretical generalization and a new solution of the scientific problem that lies in justification of theoretical principles of economic processes regulation in Ukraine with the aid of the tax incentives for business.

The objective of this study is to determine the routes of tax incentives in order to ensure economic security of the country on the basis of diagnosing the state and effectiveness of tax burden, assessment of its effect on the macroeconomic indicators of economic development.

Substantial lagging of economic development behind the opportunities and baselines of separate institutions testifies to the gaps in the institutional environment and determines the potential of the effect of institutional factors on economic growth. In this study we shall consider the institutional environment as a complex of socioeconomic institutes, institutions and mechanisms that correspond, first of all, to the peculiarities and specific aspects of ensuring economic security of the country.

Formation of the institutional environment of economic security must be based on the system-managerial, system-structural and system-information approaches.

The effective institutional environment from the system-managerial point of view has to ensure: establishment of the system of incentives for the effective

business activity that include reduction of the tax expenditures, favorable conditions of taxation and financing innovations, tariffs, etc.; establishment of conditions for the quality processes improvement through the complex information system development, business infrastructure development, establishment of conditions ensuring innovation attractiveness, the use of advantages of combining resources and opportunities, etc.; ensuring mutual understanding and harmonization of interests of economic entities on the basis of introduction of partnership business relations between them. The system-structural approach to the formation of institutional environment requires exposure of its composition and links between the components thereof.

The system-information approach to updating the institutional basis of economic security envisages a set of parameters for the assessment of security level, determination of impact factors and prediction of the level of changes.

Ensuring economic security of business is an important task of the state policy guaranteeing economic security of the state. Economic security of business is the objective prerequisite for the development of business sector of the national economy ensuring such structural components of the state security as financial, social, technological, food, foreign economic, demographic, energy industry, and ecological.

Importance of fiscal stimulation in the system of economic security of the state can be viewed as the relationship of the following factors: ensuring development of the totality of security institutes of both business entities and the state in general; guaranteeing security of strategic enterprises (local economic mainstays and enterprises of considerable importance for the economy and the state security); economy demonopolization and restructuring; raising the level of business activity; enhancement of the role of public-private partnership; raising the level of business entities innovative-investment activity; ensuring structural changes in the economy on the regional and local levels in the result of encouragement of structural-balanced development of innovating business; strengthening the structural components of economic security of the state [1],[2],[3].

To specify the totality of instruments for the improvement of institutional basis of economic security of the state in the part of fiscal stimulation of business activity development it is proposed the list of measures along the following lines:

– introduction of monitoring of the tax level burden and determination of the business activity fiscal potential;

– improvement of methodological support of strategic decisions making for the encouragement of business activity development;

– improvement of regulatory and taxation policy effectiveness for the development and ensuring economic security of small business (strengthening innovative activity of small business entities; stimulation of business activity of

[1] Romaniuta E.E. Monitoring of Tax Burden in Ukraine and EU Countries URL: http://www.sf.tneu.edu.ua/index.php/sf/article/viewFile/1003/1011

[2] Pakhnenko O.M., Semenog A.Y. The Main Principles of Tax Policy in the EU Countries at the Present Stage. Effective Economics. 2016. № 12

[3] Tsymbalyuk I. O., Vyshnevska N. V. Tax Burden as a Criterion of Effectiveness of Tax Policy. URL: http://www.nbuv.gov.ua/old_jrn/Soc_Gum/Evu/2012_19_1/Tsymbaly.pdf

population in the types of economic activity that will be potentially attractive for small business, facilitating improvement of citizens' social security, overcoming depressiveness of the territories, development of small towns and district centers; expansion of cooperation and cluster ties of the small and large business; improvement of spatial-object structure of business)[1,2].

Regulatory function of taxes on entrepreneurship in the system of financial leverage is not sufficiently used to ensure the economic security of the state. In doing so, the use of taxes as financial instruments should be based on the optimal combination of fiscal sufficiency criteria, economic efficiency, and social justice.

The use of taxes as regulatory instruments for the institutional basis of economic security should be considered as a mechanism for the use of investment instruments through which the state creates conditions for mobilizing the necessary amount of financial resources, their efficient use, and the rational flow between sectors of the economy and regions.

In economies with a significant influence of institutional deformations, the effectiveness of fiscal regulation will always be lower than expected. This is due to the institutional nature of fiscal regulation of financial flows. The category of tasks stemming from the systematic nature of regulated tax relations and their impact on the economy is aimed at achieving synergy effects of tax regulation as a tool for macroeconomic stabilization and economic security. The objectives for its achievement should be considered: definition of national economic interests in the field of tax regulation in conditions of economic instability and the need for their harmonization; definition of parameters of stabilization of economic development in Ukraine; establishing priorities for tax regulation of economic relations with regard to economic security and sustainable development; certain national economic interests for the purpose of predictability and transparency of the state relations with economic entities in the field of tax regulation; definition of investment stimulation and use of foreign investments necessary for ensuring innovation development.

Assessment of the effectiveness of measures ensuring economic security of business and the state envisages combination of such methods of studies as socioeconomic indicators monitoring and multidimensional statistical analysis.

The high level of economic security can be attained only if the entire totality of indicators selected for assessment remains within the limits of admissible values and the assessment pertains directly to the representative part of business entities.

According to the theoretical generalization of business economic security characteristics, its level is measured by the following indicators:

IB – level of maturity of the institutional basis of business economic security; E_D – number of functioning enterprises per 1000 persons; N_B – ratio of the number of newly established enterprises to those that terminated their functioning; P_E – share of profitable enterprises; S_E – level of shadow economy in proportion to GDP; R_S – coefficient of business activity system risk; C_E – number of criminal or discriminatory (including illegal takeover) actions against business entities; M_E – level of economy monopolization (concentration); T_{EC} – average period of establishing a new enterprise; T_L – average length of time for obtaining licenses and permits, property registration; FB – level of financial security of business

activity; I_L – level of protection of legal rights of creditors and borrowers; C_R – average level of credits interest rate; K_p – conventional average liquidity ratio; K_{FS} – conventional average leverage ratio; I_R – inflation level; E_p – indicator of ―insurance density‖; I_C – dynamics of enterprises' capitalization; E – level of realization of export potential of the economy business sector; K_E – export growth to import growth ratio; T_{EX} – length of export operations; E_{GDP} – export volume to GDP ratio; IC – level of favorableness of the investment environment; I_I – level of protection of investor's interests; A_L – level of fixed assets wear; I_A – volume of investments to fixed-capital assets ratio; IN_{GDP} – net increase of direct foreign investments to GDP ratio; STC – level of innovative activity and support of scientific-and-technological component of business activity economic security; NP_p – share of the new types of products (services); IAE_p – share of enterprises introducing innovations; K_{IAE} – coefficient of inventive activity; NI_{IAE} – number of instances of unlawful use of property rights; PC – level of ensuring business activity production component of economic security; L_P – labor productivity; S_L – labor turnover; S_Q – product input intensity; B_A – level of business activity; R_E – level of enterprises' operating activity; I_Q – real output index; MTB_L – level of provision of enterprises with the material-technical and technological facilities; ENC – level of maintenance of energy component of business activity economic security; E_L – level of provision of business sector of national economy with fuel- energy resources; A_{FEC} – level of wear and tear on plant and equipment of fuel and energy complex; EN_{GDP} – GDP energy intensity; ECC – level of provision ecological component of business activity economic security; ET_Q – share of introduced low waste and environmentally friendly technologies; SES_L – level of the use by business entities of secondary energy resources; EP_F – share of actually paid environmental charges in total amount of those charged[13].

The traditional list of economic security indicators of entrepreneurship in the current conditions of the need to use factors of sustainable and innovative development can be complemented by the following indicators:

Rki – the level of development of creative industries in entrepreneurship: *KIe* – the share of creative industries in GDP (GRP); *KIp* – the share of creative industries in the structure of entrepreneurship; *IAuI* – the share of enterprises that implemented managerial innovations. Creative industries are economic activities that have the potential to create added value and jobs through cultural (artistic) and / or creative expressions, and their products and services are the result of individual creativity, skills and talent [1].

SO – level of providing social component of economic security of entrepreneurship; *Ec* – level of salary arrears of the entrepreneurial sector of the national economy; *Kz* – average monthly salary; *Rz* – employment level; *Rb* unemployment rate; *Rs* – level of social investments; Rsk is the level of social capital and social services use; *ECC* – the level of ensuring the environmental component of the economic security of entrepreneurship; *ETQ* – the share of embedded low-waste and environmentally-friendly technologies; *SESL* – level of

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[1] *Cultural industries: activities. URL:http://creativecities.org.ua/uk/creative-industries/texts/?newsid=22*

use of secondary energy resources by business entities; *EPF* – The proportion of actually paid environmental charges in the total amount of the accrued.

The institutional-system model of ensuring business activity economic security (SES) that contains the above list of indicators can be supplemented with the parameters of tax burden, their effectiveness and impact on the macroeconomic indicators.

Fiscal stimulation of business activity (FSP) shall acquire the following functional expression:

$$FSP = F (MP, KE, M_{fs}),$$ (1)

where: MA – macroeconomic indicators or indicators of the state economic security; KE – elasticity coefficient; M_{fs} – fiscal impact indicators.

The models of fiscal impact on macroeconomic indicators in general appear as follows:

$$M_{fs} = F (PS, PK, PP),$$ (2)

where:PS – consumption taxes; PK – capital taxes; PP – labor taxes.

The institutional-system model of ensuring economic security shall acquire the following expression:

$$SES = F (IB, FB, FB, FB, STC, PC, ENC, ECC, FSP)$$ (3)

Modernization of the indicators list permits to take into consideration the built-in stabilizers of economic development, effectiveness of their use and to determine the trends of changes in the encouragement of business activity in order to ensure economic security of the state.

To determine effectiveness of tax regulation and establish the level of tax burden we should use other indicators as well, whose methods of calculation are shown in Table 1.

Table 1- Indicators of Tax Burden Effectiveness

Indicators	Method of calculation
Budgetary tax burden	Revenue receipts of consolidated budget / GDP * 100
Share of GDP centralization in budget	Proceeds of consolidated budget / GDP * 100
Labor tax burden	Unified social tax / GDP * 100
Gross coefficient of tax burden	Budgetary tax burden + Labor tax burden / GDP * 100

Source: constructed by the authors according to data[1]

Table 2 shows development of tax burden as per above described indicators.

Tax burden is the result of the state tax policy and a qualitative characteristics of any taxation system. The state must always conduct a moderate tax pressure policy to ensure a stable revenue stream. This concept aims at reduction of the burden on the subjects of taxation, while the growth of budget revenues has to be achieved by way of increasing the number of tax payers and expansion of the tax base [2].

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[1] *Sanina I. S. Estimate of the Level of Tax Burden in Ukraine. URL: http://www.vestnik-econom.mgu.od.ua/journal/2015/13-2015/48.pdf*

[2] Pakhnenko O.M. The Main Principles of Tax Policy in the EU Countries at the Present Stage / O. M. Pakhnenko, A.Y. Semenog. Effective Economics. 2016. № 12

The difference between the levels of tax burden in the EU countries is rather essential: the lowest index of tax burden in Ireland (24.4%) is almost twice below the highest index in the EU countries, namely, in France (47.9%). Such difference in the level of taxes is predetermined both, by various approaches to the establishment of the type and amount of tax rates, taxation objects and bases, and by various levels of economic development and GDP volume of the countries in question[1].

Table 2- Dynamics of Tax Burden Formation in Ukraine in 2007-2017 Due to Different Types of Taxes, %

Indicator	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Average Indicator
Budgetary tax burden	22,36	23,98	22,78	21,60	25,74	26,29	24,15	23,16	25,63	27,28	34,08	25,19
Gross coefficient of tax burden	32,84	34,73	33,71	32,63	36,43	37,54	35,54	33,61	34,21	31,98	37,6	34,62
Corporate Income Tax	4,72	5,01	3,57	3,71	4,21	3,94	3,71	2,51	1,76	2,28	2,2	3,42
Consumption Taxes (VAT)	8,25	9,71	9,27	8,89	10,01	9,88	8,76	8,76	9,02	9,50	12,1	9,47
Tax Burden on Labor	10,48	10,75	10,93	11,03	10,70	11,25	11,39	10,46	8,58	4,70	5,6	9,62

Source: calculated by the authors according to data[2,3]

As follows from Table 2, average level of tax burden in Ukraine differs considerably from the average index of the EU countries. The main difference is the structure of tax revenues for the budget. The share of consumption taxes in Ukraine outweighs direct taxes, that is, taxes on capital. To this end, the opposite trend is traced in the countries with the high level of development.

The tax coefficient is the simplest index of those used to characterize the tax burden. The tax coefficient as the fiscal indicator of tax regulation effectiveness reflects the ratio of the sum of all received taxes to the gross domestic product. Specificity of modern conditions of tax regulation requires introduction of the transformational mechanism that would combine instrumentarium aiming at macroeconomic stimulation of demand, supply and redistribution of income towards both, ensuring equal stress taxation and reduction of income inequality. In such a mechanism the regulation of tax effectiveness must be combined with its fiscal sufficiency. Of high importance is the determination of fiscal sufficiency. As preceding calculations and analysis of tax burden development show, only the consumption taxes perform the fiscal function.

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[1] *Sanina I. S. Estimate of the Level of Tax Burden in Ukraine. URL: http://www.vestnik-econom.mgu.od.ua/journal/2015/13-2015/48.pdf*

[2] *Official site of the Ministry of Finance of Ukraine. URL: http://www.minfin.gov.ua/control/uk/ publish/archive/main?cat_id=77643.*

[3] *Institute of Budget and Social-Economic Studies (IBSES). URL: http://ibser.org.ua/UserFiles/ File/ Budget-Monitor/KV_IV_2011_Monitoring_ukr.pdf*

Indicators of the tax burden reflect effectiveness of tax policy on the macrolevel, that is, they measure the total effect of tax payments on the sources of their payment quantitatively. Fig. 1,2 show the movement of tax coefficients in the period under study.
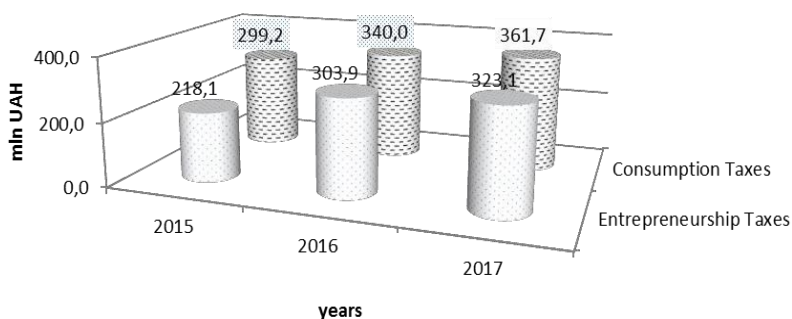

Figure 1 – Tax Dynamics Through Direct Taxes and Indirect Taxes Breakdowns in Ukraine

Source: constructed by the authors according to data[1,2]

As follows from Fig. 1,2 the level of consumption tax coefficients in Ukraine outweighs the level of business taxes, while the opposite trend is traced in the countries with the high development level. As follows from this figure, effectiveness of direct taxation falls, while effectiveness of taxation on the small business structures grows. These tendencies will determine the lines of changes in the tax policy in subsequent periods.
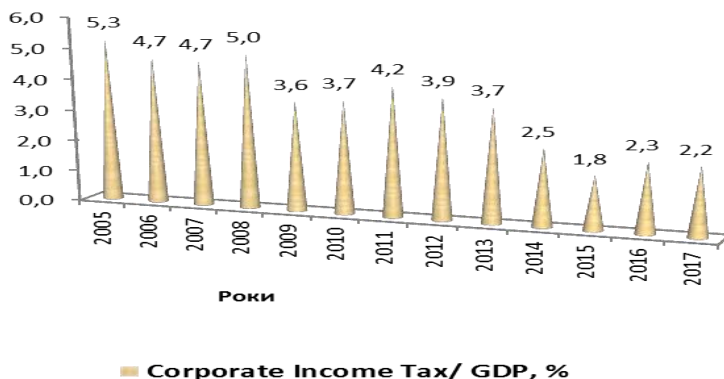

Corporate Income Tax/ GDP, %

Figure 2 – Dynamics of Tax Coefficients in Ukraine in 2005-2017
Source: constructed by the authors according to data[1,2]

[1] *Official site of the Ministry of Finance of Ukraine. URL: http://www.minfin.gov.ua/control/uk/ publish/archive/main?cat_id=77643.*

[2] *Institute of Budget and Social-Economic Studies (IBSES). URL: http://ibser.org.ua/UserFiles/ File/ Budget-Monitor/KV_IV_2011_Monitoring_ukr.pdf*

Table 3 presents trend models of business taxes and tax coefficients that determine effectiveness of tax burden. Development of capital tax burden (or direct taxes) in 2007-2017 had predominantly a parabolic type of the principal tendency. Expressed tendencies are best shown in table 2 – business taxes (direct taxes) in general and effectiveness of business tax burden had the tendency towards falling. The flat rate tax for the small business entities had the opposite development tendency – from 2005 to 2008-2009 it kept on falling, and the tendency towards a dramatic growth of the flat rate tax appeared starting from 2010.

Table 3 – Parabolic Equations of the Trend of Taxes on Capital and Labor in Ukraine in 2005-2017

Indicator	Trend equation and Student's t-criterion value	Determination coefficient R^2	Fisher's F-criterion	Durbin-Watson's DW-criterion
Direct taxes, billion UAH	$\tilde{y} = 39{,}01 + 16{,}37\,t - 0{,}82\,t^2$ 3,06 3,35* -2,08	0,829	19,3	2,06
Corporate Income Taxes, billion UAH	$\tilde{y} = 20{,}92 + 7{,}21\,t - 0{,}45\,t^2$ 2,25** 2,03 -1,55	0,486	3,8	1,98
Consumption Taxes, billion UAH	$\tilde{y} = 14{,}37 + 10{,}81\,t - 0{,}62\,t^2$ 3,78* 7,42* -5,27*	0,942	64,5	2,17
Single tax for small business entities, billion UAH	$\tilde{y} = 3{,}72 - 1{,}65\,t + 0{,}25\,t^2$ 3,18** -3,69* 6,82*	0,964	108,4	1,65
Single tax on legal entities, billion UAH	$\tilde{y} = 0{,}99 - 0{,}24\,t + 0{,}04\,t^2$ 5,50* -3,49* 7,00*	0,971	132,8	2,28

*Note: * – statistical probability with probability p = 0,99 (level of significance α = 0,01);*

*** – statistical probability with probability p = 0,95 (level of significance α = 0,05)*
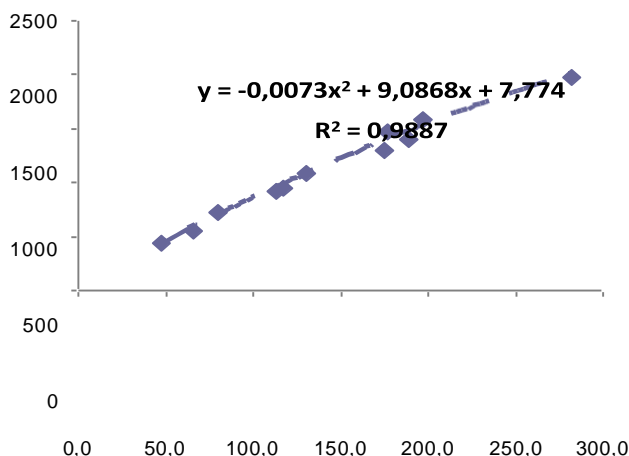
Source: constructed by the authors according to data [21,22]

Figure 3 – Parabolic Model of the Impact of Consumption Taxes on Macro Indicators

Source: constructed by the authors according to data[1,2]

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[1] *Official site of the Ministry of Finance of Ukraine. URL: http://www.minfin.gov.ua/control/uk/ publish/archive/main?cat_id=77643.*

[2] *Institute of Budget and Social-Economic Studies (IBSES). URL: http://ibser.org.ua/UserFiles/ File/ Budget-Monitor/KV_IV_2011_Monitoring_ukr.pdf*

The presented methodological principles of determination of tax burden and criteria of fiscal business taxation effectiveness is the methodological basis of the institutional instruments for tax regulation that will help calculate the level of tax burden and elaborate recommendations for improvement of tax regulation.

Taking into account the specified indices establishing the level of tax burden, fiscal stimulation of business is ensured when the taxable capacity determined by the aggregate impact of macroeconomic and transformation factors corresponds to the fiscal ability of the taxation system. The latter depends on the effect of formal norms in the sphere of redistribution. Fiscal stimulation of business is determined by interaction of the two factors – formal and macro social. The formal factors include progressive (low progressive) taxation, stimulating concessions, tax deductions. These elements of regulation will provide a beneficial effect if they correspond to the other group of macroeconomic factors [1],[2].

The latter include: the share of tax revenues of the state, share of direct and indirect taxes, share of the shadow economy. It should be noted, that the presented criteria attributes depend on the economy development condition and intensity of the redistributing activity of state.

Effectiveness of tax collection is connected with its fiscal effectiveness, that is, with the ability of tax to perform the fiscal function of pumping up the revenue part of budget. On the other hand, tax burden produces an impact on the level of macro indices, and in view of this it is required to use the appropriate correlations for assessment of tax regulation effectiveness. In such case coefficient of fiscal effectiveness (KFE) should show the following correlation:

$$KFE = PN_v / M_e : PN_{vB} / VVP, \qquad (4)$$

Where: KFE – fiscal effectiveness coefficient; M_e – macro index of economic security; PN_v – tax burden by the types of taxes; VVP – gross domestic product.

The following types of tax elasticity indices (KE) are used for the assessment of tax revenues depending on the changes in the indicators of economic growth (GDP, GNP):

$$KE = \Delta P/Po : \Delta VVP / VVPo, \qquad (5)$$

where: ΔP – increment of tax revenues in the year under study; Po – tax revenues of the preceding or reference year.

Elasticity coefficient of taxes classified by their functional indicator (capital taxes, labor taxes, consumption taxes) reflects the changes in tax revenues in case of changes in the relevant macro indices of economic and social development. To this end, if KE=1, the share of tax revenues of the index to be determined does not change. If KE is more than 1, tax revenues grow at a higher rate compared to the growth of macro index and the share of taxes therein grows as well. If KE is less than 1, the share of tax revenues drops. Absolute and relative values of macro indices can be used for calculation the elasticity coefficients. The use of tax burden

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[1]*Tsymbalyuk I. O., Vyshnevska N. V. Tax Burden as a Criterion of Effectiveness of Tax Policy. URL: http://www.nbuv.gov.ua/old_jrn/Soc_Gum/Evu/2012_19_1/Tsymbaly.pdf*

[2] *Vasyltsiv T.H. Strategy and Mechanisms for Ensuring Economic Security of Entrepreneurship in Ukraine. The dissertation for the degree of Doctor of Economics in specialty 21.04.01 - economic security of the state. Kyiv: National Institute for International Security Problems under the National Security and Defense Council of Ukraine. 2010. P.13*

elasticity index in the analysis provides the possibility of a more accurate evaluation of the tax policy priorities, and the use of inverse indices permits to predict the macro indices level of sustainable development of the economy and the appropriate level of economic security. Interests of the economic entities are most fully preserved when the elasticity coefficient is equal to 1. In case of other values there is infringement of the rights of state or the economic entities.

To analyze the cause-and-effect links in the tax domain, such as the effect of tax payment rate gain on the added value growth rate (income, GDP) and taking into account the time lag, we have used the developed indicator – tax base elasticity coefficient – as one of the parameters for measuring effectiveness of fiscal burden of the economy (tables 4 and 5).

Table 4- Elasticity coefficient (GDP)

Index	Years										
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Tax revenues for the consolidated budget, billion UAH	1.21	0.87	1.30	2.31	0.67	2.16	1.29	-0.98	0.46	1.54	1.39
Indirect taxes (consumption taxes), billion UAH	1.63	0.63	1.49	0.88	0.84	1.71	1.02	-1.51	1.33	1.76	2.95
Direct taxes, billion UAH	0.93	1.25	1.12	4.70	0.94	1.00	1.18	0.87	-1.53	-0.19	1.96
Corporate tax, billion UAH	0.48	0.97	1.26	8.57	1.20	1.92	0.16	-0.33	-3.24	-0.12	2.66
Personal income tax, billion UAH	1.64	1.62	1.01	0.84	0.78	0.30	1.61	1.34	-0.38	-0.49	7.49
Single tax on small business entities, billion UAH	0.07	0.56	0.52	1.30	0.39	0.25	17.67	8.79	1.40	1.94	2.78
Tax burden on labor (unified social tax), billion UAH	1.31	1.21	1.11	0.57	1.03	0.84	1.69	1.31	-0.07	0.10	-1.68

Source: calculated by the authors according to data[1,2]

Table 5 – Elasticity Coefficients of Taxes on Capital (to GDP)

Indicator	Years										
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Single tax on small business entities	0,56	0,52	1,30	0,39	0,25	17,67	8,79	1,40	1,94	2,78	2,36
Corporate Income Tax	0,97	1,26	8,57	1,20	1,92	0,16	-0,33	-3,24	-0,12	2,66	2,2

Source: calculated by the authors according to data[3,4]

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[1] *Official site of the Ministry of Finance of Ukraine. URL: http://www.minfin.gov.ua/control/uk/ publish/archive/main?cat_id=77643.*

[2] *Institute of Budget and Social-Economic Studies (IBSES). URL: http://ibser.org.ua/UserFiles/ File/ Budget-Monitor/KV_IV_2011_Monitoring_ukr.pdf*

[3] *Official site of the Ministry of Finance of Ukraine. URL: http://www.minfin.gov.ua/control/uk/ publish/archive/main?cat_id=77643.*

⁴ Institute of Budget and Social-Economic Studies (IBSES). URL: http://ibser.org.ua/UserFiles/ File/ Budget-Monitor/KV_IV_2011_Monitoring_ukr.pdf

This coefficient shows the vulnerability measure of the performance indicator (which can be the gross or net income, added value or profit) of the current period before the change of tax payments in the preceding period taking into account the time lags that permit to expose economic consequences of the tax payments. The coefficient measures percentage of changes in the performance factor of the current period with the change in tax payments in the preceding period by 1%.

Analysis of the added value elasticity with respect to the change of the determinant – the group of taxes on business and labor – provided the opportunity to reveal that the state tax policy implemented during the period of observation was one of the factors of inhibition of basic industries development and innovative-investment processes in the economy. Analysis of the cause-and-effect links between the tax payments gain rate in the preceding periods and subsequent GDP performance indicator growth rate, conducted with the aid of the used tax base elasticity coefficient shows, that economic development is taking place under the conditions of a considerable tax pressure.

The use in the analysis of tax burden elasticity coefficient provides the possibility of a more accurate assessment of the tax policy priorities, while the use of the inverse indicators permits to predict the level of macroindices of economic security and a sustainable development of the economy. Interests of the economic entities are most fully preserved when elasticity coefficient value is equal to one. Infringement of the rights of the state or economic entities takes place in case of other values of the coefficient.

Results of econometric analysis of the dependence of GDP on tax burden Mfs are shown in Table 6.

Table 6 – Linear Regressive Models of the Effect of Taxes on GDP and Their Statistical Assessment

	GDP dependence		
	on consumption taxes	**on capital taxes**	**on labor tax burden**
Equation	$\tilde{y}=383.49+5.02x$	$\tilde{y}=-289.46+32.162x$	$\tilde{y}=131.11+9.40x$
Student's *t*-test	$t_a = 4.33^*$ $t_b = 11.31^*$	$t_a = 0.99$ $t_b = 5.46^*$	$t_a = 0.37$ $t_b = 3.33^*$
R correlation coefficient	0.963	0.865	0.724
R^2 determination coefficient	0.928	0.749	0.525
F-test statistic	127.96*	29.77*	11.04**
DW – Durbin-Watson model	0.91	1.08	0.61

* – significance level α=0.01; ** – significance level α=0.5

Source: calculated by the authors according to data [29,30]

After studying the effect of taxation in Ukraine on GDP it can be stated, that there is a very close correlative relationship between the indirect taxes and GDP (*R* = 0.963). The value of determination coefficient R^2 = 0.928 shows, that the change or fluctuation of GDP volume depends on the change or fluctuation of the amounts of indirect taxes by 92.8%. Linear regression equation coefficient $\tilde{y}=383.49+5.02x$ shows, that the growth of indirect taxes by 1 billion UAH will

lead to the average growth of GDP by 5.02 billion UAH. Assessment of statistical reliability of the obtained results by Fisher's and Student's tests permits to insist on the adequacy of the obtained regression model and initial data with probability p=0.99 ($F = 127.96$, $F_{табл}$ (p=0.99, k_1 =1, k_2 =10) = 10.04) and reliability of the parameters with probability p=0.99 (t_a =4.33, t_b =11.31, $t_{табл}$ (p=0.99, k =10) = 3.17).

Dependence of GDP on the capital taxes is also rather close (R=0.865), dispersion of GDP value by 74.9% is explained by dispersion of capital taxes (R^2=0.749). If capital taxes are increased by 1 billion UAH, then, in accordance with the statistical reliability regression coefficient of the linear regression equation $\tilde{y}$=-289.46+32.16x with probability p=0.99 (t_b =5.46) GDP volume will be increased on the average by 32.16 billion UAH. By Fisher's test one can state, that the model is adequate to the behavior of initial data with probability (p=0.99) (F =29.77).

The minimal effect of taxation on GDP in Ukraine is observed with the labor tax burden (R=0.724, R^2=0.525).

However, statistical reliability of the regression coefficient of linear regression equation $\tilde{y}$=131.11+ 9.40x with Student's test (t_b =3.32) and adequacy of the model itself with the empirical data in accordance with Fisher's test ($F = 11.04$) with probability p=0.95 permits to conclude, that with the growth of labor tax burden by 1 billion UAH it is possible to expect GDP volume increase by 9.4 billion UAH.

Thus, checking the negative impact of macroeconomic and transformation factors and optimization of the tax base and fiscal burden permit to achieve fiscal effectiveness of taxation, which opens the ―space‖ for application of regulating taxation measures.

This study has resolved the important scientific-practical problem of further determination of the trends and factors of fiscal impact on the business activity development as the foundation of the state economic security. Ensuring economic security of the country depends on the great number of parameters and factors and is determined first of all by the use of appropriate models of prediction and drafting macrofinancial indicators that are necessary for ensuring an adequate comprehensive assessment of the conditions for taking managerial decisions, making preliminary analysis of their consequences, choosing the optimal scenarios for the achievement of the set strategic goals.

The need for selection of the appropriate models and indices-indicators of stimulation development arises at the time of the current state assessment of economic security. Limitation of the negative effect of macroeconomic and transformation factors and optimization of tax base and fiscal strain permit to achieve the fiscal effectiveness of taxation that opens up the ―room‖ for application of tax regulation measures.

The negative impact on the economic security of the country is produced in the result of ―shadowing‖ of the economy, imperfect collection mechanism of taxes, charges and other mandatory payments, ineffective tax remissions, low level of tax culture and tax discipline of the economic entities. The important task is optimization of the tax burden, which requires to reduce the tax burden on the

taxation subjects through the gradual reduction of the tax rates and expansion their bases of taxation; to ensure growth of revenues to the budget through the increase of the number of tax payers and expansion of the tax base; to expand the tax base through a considerable number of the effective taxes.

Business activity is the development foundation of the economy in most of the countries. The state must create favorable environment for business, encourage development of those business entities whose importance and role grow intensively.

This study proposes methodological principles of choosing the tax regulation trends of the economic processes of business activity stimulation on the basis of using the elaborated models of regression analysis of the tax burden by its functional indications: consumption taxes, capital taxes and labor taxes. The designed models of multiple linear regression permit to determine the probable cumulative impact of taxes on the socioeconomic indices of the national economy.

Theoretical and logical approaches to the study of macroeconomic impact of taxes have been improved with the aid of modifying fiscal effectiveness of taxes which gives the opportunity of taking into account interconnection of the taxation system when implementing macroeconomic policy.

The described analytical instrumentation is the foundation of strategic monitoring methodology of the state economic security based on the use of fiscal instruments of business development that envisages accomplishment of the following stages: indices selection of the tax burden on business activity; level determination of their impact on macroeconomic indices; determination of forecasting data on tax burden of businesses by the types of taxes; selection of the forms and instruments of the tax policy for stimulation of economic development.