

Indirect Taxes in the Mechanism of Macro Processes' State Regulation

Iryna Moyseyenko ⁱ and Nataliya Ryvak ⁱⁱ

Abstract: *This article is focused on the role of indirect taxes in the tax regulation mechanism of the micro processes. We offered the definition of the tax regulation mechanism, described the tasks and structure of indirect taxation, analytical support for its realization.*

The necessity of relevant tax regulation observation of the micro processes, its scientific and practical importance determined the choice of the topic and methods of our study, based on parametric expansion of macroeconomic regulation models through adding the elasticity, economic security and sustainable development indicators. Substantiation of the theoretical and methodical positions of the indirect taxation usage in the mechanism of tax regulation (based on the macro parameters monitoring) is the goal of the study. The analysis of indirect taxation in Ukraine makes it possible to state that there is a contradiction between the fiscal and regulatory functions, the content of which is next – the increase in the fiscal burden of the tax system is due to the decrease in the regulatory function of taxes and fiscal efficiency decline.

We proved the expediency of establishment an effective state fiscal monitoring system in Ukraine to increase the incentive function of indirect taxes. Not only the traditional tax calculations factors and their impact on macroparameters are necessary for analysis, but also consideration of dependency of the sustainable development parameters on the tax burden is important for minimizing the social and economic deformation

The study proved the existence of even relationship between indicators of indirect taxes in Ukraine and sustainable development indicators or macro parameters of GDP or GNP (Gross National Product) types; it also described the shape of such relationship. Other our papers show the overall impact of the individual components of indirect taxes on financial and economic security indicators in Ukraine. Our analytical supportive models of the tax regulation mechanism also reflect the tax burden impact on macroeconomic indicators based on correlations between indirect taxation and rates of economic growth in Ukraine and take into account the parameters of sustainable development in the process of European integration

It was offered to introduce the state fiscal monitoring system to implement the tax incentive function in Ukraine. We define the state fiscal monitoring system as a set of observation processes of the tax burden distribution and the dynamics analysis of indirect taxation, their influence on sustainable development indicators and security.

Keywords: *indirect taxes, the structure of indirect taxes, fiscal (tax) mechanism, macro indicators, fiscal efficiency, sustainable development, economic security, regression models*

Introduction

The current level of Ukraine's and world economy with a bang demonstrates the need for tax mechanism in resolving problems of economic dynamics, developing plans

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for overcoming the crisis, which are based on the measures of tax policy changes. Latter are designed to support the demand in domestic markets and promote the domestic production development, encourage the economy reconstitution on innovation basis. However, it is necessary to state that the tax regulation of the economy has not been studied in the context of the requirements of the economic security and sustainable development concept.

Taxes are considered primarily as a fiscal tool in Ukrainian business practice, and their ability to determine the economic development dynamics and actively influence the socio-economic indicators is ignored. This approach was the cause of economic growth inhibition, maintaining structural imbalances in the economic system, and the root of socio-economic and environmental problems. This necessitates an in-depth research and development of the methodology of the tax mechanism ensuring the sustainable economic development [3,4].

Ukrainian indirect taxation features and issues, the evolution of the usage practice of different indirect taxation tools in terms of economic crisis overcoming can show that the main problem of VAT in the EU countries and Ukraine is a significant level of evasion from paying this tax. The presence of significant problems in collecting VAT and other indirect taxes is the evidence of both: weakening in the mechanism of fiscal regulation and the fact that this taxation is gradually transforming from a budget-earning into the budget-spending.

Literature review

Issues relating to the usage of VAT, its role in the tax system, as well as some problems of this tax application and collection mechanisms are the research topic of many Ukrainian scholars and practitioners, such as V. Andrushchenko, V. Buryakovskyy, V. Geyets, O. Vasylyk, O. Danilov, T. Efymenko, M. Kucheriavenko, A. Lisovyy, I. Lunina, S. Lyovochkin, T. Medynska, V. Oparin, V. Pynzenyk, A. Sokolowska, D. Sologub, V. Sutorminoa, V. Fedosov and others. Among foreign scientists who studied the conceptual basis of VAT functioning we can identify G. Bannock, M. Hillis, G. Jenkins, M. Keane, R. Matthews, K. Militser, R. Ring, W. Fox, J. Hammond, K. Shoup and others.

The Data

Despite the wide range of professional studies, a number of indirect taxation aspects require methodical justification of the reforming areas and the specificity of the Ukrainian tax system should be considered. The latter includes identification of the functioning details of VAT at the current stage, the definition of the perfect forms, methods and application principles of VAT in Ukraine, the study of its impact on the dynamics of growth and socio-economic indicators, indicators of economic security and sustainable development. The need for further research in this area, as well as its scientific and practical importance determined the choice of topics and methods of research.

The purpose of this research is the theoretical and methodical study of the indirect taxation usage in the state regulation mechanism of social and economic processes based on the monitoring of the macroparameters and indicators of the economic security and sustainable development in Ukraine.

The analysis methodology of the indirect taxation impact on the indicators of sustainable development and economic security was worked out, which helped to justify the system parameters of the fiscal monitoring and the fiscal burden forecasting in the mechanism of the state regulation in the Ukrainian economy. The methodology is based on the correlation and regression analysis study of the correlation presence between the indirect taxes and economic security indicators together with the indicators of sustainable development in Ukraine. The existence of pair relationship and its shape between one of the indicators of indirect taxes in Ukraine and one of the economic security or sustainability indicators, as well as the cumulative effect presence of the individual components of the indirect taxes on the economic security and sustainable development indicators was shown in stages. The results were evaluated for statistical reliability using the criterion of Fisher's and Student's tests.

In this study we consider taxation not only as a source of budget revenues, but also as an important component in the mechanism of the state economy regulation. We will define the mechanism of tax regulation as measures of the state economic impact on economic, environmental and social processes through the regulation system of taxation (adjustment of the overall taxation level, the amount and types of taxes, the tax rates and exemptions, deductions to the budget) [8].

Implementation of the tax regulation mechanism means the introduction of the macroprocesses analytical models.

The major tasks of the tax regulation mechanism at the macro level are the next:

- national economy growth and improvement of the population living standards;
- investment and innovation encouragement and support;
- forming a rational relationship between consumption and accumulation;
- the impact on the inflation processes rate;
- the socialization of the economy [1].

Research of the indirect taxes essence allows us to conclude that the division of taxes into direct and indirect is subjunctive. The source of payment criteria is the basis of such division, that is the direct taxes are paid directly from the personal income or enterprise profits, and the indirect taxes are included in the cost or become the premium to prices leading to their growth. Based on this criteria, we will use the next definition of indirect taxes: indirect taxes are ones which are paid by legal entities or individuals-entrepreneurs, provided that such taxes relate to the costs (cost) or become a premium to the price, increasing the latter [9].

This mentioned above definition allows us to offer the next division of indirect taxes into groups: 1) excise duties; 2) duties; 3) valued added tax (VAT). Using such division helps in better overall research and details analysis of the each group's peculiarities. Not only the list of indirect taxes, but also the indicators of fiscal performance play important role in the taxes regulation mechanism and determine the direction and level of the tax regulation. The overall tax burden is presented in Figure 1, the dynamics of the tax ratio – in Fig. 2, and the structure of indirect taxes – in Fig. 3.

We offer to use the complex of indicators and coefficients for the comprehensive analysis of fiscal efficiency of the indirect taxes collection. This complex should include indicators and coefficients, which characterize different aspects of economic relations arising from the operation of the tax, namely: revenues from indirect taxation; tax

burden and tax rate; absolute and relative revenue growth of indirect taxes compared to the previous period, the impact of macroeconomic factors and state of indirect taxes revenues [2].

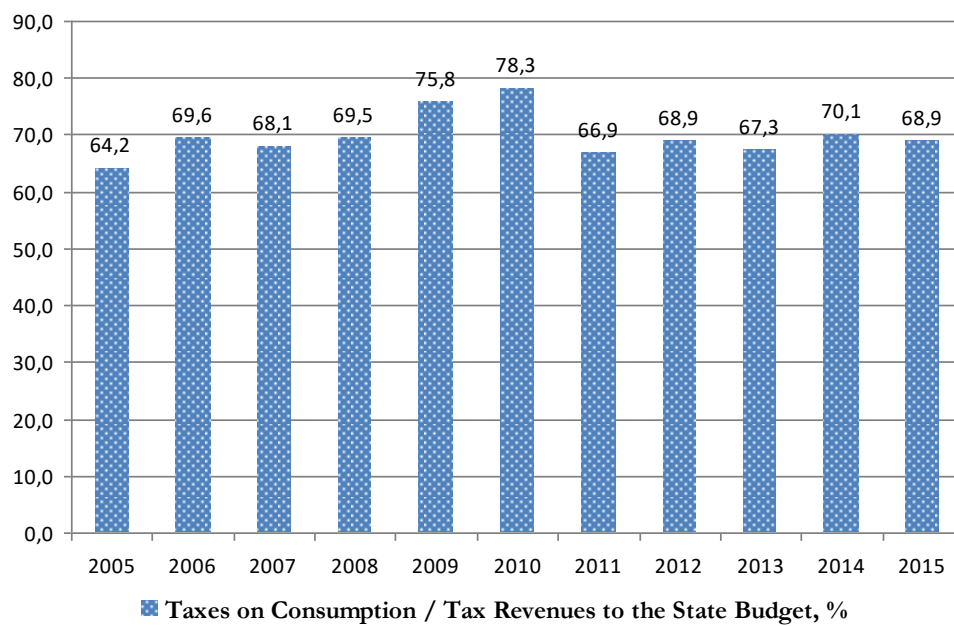


Fig. 1: Tax Burden Level [according to 2,5,6]

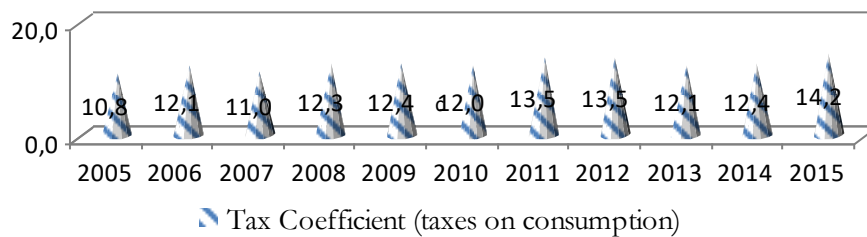


Fig.2: Dynamics of Changes in the Tax Coefficient of Indirect Taxes [according to 2,5,6]

The higher the share of taxes in Gross Domestic Product – GDP (tax coefficient) is, the higher ceteris paribus elasticity of demand for state financial resources is, and therefore:

- the higher is the tax burden with all the negative consequences if it is greater than the limit of tax exemptions;

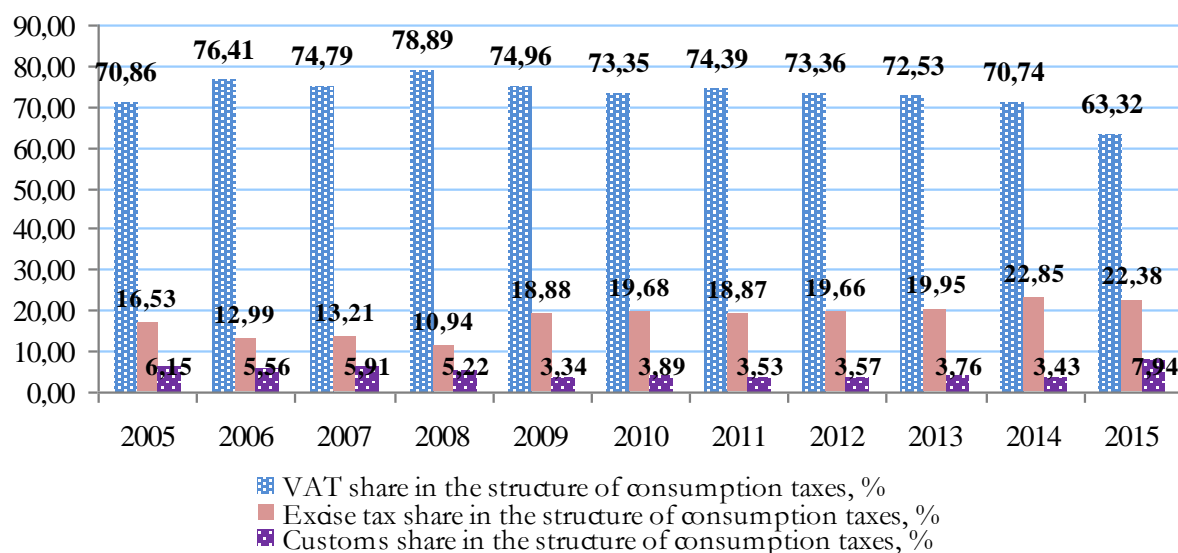


Fig.3: Dynamics of Taxes on Consumption in Total Tax Revenues [according to 2,5,6]

- higher likelihood of the growth rate decline and absolute size of tax revenues decrease not only in terms of mass tax evasion attempts increase, but from the influence position of the elastic demand basic rule – the decline in tax revenues with the simultaneous increase of the services relative price (share of taxes in GDP or Gross Value Added – GVA).

The model and its main findings

The analysis of indirect taxation in Ukraine makes it possible to state that there is a contradiction between the fiscal and regulatory functions, the content of which is next – the increase in the fiscal burden of the tax system is due to the decrease in the regulatory function of taxes and fiscal efficiency decline.

We offer to introduce the state fiscal monitoring system in Ukraine to improve the catalytic function of indirect taxes, which will be seen as a set of processes study of the tax burden distribution, the dynamics analysis of indirect taxation and their influence on the macro indicators of the economic development. Not only the traditional tax calculations factors and their impact on macroparameters are necessary for analysis, but also consideration of dependency of the sustainable development parameters on the tax burden is important for minimizing the social and economic deformation [1,10].

Connection between tax burden and macro indicators based on correlations between indirect taxation and indicators of economic growth rate is presented in Table 1. The dependence of the gross domestic product of Ukraine on the indirect taxes in general has statistically significant linear character with probability $p = 0,99$.

There is also high adequacy of the power models to the initial data, the former indicates a change in the GDP percentage to change of indirect taxes. Thus, if indirect taxes increase by 1%, the GDP will grow by an average of 0.641%; if the VAT increases by 1%, the GDP will increase by 0.665%; excise increase by 1% will cause increase of GDP by 0.8%; if the customs increase by 1%, the GDP will increase by 1.298%.

Analysis of the combined influence of the indirect taxation components (X) on GDP (Y) by multiple linear equation indicates statistically significant with probability $p = 0.95$ impact of value added tax and excise duties on GDP amount change.

$$VVP = 69661,7 + 5086,1PDV + 11233,4A + 21751,0M;$$

$$(1,15) \quad (2,68)^* \quad (2,31)^* \quad (1,53)$$

$$F_{rozr} = 275,2^{**}; \quad R^2 = 0,994.$$

In particular, the increase in VAT by 1 billion UAH at a certain fixed value of excise duties and taxes on international trade and external transactions takes place with the GDP increase by 5,086,100,000 USD. If the excise duty increases by 1 billion UAH, while VAT and taxes on international trade and external transactions do not change, the GDP will grow by an average of 11, 233, 400, 000 USD.

Table 1: Regression Models of Dependencies of GDP on Indirect Taxation in Ukraine

Model type	Pair regression equation /	Coefficients		Estimated values of Fisher's F-test Frozr
	Estimated values of	correlation	determination	
	Student's t-test ta, tb, tc	R	R²	
Dependency of GDP on indirect taxation in Ukraine				
linear	$\tilde{y} = 269222,2 + 4361,8 x$ $4,77^{**} \quad 10,03^{**}$	0,967	0,935	100,54**
power	$\tilde{y} = 39118,6 x^{0,641}$ $66,87^{**} \quad 18,03^{**}$	0,989	0,979	325,12**
Dependency of GDP on VAT in Ukraine				
linear	$\tilde{y} = 156497,6 + 8982,8 x$ $5,50^{**} \quad 23,38^{**}$	0,994	0,987	546,80**
power	$\tilde{y} = 47772,0 x^{0,665}$ $61,58^{**} \quad 15,17^{**}$	0,985	0,970	230,15**
Dependency of GDP on excise taxes in Ukraine				
linear	$\tilde{y} = 231438,2 + 34201,7 x$ $2,66^* \quad 6,78^{**}$	0,932	0,868	45,99**
power	$\tilde{y} = 88108,7 x^{0,800}$ $42,07^{**} \quad 7,58^{**}$	0,944	0,891	57,48**

Dependency of GDP on international trade taxes and external transactions taxes in Ukraine				
linear	$\tilde{y} = -128263,0 + 108691,6 x$ -0,65 4,57**	0,865	0,749	20,87**
power	$\tilde{y} = 47873,8 x^{1,298}$ 24,24** 5,95**	0,914	0,835	35,42**

Note. ** – statistical probability of the model / coefficients with probability $p = 0,99$;

* – statistical probability of the model / coefficients with probability $p = 0,95$;

Thus, the existence of the strong influence of indirect taxes burden on the economic development parameters was proved together with the possibility to choose between the offered models to analyse the micro processes dynamics. The authors[8] analyzed existence of correlation connection between indirect taxes and sustainable development indicators in Ukraine, the latter take into account economic, social and ecological development. The model of multiple linear regression dependency of sustainable development index on individual components of indirect taxes in total was proved

$$Ind_St_Rozv = 0,605 + 0,021PDV - 0,053A - 0,068M;$$

$$(3,86**) \quad (3,76**) \quad (-3,93**) \quad (-1,84)$$

$$F_{rozr} = 8,84*; \quad R^2 = 0,898.$$

to be adequate to the output data with probability of $p = 0.95$. In addition, the regression coefficients are statistically significant with probability $p = 0.99$, indicating a statistically significant cumulative effect of the indirect taxes components. The results were evaluated for statistical reliability with the help of Fisher's and Student's tests [8].

Conclusions

The mentioned above models were tested and help to analyze the impact of indirect taxation on sustainable development indicators. They make it possible to justify the settings of fiscal monitoring and fiscal burden forecasting in the tax regulation mechanism of the economy in Ukraine. The models are based on correlation and regression analysis of the correlation connection existence between the indirect taxes, macroeconomic indicators and indicators of sustainable development in Ukraine. The study proved the existence of even relationship between indicators of indirect taxes in Ukraine and sustainable development indicators or macro parameters of GDP or GNP (Gross National Product) types; it also described the shape of such relationship. Other our papers show the overall impact of the individual components of indirect taxes on financial and economic security indicators in Ukraine. Our analytical supportive models of the tax regulation mechanism also reflect the tax burden impact on macroeconomic indicators based on correlations between indirect taxation and rates of

economic growth in Ukraine and take into account the parameters of sustainable development in the process of European integration [8,9].

Current observation necessity of macro processes fiscal management, the scientific and practical significance of such observation were the reasons to choose the described topics and methods of this study. The latter are based on parametric expansion of macroeconomic regulation models through adding the elasticity, economic security and sustainable development indicators.

It is offered to introduce the state fiscal monitoring system to implement the tax incentive function in Ukraine. We define the state fiscal monitoring system as a set of observation processes of the tax burden distribution and the dynamics analysis of indirect taxation, their influence on sustainable development indicators and security.

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