

Effective Taxation Modeling Based on International Experience

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Abstract

Foreign experience in taxation has been generalized in the article based on the analysis of Ukrainian fiscal system. Modern approaches in direct and indirect profit and consumption taxation have been determined. Effective taxation methodology based on the taxation burden management modeling has been proposed.

Keywords: private entity profit taxation; taxation efficiency; tax rate; taxation burden; taxation modeling; value-added tax.

1. Introduction

The taxation systems in some European countries have been formed under the influence of different socio-economic and political processes. The study of foreign taxation experience allows for improvement of Ukrainian taxation system with the aim of enhancing its effectiveness, investment climate improvement and entrepreneurial activity stimulation.

Only in the middle of XX century common features appeared within taxation system development connected to post-war economic reforms. At that time high level of state expenditures was accompanied by high taxes. It is worth to mention domestic scientists' achievements in studying some theoretical and practical taxation aspects. Mainly, A. Krysovatyi, P. Melnyk, A. Sokolovska, L. Shablysta and others pay much attention to current state taxation system reason determination, ways of its reforming, research into taxation system influence upon the development of country's financial sphere as a whole and upon its separate components [1 – 4]. But the taxation system modeling determination study aimed at taxation system effective functioning is relevant and calls for some further research.

The taxation system is based on taxation principles, first put forward by A. Smith. The scientist proved four basic principles that make the foundation for modern taxation system: taxation proportionality, determination, convenience and justice. Citizens must make payments to the benefit of the state proportionally to their income, claimed A. Smith. The tax, its volume, terms and payment method should be clearly determined and understandable for the payer. The author mentioned that tax should be paid at the most convenient time. Tax justice deals with the fact if its volume reflects on the payers' financial situation, as the tax should not encumber citizens' income [1, p.35].

D. Ricardo supported and developed A. Smith's thoughts in his works. He believed that «the best tax is the lowest tax». So, the tax justice should be the initial impulse to form taxation system and develop right effective relationship between taxation system subjects. Balance between state expenditure and income formed by means of taxes should be kept, claimed M. Turheniev. He proposed the following taxation principles:

- equal sharing of taxes;
- their correspondence to payer's income;
- tax determination;
- tax collection at convenient time;
- most of tax burden orientation towards net profit.

2. Main body

There is an idea that some countries have very complex and multi-level taxation systems. Tax value for the same taxes can be different in different countries. For example, in France indirect tax share in budget income is equal to 62.7 %, while in Holland it is 41.3 %. In order to determine the variety and gap among income tax rates in different countries, the taxation system comparison shall be done. Many countries use the progressive income tax rate system with totally different progressive characteristics and different basic maximum tax rate. Traditionally income tax is considered to be not so influential in comparison with profits tax, production duty, savings tax on different kinds of investment. The unified workforce market is now in formation in Europe, so almost all obstacles for capital migration are removed. It leads to enhanced differentiation in taxation systems, especially in maximum tax rates for the citizens. These taxes especially effect corporations head quarters, research institutes, production location that use highly qualified workforce. As the research results demonstrate, there are two basic taxation principles as for the income, received abroad:

1) territorial principle (used in France), when the income taxation is performed according to different rates, depending on the source of income (in its mere state this principle is the taxation of the income obtained only from the source within the country, while the income obtained abroad, is free from taxation);

2) residential principal, based on the fact that tax rate does not depend on the source of income obtained. This principal is applied by almost all the countries and, undoubtedly, there can appear the situation when one and the same income is charged firstly in the country of origin, and then in the income resident's country. To avoid double taxation in most of EU states-members the taxes, charged abroad, are taken into calculations within the country [6].

A special kind of tax used in some EU states-members is capital gain tax. In most of the countries this tax is charged not at the point of capital gain, but at the point of its disposal (i. e. after selling the shares). The rate for this tax is lower than the income tax rate in Belgium and France. In Germany, Holland, Italy citizens do not pay capital gain tax in case of long-term investments. Capital gain specific form is having profit (loss) because of currency exchange rates changes. Such profit is charged according to income tax rates, but in some countries this tax is not paid. For instance, in Great Britain changes in profit due to currency exchange rates changes is not considered to be a financial results.

One should separately mention such an important element in European countries fiscal police as value-added tax. Since the middle of 70-s of the XX century it has become the indispensable element within EU states-members taxation policy. Recently this tax can be treated as one of the examples of these countries taxation police harmonization. In summer of 1991 almost all EU states-members (except for Great Britain) agreed with the necessity of establishing minimal VAT rate of 15 %. Before that the recommended VAT rate was determined within the range of 9-19 % (low rate was 4-9 %). But, despite the reaching of this fundamental agreement as for value-added tax rates, it is still too early to talk about harmonization. For example, if in Spain regular VAT rate is 15 %, in Germany it is 14% (low rate is 6.5%), in France there is a rate of 18.6% (besides, there are rates of 5.5; 27.8 and 33.33%), and in Denmark there is even a rate 25%.

The European developed countries experience in charging VAT shall be studied in this connection.

In Holland there are two VAT rates: general (17,5%) and 6% for food products and medication. As for the goods meant for export, VAT is not charged. In Holland this tax is paid at each production and goods and services distribution stage. Thanks to its reduction in previous stages, VAT does not demonstrate accumulative character. Everyone liable to taxation is responsible for VAT (turnover tax) minus VAT already charged for expenses and investments. In case of negative balance the tax is returned. Some kinds of operation are excluded from value-added taxation: transfers and real estate rent payments; educational establishment services; social and cultural services; most of the services provided by banks; insurance services; non-profit organizations activity; public television and radio broadcasting; postal, telephone, telegraph services [7].

The Italian experience seems to be interesting: value-added tax has been introduced to substitute already existing turnover tax and now it remains one of the basic indirect taxes. From the view point of tax basis added value is made by the difference between sales revenue for selling goods and services within established period of time and the sum paid to raw material suppliers and included into production costs of goods and services produced. VAT is a proportional tax, though it has differentiated percentage rates. There are four basic VAT rates: Minimal (4% for primary commodities) and also 9 and 13%, including the most spread 19 % rate. Export goods, international services and operation connected to them are not charged due to the fact that they are not viewed as happening on

country's territory. That is why goods exchange international operations are charged on the territory of the receiving country. But invoices should be produced for all operations and they should be registered in an established order. Payer's duties include the fact that he has to be registered at VAT accounting office according to his place of residence (location of business entity). Within 30 days period since the beginning of entrepreneurial activities the subject has to make a statement: to fill in the required form at VAT accounting office and to get the company registry number. As for the legal entities, the same registry number will serve as a fiscal code. One should inform the VAT accounting office about any changes in elements, given in entrepreneurial activities beginning declaration, within 30 days period since the moment of their appearance. The same procedure is followed when entrepreneurial activities are suspended. There are special departments in fiscal bodies, responsible for extra VAT refund issues [8].

In Poland turnover tax was relatively slowly substituted for VAT. Initially VAT was put into operation in limitedly, and later due to the law implementation was enacted in 1993. Turnover tax basic rate was 20% for the total turnover sum according to enterprises' prices plus tax liability, and in case of import it included customs value plus customs duty. The tax rate was 5% for most of the tangible and intangible services as well as some manufactures products (food products, some goods for children, construction materials). The turnover of limited quantity of goods was charged according to different rates. VAT in Poland is general value and value-added tax, not so much tax relieves and exemptions are granted. Legal entities, enterprises not possessing the rights of legal entities and individual entrepreneurs pay this tax. Some kinds of manufactured goods and services (livestock farming, low processed agricultural commodities, and some construction objects) are relieved from the tax. Its basic rate is 22 %, preferential rate (some goods for children, construction materials, agricultural goods and services) is 7%. Zero rates are used in case of export sales, low processed goods, non-profit services: Health care, small business sales with total turnover less than 600 million zloty per year. Labor safety, electric, heat energy and coal are released from taxation.

Today common European taxation standard for corporation revenue is so-called imputation tax system. Imputation tax system is capable of increasing the investments and raising their quality, as this taxation system is more profitable for those corporation that pay. [9] Advance corporation tax (ACT) exists in Great Britain. Advance tax was introduced to create free payments to the budget. The volume of this tax is determined by dividend payment level. But advance tax is not one more dividend tax; its payment is treated as advance payment, which is taken into account when the actual payment occurs. In case when advance tax volume exceeds VAT volume, this tax advance payments can be taken as debt redemption for the previous or future value tax payments.

In France corporate revenue tax makes up 42%. On calculating the profit which is liable to taxation, dividends paid to shareholders, are not reimbursed but paid after the taxation. In Germany companies pay 25 % from the sum as a dividend tax. Dividend tax reduces the opportunities for shareholders' tax evasion. Taxation still remains one of the basic issues connected with so-called common European market harmonization. EU official taxation police since the times of the Treaty of Rome is to unify EU states-members taxation systems both from the perspective of tax charging methodology and mechanism and in terms of taxation rates volume.

In 1975 EU states agreed about the transition to corporation revenue advance taxation system with the rates ranging from 45% to 55%. Today taxation recommended rate vary from 30 to 40%. It means that in some countries (Germany, France and Greece) it is necessary to reduce corporate revenue taxation rates. On the other hand, countries within the lower interval (Luxembourg, Spain, and

Holland) cannot reduce corporate revenue taxation rates any more. Taxes play vital role in EU states-members' taxation systems, but also there is a notion of controlling fiscal legislation and levying. [10]

Taxation system is effective only if it functions within well-developed legal system with established legal framework for developing economic policy. Taxation system in Switzerland has its own features that distinguish it from the other countries. First of all, it is cantons independence in terms of taxation. Another peculiarity is the competition among cantons as each of them independently determines its taxation rates. If taxation rates are increasing, then the canton obtained more monetary funds, but, on the other hand, because of high taxation rates its population can simply move to "cheaper" canton. Intersectional competition between different cantons taxation system is an effective means of taxation rate reduction on the territory of the whole Switzerland. An important feature of Swiss taxation system in fiscal laws generalized interpretation. Here universal provisions are in power that gives fiscal body employees the opportunity to interpret fiscal laws individually. Economic factors in this connection are given the priority for the legal ones. To solve the disputes there are courts of different jurisdiction level. The first court type acts on the level of community. If the dispute cannot be resolved there, the decision is made by canton court. In case of disagreement the issue is discussed at court. Any issue can be resolved at this level. In Poland legal control over taxation is exercised by fiscal service special bodies. Within the Ministry of Finance alongside with other departments there are Departments of Taxes and Levies, Chief Inspectorate of Financial Control, Administrative and Budget Office. Each of 49 voivodships has its own Finance Chamber, and most of them also possess their Financial Departments [11].

Financial Departments keep the registers of tax payers, collect taxes and levies, control their calculation correctness and timely payments, and impose sanctions against fiscal law violations. Finance Chambers exercise control over financial departments' activity, check annual financial reports of the biggest tax payers. Fiscal services employees have free access to tax payers' financial information. Refusal to provide such information or its falsification is penalized by high fines (up to 1.5 million of monetary units). Very high professional demands for tax officers exist there: Higher education in economics, law or any other corresponding field of management, work experience in fiscal bodies no less than 5 years or treasury control practice no less than 3 years, qualification examination at the committee, appointed by General Inspector of Treasury Control.

In Italy, due to different reasons, controlling bodies can be either selected or chosen by lot. These are basic types of controlling, existing in Italy:

1. Analytical control when fiscal departments can make corrections to data declared based on accounting records transactions. Analytical control presupposes correct and exact accounting. This control form calls for accounting records and all enterprise papers checks.

2. Inductive control is held if the declaration does not fully demonstrate mentioned sources of income, some records are absent or accounting rules are violated.

3. Partial control is exercised directly according to payers' register. The example of the partial control can be the controlling practice based on expected probable income ratios.

4. Partial control is used in case when payer demonstrates the solvency that exceed revenue capacity declared, fiscal offices have the power to include required changes into stated total profit.

Italian law imposes special criminal liability norms for tax offenses. Tax offenses are treated as high crimes in the following cases: the profit of more than 50 million of liras is not included into the

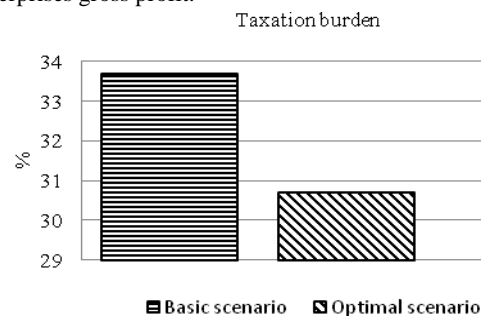
declaration; the accounting procedure is not mentioned in the records; the usage of dummy invoices; profit understatement. In the cases mentioned payer's accounting records are checked and all inspection reports are transferred to courts, where at the stage of pre-trial investigation the decision about trial should be produced.

All the checks and inspections are finalized by making the required report and then are transferred to direct taxation department, VAT department, record-keeping office and payer's card catalog, real estate taxation department and local fiscal body. [12]

Taxation systems in some countries of Europe have both common features and differences. As for Ukraine, it would have been reasonable to use foreign taxation system operating experience for national fiscal system. Switzerland can be used as a model for developed country. Generally the major principle for taxation system is legal or legislative basis. In Switzerland this issue is solved due to universal tax laws. This feature can be explained in such a way: all the taxation process parties can individually interpret the law content and select the leading ways for their activity and operation on their own. In Ukraine fiscal laws adoption process is incomplete, as they are constantly amended, supplemented, and sometimes even totally changed. All these cause negative effect on entrepreneurship in the country. Another example of Swiss taxation system experience implementation can be the fact that all cantons have the power to collect taxes and to act independently from the federal taxation body. Locality allows for quick response to changes that occur in particular region and to improve the situation at micro level. [14]

In Ukraine there is also a certain level of regional autonomy, but, in our opinion, it is quite limited. Tax volumes and rates are determined at the state level and they do not demonstrate any local nature. Granting more autonomy in necessary laws adoption in terms of tax rates and tax volumes to the regions can become an effective means of implementing international experience. The improvement example can be VAT rates differentiation. Such differentiation exists in most of the European countries. Low, universal and high VAT rates are established. [15] It creates an opportunity for the distribution of goods liable to this tax into primary commodities, valuables etc. Goods have different value; i. e. activity connected with them contains different risk levels that are why it should be reflected in the rates. In Ukraine VAT rate is the same for everybody (20%), but the introduction of several VAT rates could have improved the situation. In our opinion, these are only some proposal for Ukrainian taxation sphere improvement, taking into account foreign experience. The efficiency of the developed methodology for the taxation optimization criterion is proved by the visual comparison of taxation processes imitation model reviews in case of basic and optimal management scenario (fig. 1).

According to decision-making administrative principals, taxation burden combination values and factors that influence taxation burden are taken as taxation burden management scenarios, and they can changed in order to achieve more effective management and enterprises gross profit.



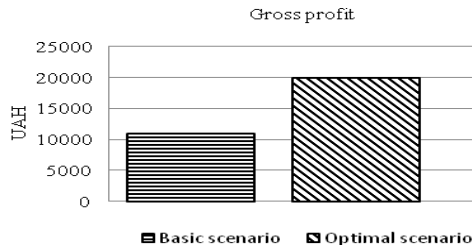


Fig. 1: The comparison of taxation burden management developed scenarios

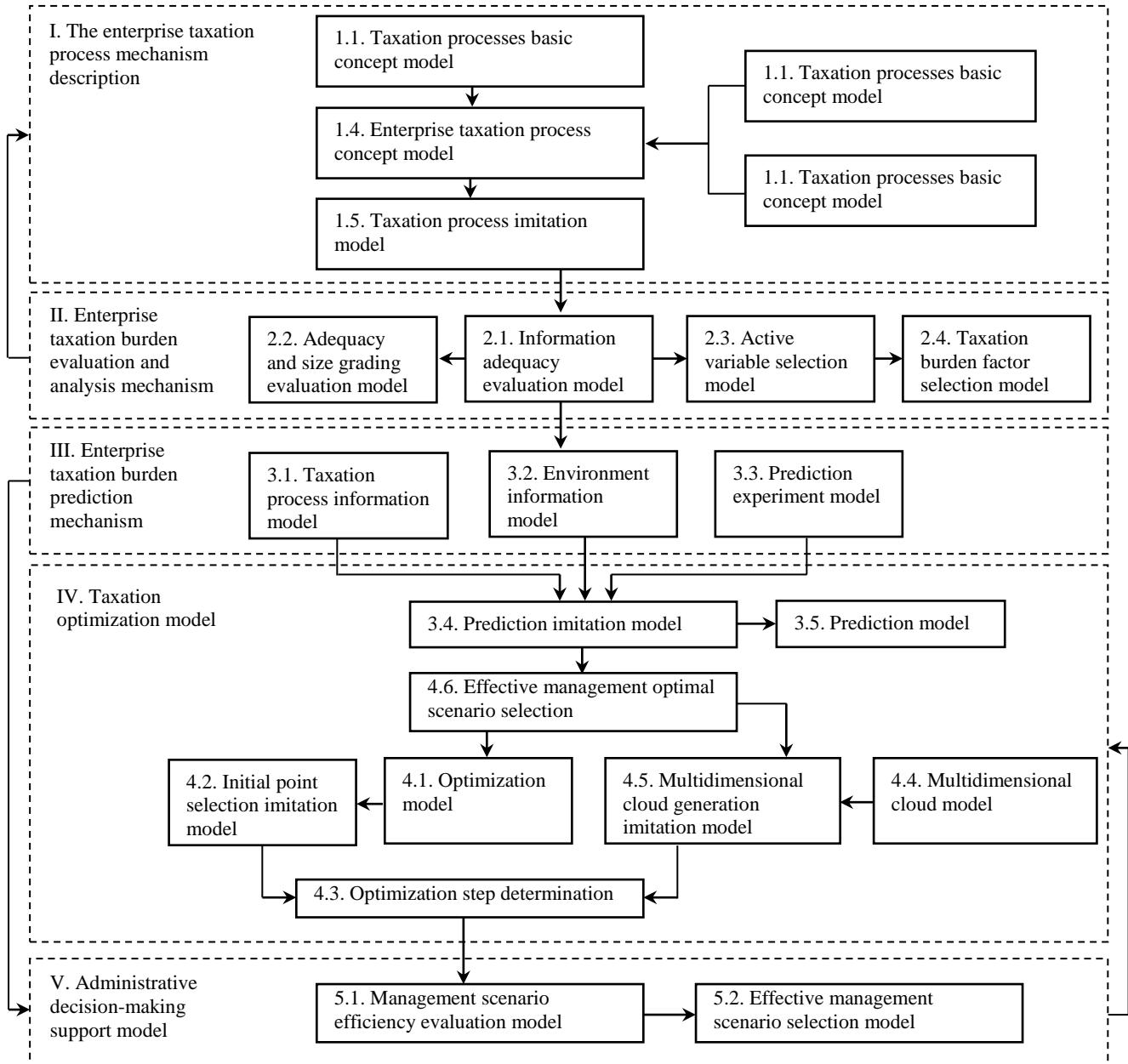


Fig. 2: Evaluation, analysis, taxation burden prediction, taxation optimization and administrative decision-making mechanism

Multiple predictive scenarios $\{Sc^i\}, \forall i \in (0, 1, \dots, S)$ are presented, where Sc^i is i predictive scenario for enterprise taxation burden management which can be presented as:

$$Sc^i = (x_1^i, x_2^i, \dots, x_n^i, TR^i, NP^i), \forall i \in (0, 1, \dots, S), \quad (1.1)$$

where $x_k^i, \forall k \in (1, 2, \dots, n)$ is k taxation burden factor in i predictive scenario; n is number of taxation burden factors; TR^i is taxation burden in i scenario; NP^i is gross profit of i scenario; S is number of management predictive scenarios.

Predictive scenario in $i=0$ case is considered to be basic one,

presupposes taxation burden factors invariability and can be presented as:

$$Sc^0 = (x_1^0, x_2^0, \dots, x_n^0, TR^0, NP^0). \quad (1.2)$$

Other predictive scenarios are called additional.

Taxation optimization criterion, formulated under the conditions of environmental impacts probable nature, which is formalized using random variables, mathematically can be represented as an optimization problem:

$$\begin{aligned} M(NP) \rightarrow \max \\ P(\underline{TR} \leq TR \leq \overline{TR}) \geq 1 - \alpha \\ \underline{x}_k \leq x_k \leq \overline{x}_k, \quad \forall k = 1, n \\ \{ \dots \} \end{aligned} \quad (1.3)$$

Where $M(NP)$ is mathematically expected enterprise gross profit; TR is enterprise taxation burden; \underline{TR} , \overline{TR} is corresponding lower and upper limits for taxation burden; α is significance level; \underline{x}_k , \overline{x}_k are corresponding lower and upper limits for variations of k taxation burden factor.

A solution of the problem (3.3) provides an opportunity of creating optimal scenario for taxation burden management, indicated as:

$$Sc^{opt} = (x_1^{(opt)}, x_2^{(opt)}, \dots, x_n^{(opt)}, TR^{(opt)}, NP^{(opt)}), \quad (1.4)$$

where $x_k^{(opt)}$, $\forall k \in (1, 2, \dots, n)$ – k is taxation burden factor; $TR^{(opt)}$ is taxation burden in case of optimal management scenario; $NP^{(opt)}$ is optimal enterprise gross profit.

The set of models that support evaluation, analysis, taxation burden prediction, taxation optimization and administrative decision-making mechanisms for creation and implementation of the scenarios mentioned is given in fig. 2.

3. Conclusions

Models given above enable effective taxation model creating in Ukraine with accountancy of appreciable economic fluctuations. Fiscal system model can help in changing taxation police priorities towards entrepreneurship stimulation and different level payments to budget. VAT rates differentiation can also stipulate total demand and total supply at regional and state level alongside with taxation pressure reduction for small and medium-sized business. Direct taxation development and additional taxation reduction will promote economic growth provision. Taxation burden management methodology will allow predicting enterprises spending according to its economic activity type as well as different level budget profit that can encourage macroeconomic policy formation and balanced budget.

References

- [1] Ivanov Yu. B. Podatkova systema : pidruchnyk / Yu. B. Ivanov, A. I. Krysovatyi, O. M. Desiatnyk. – K. : Atika, 2006. – 920 p.
- [2] Melnyk P. V. Rozvytok podatkovoï systemy v perekhidnii ekonomitsi / P. V. Melnyk. — Irpin : ADPSU, 2001. – 362 p.
- [3] Sokolovska A. M. Podatkova systema : Podatkova systema Ukrainy: M. Sokolovska. – K.: : NDFI, 2001. – 371 p.
- [4] Shablysta L. M. Podatky yak zasib strukturnoi perebudovy ekonomiky / L. M. Shablysta ; NAN Ukrainy ; In-t ekonomiky. — K., 2000. – 218 p.
- [5] Baranyuk Anastasiya Kak Chekhiya pytaetsya reshit problemy upadochnyh promyshlennyh regionov / Anastasiya Baranyuk // Gazeta "Prav da" №55 (421) 27.11.2014.
- [6] Ofitsiyni sait «Ukrainian Association of Public Relations» [Elektronnyi resurs]. –Rezhym dostupu: <http://www.uapr.com.ua/ua/>
- [7] Ofitsiyni sait «Publicity Creating » [Elektronnyi resurs]. –Rezhym dostupu: <http://www.publicity.com.ua/>
- [8] Stoika V.O. Podatky yak chynnyk zabezpechennia efektyvnoho suspilnoho vyrobnytstva. Serii: Investytsii: praktyka ta dosvid №6/2015. – P. 28-31
- [9] Tymoshenko N.Iu. Problemy rozvytku innovatsiinoi ta investytsiinoi diialnosti v Ukraini / Menshykh N.V. – Serii: Investytsii: praktyka ta dosvid №12/2015. – P.35-38
- [10] Insurance information institute [Elektronnyi resurs]. – Rezhym dostupu: <http://www.iii.org>
- [11] «Problemy konkurentospromozhnosti ekonomiky v umovakh yevrointehratsii aspekty» [Elektronnyi resurs] – rezhym dostupu http://old.niss.gov.ua/Table/23_240508/rekom.htm
- [12] Darrell K. Rigby Management tools / Rigby K. Darrell. – Boston.: Bain & Company, Inc. 2016. – p. 14–15.
- [13] Reitynh hlobalnoi konkurentospromozhnosti [Elektronnyi resurs] // Informatsiine ahentstvo Interfax-Ukraina. – Rezhym dostupu: <http://ua.interfax.com.ua/news/general/166276.html>
- [14] Sijbren Cnossen (2017) Corporation taxes in the European Union: Slowly moving toward comprehensive business income taxation? *International Tax and Public Finance*, Volume 25, Issue 3, pp. 808-840. <https://doi.org/10.1007/s10797-017-9471-2>
- [15] Simon James, Alison Edwards (2008) Developing Tax Policy in a Complex and Changing World. *Economic Analysis and Policy*, Volume 38, Issue 1, pp. 35-53. [https://doi.org/10.1016/S0313-5926\(08\)50005-1](https://doi.org/10.1016/S0313-5926(08)50005-1)
- [16] Varnaliy, Z., Onishchenko, S., & Masliy, A. (2016). Threat prevention mechanisms of ukraine's economic security. *Economic Annals-XXI*, 159(5-6), 20-24. <https://doi.org/10.21003/ea.V159-04>