Modelling the Trajectory of Implementing the Offshore Mechanism of Taxation Optimization Within the Conditions of International Tax Competition

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Abstract - The paper presents justification of the taxation optimization principles within the conditions of the tax competition. The concept of modelling the trajectory of implementing the offshore mechanism of business entities' taxation optimization is presented. The model of the trajectory of implementing the offshore mechanism of taxation optimization is developed.

Keywords - economic and mathematical modeling; tax competition; taxation optimization; offshore financial centers; trajectory

I. INTRODUCTION

The multifaceted nature of offshore financial centers is preconditioned by the wide range of their tax, financial, organizational, and economic instruments of assistance to business.

Simple offshore schemes, as well as other schemes of taxation optimization, are based on the universal principle of taxation, according to which only the income received from a source situated within the territory of a state is taxed [1].

The offshore mechanisms of taxation optimization have a duplicitous impact on the subjects that are directly or indirectly involved in corresponding processes. On the one hand, these are business entities that use the offshore mechanisms not only to minimize the tax burden but also to optimize the tax and financial system in general. On the other hand, this is the economic environment of a country that systematically receives less share capital and tax revenues.

The activity of offshore financial centers is formed on the basis of the organizational mechanism that consists of the following elements:

- institutional (the mechanism of interrelations among institutions within the process of carrying out the offshore activity);
- legal (the complex of the legal standards that govern the activity of offshore financial centers);
- organizational (the complex of the organizational approaches to arrange the activity of an offshore financial center);
- economic (the mechanism of the state regulation, taxation, and the investment and innovation mechanism);
- financial (the mechanism of generating and redistributing funds and cash flows);
- information (the complex of information and communication support of the activity of offshore financial centers) [2].

The legality of using the offshore mechanism is indisputable as taxation optimization is based on moving assets to areas with lower taxes within the framework of the law. The interaction of the set of independent tax rules stipulated by sovereign states creates disputes including the possibility of not only the double taxation of companies but also shifting profit to jurisdictions with more favorable taxation regime. This economic, if anything, and social phenomenon has (indirectly) resulted from the unsolved issues of excluding the double taxation in terms of the international legislation [3]. However, the results of the offshore business development have one-sided commercial interest, and that preconditions the search for state mechanisms of deterring and restricting the development of this international economic sector.

The development of the offshore business also provokes the escalation of the international tax competition as a product of the economic evolution, thus laying the foundation for creating a united tax area.

II. PRINCIPLES OF TAXATION OPTIMIZATION WITHIN THE CONTEXT OF TAX COMPETITION

Tax competition is the objective reality of the world economy – jurisdictions compete in the market of institutions and public benefits for engaging mobile factors of production (capital and workforce) that are the sources of tax payments. Tax competition does not reduce to tax factors only as, when selecting a jurisdiction, corporations and individuals take into account both the "quality" of public benefits and institutional services offered by a jurisdiction and the "price" of those – taxes. Tax competition obviously implies several macroeconomic advantages and burdens for participating states, which is partly preconditioned by the existence of the "power of..."
degree of integration of the country’s economy; level of foreign investments; technological level of the country’s development; Iik is the budget performance; Lk is the living standards.

similar to the competition and tax level of a country, taxation policy, taxation policies of other countries, the political factor, and other social and economic factors [5].

Based on the above, a set of parameters that characterize the competitive level of taxation in a country $R_k$ can be presented as a composition of the sequence:

$$R_k = \{S_k, P_k, VVP_k, I_k, T_k, L_k, B_k, D_k, L_k\}$$  \hspace{1cm} (1)

where $S_k$ is the size of a country; $P_k$ is the number of inhabitants; $VVP_k$ is the level of the country’s GDP; $I_k$ is the degree of integration of the country’s economy; $T_k$ is the technological level of the country’s development; $L_k$ is the level of foreign investments; $E_k$ is the parameter of the country’s import-export ratio; $PN_k$ is the level of the tax burden; $V_k$ is the business conditions; $VEZ_k$ is the availability of free economic zones; $D_k$ is the country’s budget performance; $L_k$ is the the living standards.

The development of tax competition among countries results from the processes of integration of national economies and globalization [6]. Evaluating the taxation within the context of the increased tax competition has led to the manifestation of the corresponding positive and negative aspects of its consequences. So, on the one hand, tax competition creates the loyalty of economic agents, and on the other hand, leads to mobile capital outflow.

It should be noted that all types of jurisdictions are characterized by various degrees of liberalization of the business environment, in particular, the tax conditions, nominal or real activity, and restrictions from the point of view of residence. Researchers underline the significance of such criteria for jurisdictions as cheapness and simplicity of registration and the cost of maintaining a company; the necessity of bookkeeping; openness of information; the efficiency of cash flow; and the image of the country of registration [5].

Similarly to the competition and tax level of a country, a certain jurisdiction is characterized by the composition of a sequence:

$$Jn_z = \{B_z, R_z, M_z, TB_z, Pr_z, Mech_z\}$$  \hspace{1cm} (2)

where $B_z$ is the business environment in a jurisdiction; $R_z$ is the tax risk in a jurisdiction; $M_z$ is the methods and models of taxation optimization that are effective in a jurisdiction; $TB_z$ is the level of tax burden in a jurisdiction; $Pr_z$ is the cost-effectiveness of business in a jurisdiction; $Mech_z$ is the organizational and economic mechanism of a jurisdiction.

The choice of a jurisdiction is justified for the purpose of taxation optimization in accordance with the strategy of a business entity’s activity, which, in its turn, is presented as follows:

$$Str_{obj} = \{G_{obj}, TP_{obj}, Pr_{plan_{obj}}, Rplan_{obj}, TBplan_{obj}\}$$  \hspace{1cm} (3)

where $G_{obj}$ is the strategy of a business entity’s activity; $TP_{obj}$ is the taxation policy of a business entity; $Pr_{plan_{obj}}$ is the planned cost-effectiveness of a business entity; $Rplan_{obj}$ is the planned risk level of a business entity; $TBplan_{obj}$ is the planned level of a business entity’s tax burden.

The choice is based on the business entity’s degree of loyalty towards various types of taxation optimization mechanisms and the availability of such for a business entity.

The complex of the types and regimes of offshore financial centers provides the possibility to use various mechanisms of business entities’ taxation optimization using nonresidents, the detailed description of which is beyond the scope of the research.

III. THE CONCEPT OF MODELLING THE TRAJECTORY OF IMPLEMENTING THE OFFSHORE MECHANISM OF TAXATION OPTIMIZATION OF BUSINESS ENTITIES

The context of the research sets the task of justifying the trajectory of implementing the offshore mechanism of taxation optimization of business entities under the existing alternative, financial and economic basis, and the infrastructure. The concept of modelling the trajectory of implementing the offshore mechanism of taxation optimization of business entities is based on the following assumptions:

- a business entity belongs to medium-scale or large-scale business;
- the activity of a business entity includes foreign economic operations;
- there exists a complex of available alternatives of the offshore mechanisms;
- a business entity possesses reliable information on the available alternative of offshore mechanisms;
- the infrastructure meets the requirements of carrying out foreign economic operations.

The structure of the concept is created within the integration of three component blocks:

- a block of studying a business entity;
- a block of studying the mechanism of taxation optimization of the results of the business entity’s activity;
- a block of modelling the trajectory of implementing the offshore mechanism of taxation optimization of business entities.

The first block of studying a business entity includes carrying out a financial analysis and SWOT analysis of a company’s activity that, as a result, provides the assessment...
of the financial status, advantages, drawbacks, and associated risks of the business entity’s activity. Evaluating the level of the tax burden and tax risks of the business entity’s activity is a significant component of the block, which preconditions the formation of taxation optimization criteria in accordance with the specific features of the activity.

The block of studying the mechanism of taxation optimization of the results of the business entity’s activity consists of summarizing the types of offshore zones with further description of their tax, financial, organizational, and economic characteristics. The advantages of using each type of offshore zones are studied within the context of assessing the associated risks of such business.

As a result, each jurisdiction is characterized by a composition of the sequence (2).

Further, the choice of a jurisdiction is justified for the purpose of taxation optimization in accordance with the strategy of a business entity’s activity, which, in its turn, is presented as a composition of the sequence (3).

The choice is based on the business entity’s degree of loyalty within the existing alternatives of the offshore mechanisms. The loyalty may be characterized as the complete dedication to a system, processes, objects, or subjects that occurs due to their effective functioning or rational formation and creates a close and stable connection among the parties.

IV. MODELLING THE TRAJECTORY OF IMPLEMENTING THE OFFSHORE MECHANISM OF TAXATION OPTIMIZATION

A business entity selects the offshore mechanism on the basis of the expert evaluation of the degree of its conformity to the requirements of a business entity based on the principles of fuzzy logic, as a business entity possesses the information that is rich in the linguistic data.

Lately, fuzzy modelling has been one of the most active and promising areas of applied research in the sphere of management and decision-making. Fuzzy modelling is especially useful when there is uncertainty in the description of technical systems and business processes that impedes or even excludes the usage of precise quantitative methods and approaches [7].

The theory of fuzzy mathematics is based on the understanding that the elements that comprise a set and belong to it by a certain parameter can be characterized by that parameter to various degrees and belong to such set also to a certain degree (as compared to the classical set theory where an element either belongs to a set or not) [8, p. 79].

The realization of the concept of fuzzy mathematics is based on the justification of the membership function. The membership function is the function \( \mu^i(x) : X \rightarrow [0; 1] \) that allows calculating for a random element \( u \) of the universal set \( U \), which is a complete set of values covering all the problem domain; and for the degree to which it belongs to a fuzzy set \( T \).

Within the context of the research, the Mamdani-type fuzzy controller can be used, which translates quantitative and qualitative data to linguistic terms only by fuzzification.

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In order to implement the model, a vector of initial variables \( X^* = (x_1^*, x_2^*, \ldots, x_n^*) \in U_i \) is formed, where \( y^* \in Y \) is solved as the existing dependence of the resulting variable \( y \) on the set of the input variables \( x_i^* \):

\[
y = f(x_1^*, x_2^*, \ldots, x_n^*)
\]

Further, membership functions are formed, which allows defining the linguistic evaluations of the input variables, and as a result, term sets are formed for the input variables and the resulting variable:

\[
M_i = \{t_1, t_2, \ldots, t_k_i\}
\]

\[
M^* = \{t_1, t_2, \ldots, t_m^*\}
\]

where \( k_i \) is the quantity of linguistic terms in the term set \( M_i \) of the input variable \( x_i \).

\( m \) is the number of linguistic values of the resulting variable \( y \).

At the following stage, the rules of decision-making

\[
V_p = \{x_1, x_2, \ldots, x_n, y\}, \quad p = 1, d
\]

are justified; their aggregate is a base of fuzzy knowledge summarized as a matrix. In general, the created system of fuzzy logical statements is formalized as follows:

\[
k_j = \bigcap_{p=1}^{n} (x_i = a_q^{j_p}) \rightarrow y = d_j, \quad j = 1, m
\]

Based on the obtained fuzzy inference model, a scenario modelling of the trajectory of implementing the offshore mechanism of taxation optimization is carried out, and as a result, out of the obtained set of scenarios \( \{S_1, S_2, \ldots, S_n\} \), where:

\[
S_i = (x_1^i, x_2^i, \ldots, x_n^i, Pr_{plan^i}, Rplan^i, TBplan^i)
\]

an optimal scenario is selected:

\[
S_{opt} = (x_1^{opt}, x_2^{opt}, \ldots, x_n^{opt}, Pr_{plan^{opt}}, Rplan^{opt}, TBplan^{opt})
\]

According to the selection criteria, which are changes of the parameters of the business entity’s strategy, for
example, the level of tax burden \( TB \) in the \( i \)-th jurisdiction as compared to the existing \( TB_0 \) and the ideal, that is:

\[
\Delta TB_i = \frac{TB_i - TB_0}{TB_0} \leq \Delta TB_{\text{optimal}} = \frac{TB_{\text{optimal}} - TB_0}{TB_0}
\]  

(7)

the trajectory of implementing the offshore mechanism of taxation optimization is justified. As a result, the evaluations of the quality and effectiveness of taxation optimization are subject to systematic monitoring.

V. CONCLUSION

A trajectory, which is essentially a motion path of a point or a body, is, within the context of this research, a way of implementing taxation optimization by a business entity, in particular, on the basis of using an offshore mechanism. In the theory of economic and mathematical modelling, the term is used, in particular, in the theory of optimal processes, the phase space theory, and the theory of economic development. That is, the offshore mechanism of the taxation optimization is studied as a motion of changes of its parameters within the phase space along a certain trajectory with respect to the optimality criterion set by a business entity; as the stability of the offshore mechanism of taxation optimization by a business entity against the error in the input data and the impact of the environment factors; and as the probable way of developing the trajectory of implementing the offshore mechanism of taxation optimization.

Finally, it should be noted that the research proposes the concept of modelling the trajectory of implementing the offshore mechanism of taxation optimization of business entities that consists of three blocks, and the connection among those preconditions the cause-and-effect relations between the elements of offshore financial mechanisms and business entities. The structure of the concept is formed by the integration of three component blocks: a block of studying a business entity; a block of studying the mechanism of taxation optimization of the results of the business entity’s activity; and a block of modelling the trajectory of implementing the offshore mechanism of taxation optimization of business entities.

The conceptual grounds are based on using the multicriteria evaluation, scenario modelling, methods of optimization and cognitive modelling. The realization of the proposed model allows justifying the trajectory of taxation optimization of business entities within the conditions of a certain jurisdiction from the point of view of effectiveness and risks.

REFERENCES


