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ANALYSIS OF ASSESSMENT METHODS OF TAX BURDEN: THEORETICAL ASPECT

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Abstract

The evaluation of the burden of taxation is a very important indicator influencing both the development of economy and the consumption peculiarities of the business subjects and individuals. This index is calculated using various methods, because the unanimous assessment methodology has not been prepared yet. Besides, the latter suit only for certain tax system, and as different tax systems are used in each country, the international comparison becomes simply impossible. Moreover, the calculation principles presented on the basis of them can differ significantly, which affects various assessment results. The index of tax burden is a very important index for comparison of international effectiveness of tax systems, whereas the existence of essentially different methods does not create necessary conditions. Thus the assessment methods of tax burden encountered most frequently in the scientific literature have been distinguished, identified and characterized in this article. After their advantages and disadvantages have been analyzed, the assessment model of tax burden is created, which allows assessing the size of tax burden more objectively with regard to Lithuania and other foreign countries that have different tax systems, and which suit for interstate comparisons.

Keywords: taxes, tax burden, tax burden evaluation, tax burden calculation.
JEL Classification: F40, H20, H21, M40.

Introduction

The taxes are necessary for execution of functions of each country. The totality of taxes paid in the country creates the tax system. The tax burden and its effect on tax payers is important index for businessmen, who pay taxes, and for the country that collects these taxes. The current changes made in Lithuanian Republic tax system determine new surveys and discussions - many market experts state that even after fulfilling reform of taxation the economic efficiency will not be achieved. One of the essential aspects needed to be discussed while examining the economic efficiency of taxes is the burden of taxation. Whereas taxes are not associated with the benefit to payer and are judged as a kind of a burden, state has to distribute taxes among the households and business subjects, insomuch, that it could reduce widely spread wealth inequality and to overcome the business depression that strikes Lithuania, as quickly as possible.

The tax burden is often discussed in Lithuania, but the scientists and market experts assess it very differently. This is because no unanimous calculation methodology of tax burden has been prepared and various authors calculate the tax burden using different methods, or they simply leave the intuitive evaluations, which are not based on any calculations. Therefore the present assessment of effectiveness of the country's tax system using the index of tax burden is simply impossible, because different tax systems exist in different countries, while the calculation methods of tax burden described in the scientific literature are applicable for certain country. If each country applies different assessment methods of tax burden, the international analysis loses any sense. This index depends on various factors, such as traditions, internal and international economic situation, structures of tax system, etc. When various taxes and business environment were analyzed, it was noticed that excessive taxes suppress the businessmen's initiative, stops the expansion of legal economics, induces tax concealment and shadow economy.

The aim of the research is to analyse the burden of taxation evaluation methods.

The object of the research – the burden of taxation.

To achieve the aim the following tasks were exercised:

- To examine the methodology to calculate the burden of taxation;
- To determine the factors influencing the burden of taxation;
- To ground the designed model.

The analysis of the scientific works, economical literature, and analytical works was carried out and the practice to design the evaluation model for the burden of taxation was performed. Methodology to evaluate the burden of taxation was analysed combining together monographic, logical, statistical analysis methods and comparative approach.

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Scientific research description and results

The taxes are the area, where calculations can be done, and even in several modes; however it is often forgotten that all the calculations should be considered with big reservations. Sometimes they may provide information whether the taxes are big or small, whether their burden is bearable or not.

Various calculation and assessment methods of tax burden are distinguished in the scientific literature (see figure 1).

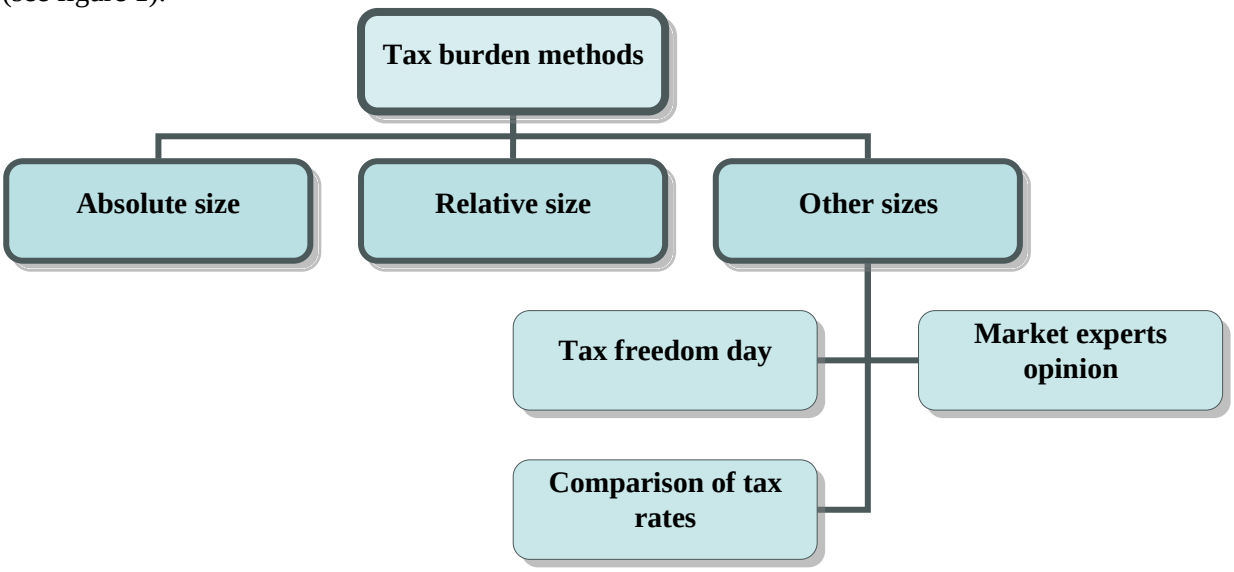

Figure 1. Methods of assessing tax burden

Each household and each company may calculate, how many taxes they have paid to the state. In absolute amount the tax burden is calculated as the total amount of taxes paid by the tax payers, i.e. general tax revenues of the State. According to this calculation method of tax burden, it includes all the taxes paid by the tax payers – to State budget and various funds. However, when the tax burden is calculated in this way, some problems may be encountered:

- All the taxes paid by tax payers cannot be reflected in one budget and more than one statistical resource will be needed to calculate general tax revenues of the State;
- The tax revenues of certain fund formed by the State are registered in the tax revenues of other State fund, as well.

The calculation of tax burden in the absolute amount allows comparing the changes of tax revenues of each country with regard to time. However, according to Conrad (1955), in order to compare the indexes of tax burden of several countries, the relative indexes are calculated, which use the following index of tax burden the most frequently – proportion of tax revenues and gross domestic product. The relative index, according to Elschner & Schwager (2005), shows what part of gross domestic product is redistributed in taxes and what amount may be compared in the time scale not only with regard of one country, but also internationally.

The size of taxes for one resident on average is expressed in absolute amount and is calculated as the proportion of all tax revenues of national budget and number of residents. However, this size is of little value because it does not take into account the differences in the level of national revenues, does not separate the taxes of households and business subjects, and thus it is not suitable for international comparisons. The most frequently used comparison method of tax rates is used for interstate comparative analyses of taxes, when the rates of the same tax are compared. However, according to Atrostic & Nunns (1991), the tax is not just a rate, but also a base. When the rates are compared, the superficial information is received. It is meaningful to compare it only if the tax base is the same; however it differs, especially in case of direct taxes.

The index of tax burden is the index meant to assess the size of paid taxes and other expenses related to the tax payment (Browning & Johnson, 1984). Despite the topicality of tax burden, no officially approved calculation methodology is present in our country.

The following calculation methods of tax burden are encountered in the Lithuanian and foreign literature:

- Methodology used by EUROSTAT;
- Methodologies used in the Lithuanian Free Market Institute;
- Methodologies suggested in the scientific literature.

The unanimous tax calculation methodology has not been confirmed yet in Lithuania, thus the Department of Statistics by the Lithuanian Government and Lithuanian Free Market Institute publish different indexes of tax burden. As the Department of Statistics is the one to present official data on tax burden to EUROSTAT, thus when the tax burden is calculated, as EUROSTAT announces, the paid taxes include only tax revenues of the State and taxes paid to various funds:

$$\text{tax burden, } \% = \frac{x_1 - x_2 - x_3 + x_4 + x_5 - x_6 + x_7}{x_8} \times 100, \quad (1)$$

where:
x_1 – national budget income;
x_2 – non-taxable income;
x_3 – European Union support for the country;
x_4 – compulsory health insurance fund income;
x_5 – state social security fund income;
x_6 – assignats;
x_7 – guarantee fund income;
x_8 – gross domestic product (Ekonomikos ir finansų departamento ekonominės analizės skyrius, 2007).

When this calculation method is used, only the revenues of national budget and various funds are taken into account. The calculated tax burden would be more precise if the levies not defined by the Lithuanian laws were also included. However, the calculation method of tax burden used by EUROSTAT is favored by market reviewers and the principle of this method is used to calculate the tax burden of all the Member States of the European Union.

The data published by EUROSTAT and Lithuanian Free Market Institute usually differ minimally, because the latter calculates the tax burden using the specified formula 1. The calculations of tax burden suggested by the Lithuanian Free Market Institute are not simply abstract numbers, as it is said by many experts of economic science. They provide certain calculation method, which could be used to calculate the real index of tax burden.

Lithuanian Free Market Institute calculates the index of tax burden by three modes:

- Assessment method based on the opinion of market participants (experts);
- Using the data of official statistics;
- Calculating the day of freedom from taxes (Lukaševičius, 1999).

Since 1997 the Lithuanian Free Market Institute has been surveying the main economic indexes of the country based on the assessments and forecasts of market participants. The assessment method based on the opinion of market participants uses the paradigm agreed by the experts, which follows the theory of rational expectations. When the tax burden is calculated by such method the contradictions, which are difficult to solve, appear, because the market participants may present only the assessments based on their experience and information they have. To generalize the assessments of experts, three means are used – arithmetical, moda and mediana (Lietuvos laisvosios rinkos institutas, 2002).

The second method defines the tax burden as the proportion of revenues of national budget and funds with the gross domestic product or gross national product expressed in per cent:

$$\text{tax burden, } \% = \frac{x_1 + x_4 + x_5 + x_7}{x_8} \times 100, \quad (2)$$

where:
x_1 – national budget income;
x_4 – compulsory health insurance fund income;
x_5 – state social security fund income;
x_7 – guarantee fund income;
x_8 – gross domestic product.

This method is not the most popular and it is often criticized by the market analysts because of revenues of national budget. When the index of tax burden is calculated, the LLRI experts use all the

revenues of national budget without taking into account the amount of tax-free revenues and support of the European Union, which may distort the real size of tax burden significantly.

The day of freedom from taxes is the day in the year, until which the part of goods created by average tax payer is given to the State:

$$\text{tax freedom day} = \frac{x_9}{x_8} \times 365, \quad (3)$$

where:
x_8 – gross domestic product.
x_9 – all income from taxes;

It is the index of relative tax burden that shows, which part of household goods is given to the State and redistributed through the national budget and non-budgetary funds (Fullerton & Rogers, 1993). The LLRI experts calculate the tax burden as the proportion of all forecasted tax revenues of the State (budgetary and non-budgetary funds) and forecasted gross national product, following the globally recognized methodology. It is used to calculate the day of freedom from taxes in the USA, Canada, Great Britain, Poland and other countries (Jakštonytė, 2009). When the tax burden is calculated using this methodology, the monetary expenses and time expenditure related to tax administration are not included, neither is the State borrowing, which may turn into tax burden in the future.

The index of the day of freedom from taxes is very remote from the individual and does not tell anything about its tax burden. That is because the total amount of taxes paid by everyone (households and business subjects) is compared to total amount of the created goods – gross national product. Usually that is the size of tax burden that is mostly used in various historical, geographical comparisons and discussions of politicians.

Two methodologies of the scientists, who analyze tax burden, are most frequently encountered in the Lithuanian scientific literature. That is the methodology suggested by G. M. Pajuodienė, and that suggested by D. Meškauskienė with M. Tvaronavičienė.

According to the methodology of G. M. Pajuodienė, in order to calculate the tax burden, first of all the data has to be collected and the total annual tax revenues of the country have to be calculated. When she was calculating total tax revenues, she was using various sources: national budget, State Social Insurance Fund, and Obligatory Medical Insurance Fund:

$$\text{tax burden, } \% = \frac{x_{10} + x_{11} + x_{12}}{x_8} \times 100, \quad (4)$$

where:
x_8 – gross domestic product;
x_{10} – national budget income from taxes;
x_{11} – compulsory health insurance fund income from taxes;
x_{12} – state social security fund income from taxes (Pajuodienė, 1998).

When Pajuodienė (1999) calculates tax revenues of national budget, she also includes part of tax-free revenues (the tax for national natural resources and tax for environmental pollution are added additionally, as well as the EU support to the country, which may distort the size of tax burden significantly. Therefore the calculated tax burden is a little bigger than actual. However, G. M. Pajuodienė includes the tax-free revenues to the calculations only because she considers that the structure of tax revenues is not formed precisely, and the taxes included into the tax revenues, as well as taxes collected in various countries, ate different. Besides, it is not indicated, which particular tax-free revenues are included by the author into the calculations.

Other authors (Meškauskienė et al. 2003) state that the tax burden is affected not only by the tax rate, presentation of the taxation bases or taxation rules. It is more important to take into account the changes of economic structure of the branch, which affect the size of tax burden, although other conditions remain the same. Therefore there are presented calculation of the index of tax burden and its dependency on GDP, according to the types of economic activity.

In order to calculate the tax burden D. Meškauskienė and M. Tvaronavičienė created the quantitative model of dependency of tax burden on structure of economic branches. The authors solve the dependency between the tax burden and GDP of the economic branch by the following mode:

- They form the statistical model that calculates the burden's index by dividing total tax revenues

from GDP.

- They perform quantitative survey of dependency of tax burden and GDP, according to the types of economic activity.

According to the present model of the authors, the size of tax burden is determined by two indexes:

- Changing tax revenues;
- Changing Gross Domestic Product (see formula 5). (Meškauskienė et al., 2003).

$$\text{tax burden, } \% = \frac{x_7 + x_{10} + x_{11} + x_{12}}{x_8} \times 100, \quad (5)$$

where:
x_7 – guarantee fund income;
x_8 – gross domestic product;
x_{10} – national budget income from taxes;
x_{11} – compulsory health insurance fund income from taxes;
x_{12} – state social security fund income from taxes.

If the tax revenues are decreasing or if the Gross Domestic Product is increasing, the tax burden is decreasing. It is possible to calculate the tax burden as suggested by M. Tvaronavičienė and D. Meškauskienė if a very thorough analysis is done and it is planned to present the tax burden in detail by dividing it, according to various sorts of economic activity. Besides, this calculation methodology is more acceptable and precise than the calculation methodology of tax burden suggested by G. M. Pajuodienė, because it takes into account the revenues of the Cover. Therefore it is possible to distinguish the following advantages and disadvantages of assessing methodologies discussed in the scientific article:

Table 1. Comparisons of tax burden calculation methodologies

Methodology	Advantages	Disadvantages
Methodology used by EUROSTAT	Only tax revenues of the State and revenues of various funds are assessed	The calculated tax burden would be more precise if the levies not defined by the Lithuanian laws were also included
Methodologies used by Lithuanian Free Market Institute		1. The market participants may present only the assessments based on their experience and information they have; 2. The calculation also includes the tax-free revenues of the State budget, for example support of the European Union
Methodology of the day of freedom from taxes		The monetary expenses and time expenditure related to tax administration are not included, neither is the State borrowing, which may turn into tax burden in the future
Methodology suggested by G. M. Pajuodienė	Only assessment of tax revenues is attempted	1. The calculation also includes the tax-free revenues of the State budget, for example support of the European Union; 2. The revenues of the Cover are not taken into account
Methodology suggested by D. Meškauskienė and M. Tvaronavičienė	The calculation methodology of tax burden suggested by G. M. Pajuodienė, because it takes into account the revenues of the Cover	

It is necessary to perform a thorough complex survey, which conclusions would not only provide possibility to calculate the real tax burden for the business, but would also still doubts regarding comparison of correct index of tax burden with the data published by other EU Member States. In order to calculate the tax burden in Lithuania, it would be the most meaningful to apply such calculation methodology, which would allow calculating the tax burden by dividing the State's revenues from gross domestic product, and also including such taxes, which weighs on businessmen and households, and which are not verified by the

Lithuanian laws. Thus following the done analysis of the scientific literature, the article's author suggests the following assessment mode of the tax burden:

$$\text{tax burden, } \% = \frac{x_{10} + x_{13} + x_{14}}{x_8} \times 100, \quad (6)$$

where:
x_{10} – national budget income from taxes;
x_{13} – various funds and budgets income from taxes;
x_{14} – levies not defined by the Lithuanian tax laws.

The tax revenues of the national budget should include only the revenues received from the taxes, excluding the revenues from fines, default interests and confiscations. Regardless the tax administration and recording procedure applied in the country, there should be included the tax revenues, which have been paid to various purposive funds and other budgets. Besides, it is necessary to include other levies, which are not provided in certain tax laws, for example, fess for various licenses, registers, which are not included as tax revenues of certain budget or fund, but are recognized as revenues of certain organizations.

Conclusions

- Assessment modes of tax burden: by absolute amount, by relative amount (proportion of tax revenues with GDP and proportion of employment-related tax revenues with employer's expenses for an employee), while calculating the index of tax burden and day of freedom from taxes.
- The main factors, which affect the tax burden, are tax rates and base, changing GDP, and culture of tax-payers (retreat to shadow economy with increase of taxes).
- The EUROSTAT methodology calculates the tax burden the most precisely. It is evaluated by most variables: national revenues to the State budget, revenues of State social insurance, obligatory medical insurance, the Cover, support of the European Union, assignations; however, it does not take into account other levies not regulated by tax laws.
- After the assessment modes of tax burden had been analyzed, their advantages and disadvantages had been identified, the methodology was suggested, where only the tax revenues (and not all) of various budgets and funds are divided from GDP. It also takes into account other fees payable by businessmen, which are not verified by certain tax laws. These are such fees as various levies, fees for licenses, certificates, permits, etc., which usually become revenues of certain governmental organizations, and not the tax revenues of budget or funds.

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