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## Estimation of impact of the changes made to the tax legislation to the tax receipts through fuzzy numbers

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### Abstract

The methodology for estimation of the impact of changes made in legislative base of tax system to the tax revenues is proposed in the paper. The adjustment of time series of tax revenues and relevant computer simulation of them was conducted by the fuzzy numbers according to the expert evaluation. Double expert estimation methodology was used in order to ensure the maximum reliability and truthfulness of the existing information. The relevant fuzzy regression dependency of gross domestic product (GDP) on the time series of tax revenues, the relevant fuzzy regression dependency on the time series of adjusted tax revenues was arranged.

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### 1. Introduction

The analysis of tax policy, forecasting of tax revenues, stability of tax system from point of sustainability of

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revenues to ensure the state expenses are issues of decisive importance for all states. That's why, the national institutes of tax policy implement necessary structural, administrative and legislative reforms for continuous improvement of tax system to meet to challenges of the global economic environment.

The tax policy institutions are obliged to take into account many factors in this process at the same time.

The impact of the economic growth and tax reforms on general tax revenues and structure is analyzed by Kanghua et al (2013). As it is noted in the period of 1950-2011 7 tax reforms were conducted in China and the current tax system has been formed and included value added tax and profit tax from entities. This article reviewed economic evaluation of 7 tax reforms, the essence of the impact of the tax reforms on the tax revenues and structural changes, the impact of the mutual relationship of the economy with taxation. The impact of the tax reforms on economic growth was studied over empiric test and empirical analyses. The authors analyzed the impact of the economic growth and tax reforms on tax revenues and tax structure with regression model.

The impact of the taxes on economic growth was studied by Santiago et al. (2012). The authors have investigated the connection of the long-term economic growth with change of the tax base according to studies of the countries having high, medium and low income level at least within 20 years. The goal of the article is to detect the restrictions by studying the connection between the tax structure and the long-term growth. The authors reviewed the methods offered by Pesaran (1999), Arnhold (2011), Kneller (1999) in this field, conducted deeper researches based on wide data, analyzed the impact of the main taxes on the economic growth, but they also used the empiric method.

The impact of the tax structure on the economic growth, the empiric evidences of OECD member countries in this field were reviewed by Jing Xing (2011). The evaluation of the impact of income-neutral tax structure on the long-term per capita income level was conducted for the period of 1970 – 2004. It has been noted that there are a few researches dedicated to relationship of economic growth with tax structure. The changes occurring in tax system of OECD countries were reviewed. As we know, there are many disputed questions in taxation system and this causes various scientific discussions. The advantages of consumer taxes in comparison with the profit tax are disputed in theoretical and empirical studies. For example, abovementioned author did not discover the advantage of the consumer taxes against of profit tax or the corporate tax against personal income. The only conclusion to be noted is that change of the tax revenues is associated with long term higher income per capita in the direction of property incomes.

Timothy and Torsten Persson (2014) have analyzed the problem of low taxes in developed countries. They note that in order to perceive the taxation, economic growth and the mutual relations between them, it is necessary to think about management of this growth process. This article reviewed political, social and cultural factors along with the factors influencing the economic structure (such as weak management institutions, non-availability of transparent information). The authors suggest the necessity of the dynamic approach for each of the above mentioned factors and this creates bilateral relationships between political, or social, or cultural factors and economy. Thus, it is evident that taxation is much more complicated problem than only tax collection, stable taxation is one of the main features of developed state of the government.

Taxation of incomes and economic growth, the issues of empiric analyzes of 25 rich countries of the OECD were reviewed by Margareta and Asa Hansson (2012). The impact of the taxation of incomes on economic growth was analyzed based on the indicators of 1975-2010. It was determined that tax deductions from corporate and personal incomes make negative impacts on the economic growth. The indirect methods were used in scientific researches conducted in this field, including analysis of the connection of general state expenses and economic growth, and studying of the impact of the tax deduction on economic growth. Only in some scientific researches (Koester and Kormendi (1989); Plosser (1992); Slemrod (1995)) direct connection was analyzed. The tax system reform is used in many countries of the world in order to strengthen the competitive advantage of the country. The indicators expressing the increase of demands for social protection and strengthening of tax competition make the methods of increasing tax efficiency more important, it expresses the necessity of studying the impact of various kinds of taxes on economic growth.

The design of the tax structure enabling to ensure economic growth is investigated by Asa et al. (2008); new grounds are created by indicating that the changes in tax deduction cause significant increase in some cases based on the indicators used in fields and individual campaigns. This practical tax reform requires creation of balance between efficiency, equality, simplicity and increase of income. The article reviews the tax structure and general tax direction, investigate the per capita GDP of tax system structure, the impact, use and labor productivity through its components, the ways directing the generalized tax construction of reform are described in general. The possibility

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