

EVALUATION OF THE FISCAL DECENTRALIZATION

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Abstract

The empirical studies of fiscal decentralization depend critically on the correct measurement of fiscal decentralization. Fiscal decentralization is an important aspect of fiscal institutions in both developing and developed countries. The article attempts to provide an overview of the fiscal decentralization concept and create methodology for evaluation of fiscal decentralization level using multicriteria decision making method. Methodology developed using Simple Additive Weighting (SAW) method. The article assesses the degree of fiscal decentralization in selected Europe Countries. The empirical results show that, in general, the degree of fiscal decentralization is higher in developed countries than in most developing Europe countries. Fiscal decentralization index in developed countries range from 0,75 till 0,52 (0.75 in Sweden and less 0.52 in Luxembourg). Fiscal decentralization index in Lithuania is the lowest among 14 Europe countries.

1. Introduction

The decentralization of public services and their financing is high on the economic agenda and has triggered a growing interest in measurement issues. Fiscal decentralization have become an interesting topic until today, because studies about fiscal decentralization are not only considered from economic perspective but also from other perspective such as politic, geographic, other subject. Appropriate indicators can help governments compare, diagnose and reform intergovernmental fiscal frameworks as well as assess the outcome of past reforms. They can help assess whether and to what extent decentralization fosters economic growth, raises efficiency of the public sector or contributes to macroeconomic stability. The issue has attracted the attention of both academics and international institutions such as the World Bank and OECD. Most of research works were evaluated only some parts of fiscal decentralization (revenue or/and expenditure), but this research work be used Multiple Criteria Decision Making (MCDM) method, be evaluated all fundamental principles of fiscal decentralization and be calculated index of fiscal decentralization.

The purpose of this article is to analyse literature of fiscal decentralization and evaluate with multicriteria decision making method the fiscal decentralization level in selected Europe countries.

To achieve stated object, the following goals have been set:

- to review the literature of fiscal decentralization;
- to evaluate with multicriteria decision making

method (Saw) the level of fiscal decentralization in selected Europe countries;

Research methods. Review of scientific literature, introduce methodology of evaluation of fiscal decentralization, analyse of statistical data.

2. Concept of fiscal decentralization

From historical point of view, the demand of good government and governance generated notion of fiscal decentralization. Actually, fiscal decentralization has become main issue for economist and government for last decades, and later it has been discussed to answer the urge in creating good government and governance across the country in the world.

The concept of fiscal decentralization could be understood in several terms. Understanding the concept depends on the context of using the terminology of fiscal decentralization. Some scholarly concepts has defined a fiscal decentralized system which means that central government delegates authorities and responsibilities or transfer functions to local government regarding to financial aspects. The aspects are how to share responsibilities and revenue sources between central government and sub-national government (provincial and district level). Another aspect is related to decision of the amount of authorities and responsibilities transferred to local government in order determine local expenditure and revenue (Davey 2003). In line with Boschmann (2009) also argue that authorities given to local government is intended to make a proper decision in allocating financial resources.

Furthermore to expand concept of fiscal decentralization, it was explained by Beer-Toth (2009) that fiscal decentralization including three elements namely local expenditure, revenue and budgetary autonomy. Those of elements interacts each other. First, local expenditure autonomy is defined as local government determines own expenditure in terms of public goods and services based on their local community needs. Second, local revenue autonomy means that local government has own authorities and responsibility in making decision related to source of their financial. Local budgetary autonomy appears when the local government would like to manage degree of revenue with respect to spending level.

Regarding to the explanation above, it could be concluded that in fiscal decentralization there a share of financial functions includes power and responsibility from central government different level administrative unit.

3. Methodology of fiscal decentralization index

Multicriteria evaluation methods have been used in Lithuania for more than 30 years. At first they were used for solving technological problems in construction. Various evaluation techniques beginning with simple (sum of places, geometric average), more accurate ones (SAW COPRAS) and finishing by the most complicated ones – TOPSIS, VIKOR, MOORA, MULTIMOORA, ELECTRE, PROMETEEY, PROMETEI II and others) are used. Actually, multicriteria methods allow us to quantitatively evaluate any complicated object described by a set of criteria, and they let to combine both maximizing and minimizing criteria expressed in various dimensions into one integrated criterion. The maximizing criteria imply that, if their values are growing, the situation is getting better, while for minimizing criteria this means a worsening situation. The integration is achieved by normalization which helps to convert all the criteria values into non-dimensional, i.e. comparable quantities (Ginevičius, Podvezko 2007). Many similar assignments, involving various technical, social and other problems have been solved. Many similar assignments, involving various technical, social and other problems have been solved: evaluation of the critical success factors for construction projects (Gudienė et al., 2014); strategic assessment of networking of a higher education institution (Nugaras, Ginevičius, 2015), quantitative assessment of quality management systems' processes (Ginevičius et al., 2015), assessment of a country's regional economic development (Ginevičius et al., 2015), evaluation of electric rail transport implementation in Vilnius city (Bureika, Steišūnas, 2015), evaluation of commercial industrial zone development (Komarovska et al. 2015), evaluation sustainability of a business project in the construction industry (Dabrovolskienė, Tamošiūnienė, 2016), evaluation of electricity generation technologies (Štreimikienė et al., 2016). Evaluation of local government revenue autonomy is a new object for using multicriteria evaluation methods.

Quantitative evaluation methods are based on the matrix of the criteria, describing the compared object, statistical data or experts' estimates $R = ||r_{ij}||$ and the criteria weights ω_i , $i = 1, \dots, m$; $j = 1, \dots, n$, where m is the number of the criteria, n – the number of the objects (alternatives) compared.

Methods differ in their complexity. The most widely used method is SAW (Simple Additive Weighting). The quantitative assessment of local government revenue autonomy may also be done by applying a multi-criteria model based on the SAW (Simple Additive Weighting) method (Hwang, Yoon 1981):

SAW multicriteria evaluation method is one of the most understandable and the simplest ones embodying indexes values and weights connection into a single evaluating size – method criterion. Revenue autonomy by SAW method can be calculate in this way:

$$S_j = \sum_{i=1}^m \omega_i \tilde{r}_{ij}, \quad (1)$$

where: S_j – the value of the quantitative assessment of local government revenue autonomy ω_i – the weight of indicator of local government revenue autonomy; $\tilde{r}_{ij}$ – the normalized value of indicator i of local government revenue autonomy. The multi-criteria assessment SAW method requires the nature of change of all indicators to be the same, i.e. all of them need to be maximizing or minimizing.

We need to determine of local government revenue autonomy of a country, therefore we should perform normalization employing the ESP method.

In this case, the normalization of the initial data can be performed by the formula (Ginevičius et al. 2015):

$$W = \frac{12S}{r^2 m(m^2 - 1) - r \sum_{j=1}^r T_j}, \quad (2)$$

where r_{ij} – the normalized value of indicator i ; $\max r_{ij}$ – the highest value of indicator i (obtained from statistical data or established through expert assessment).

Indexes weights can be determined in two main ways: direct and indirect. The first way is suitable when the number of evaluated indexes is not big – till some (Ginevičius 2007). Experts determine the weights of indexes in parts of a unit at once. This technique is very simple, understandable and convenient to apply. When the number of evaluation indexes increases, it becomes problematic to apply it. The reason is that it is harder for an expert to determine the correlated relations of indexes weights from the point of view of an examined phenomenon. At the same time the incompatibility of opinions grows which often exceeds allowable limits. The best known one is T. Saaty hierarchy analysis method (Aghdaie et al. 2013). In this case the experts compare only two indexes, but not all at once. The other one which is less widespread for the present, named FARE method, is also grounded on reciprocity of indexes (Ginevičius 2011). On the basis of minimal initial information about the main index influence on other system indexes, the interrelations and strength of all the rest indexes are determined by applying an analytical technique. It allows to form completely coordinated matrix of indexes interactions and to calculate the weights of a larger number of indexes considerably more accurately.

The weight values can be used in further multicriteria evaluation, provided that experts judgments are consistent (in concordance). The concordance level can be determined by Kendall's concordance coefficient W (Kendall 1970):

$$W = \frac{12S}{r^2 m(m^2 - 1) - r \sum_{j=1}^r T_j}, \quad (3)$$

where r is the number of experts, m – the number of the criteria considered.

In fact, the concordance degree of experts' estimates is determined by the value χ^2 rather than the concordance coefficient W (Kendall 1970):

$$\chi^2 = Wr(m-1) = \frac{12S}{rm(m+1)} \quad (4)$$

It has been shown (Kendall 1970) that if the value of χ^2 calculated by formula (4) is larger than its critical value $2\chi^2_{kr}$ taken from the distribution table of χ^2 with $v = m - 1$ degree of freedom and the significance level α chosen to be close to zero, then the statistical hypothesis about expert estimates' consistency is adopted.

4. Level of Fiscal decentralization in Europe countries

The main purpose of this section is to calculate fiscal decentralization index for a range of developing and developed Europe economies.

For research was selected these **Europe countries** - Estonia, Latvia, Lithuania, Poland, Slovakia, Slovenia, Hungary – developing countries. Developed Europe countries (United Kingdom, Denmark, Netherlands, France, Finland, Sweden, Luxembourg) were selected for comparison with developing Europe countries

The weights of fiscal decentralization of the country were determined by interviewing experts. The estimates of all criterias provided by 10 expert from different countries (such like Austria, Italy, Rumunia, Slovenia and other, see 1 table).

Expert	1	2	3	4	5	6	7	8	9	10
Country										
Austria									+	
Italy	+									
Lithuania				+				+		+
Portugal							+			
Rumunia		+	+							
Slovenia					+					
Turkey						+				

Table 1. Experts by countries (Source: authors)

The concordance coefficient $W = 0.74$ was calculated by formula (3). The value of $\chi^2 = 33.25$ calculated by formula (4) exceeds the critical value $\chi^2_{kr} = 11.07$ with the significance level $\alpha = 0.05$. It shows that experts' judgements are consistent and the criteria weights

(2 table), calculated based on expert estimates can be used in multicriteria evaluation.

In the last step (formula 1) was calculated index of fiscal decentralization in selected Europe countries (see Figure 1)

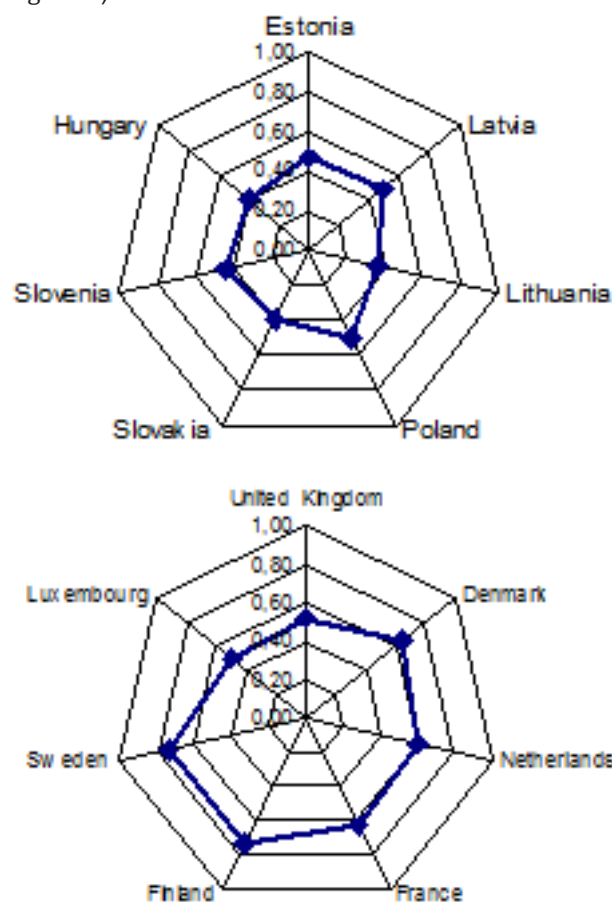


Fig. 1. (a) Developing Eastern and Central Europe countries; (b) Developed Europe countries

Calculation results are shown in 1 figure for developing Europe countries (a) and developed (b) other Europe countries. As seen in Figure 1, the highest index of fiscal decentralization of selected Europe countries has Latvia (0.49) and lowest in Lithuania, only 0.36. In contrast to the situation in the developed countries, where fiscal decentralization index is high then 0.5 (see Fig. 1 b.) fiscal decentralization index range from as high as 0.75 in Sweden and less 0.52 in Luxembourg. Fiscal decentralization index in Lithuania is the lowest among 14 selected Europe countries.

Name of indicators	Autonomy of revenue (V_1)	Intergovernmental fiscal transfer (V_2)	Autonomy of expenditure (V_3)	Autonomy of borrowing (V_4)	Total
Weight of the indicator	0.378	0.161	0.289	0.172	1.0

Table 2. Weights of fiscal decentralization indicators of the country (Source: compiled by authors)

5. Conclusion

Multicriteria evaluation methods have been used in Lithuania for more than 30 years. At first they were used for solving technological problems in construction. Their universal nature allowed to start applying them later in analysing socioeconomic systems, especially in quantative evaluating of the processes which have such nature and for evaluation of expressions position. Evaluation of fiscal decentralization is a new object for using multicriteria evaluation methods.

The degree of fiscal decentralization of Europe countries in developed countries is higher then in developing Central and Eastern Europe countries. This results show that local government in developed countries (such like Sweden, Denmark and other) has more power for financial solutions then in developing countries (Estonia, Poland and other). Fiscal decentralization index in developed countries range from 0,75 till 0,52 (0.75 in Sweden and less 0.52 in Luxembourg). Fiscal decentralization index in Lithuania is the lowest among 14 Europe countries.

The principles of the integrated evaluation of fiscal decentralization were developed and the methodology integrating the qualitative analysis methods fis fiscal decentralization indicators, scenarios analysis and complex quantitative evaluation was offered. Quantitative evaluation is based on the concept of fiscal decentralization as an aggregate of components and the use of a model created by applying formalization and multicriteria evaluation methods. This serves as an important theoretical tool for developing strategic decisions.

6. References

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