

## Evaluation of the Fiscal Decentralization: Case Studies of European Union

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*Fiscal decentralization has been widely discussed at various levels and from various perspectives. The Organization for Economic Co-operation and Development (the OECD), similar to the World Bank, also pays great attention to it. Fiscal decentralization has always been an interesting investigation topic, and the researchers, in addition to considering the future of the economy, study this problem from different perspectives, i.e. geographic, political and others. The effect of fiscal decentralization on the economic development of the state has been investigated by various authors. Three different hypotheses provide the proofs of the positive effect of fiscal decentralization. The main advantage of fiscal federalism are efficient and adequate public services which are provided locally through the mobility of the citizens, voting power and competition between the local governments in the created ecosystem. The potential advantages of the competition among the local government powers are similar to the advantages associated with the competition on the private markets. The paper is focussed on fiscal decentralization of the state. It aims to investigate the theoretical aspect of the impact of fiscal decentralization on the economic development to calculate the index of fiscal decentralization and to evaluate the effect of fiscal decentralization on the economic development in the particular states of the European Union. Thus, Bulgaria and Lithuania have the lowest fiscal decentralization index of EU-13 (0.28), while the Czech Republic has the highest index (0.46). The researchers have proved the effect of fiscal decentralization on the economic development of the EU-13 states to be statistically significant and positive. The originality of this paper is that it introduces a theoretical model for evaluating the fiscal decentralization effect on the economic development and assesses the fiscal decentralization effect on the economic development of the particular EU-13 states.*

**Keywords:** *the Effect of Fiscal Decentralization; Economic Development; the States of the European Union; Fiscal Federalism; Fiscal Decentralization Index.*

### Introduction

The history of the formation of the local government began around 500 years BC. Since the times of the ancient Greece the term "democracy" (Gr. demos - People, kratos - Power) has been used (Grillo & Nanetti, 2019). The theoretical description of decentralization problems can be found in the philosophers and politicians works of Rousseau, Mill, de Tocqueville, Montesquieu and Madison from the 17th-19th centuries. The works revealed that there was no trust in the central government, while smaller democratic government units were considered to be able to guarantee the principal human freedoms and rights (Faguet, 1997). In the second half of the 20th century, the theory of fiscal federalization was created in the Western countries. Systematic analysis of fiscal decentralization could now be performed to help reduce a complicated and inactive state apparatus (Bird & Wallich, 1993). According to the International Organization for Economic and

Cooperation Development (OECD, 2013), decentralization and funding of public services in recent years has led to the increasing interest from politicians. The importance of local authorities was also highlighted by the President of the European Committee of the Regions (CoR), Mercedes Bresso, in the report in Brussels stating that the high economic level 2020 should be maintained in 2020 (Kyriacou *et al.*, 2017). The level should be increased to include local and regional authorities as in many countries local authorities are a major factor in pursuing their economic policy. The phenomenon of fiscal decentralization has been thoroughly analysed at various levels and from various perspectives. It is also of particular importance to the OECD and the World Bank.

Despite the increasing interest in fiscal decentralization and its effect on the states' economic development, the performed research had not given a straightforward answer to the solution of the considered problem and the results were even contradicting one

another. One of the main problematic features is associated with various indicators of fiscal decentralization (Oates, 1993; Davoodi & Zou, 1998; Thieben, 2005; Thornton, 2007; Szarowska, 2014; Lozano & Julio, 2015). It lacks a comprehensive evaluation of fiscal decentralization, covering all fiscal decentralization aspects. Most of the researchers in this field measure fiscal decentralization using the indicators of decentralization of income or costs and ignoring the dimensions of intergovernmental transfers and loans, which are also the components of fiscal decentralization. Another highlighted problem is that the studies assessing the effect of fiscal decentralization on the economic development were mainly performed in a specific country (Yongyou & Yuping, 2012; Lozano & Julio, 2015), in the OECD states (Rodriguez-Pose & Erzura, 2011; Blochliger, 2013; Baskaran & Feld, 2013), the European Union (EU) countries (Szarowska, 2014), or in various world countries (Davoodi & Zou, 1998). However, contradicting research results suggest that the effect of fiscal decentralization on the economic development of a state should vary in all the states or their groups. Not many studies have been performed to compare the effect of fiscal decentralization on the economic development by dividing the countries according to their current economic level (Davoodi & Zou, 1998).

Now, no integrated model exists for assessing the level of fiscal decentralization in the state as well as its effect on the state's economic development. Consequently, there is a need for developing a fiscal decentralization assessment pattern which could allow a comprehensive evaluation of the fiscal decentralization level and its impact on the

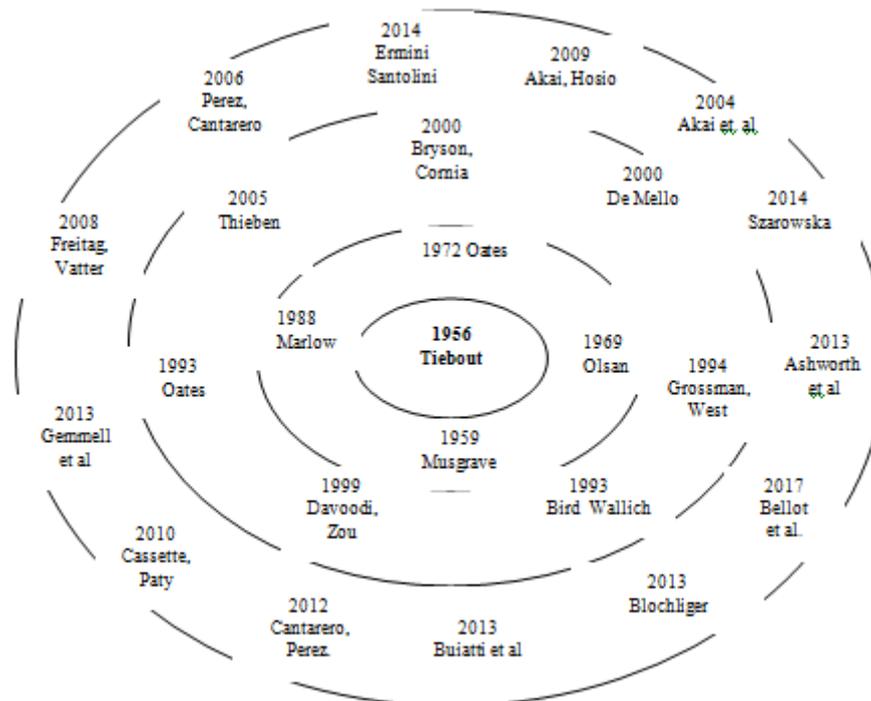
state's economic development enabling the right decisions to be taken by distributing public finances and ensuring their economic efficiency.

*The object of the paper is* fiscal decentralization of a state. *The paper aims* to investigate the theoretical aspect of the fiscal decentralization effect on the economic development, to calculate the fiscal decentralization index and to evaluate the fiscal decentralization effect on the economic development in the particular states of the European Union (EU-13).

### Overview of the Literature

The academic interest in fiscal decentralization started in the 1950s. The paper by Tiebout (1956) on the theory of the local government's expenditure laid the foundation for endless discussions about the impact of fiscal decentralization on the state's welfare (Slavinskaite, 2017). In 1959, Musgrave's theory of fiscal federalism was singled out as an independent economic science and was later followed by Oates (Oates, 1972). A new impetus for the development of a democratic self-government was given by the EU's creation. On September 1, 1988, the European Charter of Local Self-Government went into effect. It sets out the common European standards for the protection and extension of the local self-government's rights and freedoms, including the financial autonomy of local authorities.

The main research papers analysing fiscal decentralization are grouped according to the year of the study and are presented in Figure 1.



**Figure 1.** The Main Research Papers Investigating Fiscal Decentralization

Source: Slavinskaite (2017)

Fiscal decentralization research papers may be classified into four categories (OECD, 2013; Slavinskaite, 2017):

- *Growth.* The fiscal decentralization impact on the economic growth. The latest works on this topic are as follows: Thornton (2007), Akai *et al.* (2007), Rodriguez-

Pose *et al.* (2009), Baskaran, Feld (2009), Rodriguez-Pose, Ezcurra (2011), Baskaran, Feld (2013), Gemmell *et al.* (2013), Szarowska (2014), Sun *et al.* (2017);

- *Deficit and debt.* Freitag, Vatter (2008), Schaltegger, Feld (2009), Baskaran (2010), Buiatti *et al.* (2013), Rompuy (2015) Bellot *et al.*, (2017) are researchers who focus on deficit and debt. Fiscal decentralization may have an impact on the government’s budget deficit and, simultaneously, on the public debt growth;

- *Public sector size.* Cassette, Paty (2010), Baskaran (2011), Cantarero, Perez (2012) Liberati, Secchi (2013), Asword *et al.* (2013), Silvia, Malešević (2014), Sijabat (2016) researches focus on public sector size. The public choice problem is studied based on the size of the government’s sector;

- *Inequality.* Fiscal decentralization can affect regional inequalities. Akai, Hosoi (2009), Song (2013), Sacchi, Salotti (2014), Kyriacou *et al.* (2017) researches

focus on regional inequalities or regional discrepancies in income.

During the last decades, a particular attention was paid to identifying how fiscal decentralization and the economic development of a state are interrelated. To assess the impact of fiscal decentralization on the economic development foreign authors most often use the Barro's endogenous growth model (Barro, 1990), where Cobb-Douglas's production function has multiple entrances, including public and private expenditure (Davoodi & Zou, 1998; Akai & Sakata, 2002; Akai *et al.*, 2004; Carrion-i-Silvestre *et al.*, 2008; Perez & Cantarero, 2006; Gemmell *et al.*, 2013; Thushyanthan & Lars, 2013; Filippetti & Sacchi, 2016).

Scientists used the Barro’s endogenous model with the empirical methodology to assess the fiscal decentralization effect and the economic development studies presented in Table 1.

Table 1

**The use of Barro’s Endogenous Model for Evaluating the Fiscal Decentralization Effect on the Economic Development**

Author, Year	Time period, sample	Empirical methodology	The impact of fiscal decentralization on the economic development	
			Positive	Negative
Davoodi, Zou (1998)	1970–1989 46 countries	Panel data. Fixed effect model. OLS		
Akai <i>et al.</i> (2004)	1992–1996 50 US states	Panel data. Fixed effect model. OLS	+	+
Iimi (2005)	1997–2001 51 countries	OLS	+	
Baskaran, Feld (2009)	1975–2001 23 OECD states	Panel data. Fixed effect model. OLS		
Rodriguez-Pose, Ezcurra (2011)	1990–2005 21 OECD states	OLS	+	+
Gemmell <i>et al.</i> (2013)	1972–2005 23 OECD states	PMG, Lag	+	+
Szarowska (2014)	1995–2012 17 European states	Panel Data. Generalized Method of Moments	+	+
Filippetti, Sacchi (2016)	1970–2010 21 OECD states	Panel data. Fixed effect model.	+	
Ganaie <i>et al.</i> (2018)	1981–2014 14 Indian states	OLS	+	+

Source: Authors

A large number of factors affect economic development (Ignatavicius *et al.*, 2015; Travkina & Tvaronaviciene, 2015; Genys, 2016; Aleksejeva, 2016), including fiscal decentralization, which also has a particular role in it (Musgrave, 1959; Oates, 1972).

**Research Methodology**

The proposed model for assessing the state's fiscal decentralization consists of two parts: the evaluation of the fiscal decentralization degree and its impact on the economic development of the country. The proposed model for assessing fiscal decentralization of the state is shown in Figure 2. The generated model of evaluating fiscal decentralization creates the prerequisites for further scientific challenges and can be used to analyse both fiscal decentralization of the particular states, as well as the fiscal decentralization effect on the states' economic development.

In the first phase of the survey, the country's Fiscal Decentralization index (FDI) is determined by the SAW

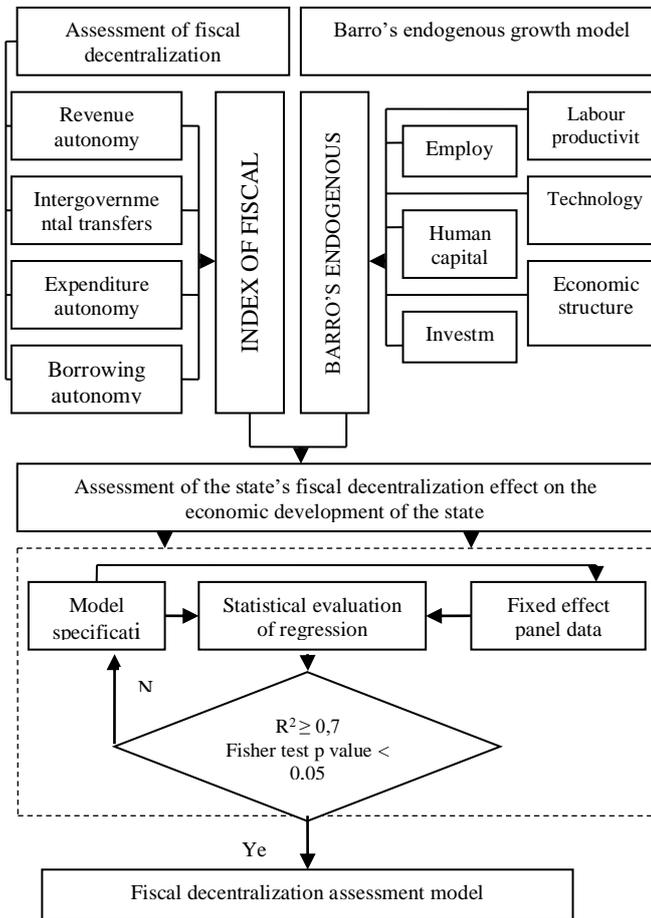
multi-criteria method. This methodology of the research has been created assuming that the impact of fiscal decentralization on the economic development of the state is determined by the level of the state’s economic development. Therefore, the unified states of the EU are divided into two groups by GDP per capita as the states of high and low levels of economic development. The empirical verification of the author's model was made for 13 unitary low economic growth states of the EU. The unitary states with a high level of economic development or all the EU states will be analysed in other works of the authors.

The index embraces four measures of 24 fiscal decentralization indicators (revenue autonomy - 5, intergovernmental transfer - 4, expenditure autonomy - 10 and borrowing autonomy - 5). Finzgar and Brezovnik (2019) presented a new fiscal decentralization index on the basis of the European Charter of Local Self-Government. This new index methodology could be used for evaluating the effect on the economic development due to fiscal decentralization in the European Union states.

The index of fiscal decentralization is determined by the SAW multi-criteria method. It was chosen after studying the works of other authors (Simelyte, 2014; Bruzge, 2014; Dobrovolskiene, 2016). SAW as a multi-criteria assessment method is among the oldest and the simplest approaches based on the integration of the index values and weights into a single evaluating criterion.

Taking into account the complex nature of the state's fiscal decentralization, encompassing the expenditure autonomy, the revenue autonomy, the borrowing autonomy and the intergovernmental transfers, the assessment of

fiscal decentralization should embrace the indicators describing these criteria. Therefore, a decision was made to develop the integrated indicators for the assessment of the fiscal decentralization. It should be noted that the aim of compiling the fiscal decentralization index is not, as usual, just the comparison of the level of fiscal decentralization with those of other countries, but rather the obtaining of the quantitative expression of the fiscal decentralization (factors) of the present state and using it at further stages of the research (Figure 2).



**Figure 2.** The Theoretical Model for Evaluating the Fiscal Decentralization Effect on the Economic Development of the State  
 Source: Slavinskaite (2017)

An empirical analysis of regression is preferable as it allows for incorporating many states, including a high dataset variation (Cottarelli & Jaramillo, 2012). The technique of the fixed effect panel data model was chosen to estimate the regression model parameters. The study includes the considered equation of Lapinskiene et al. (2014; 2015). The fixed effects model is a statistical model where the levels (values) of independent variables are fixed (constant). Moreover, in response to the levels of independent variables there is a change only in the dependent variable.

Regressions include as follows:

The annual growth rate of GDP per capita is a dependent variable.

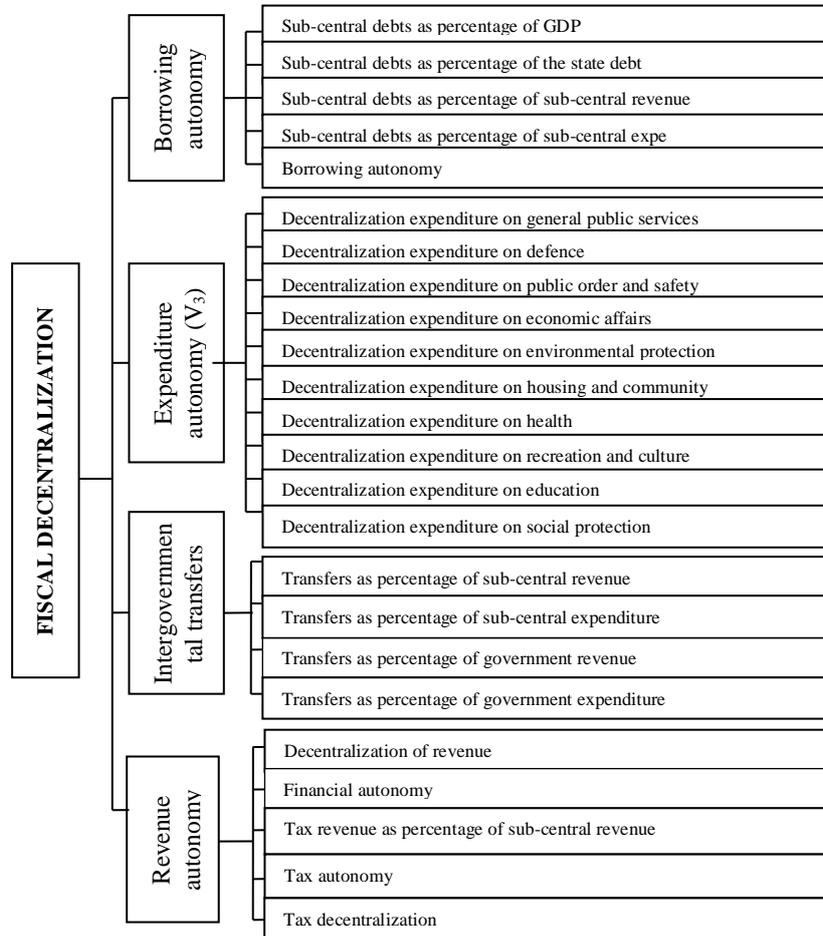
The fiscal decentralization index and six control variables are independent variables found relevant for almost all types of economic development research (Cantarero & Gonzalez, 2009; Nguyen & Anwar, 2011; Stailova & Potonov, 2012; Gemmel et al., 2013; Baskaran & Feld, 2013; Lazano & Julio, 2015).

The ordinary method of the least squares (OLS) was applied to the procedure of determining the regression model parameters (Thornton, 2007; Rodriguez-Pose & Ezcurra, 2011):

$$GDP_{it} = \alpha + \mu_i + \beta_1 FDI_{it} + \beta_2 LAB_{it} + \beta_3 INV_{it} + \beta_4 HUM_{it} + \beta_5 EML_{it} + \beta_6 TECH_{it} + \beta_7 STRUC_{it} + \varepsilon_{it} \quad (1)$$

The control variable contains: 1) the investment ratio to GDP (INV); 2) the economic structure (STRUC) 3) human capital expenditure for education (HUM); 4) technology (TECH); 5) GDP per working capital (LAB); 6) employment (EML). The fiscal decentralization index (FDI) is made of four different variables (sub-indexes):

1) the autonomy of revenue; 2) the autonomy of expenditure; 3) transfers from other government levels to subnational government; 4) the autonomy of borrowing (Figure 3).



**Figure 3.** The Theoretical Model for Evaluating the Fiscal Decentralization Effect on the Economic Development of the State  
 Source: Slavinskaite (2017)

Fiscal decentralization index may be calculated using the SAW method as follows:

$$S_j = \sum_{i=1}^m \omega_i \tilde{r}_{ij}, \quad (2)$$

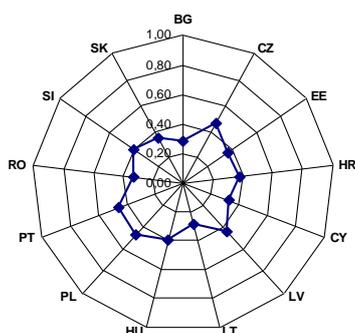
where  $S_j$  is the value of the quantitative assessment of the fiscal decentralization index;  $\omega_i$  is the weight of the fiscal decentralization indicator;  $\tilde{r}_{ij}$  is the normalized value of the indicator  $i$  for the local government revenue autonomy. The nature of change has to be the same for all indicators in the SAW method, implying that they should be maximizing or minimizing.

The results are statistically processed by using the MS „Excel“ and „Eview“ software. The evaluation model of the effect of fiscal decentralization on the economic development was created by integrating the fiscal decentralization index into the Barro’s endogenous growth model.

In the first step, the fiscal decentralization index was calculated. The index embraces 24 indicators of four fiscal decentralization measures (revenue autonomy - 5, intergovernmental transfer - 4, expenditure autonomy - 10, borrowing autonomy - 5).

The analysis data was taken from OECD Fiscal decentralization Database, Word Bank database and Eurostat database and analysed for the period from 2006 till 2016 years. The calculation results for the EU-13 countries are shown in Figure 4.

## Results and Discussion



**Figure 4.** The Index of Fiscal Decentralization in 2016

Source: Authors

Figure 4 shows that the fiscal decentralization index ranges from 0,28 to 0,46. Bulgaria and Lithuania (0,28) have the lowest fiscal decentralization indexes, while Czech Republic has the highest index (0,46).

The real data include thirteen selected European Union states (EU-13): Bulgaria (BG), Cyprus (CY), Czech Republic (CZ), Croatia (HR), Hungary (HU), Estonia (ES), Latvia (LV), Lithuania (LT), Poland (PO), Portugal (PT),

Slovak Republic (SK), Slovenia (SV) and Romania (RO). The empirical verification of the authors' model was performed for 13 EU unitary states with low economic growth level, which were selected using 2 clusters by GDP per capita. The first cluster is EU-13. The research results for the states of another group will be presented in other studies of the authors.

The study of the fiscal decentralization effect on the economic development of the EU-13 states was performed. The estimated regression (the fixed effects model) demonstrates that both fiscal decentralization and other economic growth factors comprising the model affect the economic development of the EU-13 states. P value for all the variables of the model is <0,05. It means that the variables produce the effect on the economic growth of the state and it is statistically significant with the 95 percent probability. The slope coefficient is 0,1049. The measurement of fiscal decentralization has a 1-year delay effect (lag). Thus, the effect takes place one year later (Table 2).

Table 2

**The Results of Fiscal Decentralization Effect on the Economic Development in the EU-13 States**

Variable	Coefficient	Std. error	T-Statistic	p-value
C	-0.035	0.022	-1.627	0.107
FDI(-1)	0.105	0.054	1.951	0.044**
LAB	0.244	0.029	8.204	0.000***
INV	0.079	0.009	8.499	0.000***
HUM	0.222	0.041	5.407	0.000***
EML	0.016	0.006	2.439	0.017**
TECH	0.025	0.009	2.927	0.004**
STRUC	0.027	0.015	1.782	0.048**
Effects specification				
R <sup>2</sup>				0.995
F-statistic				947.56
Durbin-Watson				1.303
Prob (F-statistic)				0.0000

Source: Authors

Note:\*\*\* statistical significance at 1 % level; \*\* statistical significance at 5 % level.

The value p of all the variables comprising the model (Table 2) is –less than 0,05, which shows that the variables have a statistically significant impact on the economic development at 95 percent probability. The model's determination coefficient R<sup>2</sup> reaches 0,99, which implies that the model is sufficiently accurate. The model's reliability is proven by F–statistics, which are less than 0,05. In estimating the error autocorrelation, the Durbin-Watson coefficient of 1,303 is taken into consideration. The lower autocorrelation is 1,637, while the upper reaches– 1,832. The Durbin-Watson coefficient drops within the range without autocorrelation. Hence, the model does not exhibit autocorrelation.

In assessing the fiscal decentralization effect on the economic development in the EU-13 states the survey results have shown that in this group of the states a positive (p <0,5) impact on the economic development can be observed because of fiscal decentralization.

The evaluation of the generated model of fiscal decentralization creates the prerequisites for further scientific challenges and can be used both for analysing fiscal decentralization of the states and the effect of fiscal decentralization on the states' economic development.

## Conclusions

The analysis of the scientific literature has revealed the connection between two essential scientific research fields: the estimation of fiscal decentralization and the economic development of the states. The assessment of the effect of fiscal decentralization on the economic development of the state is increasingly important in the assessment of fiscal decentralization.

The cooperation between various branches of science (mathematics, economics, etc.) and various fields of research (theory of public finance and theory of economic growth) provides the basis for developing a qualitatively new model of evaluating the fiscal decentralization effect on the economic development of the states.

The proper implementation of multi-criteria decision-making methods allowed for developing a fiscal decentralization index and assessing the fiscal decentralization level, as well as comparing them in the EU-13 context. The index combines four dimensions of fiscal decentralization and 24 indicators (i.e. revenue autonomy - 5, inter-budget transfers - 4, expenditure autonomy – 10 and borrowing autonomy - 5). The fiscal decentralization index

value may fluctuate from 0 to 1. A bigger value means a higher level of fiscal decentralization.

The integration of the fiscal decentralization index into the Barro's endogenous growth model resulted in the creation of the model for assessing the fiscal decentralization effect on the economic development. The following results were obtained consistently with the proposed model. It has been proved that the effect of fiscal decentralization on the economic development of the states is statistically relevant and positive for EU-13. The all variable values included in the model have  $p < 0,05$  at 95 % probability. The model's determination coefficient  $R^2$  is 0,995. The model is justified as F-statistics are less than 0,05.

The developed fiscal decentralization model creates the prerequisites for performing further scientific tasks, including the creation of a model appropriate for analysing both the level of fiscal decentralization of particular states and the effect of FDI on the economic development of the states. The author's model can be applied not only to analysing the European countries, but also to the states all over the world. These studies should be continued, taking into consideration the fact that public finance decentralization is currently among the more practical solutions for strengthening the competitive advantage in the regions through the targeted use of local resources and the promotion of the national economic growth.

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