

## FISCAL DECENTRALIZATION AND ECONOMIC GROWTH IN SELECTED EUROPEAN COUNTRIES

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*Received 07 November 2016; accepted 18 December 2016*

**Abstract.** The paper analyses the fiscal decentralization effects on economic growth in unitary countries of European Union for the period 2005–2014. The empirical analysis was based on the multiple regression method. The fixed effect panel model was used as framework for the analysis. In order to examine the different impact of fiscal decentralization, the same analysis was applied to subsets of countries categorized into two groups according to countries' level of economic development. This further analysis found that there is positive relationship between fiscal decentralization and economic growth in low level of economically developing countries and no relationship in high level of economically developed countries. These results suggested that fiscal decentralization is not always instrument for promotion of economic growth, which means that country's economic development level is an important factor when introducing reform of fiscal decentralization. The originality of this article – new fiscal decentralization index and evaluated fiscal decentralization level influence for countries economic growth.

**Keywords:** EU countries, index of fiscal decentralization, growth of economic, panel data, fixed effect panel model, local government.

**JEL Classification:** E62, H71, H72.

### 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 has become an interesting topic until today because researches about fiscal decentralization (FD) are not only discussed from the economic perspective, but also from other perspectives such as politic, geographic, other subjects. 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 (EG), raises the efficiency of the public sector or contributes to macroeconomic stability. The issue has attracted the attention of both academics and international institutions such as OECD and World Bank.

In the scientific world, the question of how fiscal decentralization effects economic growth of country has been analysed by many scientists (Oates 1999; Akai, Sakata 2002; Thiessen 2003; Iimi 2005; Buser 2011; Szarowska 2014). The arguments for the positive influence of fiscal decentralization consist of 3 different hypothesis: 1) the diversification hypothesis (also known as the decentralization theorem); 2) the Levethan hypothesis; 3) the productivity enhancement hypothesis.

Briefly summarized, the central argument of fiscal federalism is that the efficiency and adequacy of locally provided public services are ensured through citizen mobility, voting power and competition among local governments in adequate ecosystem creation (Wahl, Prause 2013; Tunčikienė, Drejeris 2015; Fuschi, Tvaronavičienė 2016).

**The purpose of this article** – to evaluate fiscal decentralization impact on economic growth in selected unitary European countries in a period 2005–2014.

**The following goals have been set to achieve stated object:**

- to review the scientific literature of fiscal decentralization;
- to evaluate with fixed effect model (FEM) how level of fiscal decentralization effects economic growth in unitary Europe Union countries.

Research methods: graphical analysis, grouping, summing up, regression analysis. This paper has three parts: 1) literature review 2) empirical methodology 3) regression results. Conclusions are in the last section.

## **1. Literature review of fiscal decentralization and economic growth**

Economic growth is affected by wide arrow of factors (Travkina, Tvaronavičienė 2015; Ignatavičius *et al.* 2015; Aleksejeva 2016; Genys 2016), among which fiscal decentralization plays certain role (Musgrave 1959; Oates 1972). What is the relationship between FD and economic growth? According to the fiscal federalism theory (Tiebout 1956; Oates 1972), local government fiscal autonomy ensures efficient allocative outcome, which may eventually lead to higher rates of growth.

The first theoretical discussion of fiscal decentralization from economic point of view dates back to the middle of the twentieth century. Musgrave (1959) and Tiebout (1956) formulated the theoretical foundations of fiscal federalism. These ideas were further developed by Oates (1972, 1993, 1999) and Brennan, Buchanan (1980).

Traditionally, the economic aspect of decentralization was analysed through the framework of fiscal federalism. At this point, it is important to distinguish differences between concepts of fiscal decentralization and fiscal federalism. While fiscal federalism is a framework for analysis of nation's public sector, decentralization is a process of public sector activities assignment to government different levels. Thus, fiscal federalism is the system of reference within which the process of decentralization or centralization occurs.

The results of numerous researches on the relationship between FD and economic growth, both from a cross-country and regional perspective, are very contradictory.

There is no one answer to this question. Some researches find a positive relationship (Akai, Sakata 2002; Akai *et al.* 2004; Thiessen 2003; Iimi 2005; Buser 2011; Szarowska 2014), whereas other show that FD and economic growth are either negatively correlated (Davoodi, Zou 1998; Rodríguez-Pose, Ezcurra 2011; Baskaran, Feld 2013). There is a group of researchers who have found relation between FD and economic growth, but it is not statistically significant (Davoodi, Zou 1998; Thornton 2007; Asatryan, Feld 2015). In Table 1, summarized empirical findings of researches on the impact of FD on economic growth in cross – countries, are presented:

Table 1. Empirical findings in cross-countries terms

Authors	Year	Time period, sample	Method	Main results
Thiessen	2003	1973–1998 OECD countries	OLS	FD by 10% increases EG by 0.15% points
Eller	2004	1972–1996 22 OECD Countries	Fixed Effects	There is a positive effect of FD on EG
Iimi	2005	1997–2001 51 countries	OLS	FD by 10% increases EG by 0.6% points
Thornton	2007	1980–2000 19 OECD countries	OLS	Negative effect of FD on EG
Rodríguez-Pose, Kroijer	2009	1990–2004 Countries of Central and Eastern Europe	Fixed Effects	Negative effect of FD on EG
Rodríguez-Pose, Ezcurra	2011	1990–2005 21 OECD countries	OLS	Negative effect of FD on EG
Gemmell <i>et al.</i>	2013	1972–2005 23 OECD countries	Pooled Mean Group	FD decreases EG, revenue decentralization increases EG
Baskaran, Feld	2013	1975–2008 23 OECD countries	Fixed Effects	Negative effect of FD on EG
Szarowska	2014	1995–2012 17 unitary Europe countries	Generalized Method of Moments	Positive effect of FD on EG
Abdellati <i>et al.</i>	2015	2002–2008 18 East European countries	Generalized method of moments	FD has a positive impact on EG

Source: compiled by author.

The most widely used cases in the regional studies are obviously Chinese provinces and American states, because both countries offer sufficient samples (50 American states and 28 Chinese provinces) substantial heterogeneity among region in terms of economic and fiscal performance and reliable statistical data for a long period of time. Nevertheless, there is no consensus on the direction and significance of this relationship (Zhang, Zou 1998; Lin, Liu 2000; Jin, Zou 2005; Akai *et al.* 2009). In Table 2, summarized empirical findings of studies on the influence of FD or federalism on economic growth in the Chinese, Spanish and USA, are presented.

Table 2. Empirical findings in terms of federative countries

Authors	Year	Time period, sample	Method	Main results
Stansel	2005	1960–1990 314 US Metropolitan areas	Robust OLS	FD has a positive impact on EG
Akai <i>et al.</i>	2009	1992–1997 50 US States	Maximum Likelihood	Positive relationship between FD and EG
Cantarero, Gonzalez	2009	1985–2004 Spanish regions	GLS and fixed effect	There is not statistically significant linkage between FD and EG
Hammond, Tosun	2011	1970–2000 USA Metropolitan and no metropolitan areas	Fixed effect, lag	Negative and positive effect of FD on EG
Chu, Zheng	2013	1996–2005 31 Chinese provinces	Two-stage least squares	FD has a positive impact on EG
Jalil <i>et al.</i>	2014	1979–2009 China’s provinces	ARDL, bounds tests, pooled mean group estimators	There is positive and statistically significant linkage between FD and EG
Yang	2016	1990–2012 29 Chinese provinces	Fixed effect	Positive relationship between FD and EG

Source: compiled by author.

Some empirical studies (Davoodi, Zou 1998) found that FD effects are different in developed and developing countries: FD has negative correlation on economic growth in developing countries, but FD and economic growth has no significance relation in developed countries.

## 2. Data and methodology

The main purpose of the paper was to analyse the effect of FD on economic growth in unitary European Countries for the period 2005–2014 (data available was till 2014). Luxembourg and Malta have not been included, because economic growth of Luxembourg is bigger than other EU countries, fiscal decentralization level of Malta is very low. This empirical analysis was based on the multiple regression – Fixed effect model.

In order to examine the different impact of fiscal decentralization, the same analysis was applied to subsets of countries categorized into two groups according to the economical development stage of countries by GDP per capital:

- a high level of economic development countries: Denmark (DK), Finland (FI), France (FR), Ireland (IR), Italy (IT), Netherlands (NL), Sweden (SW) and United Kingdom (UK);
- a low level of economic development countries: Bulgaria (BG), Croatia (HR), Cyprus (CY), Czech Republic (CZ), Estonia (ES), Hungary (HU), Latvia (LV), Lithuania (LT), Poland (PO), Portugal (PT), Slovak Republic (SK), Slovenia (SV), Rumunia (RO).

The data for the analysis was taken from OECD Fiscal decentralization Database (OECD 2016), Word Bank (2016), Eurostat (2016). Fiscal decentralization has many indicators: expenditure decentralization, revenue decentralization, borrow power and intergovernmental transfer. In this paper fiscal decentralization index (FDI) as fiscal decentralization variable was used (see Slavinskaitė, Ginevičius 2016).

Reseachers have modified popular economic growth models (Solow model, Bario's endogenous growth model and Diamond's overlapping generations model) to intercorporate a potential relationship between fiscal decentralization and economic growth (Davoodi, Zou 1998; Akai *et al.* 2004; Nguyen, Anwar 2011; Baskaran, Feld 2013; Yushkov 2015; Filippetti, Sacchi 2016). The most common analytical framework that links expenditure decentralization to growth is a model developed by Davoodi and Zou (1998), which is a modified version of Bario's model (Barro 1990), where economic growth is a function of multiple inputs including private capital, human capital and multiple public spending. Growth endogenous Bario (1990) model has examined the aggregate government spending, (where both aggregate public consumption and aggregate public investment were included) and an effect on economic growth of country.

The model adopts the following form:

$$y_{it} = \alpha + \beta_y Z_{it} + \beta_z X_{it} + \varepsilon, \quad (1)$$

where  $y_{it}$  is the GDP per capital for each country and year,  $Z_{it}$  – fiscal decentralization measure (FDI) for each country and year,  $X_{it}$  – quantitative indicators – is a set of six control variables that were found to be significant in almost all economic growth researches (Nguyen, Anwar 2011; Baskaran, Feld 2013; Cantarero, Gonzalez 2009; Stoilova, Patonov 2012; Gemmel *et al.* 2013; Yushkov 2015; Lazano, Julio 2015).

The majority of the researches *dependent variable* use the real GDP per capita (in cross-country researches) or income of real provincial (state) (in particular countries researches).

The basic panel models are defined in Table 3.

Our control variable (X) include: 1) ratio of investment to GDP (INV); 2) economic structure (STRUC); 3) human capital – expenditure for education (HUM); 4) technology (TECH); 5) GDP per working capital (EML); 6) employment (EML).

Table 3. Evaluation steps of FD effects on economic growth

Stages	Steps of research	Model and method
<b>1 Hypothesis:</b> Fiscal decentralization effects economic growth		
1. Evaluate relationship between FD and economic growth	1.1 Evaluate relationship between FD and economic growth in EU-21	Data normalization: $(GDP_{it} - \min GDP_{EU}) / (\max GDP_{EU} - \min GDP_{EU})$ (2)  Fixed effect panel data model, OLS method $BVP_{it} = \alpha + \mu_i + \beta_1 FDI_{it} + \beta_2 LAB_{it} + \beta_3 INV_{it} + \beta_4 HUM_{it} + \beta_5 EML_{it} + \beta_6 TECH_{it} + \beta_7 STRUC_{it} + \varepsilon_{it}$ (3)
<b>2 Hypothesis:</b> FD has a different effects on the countries' economic growth depending on the level of economic development		
2. Evaluate FD relationship on economic growth in different EU-21 countries groups	2.1 Evaluate FD relationship on economic growth in high level economic development countries	Fixed effect panel data model, OLS method: $BVP_{it} = \alpha + \mu_i + \beta_1 FDI_{it} + \beta_2 LAB_{it} + \beta_3 INV_{it} + \beta_4 HUM_{it} + \beta_5 EML_{it} + \beta_6 TECH_{it} + \beta_7 STRUC_{it} + \varepsilon_{it}$ (4)
	2.2 Evaluate FD relationship on economic growth in low level economic development countries	Fixed effect panel data model, OLS method: $BVP_{it} = \alpha + \mu_i + \beta_1 FDI_{it} + \beta_2 LAB_{it} + \beta_3 INV_{it} + \beta_4 HUM_{it} + \beta_5 EML_{it} + \beta_6 TECH_{it} + \beta_7 STRUC_{it} + \varepsilon_{it}$ (5)

Source: compiled by author.

Fiscal decentralization index (Z) consists of four different variables (subindexes): 1) revenue decentralization; 2) expenditure decentralization; 3) transfers to subnational government from other government levels; 4) borrow decentralization.

The study employs the equation form used by Lapinskiene *et al.* (2014, 2015). The purpose of the model was to know whether fiscal decentralization effect on economic growth is the same in high economic development countries and low economic development countries. In the last part was presented research results.

### 3. Fiscal decentralization effects on economic growth empirical analysis

In the first step was calculated index of fiscal decentralization (Slavinskaitė, Ginevičius 2016). Results of calculation are shown in Figure 1 (a and b) for countries of high economic development level and countries of low economic development level. As seen in Figure 1, fiscal decentralization index ranges from as high as 0.71 in Sweden and less 0.30 in Ireland in high economic development countries. In contrast to the situation in the low economic development countries, where fiscal decentralization index is less

then 0.5 (see Fig. 1). The fiscal decentralization highest index has Hungary (0.50) and lowest FD index in Lithuania and Bulgaria, only 0.28. Fiscal decentralization index is the lowest among 21 Europe countries in Lithuania and Bulgaria.

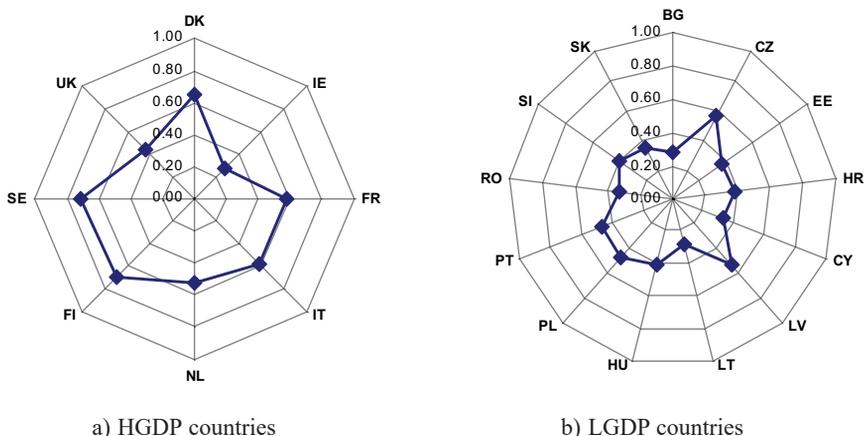


Fig. 1. Fiscal decentralization index in HGDP and LGDP countries  
 Source: compiled by author.

The estimated results in the Table 4 indicate that economic growth is positively associated with fiscal decentralization and economic growth in EU-21 countries. The estimated coefficient of fiscal decentralization is statistically significant and positive at 1% level. It is interesting to note that this pattern is consistent with the empirical studies of Jin and Zou (2005) and Zhang and Zou (1998).  $R^2$  and Adjusted  $R^2$  have been calculated by Eviews. R-squared is 0.998 and Adjusted R-squared is 0.9999. R squared is very high due to its specific estimation for the pooled data series.

Specifically, the P-value of Student’s test was used to examine the statistical significance of the effect of the independent variables on the dependent variable. In this economic growth estimation, P-value was used to determine the significance of FDI(-1), LAB, INV, HUM, EML, TECH, STRUC. When P-value is lower than 0.05, it indicates that this coefficient has a statistically significant explanatory power with the probability of 95% (it is provided in column “Prob.” in Table 4).

The F-statistic was used to test the overall fit of the model or, more specifically, if all of the slope coefficients in the regression model are zero. As shown in the 4 Table, F-statistics of the fixed effect model is 3981.06, while probability of zero F-statistics is non-existent. DW-statistic is 1.0922. Autocorrelation interval at significant level 5%: lower – 1.697, upper 1.841%. It is mean, that this model does not have autocorrelation.

Table 5 presented the estimated results indicate that relationship between fiscal decentralization and economic growth is positive in high level economic development countries, but there is not statistically significant linkage between FD and economic growth. R-squared is 0.9958 and Adjusted R-squared is 0.9947. R squared is very high due to its specific estimation for the pooled data series.

Table 4. Fiscal decentralization effect on economic growth in ES-21 countries

Variable	Coefficient	Std. error	T-Statistic	Prob.
C	-0.08114	0.03895	-2.0835	0.0388**
FDI(-1)	0.19026	0.04604	4.1322	0.0001***
LAB	0.00153	0.00025	6.0672	0.0000***
INV	0.00386	0.00041	9.3160	0.0000***
HUM	0.00004	0.00000	4.2013	0.0000***
EML	0.00101	0.00037	2.7117	0.0073***
TECH	0.00052	0.00009	5.5312	0.0000***
STRUC	0.00246	0.00072	3.4164	0.0008***
Effect specification				
R squared				0.9985
Adjusted R squared				0.9992
F-statistic				3981.06
DW				1.0922
Prob (F-statistic)				0.0000

Source: compiled by author.

Table 5. Fiscal decentralization effect on economic growth in high level economic development countries

Variable	Coefficient	Std. error	T-Statistic	Prob.
C	0.29669	0.08707	3.40762	0.0012***
FDI(-1)	0.13183	0.08986	1.46698	0.1479
LAB	0.00033	0.00037	0.87110	0.3874
INV	0.00746	0.00101	7.35915	0.0000***
HUM	0.00111	0.00143	0.78035	0.4384
EML	0.00567	0.00110	5.13440	0.0000***
TECH	0.00042	0.00014	3.03774	0.0036***
STRUC	0.00430	0.00118	3.63906	0.0006***
Effect specification				
R squared				0.9958
Adjusted R squared				0.9947
F-statistic				953.84
DW				1.1541
Prob (F-statistic)				0.0000

As shown in the 5 Table, F-statistics of the fixed effect model is 953.84, while probability of zero F-statistics is non-existent. DW-statistic is 1.1541. Autocorrelation interval at significant level 5%: lower – 1.428, upper 1.834%. What it means is, that this model does not have autocorrelation.

The other economic growth variables – investment, employment, technology and economic structure can explain the significant effect on economic growth. The estimated results presented in Table 6 indicate that relationship between fiscal decentralization and economic growth is statistically significant and positive in low level economic development countries.

Table 6. Fiscal decentralization effect on economic growth in low level economic development countries

Variable	Coefficient	Std. error	T-Statistic	Prob.
C	-0.17889	0.03316	-5.3951	0.0000***
FDI(-1)	0.10493	0.05377	1.95139	0.0539**
LAB	0.00219	0.00027	8.20394	0.0000***
INV	0.00296	0.00035	8.49919	0.0000***
HUM	0.00007	0.00001	5.40709	0.0000***
EML	0.00065	0.00027	2.43965	0.0165**
TECH	0.00029	0.00010	2.92714	0.0043***
STRUC	0.00102	0.00057	1.78203	0.0779
Effect specification				
R squared				0.9946
Adjusted R squared				0.9935
F-statistic				947.55
DW				1.3026
Prob (F-statistic)				0.0000

Source: compiled by author.

R-squared is 0.9946 and Adjusted R-squared is 0.9935. R squared is very high due to its specific estimation for the pooled data series. As shown in the 6 table, F-statistics of the fixed effect model is 947.55, while probability of zero F-statistics is non-existent. DW-statistic is 1.3026. Autocorrelation interval at significant level 5%: lower – 1.637, upper 1.832. It is mean, that this model do not have autocorrelation.

This evaluation show that if fiscal decentralization increases 1%, economic growth will increase by 0.10%. The other economic growth variables – labour productivity, investment, human capital, employment, technology and economic structure can explain the significant, positive effect on economic growth.

## Conclusions

The main objective of the paper has been to provide theory and evidence on the relationship between fiscal decentralization and economic growth in EU countries. The purpose of the paper was to analyse the impact fiscal decentralization on economic growth in unitary European countries for the period 2004–2014. The analysis used data taken from OECD Fiscal decentralization Database, OECD, World Bank and Eurostat. Fiscal decentralization index was used in the empirical analysis. The empirical test related to fiscal decentralization and economic growth was based on multiple regression model – Fixed effect.

Results show that the degree of fiscal decentralization varies widely across country: from 0.26 in Bulgaria and Lithuania to 0.70 in Sweden and Finland. The degree of fiscal decentralization in high level economically developed countries is higher than in low level economically developed countries. These results show that local government in high level economically developed countries (such like Sweden, Denmark and other countries) has a big power to control own revenue and expenditures than in low level economically developed countries (Estonia, Poland and other countries).

Findings of dynamic panel analysis confirm significant and positive impact of fiscal decentralization on economic growth in EU-21 countries. Although the relationship is positive and significant between fiscal decentralization and economic growth in low level economically developed countries, different situation is in high level economically developed countries – relation is no significance.

The article illustrates the current situation with fiscal decentralization in unitary EU countries and its potential link to countries economic growth. Identifying a clear causal relationship between fiscal decentralization and growth and solving the issues of dual causality and endogeneity in the model fall beyond the scope of the article, although it is of substantial interest for the future research of EU fiscal federalism. Actually, there are a lot of factors that can influence economic growth however, because of the limitation of data available only seven variables were used in this research paper.

## References

Abdellatif, L.; Atlam, B.; Aly, H. 2015. Revisiting the relation between decentralization and economic growth in the context of marketization, *Eastern Europe Economics* 53(4): 255–276. <https://doi.org/10.1080/00128775.2015.1065152>

Aleksejeva, L. 2016. Country's competitiveness and sustainability: higher education impact, *Journal of Security and Sustainability Issues* 5(3): 355–363. [https://doi.org/10.9770/jssi.2015.5.3\(4\)](https://doi.org/10.9770/jssi.2015.5.3(4))

Akai, N.; Sakata, M. 2002. Fiscal decentralisation contributes to economic growth: evidence from state-level cross-section data for the United States, *Journal of Urban Economic* 52(1): 93–108. [https://doi.org/10.1016/S0094-1190\(02\)00018-9](https://doi.org/10.1016/S0094-1190(02)00018-9)

Akai, N.; Hosoi, N.; Nishimura, Y. 2009. Fiscal decentralization and economic volatility: evidence from state-level cross section data of the USA, *Japanese Economic Review* 60(2): 223–235. <https://doi.org/10.1111/j.1468-5876.2008.00450.x>

- Akai, N.; Nishimura, Y.; Sakata, M. 2004. *Fiscal decentralization, economic growth and economic volatility – theory and evidence from state-level cross-section data for the United States*. Discussion Paper Series 03-F-2.
- Asatryan, Z.; Feld, L. 2015. Revisiting the link between growth and federalism: a Bayesian model averaging approach, *Journal of Comparative Economics* 43(3): 772–781.  
<https://doi.org/10.1016/j.jce.2014.04.005>
- Barro, R. 1990. Government spending in a simple model of endogenous growth, *Journal of Political Economy* 98: 108–125. <https://doi.org/10.1086/261726>
- Baskaran, T.; Feld, L. P. 2013. Fiscal decentralisation and economic growth in OECD countries. Is there a relationship?, *Public Finance Review* 41(4): 421–445.  
<https://doi.org/10.1177/1091142112463726>
- Brennan, G.; Buchanan, J. 1980. *The power to tax: analytical foundations of a fiscal constitution*. Cambridge: Cambridge University Press.
- Buser, W. 2011. The impact of fiscal decentralization on economic performance in high income OECD nation: an institutional approach, *Public Choice* 149(1): 31–48.  
<https://doi.org/10.1007/s11127-011-9827-6>
- Cantarero, D.; Gonzalez, P. P. 2009. Fiscal decentralization and economic growth: evidence from Spanish regions, *Public Budgeting & Finance* 29(4): 24–44.  
<https://doi.org/10.1111/j.1540-5850.2009.00941.x>
- Chu, J.; Zheng, X. P. 2013. China's fiscal decentralization and regional economic growth, *Japanese Economic Review* 64(4), 537–550. <https://doi.org/10.1111/jere.12013>
- Davoodi, H.; Zou, H. 1998. Fiscal decentralization and economic growth: a cross-country study, *Journal of Urban Economics* 43: 244–257. <https://doi.org/10.1006/juec.1997.2042>
- Eller, M. 2004. *The determinants of fiscal decentralization and its determinants on economic growth: empirical evidence from a panel of OECD countries*: Diploma Thesis.
- EUROSTAT. 2016. European Commission database [online], [cited 20 November 2016]. Luxembourg: European Commission. Available from Internet: <http://ec.europa.eu/eurostat/data/database>
- Filippetti, A.; Sacchi, A. 2016. Decentralization and economic growth reconsidered: the role of regional authority, *Environment and Planning C: Politics and Space* 34(8): 1793–1824.  
<https://doi.org/10.1177/0263774X16642230>
- Fuschi, D. L.; Tvaronavičienė, M. 2016. A network based business partnership model for SMEs management, *Entrepreneurship and Sustainability Issues* 3(3): 282–289.  
[https://doi.org/10.9770/jesi.2016.3.3\(5\)](https://doi.org/10.9770/jesi.2016.3.3(5))
- Gemmell, N.; Kneller, R.; Sant, I. 2013. Fiscal decentralization and economic growth: spending versus revenue decentralization, *Economic Inquiry* 51(4): 1915–1931.  
<https://doi.org/10.1111/j.1465-7295.2012.00508.x>
- Genys, D. 2016. Towards sustainable development: tackling relations between energy security and social exclusion, *Journal of Security and Sustainability Issues* 6(1): 27–36.  
[https://doi.org/10.9770/jssi.2016.6.1\(2\)](https://doi.org/10.9770/jssi.2016.6.1(2))
- Hammond, G. W.; Tosun, M. S. 2011. The impact of local decentralization on economic growth: evidence from U.S. counties, *Journal of Regional Science* 51(1): 47–65.  
<https://doi.org/10.1111/j.1467-9787.2010.00683.x>
- Imi, A. 2005. Decentralization and economic growth revised an empirical note, *Journal of Urban Economics* 57(3): 449–641. <https://doi.org/10.1016/j.jue.2004.12.007>
- Ignatavičius, R.; Tvaronavičienė, M.; Piccinetti, L. 2015. Sustainable development through technology transfer networks: case of Lithuania, *Journal of Security and Sustainability Issues* 4(3): 261–267. [https://doi.org/10.9770/jssi.2015.4.3\(6\)](https://doi.org/10.9770/jssi.2015.4.3(6))

- Jalil, A.; Feridun, M.; Sawhney, B. L. 2014. Growth effect of fiscal decentralization: empirical evidence from China's provinces, *Emerging Markets Finance & Trade* 50(4): 176–196. <https://doi.org/10.2753/REE1540-496X500411>
- Jin, J.; Zou, H. 2005. Fiscal decentralization, revenue and expenditure assignments, and growth in China, *Journal of Asian Economic* 16: 1047–1064. <https://doi.org/10.1016/j.asieco.2005.10.006>
- Lapinskienė, G.; Peleckis, K.; Radavičius, M. 2015. Economic development and greenhouse gas emissions in the European Union countries, *Journal of Business Economics and Management* 16(6): 1109–1123. <https://doi.org/10.3846/16111699.2015.1112830>
- Lapinskienė, G.; Tvaronavičienė, M.; Vaitkus, P. 2014. The emissions of greenhouse gases and economic growth – the evidence of the presence of the environmental Kuznets curve in the European Union countries, *Technological and Economic Development of Economy* 20(1): 65–78. <https://doi.org/10.3846/20294913.2014.881434>
- Lazano, I.; Julio, M. J. 2015. *Fiscal decentralization and economic growth: evidence from regional-level panel data for Colombia*. Borradores de Economía 8651.
- Lin, J.; Liu, Z. 2000. Fiscal decentralization and economic growth in China, *Economic Development and Cultural Change* 49: 1–22. <https://doi.org/10.1086/452488>
- Musgrave, R. A. 1959. *The theory of public finance*. A study in public economy. New York: McGraw Hill. 628 p.
- Nguyen, L.; Anwar, S. 2011. Fiscal decentralization and economic growth in Vietnam, *Journal of the Asia Pacific Economy* 16(1): 3–14. <https://doi.org/10.1080/13547860.2011.539397>
- Oates, W. E. 1972. *Fiscal federalism*. New York: Harcourt Brace Jovanovich.
- Oates, W. E. 1993. Fiscal decentralisation and economic development, *National Tax Journal* 46(2): 237–243.
- Oates, W. E. 1999. An essay on fiscal federalism, *Journal of Economic Literature* 37(3): 1120–1149. <https://doi.org/10.1257/jel.37.3.1120>
- Organization for economic, Co-operation and Development Database (OECD). 2016. *OECD Fiscal Decentralisation Database* [online], [cited 07 November 2016]. France: Organization for economic, Co-operation and Development. Available from Internet: <http://www.oecd.org/ctp/federalism/fiscal-decentralisation-database.htm>
- Rodríguez-Pose, A.; Ezcurra, R. 2011. Is fiscal decentralisation harmful for economic growth? Evidence from the OECD countries, *Journal of Economic Geography* 11(4): 619–643. <https://doi.org/10.1093/jeg/lbq025>
- Rodríguez-Pose, A.; Kroijer, A. 2009. Fiscal decentralization and economic growth in Central and Eastern Europe, *Growth and Change* 40(3): 387–417. <https://doi.org/10.1111/j.1468-2257.2009.00488.x>
- Slavinskaitė, N.; Ginevičius, R. 2016. Revenue autonomy of local government: fiscal decentralization aspect in 9th International Scientific Conference “Business and Management 2016”, 12–16 May 2016, Vilnius, Lithuania.
- Stansel, D. 2005. Local decentralization and local economic growth: a cross-sectional examination of US metropolitan areas, *Journal of Urban Economics* 57: 55–72. <https://doi.org/10.1016/j.jue.2004.08.002>
- Stoilova, D.; Patonov, N. 2012. Fiscal decentralization: is it a good choice for the small new member states of the EU?, *Scientific Annals of the „Alexandru Ioan Cuza” University of Iasi, Economic Sciences Section* 59(1): 125–137.
- Szarowska, I. 2014. Fiscal decentralization and economic development in selected European countries, *European Financial and Accounting Journal* 9(1): 22–40.

- Thiessen, U. 2003. Fiscal decentralisation and economic growth in high income OECD countries, *Fiscal Studies* 24: 237–74. <https://doi.org/10.1111/j.1475-5890.2003.tb00084.x>
- Thornton, J. 2007. Fiscal decentralisation and economic growth reconsidered, *Journal of Urban Economics* 61(1): 64–70. <https://doi.org/10.1016/j.jue.2006.06.001>
- Tiebout, Ch. 1956. A pure theory of local expenditures, *Journal of Political Economy* 64(5): 416–424. <https://doi.org/10.1086/257839>
- Travkina, I.; Tvaronavičienė, M. 2015. Peculiarities of export structure in Lithuania: synthesis and analysis, *Entrepreneurship and Sustainability Issues* 2(4): 233–247.
- Tunčikienė, Ž.; Drejeris, R. 2015. Entrepreneurship ecosystem: methodological approaches to functions' review of public sector institutions, *Entrepreneurship and Sustainability Issues* 2(3): 118–132. [https://doi.org/10.9770/jesi.2014.2.3\(1\)](https://doi.org/10.9770/jesi.2014.2.3(1))
- Yang, Z. 2016. Tax reform, fiscal decentralization and regional economic growth: new evidence from China, *Economic Modelling* 59: 520–528. <https://doi.org/10.1016/j.econmod.2016.07.020>
- Yushkov, A. 2015. Fiscal decentralization and regional economic growth: theory, empirics, and the Russian experience, *Russian Journal of Economics* 1: 404–418. <https://doi.org/10.1016/j.ruje.2016.02.004>
- Zhang, T.; Zou, H. 1998. Fiscal decentralization, public spending, and economic growth in China, *Journal of Public Economics* 67: 221–240. [https://doi.org/10.1016/S0047-2727\(97\)00057-1](https://doi.org/10.1016/S0047-2727(97)00057-1)
- Wahl, M.; Prause, G. 2013. Toward understanding resources, competencies, and capabilities: business model generation approach, *Entrepreneurship and Sustainability Issues* 1(2): 67–80. [https://doi.org/10.9770/jesi.2013.1.2\(1\)](https://doi.org/10.9770/jesi.2013.1.2(1))
- World Bank. 2016. *World bank database* [online], [cited 15 November 2016]. Washington: World Bank. Available from Internet: <http://data.worldbank.org/>

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