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FISCAL DECENTRALIZATION AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE FROM EUROPEAN COUNTRIES

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Abstract

This paper empirically explores the relationship between fiscal decentralization and economic growth, using panel dataset for 31 European countries, over the period 1972-2012. The empirical results indicate that fiscal decentralization, quantitatively measured as the share of local government expenditures and revenues in total government expenditures and revenues has a favorable impact on economic growth in the European countries, and also that revenue decentralization is shown to be more effective than expenditure decentralization in terms of stimulating economic growth. Further, our empirical results also suggest that the relationship between decentralization and economic growth is nonlinear, i.e., there is some optimal level of decentralization that maximizes economic growth. This means that fiscal decentralization is expected to have a more pronounced positive impact on growth in less decentralized countries, while in more decentralized countries, a further increase in decentralization starts to hinder economic growth.

In addition, the growth-enhancing effect of fiscal decentralization is even strongly confirmed in our subsample of advanced European countries, when the long-term effect of decentralization was examined. Therefore, compared with our previous findings on the impact of fiscal decentralization on growth in Central and Eastern European countries, we find that fiscal decentralization has a different impact on economic growth in advanced European countries vis-à-vis Central and Eastern European countries, i.e., while it enhances growth in the former, it hindered growth in the latter.

Keywords: Fiscal decentralization, economic growth, European countries.

JEL classification: H71, H72, H77

Introduction

Fiscal decentralization has been a topic of considerable interest in recent economic literature, partly due to its potential implications for economic growth. Transferring fiscal resources and responsibilities to local governments is primarily aimed at achieving a more efficient delivery of public goods and services. This enhanced efficiency within the public sector is expected to foster economic growth and to improve the welfare of citizens. Therefore, over recent decades, many developing countries have adopted fiscal decentralization initiatives to strengthen their public sector effectiveness. According to Garman *et al.* (2001) more than 80% of 75 developing countries had implemented some form of fiscal decentralization reform in the preceding two decades. Another report states that more than 120 developing countries have conducted some type of decentralization since 2008 (Ivanyna and Shah, 2014). In the case of developed countries, the picture is quite the same. The index of regional authority by Hooghe *et al.* (2010) reveals that 70% of these countries have experienced an active decentralization process since 1950.

Scholars studying the theoretical and practical dimensions of fiscal federalism have long debated on the efficiency benefits of fiscal decentralization (Tiebout, 1956; Musgrave, 1959; Oates, 1972; Rubinfeld 1987). The first generation of fiscal decentralization theories, pioneered by Oates (1972), while not directly addressing the issue of economic growth, underline that in the case of diverse local preferences and needs local government's provision of public good and services will lead to greater efficiency and will improve the citizen's welfare. Oates's well known decentralization theorem states that local governments are better positioned to identify citizens' diverse preferences for public goods and services, and secondly by tailoring services to local needs and managing costs more effectively, they can provide public goods and services at lower costs than central governments. Further, fiscal decentralization places local governments in competition with one another and therefore promotes fiscal discipline by encouraging them to prioritize spending and generate revenue more effectively (Tiebout, 1956; Brennan and Buchanan, 1980). Consequently, the proponents of fiscal decentralization argue that it can foster economic growth by more efficient resource allocations, greater responsiveness to local preferences and enhanced accountability of local governments (Oates, 1993; Martinez-Vazquez and McNab, 2006).

On the other hand, numerous authors have shifted their attention to the inversed side of the coin: the potential risks associated with decentralization in terms of economic performance (Prud'Homme, 1995; Tanzi, 1996; Rodriguez-Pose and Gill, 2005). Critics argue that decentralization could potentially undermine economic performance by causing fragmentation, inefficiencies from overlapping functions and duplicating costs, fiscal disparities among regions, etc. For example, local governments may be disposed to bigger corruption because officials at the local level are more susceptible to demands of local interest groups (Prud'homme, 1995; Shah 2004). Moreover, excessive decentralization can make fiscal policy coordination more complex and harm macroeconomic stability (Oates, 2005). In some cases, as in less developed countries, local governments may lack the capacity to effectively manage decentralized responsibilities, resulting in ineffective outcome of fiscal decentralization (Prud'Homme, 1995, Rodriguez-Pose and Kroijer, 2009, Odero, 2004). In this respect, Prud'homme (1995) and Tanzi (1996) firstly recognized that poorly designed decentralization systems, where subnational governments are allowed to borrow without control and the central government covers any defaults, lead to macroeconomic instability and worse overall economic performance.

An important extension of the fiscal federalism literature is the second-generation theories initiated by Weingast (1995) that bring a different perspective by assuming the presence of self-interested government officials with their own agenda, opposed to the benevolent government officials assumed in the previous literature. According to Hatfield (2006) economic policy is not decided by benevolent social planners, but by self-interested government officials with at least one eye on their reelection prospects. In this context, the second-generation theories extend and adapt the old decentralization's lessons according to this new perspective of the role of the government officials (Qian and Weingast 1997; Garzarelli 2004; Oates, 2005).

The latter studies on fiscal federalism emphasize the critical importance of local government revenue generation that makes local governments more responsive to citizens, reduces corruption and increases the incentives for efficient provision of public goods and services. In other words, if local governments are given greater autonomy over their fiscal revenues, as a result, they become more directly

accountable to the citizens (Rodden, 2003). However, some authors argue that decentralization can lead to fiscal competition between local governments to engage in a race to the bottom on the taxation of mobile factors, hence underproviding productive public expenditure (Wilson, 1986; Zodrow and Mieszkowski, 1986; Brueckner 2004). On the other hand, the intergovernmental fiscal transfers by concentrating taxing power at central government and undermining fiscal discipline of local governments can lead to a larger and less effective public sector (Grossman, 1989; Bahl and Linn, 1992).

Finally, according to some authors, the relationship between decentralization and economic growth is not necessarily linear. Thiessen (2003) found that a low level of fiscal decentralization may hinder long term economic growth because local governments lack sufficient motivation to enhance allocative and production efficiency. Equally, excessive decentralization can also lead to economic inefficiencies and social welfare losses, affecting macroeconomic stability and exacerbating income inequality. In this respect, countries that start with a lower initial level of public sector decentralization are likely to experience more significant positive effects of decentralization on economic growth, in contrast to countries that have already achieved a higher level of fiscal decentralization (Blochliger and Egert, 2013). As a result, decentralization has the potential to foster economic growth by enhancing public sector efficiency, but its impact remains ambiguous and depends on multiple factors and context-specific circumstances (Litvack *et al.*, 1998).

The primary objective of this study is to empirically explore the link between fiscal decentralization and economic growth in European countries and to observe whether the impact of decentralization on growth is consistent across advanced European countries compared to developing countries in Central and Eastern Europe (explored in our previous empirical study). Furthermore, we examine whether there is a nonlinear association between fiscal decentralization and economic growth across these countries.

The remaining sections of the paper are organized as follows i.e. the second section offers a concise overview of the empirical literature related to this topic, the third section elaborates the methodology employed and the data utilized in the study, the fourth section presents and discusses the findings from the empirical investigation and the final section concludes with closing remarks.

Review of Empirical Literature

Numerous empirical studies have attempted to examine and quantify the relationship between fiscal decentralization and economic growth, but their findings have been inconsistent. Some studies find positive correlations, indicating that fiscal decentralization fosters economic growth. On the other hand, some studies find no significant relationship or even negative correlations between fiscal decentralization and economic growth.

The majority of the empirical studies are cross-country analyses that use extensive samples from varied countries (Oates, 1995; Davoodi and Zou, 1998; Yilmaz, 1999; Iimi, 2005; Martinez-Vazquez and McNab, 2006; Canavire-Bacarreza *et al.*, 2020). However, most of the these studies are dominantly focused on advanced OECD countries due to better availability of data (Thiessen, 2003; Eller, 2004; Thornton, 2007; Rodriguez-Pose and Ezcurra, 2011; Baskaran and Feld, 2013; Gemmel *et al.*, 2013; Filippeti and Sacchi, 2016), whereas only a smaller fraction of studies are focused on developing countries (Enikolopov and Zhuravskaya, 2007; Aristovnik, 2012; Makreshanska-Mladenovska and Tashevska, 2019; Hanif *et al.*, 2020; Korotun *et al.*, 2020). On the other hand, numerous studies also explore the relationship between decentralization and growth within specific countries, primarily China (Zhang and Zou, 1998; Lin and Liu, 2000; Jin and Zou, 2005; Qiao *et al.*, 2008; Yang, 2016; Song *et al.*, 2019; Ding *et al.*, 2019) or USA (Xie *et al.*, 1999; Akai and Sakata, 2002; Stansel, 2005).

As previously stated, so far there is no empirical consensus regarding the impact of fiscal decentralization on economic growth. Empirical studies deliver divergent results based on varying datasets, estimation techniques and specifications and different indicators of decentralization. Hence, many empirical studies confirm that there is a positive relationship between fiscal decentralization and economic growth (Lin and Liu, 2000; Akai and Sakata, 2002; Iimi, 2004; Stansel, 2005; Qiao *et al.*, 2008; Buser, 2011; Blochliger and Egert, 2013; Gemmell *et al.*, 2013; Filippeti and Sacchi, 2016; Slavinskaite,

2017; Hanif *et al.*, 2020; Slavinskaite *et al.*, 2020). Other studies suggest that fiscal decentralization has a negative impact on economic growth (Zhang and Zou, 1998; Xie *et al.*, 1999; Enikolopov and Zhuravskaya, 2007; Jin and Zou, 2005; Rodriguez-Pose and Ezcurra, 2011; Baskaran and Feld, 2013) or that it has no clear impact on growth (Davoodi and Zou, 1998; Bodman and Ford, 2006; Thornton, 2007; Baskaran and Feld, 2013; Asatryan and Feld, 2015; Korotun *et al.*, 2020).

If we analyze separately the revenue versus expenditure decentralization, recent studies (Rodriguez-Pose and Kroijer, 2009; Blochliger and Egert, 2013; Gemmell *et al.*, 2013) mainly find that revenue decentralization has more pronounced stimulating effects on economic growth, while expenditure decentralization is associated with lower economic growth; however other studies find no significant impact for revenue decentralization (Thornton, 2007) or stronger effect of expenditure decentralization (Canavire-Bacarezza *et al.,* 2020). In addition, intergovernmental fiscal transfers have a more pronounced adverse impact on growth (Rodriguez – Pose and Kroijer, 2009).

Unlike most studies that explore the linear relationship, Thiessen (2003) indicates a non-linear relationship between fiscal decentralization and economic growth. According to him, this relationship is inverted "U" shaped (bell-shaped), meaning that there is some optimal degree of fiscal decentralization that maximizes growth, beyond which higher decentralization starts to reduce the economic growth rate. The diminishing returns on decentralization are also confirmed by Eller (2004), Blochliger and Egert (2013), Song *et al.*, (2019) who find that countries or regions with lower levels of decentralization tend to experience more significant positive effects on economic growth. From recent empirical research on the topic, the bell-shaped relationship between fiscal decentralization and growth was confirmed by Belkovicsova and Boor (2021) on a sample of 29 OECD countries and by Carniti *et al.* (2019) on a panel dataset of 25 European countries that is more related to our empirical work.

Further, some studies have found varying impacts of fiscal decentralization on growth in advanced versus developing countries. For example, studies by Davoodi and Zou (1998), Im (2010) and Slavinskaite (2017) did not identify a significant relationship in advanced countries, while results were mixed for developing countries. In contrast, Canavire-Bacarreza et al. (2020) observed a positive effect of decentralization in advanced countries but no significant effect in developing countries. In line with this, the impact of decentralization on economic growth may vary also upon the quality of institutional and political factors within a country. For example, as suggested by Enikolopov and Zhuravskaya (2003); Iimi (2004), Buser (2011), Aristovnik (2012), Hanif *et al.* (2020), in developing countries, the impact of decentralization on economic growth varies based on the quality of political governance within the country. Consequently, Aristovnik (2012) attributes the limited success of fiscal decentralization in Eastern European economies to the absence of such favorable institutional conditions. Makreshanska-Mladenovska and Tashevska (2019) also confirmed on the sample of CEE countries that decentralization may be particularly harmful for economic growth in the countries in early stages of economic development, where the administrative capability of local governments is insufficient, and they may not be responsive to preferences of the local citizens.

In conclusion, the impact of fiscal decentralization on economic growth continues to be a subject of ongoing debate. Despite conflicting results from numerous empirical studies, this paper aims to explore the connection between fiscal decentralization and economic growth across a comprehensive dataset covering advanced and developing European countries during the extended period from 1972 to 2012.

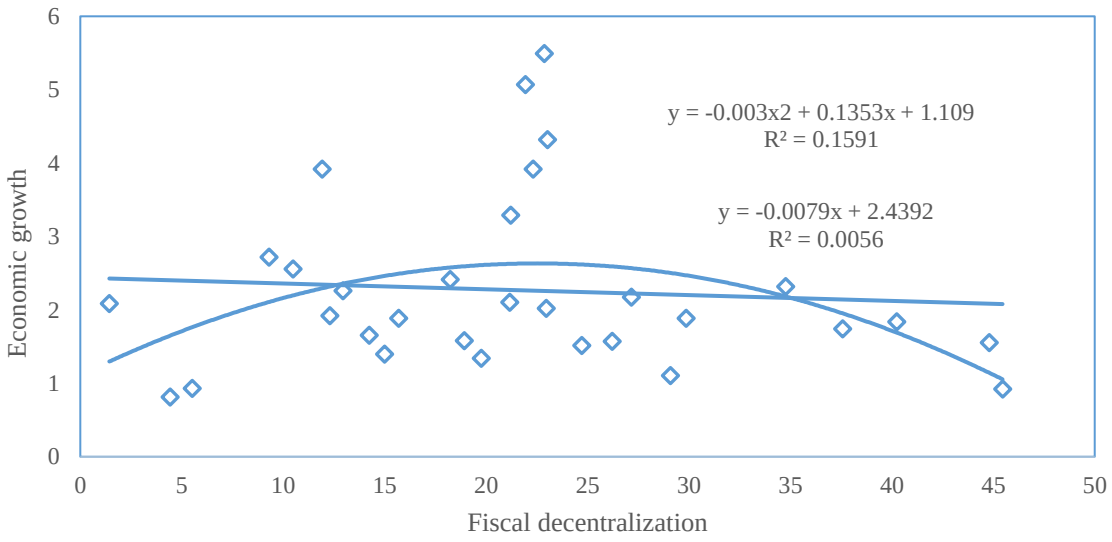
Methodology and Data

Model

Our empirical study focuses on examining the impact of fiscal decentralization on economic growth in European countries. The dependent variable in our model is the annual real growth rate of GDP per capita and our primary subject of interest is the coefficient on the fiscal decentralization variable, which is expected to be positive and significant given the conventional arguments in favor of fiscal decentralization.

Figure 1 plots the average GDP per capita growth rate in European countries on the average share of local government expenditures in total government expenditures over the study period and gives an initial assessment of the main research topic. First, the simple linear association between both variables seems to show the existence of a slightly negative relationship between economic growth and the level of fiscal decentralization. Second, the relationship between economic growth and fiscal decentralization is better explained by a quadratic than a linear function form, indicating that there is some optimal level of fiscal decentralization in terms of economic growth.

Figure 1: The link between economic growth and fiscal decentralization in European countries



Source: Authors' calculations.

As we can see from the simple scatter plot analysis, the relationship between economic growth and fiscal decentralization is more likely to be non-linear than linear. The negative sign of the coefficient of quadratic term of the fiscal decentralization suggests an increasing slope of the economic growth function at lower level and decreasing slope at higher level of decentralization. This implies that, as suggested by Thiessen (2003), there is some optimal level of fiscal decentralization that maximizes economic growth. Therefore, in our empirical model we also test for the non-linear relation between decentralization and growth.

However, the information provided by the graph should be interpreted with caution, as economic growth does not depend exclusively on the degree of fiscal decentralization of a country and omitted variables may affect the observed relationship. Therefore, in order to test whether fiscal decentralization matters for economic growth, we estimate the econometric model.

In specification of our econometric model, we have followed the most common used analytical framework introduced by Davoodi and Zou (1998). The model is derived from Barro's economic growth model (Barro, 1990), where economic growth is based on a Cobb-Douglas production function of physical capital, human capital, and public spending by different levels of government. In addition, following Davoodi and Zou (1998), Akai and Sakata (2002), Martinez-Vazquez and McNab (2003), Filippetti and Sacchi (2016), etc., we also include several control variables to account for other factors that could influence economic growth, such as demographic variables and macroeconomic policy variables.

Therefore, the empirical model is represented as follows:

$$economic\ growth_{it} = \beta_0 + \beta_1\ physical\ capital_{it} + \beta_2 human\ capital_{it} + \beta_3 population_{it} + \beta_4 macroeconomic\ variables_{it} + \beta_5 decentralization_{it} + u_{it}$$

We employ an unbalanced panel data regression model that spans multiple countries and periods, enabling us to leverage a greater volume of observations. As recommended by the Hausman test, we utilized a fixed effects model. To correct for heteroscedasticity and serial correlation, we applied White cross-section weights and a first order autoregression component (AR1), respectively.

Data and Variables

In our empirical study we use a comprehensive panel dataset covering 31 European countries (including 27 EU member countries, along with Norway, Iceland, Switzerland, and Great Britain) over the period of 1972-2012. Additionally, we explore the long-term effect for a subsample of advanced countries. In order to do this, we averaged the data for five-year periods to smooth the data over the macroeconomic cycle. In a previous empirical study, we have examined the impact of fiscal decentralization on economic growth in the Central and Eastern European countries using the same approach (Makreshanska-Mladenovska and Tashevska, 2019), thus enabling the exploration of potential variations in the influence of fiscal decentralization on economic growth between advanced and developing countries.

The dependent variable in the model is the economic growth i.e. the annual real growth rate of GDP per capita, with data sourced from the World Development Indicators Database. The main explanatory variable of interest in the model is fiscal decentralization. To measure fiscal decentralization, we use two most conventional measures: expenditure decentralization (local government expenditures to total government expenditures ratio) and revenue decentralization (local government revenues to total government revenues ratio). These two measures relate to different aspects of decentralization, so they may result in different outcomes. Expenditure decentralization may not always imply effective decentralization, while revenue decentralization although is harder to achieve, it may refer to higher accountability and more efficient expenditures at local level of government. The data series for the fiscal decentralization indicators are derived from Fiscal Decentralization Database of the World Bank[1].
Physical capital is represented by two variables: the gross savings to GDP ratio and the annual change of gross fixed capital formation to GDP ratio, while selecting suitable indicators for human capital was challenging, as most tested variables were statistically insignificant. However, it is difficult to dismiss the importance of human capital for economic growth. The lack of statistical significance for these variables is probably due to limitations and data series discontinuity. From the various tested variables, we opted to include the secondary school enrollment ratio (in addition, we also tested the public education expenditures, public revenues for science and research, university enrollment rate, the number of patent applications and researchers per million citizens).

As for the other control variables, macroeconomic policy variables include public sector size (general government expenditures to GDP ratio), budget balance to GDP ratio, inflation (annual growth rate of CPI) and trade openness (imports and exports of goods and services to GDP ratio). To enhance the model's explanatory capacity, we also incorporate various demographic variables that are frequently observed in existing economic growth studies: population growth rate, urban population share, and the dependency ratio. The data for these variables are extracted from the World Development Indicators Database.

Results and Discussion

Table 1 displays the empirical results on the impact of fiscal decentralization on economic growth across a comprehensive sample of 31 European countries and a subsample of 17 advanced European countries. Regression equations (1) and (5) refer to expenditure decentralization for the entire sample and the advanced countries' subsample, respectively. In contrast, regression equations (2) and (6) are associated with the revenue decentralization in the respective samples. Equations (3) and (4) refer to the results of the non-linear relationship test between decentralization and growth for the entire sample of 31 European countries, discussed in the next section.

[1] Given that the analyzed time series spans 40 years, we refrained from extending the data using additional fiscal decentralization databases. Our decision was driven by the desire to maintain data consistency and results integrity. Instead, we sourced the entire dataset from the Fiscal Decentralization Database of the World Bank, which unfortunately provides decentralization data only up until 2012.

Our empirical results indicate that fiscal decentralization in general has a favorable impact on economic growth in the European countries, as the linear relationship between expenditure and revenue decentralization and GDP per capita growth rate appears to be positive in all equations. Further, as expected, the revenue decentralization is shown to be more effective in terms of stimulating economic growth. However, for the whole sample, the positive relationship between decentralization and growth is relatively weak. Namely, the coefficient of expenditure decentralization, although positive, is rather small and insignificant (equation 1), while the coefficient of revenue decentralization is positive and statistically significant at the 10% confidence level (equation 2). On the other hand, in the subsample of advanced European countries, when the long-term effects of decentralization on growth are examined using 5-year averages, both, expenditure and revenue decentralization appear to have a statistically significant positive impact on economic growth (equations 5 and 6).

From our empirical results we can implicitly conclude that fiscal decentralization has a more favorable effect on growth in more developed European countries, probably due to their higher government spending efficiency compared to the less developed Central and Eastern European countries (e.g. Halaskova *et al.*, 2022). This finding is also confirmed by our previous empirical study on the effects of fiscal decentralization on the economic growth in 11 Central and Eastern European countries, over the period from 1992-2012, where we found that fiscal decentralization has a notably adverse effect on economic growth (Makreshanska-Mladenovska and Tashevska, 2019).

Therefore, the empirical findings from both our studies are in line with the previously stated conventional argument that the macroeconomic effects of decentralization do not solely depend on the size of the local government expenditure or revenue decentralization. On contrary, decentralization is expected to have more pronounced positive effect on economic growth in economies where certain institutional and political preconditions are met, such as: institutional quality, fiscal autonomy of subcentral governments, level of democratization of the country, etc. (see Buser, 2011). Therefore, fiscal decentralization, when quantitatively measured as in our case, is expected to have varying macroeconomic implications across different country groups due to differences in the qualitative aspects of the decentralization process.

Table 1: Empirical results

Dependent variable: Annual growth rate of GDP per capita

Independent variables	1		2		3		4		5		6	
Exp decentralization	0.0099				0.0589	**			0.0361	**		
	0.0116				0.0291				0.0178			
Exp decentralization ^2					-0.0006	**						
					0.0003							
Rev decentralization			0.0260	*			0.1078	***			0.0457	**
			0.0154				0.0352				0.0222	
Rev decentralization ^2							-0.0010	***				
							0.0004					
Government expenditures	-0.0495	**	-0.0520	**	-0.0558	**	-0.0575	***	-0.0708	***	-0.0622	***
	0.0235		0.0227		0.0223		0.0212		0.0200		0.0178	
Budget balance	0.0967	**	0.1032	**	0.0947	**	0.1068	**				
	0.0451		0.0446		0.0444		0.0444					
Inflation	0.0015		0.0015		0.0015		0.0016		0.0448	***	0.0451	***
	0.0017		0.0017		0.0017		0.0017		0.0152		0.0164	
Savings	0.0097		0.0099		0.0095		0.0120		-0.0286		-0.0166	
	0.0331		0.0340		0.0339		0.0348		0.0333		0.0350	
Capital (growth)	0.2354	***	0.2365	***	0.2369	***	0.2379	***	0.3007	***	0.2994	***
	0.0275		0.0275		0.0272		0.0271		0.0200		0.0196	
Patents	0.1011		0.1105		0.0981		0.1213		-0.2807		-0.2770	
	0.1303		0.1265		0.1308		0.1269		0.1143		0.1155	
School	0.0105		0.0094		0.0079		0.0062		0.0083	***	0.0086	***
	0.0077		0.0077		0.0075		0.0076		0.0025		0.0024	
Openness	0.0238	**	0.0224	**	0.0214	**	0.0202	**	-0.0055		-0.0039	
	0.0096		0.0093		0.0098		0.0093		0.0046		0.0047	
Population	-1.4607	***	-1.5029	***	-1.4945	***	-1.5199	***	-1.9966	***	-1.9766	***
	0.2011		0.1974		0.2032		0.1926		0.1235		0.1228	
Urbanization	-0.1416	***	-0.1380	***	-0.1414	***	-0.1350	***	-0.0716	***	-0.0691	***
	0.0429		0.0423		0.0431		0.0427		0.0128		0.0123	
Dependency									-0.0603	***	-0.0563	***
									0.0225		0.0209	

Constant	10.2681	***	9.8653	***	10.2416	***	8.9538	***	15.1846	***	13.5782	***
	3.4600		3.3563		3.4616		3.3263		1.3168		1.7182	
AR(1)	0.1619		0.1492		0.1546		0.1444		-0.1504	**	-0.1802	**
	0.1018		0.0990		0.1001		0.0987		0.0683		0.0757	
R-squared	0.7935		0.7962		0.7961		0.7992		0.9344		0.9315	
R-squared adjusted	0.7778		0.7807		0.7801		0.7836		0.9047		0.9006	
F-statistic	50.4924	***	51.4460	***	50.0172	***	51.1039	***	31.5289	***	30.1164	***
Durbin-Watson statistics	1.9127		1.9154		1.9141		1.9174		2.3012		2.3325	
Inverted AR Roots	0.16		0.15		0.15		0.14		-0.15		-0.18	
Cross - section	31		31		31		31		17		17	
Sample	1972-2012		1972-2012		1972-2012		1972-2012		1976-2012		1976-2012	
Observations	595		596		595		596		91		91	

Note: White heteroskedasticity consistent standard errors are provided below the coefficients.
* 10%, ** 5%, *** 1% level of significance.

Source: Authors' calculations.

Further, in addition to the linear relationship between decentralization and growth, we also test for the nonlinear effects of decentralization on economic growth. Specifically, equations (3) and (4) examine the quadratic relationship between decentralization and economic growth across the entire sample. These equations incorporate the quadratic forms of the fiscal decentralization indicators, namely the quadratic share of local expenditures and local revenues in general government expenditure and revenues, respectively. The results reveal a statistically significant quadratic relationship between fiscal decentralization and economic growth, when considering both expenditure and revenue decentralization. The negative sign associated with the decentralization variable indicates an inverted "U" (parabolic) shape, implying that increasing decentralization initially supports economic growth, but beyond a certain "optimal" level of decentralization, further decentralization starts to decelerate growth. In this context, it has been noted in the literature that excessive decentralization can make policy coordination more complex and harm macroeconomic stability via fiscal policy coordination problems.

Regarding the other tested variables, the public sector size negatively impacts the GDP per capita growth rate for the entire sample and for the subsample of advanced countries. The positive influence of the budget balance on the growth rate is also confirmed for the entire sample. The level of trade openness positively impacts growth in the entire sample, while in the subsample of advanced countries it loses significance. In terms of physical capital, the growth rate of gross fixed capital formation has a statistically significant positive effect both for the entire sample and for the sample of advanced countries, confirming the growth-inducing effect of investments in capital. On the other hand, inflation appears to be a relevant factor only for the subsample of advanced countries, with a stimulating effect on growth. Secondary school enrollment seems to be a significant contributing factor to growth only in the equations for advanced countries as well. Regarding the demographic variables in the model, the population growth rate and the share of urban population confirm the statistically significant negative impact on growth, in both the entire sample and the subsample of advanced countries. For the subsample of advanced countries, the impact of the dependency ratio was also considered, and it had a statistically significant negative coefficient, unlike the case of the CEE countries, where it had a significantly positive coefficient (Makreshanska-Mladenovska and Tashevska, 2019). This might be because the dependency ratio is far greater in the advanced countries, and they are on a higher stage of demographic transition compared to the new member states. Empirical evidence shows that on a lower level of demographic transition, population ageing can have beneficial effects on economic activity and growth, as more people enter the workforce, however at later stages the increasing share of older (inactive) population lead to diminishing results. The other control variables, as the ratio of savings to GDP and patents, did not have statistically significant coefficients.

Conclusion

The empirical analysis of the relationship between fiscal decentralization and economic growth in the European countries shows a positive overall impact of revenue and expenditure decentralization on growth rate of GDP per capita. Furthermore, the advanced European countries experience a more

pronounced positive impact of decentralization on growth. Specifically, fiscal decentralization, measured by the quantitative share of local government expenditures and revenues in total government expenditures and revenues, has a stronger positive and statistically significant impact on economic growth in the subsample of advanced European countries when the long-term effects of decentralization on growth are examined related to the entire sample of 31 European countries.

Furthermore, our empirical results suggest that the link between decentralization and economic growth in the European countries follows a nonlinear pattern. From a growth perspective, there exists a certain "optimal" level of fiscal decentralization, implying that in countries with a lower level of decentralization, an increase in decentralization yields more pronounced positive effects on growth. On the other hand, in countries with a higher level of decentralization, further decentralization begins to impede economic growth. In comparison to our previous study on the effects of fiscal decentralization on economic growth in Central and Eastern European countries, our empirical findings reveal differing effects of fiscal decentralization based on the country context. Namely, for the sample of 11 CEE countries, we previously found that fiscal decentralization appears to have a statistically significant negative impact on economic growth (Makreshanska-Mladenovska and Tashevska, 2019). This outcome may stem from differences in the quality aspects of fiscal decentralization and consequently, the macroeconomic implications of decentralization may differ significantly across different countries.

In conclusion, while fiscal decentralization holds the potential to spur economic growth, its impact depends on a range of factors and context-specific circumstances. Besides the level of economic development, other factors, such as the quality of institutions, corruption, government effectiveness etc. could be included in future research on the topic.

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ANNEX

Table A.1: Variables: description and sources

Variable	Description	Source
Economic growth	GDP per capita growth (annual %)	World Development Indicators, World Bank
Expenditure decentralization	Local expenditures, % of general government expenditures	Fiscal Decentralization Database, World Bank
Revenue decentralization	Local revenues, % of general government revenues	Fiscal Decentralization Database, World Bank
Government expenditures	General government expenditures, % of GDP	World Economic Outlook Database, IMF
Budget	Budget balance (surplus/deficit), % of GDP	World Economic Outlook Database, IMF
Inflation	Inflation, consumer prices (annual %)	World Economic Outlook Database, IMF
Openness	Trade - exports and imports of goods and services, % of GDP	World Development Indicators, World Bank
Savings	Gross savings, % of GDP	World Development Indicators, World Bank
Capital	Gross fixed capital formation, % of GDP	World Development Indicators, World Bank
Patents	Patent applications, residents and nonresidents	World Development Indicators, World Bank
School	Secondary school enrollment (ratio of total enrollment to the population of the age group)	World Development Indicators, World Bank
Population	Population growth (annual %)	World Development Indicators, World Bank
Urbanization	Urban population, % of total population	World Development Indicators, World Bank
Dependency	Age dependency ratio (people younger than 15 or older than 64, % of working-age population)	World Development Indicators, World Bank