# Fiscal Decentralization and Economic Growth: Theory and Application

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November 2017

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## Abstract

In this study, we examined the effect of fiscal decentralization on economic growth. In economics, tacit and dispersed knowledge, public choice school, and principal–agent approaches provide a theoretical framework for this relationship.

This study used both theoretical and empirical approaches. First, the fiscal decentralization–growth relationship was theoretically investigated and then the OECD countries were analyzed using panel data for the period 1995–2012. As a result, we found that different decentralization measurement criteria and different empirical methods have different effects on growth

Keywords: fiscal decentralization, economic growth

## 1. Introduction

Fiscal decentralization (FD) has become increasingly popular due to its importance for many countries. There is no consensus among economists about the definition and measurement of FD. In the literature, local government expenditure, income, and tax revenue are utilized for the measurement of FD, whereas theoretical discussions are related to the effects of FD. FD exhibits good and bad sides, both theoretically and empirically.

In this study, the relationship between FD and economic growth will be evaluated first in a theoretical way. In the theory of economics, hidden and dispersed knowledge theory, public choice school, and principle–agent approaches provide a theoretical perspective for investigating the relationship between FD and economic growth. In addition, there are also theoretical approaches in public finance theory examining this relationship.

In this study, the relationship between FD and economic growth is tested for 25 OECD countries. Studies in the literature have reported different results for different groups of countries, different methods, and for different periods. For this reason, we estimated panel data

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models by using classical, fixed effects, and random effects methods. Thus, we determine how the coefficients, the $t$ statistics, and the direction of the relationship change as the model differentiates, and demonstrate how the results change when the method changes.

We set the FD criteria by dividing the data into two groups. In the first group, we used the local government expenditure, income, and tax revenue to GDP ratios and established the models with these data. In the second group, we modeled the local government expenditure to the total public expenditure ratio, the local government income to total public income ratio, and the local government tax revenue to total public tax revenue ratio.

We added an instrumental variable for institutions and a dummy variable for governance type to solve the endogeneity problem, which is a significant issue in the empirical investigation, to increase the explanatory power of our model.

The rest of the work is organized as follows. In the second part of the study, the relationship between FD and economic growth will be theoretically investigated. The third part will examine the literature. The fourth part empirically tests the FD and growth data of 25 OECD countries. The findings are discussed and conclusion presented in the fifth and sixth parts, respectively.

## 2. The Effect of Fiscal Decentralization on Economic Growth: A Theoretical Approach

It is possible to divide the literature into two streams in terms of the impact of FD on economic growth (Oates, 2005; Martinez-Vazquez et al., 2015). First-generation explanations were developed by Oates (1972) and Tiebout (1956). In the context of the first generation, public services are provided more efficiently along with FD. This is a prominent point in the explanation for the positive relationship between FD and economic growth. This approach can be handled within the framework of knowledge. It is possible that local governments have better knowledge of basic needs (Lessmann and Markwardt, 2012; Rodriguez-Pose and Ezcurra, 2010) as much as the quantity and quality of local public goods (Baskaran et al., 2016).

In the second generation, explanations are developed later and the assumption of a benevolent public administrator is removed. By removing this assumption, the importance of knowledge becomes even more striking when it comes to developing second-generation explanations for the relationship between FD and growth (Rodriguez-Pose and Ezcurra, 2010).

In the second-generation explanations, the knowledge problem and the approach of public choice school are important. The second-generation explanations deal with those institutions important for the actions of economic agents with incomplete knowledge and uncertainty, as public administrators have different goals from the goals of society (Oates, 2005). The second

generation can be considered as an attempt to establish a better theoretical framework for the impacts of FD. Hayek's ignorance (knowledge) theorem, the principle–agent problem, and the public choice perspective present new theoretical frameworks that we will use in this paper (see Martínez-Vázquez et al., 2015).

As mentioned earlier, the sign of the relationship between FD and economic growth depends on the method, countries, and period under consideration and can be positive or negative. This uncertainty is also true for the theoretical analysis. In terms of the effects on growth, it is possible to develop and find arguments for and against FD.

According to Hayek (1948), the dispersed character of knowledge is one of the fundamental features of social life. The knowledge required to carry out economic activities is dispersed among individuals. As this knowledge is not cumulative, it is not possible for anyone or any group to have all knowledge about social life. The dispersed nature of knowledge makes it impossible to solve problems that we encounter during economic activities when all decisions are taken by one person or central group; therefore, we should let individuals take their own decisions to reach the best result. This thought is a result of Hayek's adaptation of "spontaneous order," which is developed by Adam Ferguson, Bernard Mandaville, David Hume, Adam Smith, and Carl Menger.

This notion of knowledge can be applied to the relationship between FD and economic growth. The needs of individuals living in different regions of the country can differentiate to their possessions, their dispossessions, their culture, etc. It may not be possible for a central government to develop different treatments for different regions even if they have all knowledge. Lessmann and Markwardt (2012) state that local authorities have more knowledge about local needs and can provide public goods more efficiently.

Another theoretical explanation for the positive effects of FD on growth is provided by the principle–agent perspective. According to the principle–agent problem, information asymmetry between the principle and the agent causes inefficiency. When this explanation is applied to FD, people can be regarded as "the principle" and public administrators/rulers as "the agent."

The principle–agent problem is related to the performance of the agent. The agent may tend to keep their performance to a minimum. From this point of view, it can be said that the principle–agent perspective takes place among the second-generation explanations. The people (principle) aim to increase their income and prosperity and they think that the rulers (agent) will act accordingly. The information asymmetry between them arises in relation to the performance

and intentions of the rulers. Rulers may have different purposes from those of the people. In the case of a central government that holds all the authority, the greater the distance between the center and the people the more negative the effect and magnitude of the information asymmetry. Transferring authority to local governments allows the people to inspect the rulers by reducing the principle–agent distance. On the other hand, the public has the opportunity to make a more accurate performance evaluation over local governments.

The third explanation for the positive effect of FD on economic growth is provided by the public choice perspective. Brennan and Buchanan (1980) point out that the state shows a tendency to grow by increasing public spending. FD, along with fiscal rules, prevents the growth of the state. According to the public choice perspective, the objectives of public administrators and voters are different. Public administrators, like other rational actors, try to achieve their goals. This leads to vote maximization through lobbying. Here, being close to the center and the size of the region (voting potential) become important. Transferring the powers of central government to local governments can shorten the principal–agent distance, thereby increasing the possibility of limiting lobbying and rent-seeking activities, and positively affecting efficiency and growth.

In addition to these approaches, according to Klugman (1994), decentralization is also useful in the case of a negative economy of scale. When the production of public goods and services has a negative economy of scale, FD makes a positive contribution to growth by increasing efficiency.

It is also possible to develop perspectives that the sign of the relationship between FD and growth may be negative, despite theoretical explanations of the positive effects on economic growth. Theoretical perspectives used to examine the positive effects of FD may also be used for the negative effects.

Hayek's knowledge theorem emphasizes that the knowledge problem can be solved by letting individuals take decisions and act. Although local governments have better knowledge of their regions, the fact that decisions are taken by the local rulers rather than individuals may cause a similar knowledge problem.

Even if FD allows more efficient auditing and performance appraisal from the principle–agent perspective, it is not certain that this problem will be fully solved even during periods when FD is high. The principle–agent problem emerges even at firm-level, which is why it is not certain

that FD will solve the problem of asymmetric information between principle and agent despite the fact that decentralization offers a more effective control mechanism.

The most important theoretical explanation for the negative effects of FD on economic growth comes from the public choice school. The rulers that trying to maximize their own purpose will still be true for local rulers. Owners of local firms that are not big enough to lobby on central government can appear as a pressure element on local governments. In this case, as a result of FD, transferring authority to local governments may increase lobbying and rent-seeking, and cause a negative impact on growth. Thus, shifting decision-making mechanisms from central to local government may increase rent-seeking and lobbying activities. Another problem is corruption. In recent studies, it was found that FD may increase corruption, resulting in a negative impact on growth.

Another negative impact of FD occurs with excessive tax burden and levies. When local governments' independency increases, local governments will have opportunity to impose higher taxes. This policy may cause a decrease in economic growth and welfare of people in their region.

## 2.1. Institutions and Fiscal Decentralization

One of the important elements of the impacts of FD is the quality of institutions. As mentioned above, the corruption–FD–growth relationship is one of the important examples of institutional effects. Institutions are important for three reasons as described below:

1. Neglecting institutions in growth models is seen as a serious mistake. According to institutional economics, the quality of institutions is a fundamental reason for the difference between the countries' economic levels (North, 1990; Acemoglu ve Robinson, 2013). For this reason, institutions should be added to any growth model.

2. According to Acemoglu and Robinson (2013), institutions are the main determinant of economic growth in terms of their status and degree of inclusivity. This is also important to determine the direction of the FD–economic growth relationship. As mentioned earlier, FD in which corruption is high affects growth negatively with lobbying and rent-seeking activities.
3. The third factor in the importance of institutions is related to the empirical method. The problem of endogeneity relates to the direction of the relationship between FD and growth. FD can influence growth and growth can influence FD. The addition of "institutions" as an instrumental variable may solve the endogeneity problem (Ligthart and Oudheusden, 2017; Martinez-Vazquez, et al., 2015).

## 3. Literature Review on the Relationship between Financial Decentralization and Economic Growth

Baskaran et al. (2016) conducted a meta-analysis by using the empirical literature and discussed possible answers. All studies carried out up to 2013 are included in their work. According to the result, the consensus about the effect of decentralization on economic growth is first related to how it is measured.

Gemmell et al. (2013) examined 23 OECD countries for the period 1972–2005 and found that the decentralization of expenditure is associated with lower economic growth and the decentralization of income is associated with higher growth. According to the findings, it cannot be concluded that marginal changes in spending and income decentralization support growth. According to the authors, the reason for this is that the results depend on whether local government expenditure is financed by central government tax revenue or transfers.

Lozano and Julio (2016) studied on Colombia for the period 1990–2011 and found that FD has a positive effect on regional economic growth. The results of the panel and cross section methods support each other.

Ligthart and Oudheusden (2017) found a positive relationship between FD and economic growth in their study of 56 countries for the period 1990–2007. However, when countries with different characteristics are applied to this model, this finding loses its validity.

Buser (2011) examined the impact of institutional structure on public sector decentralization for 20 high-income OECD countries for the period 1972–2005. He found that an increase in public sector decentralization is associated with higher income levels; thus, better institutions have increased the positive income effect of decentralization.

Akai and Sakata (2002) used a cross section method to analyze state-level data from the United States. Their findings contradict the results of previous studies; on the other hand, theoretical expectations support the idea that FD in developed countries could contribute to economic growth. The dataset used in the study allows minimizing the actual impact of FD on economic growth by keeping differences in terms of trade, culture, and economic development to a minimum. This dataset exposes the positive influence of FD.

Rodriguez-Pose and Ezcurra (2010) examined capital and current expenditures in a group of countries including India, Mexico, Spain, USA, and Germany. Local governments direct their resources from capital expenditures to current expenditures in all countries except the US. Contrary to expectations, current expenditures in countries with lower economic growth are

relatively higher. In Spain, the authorities were organized from the bottom up. Central, federal, or supranational governments play an important role in ensuring greater production efficiency and greater economic growth.

## 4. Data and Models

### 4.1. Data

We obtained FD data for 24 of the 25 OECD[1] countries from OECD website. Turkey's data is from the Republic of Turkey Ministry of Development. Institutions data were obtained from the Heritage Foundation. GDP growth, investment rate, population growth rate, and trade openness data are from the World Bank. We divided the FD data into two groups and used three different FD indicators in each group with our models. Thus, we could test the effects of different FD criteria on growth.

The first group of FD criteria consisted of the local government expenditure to GDP ratio, the local government revenue to GDP ratio, and the local government tax revenue to GDP ratio. In the second group of FD criteria are the local government expenditure to total public expenditure ratio, the local government income to total public income ratio, and local government tax revenue to total public tax revenue ratio.

### 4.2. Models

Our models include 25 OECD countries from 1995 to 2012. We added a dummy variable to represent federalism, "institutions" as an instrumental variable for the endogeneity problem, and control variables used in the classical growth model. Thus, we aimed to achieve a better growth model and to solve the endogeneity problem.

We estimated the models using classical, fixed effects, and random effects methods and present the results in Tables 1 and 2. We could also determine how the relationship between FD and growth varies according to the different models. However, in terms of the econometric method, it is appropriate to use one of these models. To determine the appropriate model, we first determined the existence of unit effects according to the F statistic in the fixed effects method; then, with the Haussmann test we found that the fixed effects method is appropriate in both models. Because of heteroscedasticity, autocorrelation, and cross sectional correlation, we

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[1] Austria, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Luxembourg, Holland, Norway, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingtom, and Turkey.

estimated the fixed effects model using the Driscoll–Kraay method, which is a robust estimator. We present the estimation results in Table 3.

We also controlled unit-roots according with cross-sectional dependency of variables. Although the *gdpg*, ins,and *fd2* variables used in the model are stationary at level, other variables are stationary in the first difference. We used the stationary variables. For pre and post-estimation test see Annex-1 and Annex-2.

<u>Model 1</u>

$$gdpg_{it} = \alpha_i + \beta_1 fd1_{it} + \beta_2 fd3_{it} + \beta_3 fd5_{it} + \beta_4 X_{it} + \beta_5 INS_{it} + \beta_6 dummy_{it} + u_{it}$$

<u>Model 2</u>

$$gdpg_{it} = \alpha_i + \beta_1 fd2_{it} + \beta_2 fd4_{it} + \beta_3 fd6_{it} + \beta_4 X_{it} + \beta_5 INS_{it} + \beta_6 dummy_{it} + u_{it}$$

gdpg: GDP growth rate

*fd1*: local government expenditure to GDP ratio

*fd2*: local government expenditure to total public expenditure ratio

*fd3*: local government income to GDP ratio

*fd4*: local government income to total public income ratio

*fd5*: local government tax revenue to GDP ratio

*fd6*: local government tax revenue to total public tax revenue

*X*: control variables (*i*: investment rate; *pg*: population growth rate; *to*: openness)

*ins*: institutions

*dummy*: dummy for federalism (equals 1 for countries with federalism and 0 otherwise).

Table 1: Model 1 Results

Dependent variable: *gdpg*

| Variables | Classical | Fixed Effects | Random Effects |
|---|---|---|---|
| fd1 | −0.06*** | 0.06 | −0.59** |
| | (0.01) | (0.09) | (0.02) |
| fd3 | −0.04 | −0.07 | −0.01 |
| | (0.46) | (0.46) | (0.45) |
| fd5 | −0.66 | −0.48 | −059 |
| | (0.55) | (0.54) | (054) |
| i | 0.87*** | 0.88*** | 0.87*** |
| | (0.06) | (0.06) | (0.06) |
| pg | 2.27*** | 2.13*** | 2.20*** |
| | (0.51) | (0.50) | (0.50) |
| to | 0.07*** | 0.07*** | 0.07*** |
| | (0.01) | (0.01) | (0.01) |
| ins | 0.19*** | 0.15*** | 0.17*** |
| | (0.06) | (0.06) | (0.06) |
| dummy | −091*** | | −0.89** |
| | (0.29) | | (0.41) |
| cons | 3.19*** | 1.64 | 3.13*** |
| | (0.25) | (1.02) | (0.35) |

Table 2: Model 2 Results

Dependent variable: *gdpg*

| Variables | Classical | Fixed Effects | Random Effects |
|---|---|---|---|
| fd2 | 0.01 | 0.17*** | 0.04** |
| | (0.01) | (0.03) | (0.01) |
| fd4 | −0.04 | −0.04 | −0.03 |
| | (0.14) | (0.13) | (0.13) |
| fd6 | −0.06*** | −0.24*** | −0.09*** |
| | (0.01) | (0.07) | (0.02) |
| i | 0.85*** | 0.84*** | 0.87*** |
| | (0.06) | (0.06) | (0.06) |
| pg | 2.20*** | 1.82*** | 2.08*** |
| | (0.51) | (0.48) | (0.49) |
| to | 0.07*** | 0.08*** | 0.07*** |
| | (0.01) | (0.01) | (0.01) |
| ins | 0.19*** | 0.11*** | 0.16*** |
| | (0.06) | (0.05) | (0.05) |
| dummy | −059** | | −0.41 |
| | (0.29) | | (0.44) |
| cons | 2.70*** | 0.64 | 2.32*** |
| | (0.28) | (1.05) | (0.41) |

Table 3: Robust Fixed Effects Models Results

Dependent variable: *gdpg*

| Variables | Model 1 | Model 2 |
|-----------|---------|---------|
| fd1 | 0.06 | |
| | (0.10) | |
| fd3 | −0.07 | |
| | (0.30) | |
| fd5 | −0.48 | |
| | (0.54) | |
| fd2 | | 0.17*** |
| | | (0.03) |
| fd4 | | −0.04 |
| | | (0.12) |
| fd6 | | −0.24*** |
| | | (0.07) |
| i | 0.88*** | 0.84*** |
| | (0.16) | (0.06) |
| pg | 2.13*** | 1.82*** |
| | (0.46) | (0.48) |
| to | 0.07** | 0.08*** |
| | (0.02) | (0.01) |
| ins | 0.15 | 0.11** |
| | (0.10) | (0.05) |
| dummy | | |
| cons | 1.64 | 0.64 |
| | (1.05) | (1.05) |

Note: In all tables, (***), (**), and (*) represent significant level at 1%, 5%, and 10%, respectively. Numbers in brackets are the standard errors.

## 5. Findings

In accordance with the literature, the effect of FD on economic growth varies according to the econometric method used in both models. The signs and significance of coefficients of instrumental variables do not change according to the method except for the dummy variable. This makes our findings about FD more striking.

In the first model, using the classical and random effects methods, *fd1* is the only FD measurement that is significant and its sign is negative. In the fixed effects method, no significant measure of FD is identified.

In the second model, *fd6* is significant and negative with all three methods. *fd2* is significant and has a positive sign in the fixed effects and random effects methods.

The relationship between institutions (*ins*) and growth is positive in each model and each method. The dummy variable we have added to represent the federal government has a negative and significant relationship with growth in each model. All control variables are significant and have a positive effect on growth in the first and second models.

In the first model that we estimated with the robust estimator method, there is no significant relationship between FD variables and growth. In the second model, *fd2* affects growth positively and *fd6* affects growth negatively. Control variables have a positive effect on growth in both models. *Ins* is insignificant in the first model, but is significant and positive in the second model.

Explanatory variables i, y, and to affect growth positively in all models.

According to these results, we found that the effects of FD on growth are differentiated by the measures and methods used. This result is consistent with the literature.

In additon, the results in Table-3 shows that fd2 has a positive sign while fd6 has negative. So experiencing fiscal decentralisation in public expenditure affects the economy in a positive way, conversely an increase of fiscal decentralisation in taxation affects negatively. These results may serve as a guide for decision-makers.

In this respect, another important result is that the size of fiscal decentralisation is important as a ratio of total budget rather than a ratio of GDP.

The determination of the fixed effect model as an appropriate one shows that the characteristics of countries have significant effects on fiscal decentralization and growth relationship. Factors such as institutions, the form of government (nation state or federalism), and etc. play important role in the significance and sign of this relationship.

## 6. Conclusion

In this study, we evaluated the relationship between FD and growth theoretically and empirically. The Hayekian knowledge perspective, principle–agent relationship, and public choice school provide a theoretical framework for this relationship. However, as shown here and in other recent works, theoretical approaches do not provide a definite judgment on the direction of the fiscal decentralization–economic growth relationship. For this reason, the characteristics of countries, such as the state of their institutions and their forms of governance, are also gaining importance.

As a result of our work, we found that the relationship between fiscal decentralization and growth varies according to the FD measures and analytic approach used; therefore, further research is needed to contribute new methods, different country groups, different periods, and different fiscal decentralization criteria.

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