Can Fiscal Decentralization Reduce the Public Sector Size in Europe: An Empirical Study

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Leviathan hypothesis; Sub-national governments; European countries

Abstract: The main aim of this paper is to test the Leviathan hypothesis; namely, that fiscal decentralization reduces the size of public sector, using panel data analysis, and employing data for twenty European countries over the period 1999-2016. The Leviathan hypothesis suggests a negative relationship between the public sector size and fiscal decentralization. In the empirical literature, however, there is no clear consensus on whether fiscal decentralization actually reduces the public sector size. Some authors suggest that the effects of fiscal decentralization are quite the opposite - given that the sub-national authorities are better informed about their citizens’ preferences, the decentralized provision of public goods might be more efficient and better tailored to the citizens’ preferences, which can actually increase the local demand for public services, and hence, the size of the public sector. This research finds no evidence that fiscal decentralization has any effect on the size of the government.

1. INTRODUCTION

The relationship between fiscal decentralization and the size of the public sector has been widely explored in the literature. However, a conclusive agreement on the sign of the influence of fiscal decentralization on the public sector size has not been reached yet. Different authors use different methodologies and different indicators in their empirical approach and point to different conclusions.

Prohl and Schneider (2009) argue that the growth in public sector size in the most developed economies, especially during the 1980s and 2000s, has motivated both theoretical and empirical studies of the long-term determinants of the public sector size. Oates’s decentralization hypothesis (1972, in Prohl and Schneider, 2009) suggests that fiscal decentralization may have a reducing effect on the size of government, implying that government size in the economy may be smaller if government responsibilities for taxes and expenditures are decentralized. Along those lines, Brennan and Buchanan (1980) developed the Leviathan hypothesis where governments, with a monopolistic power of taxation, are seen as leviathans aiming to maximize their size. They argue that the main role of fiscal decentralization is to limit the tax powers of the Leviathan. They further suggested that taxpayers’ mobility (i.e., voting with the feet) encourages competitive pressure on local governments to provide public good at the optimal level according to the wishes of the citizens/voters, replacing the explicit fiscal constraints. As a result, Brennan and Buchanan (1980, p. 184) define their leviathan hypothesis, suggesting that “…the total government intrusion into the economy is smaller, the greater the extent to which taxes and expenditures are decentralized”. Fiscal decentralization should bring about a smaller and more efficient government because local governments tend to have a comparative advantage in

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resource allocation when compared to the central level of government. In other words, by bringing the government “closer to the people”, fiscal decentralization allows for a better match between local preferences and local policies.

As summarized by Kim (2008), there are three main types of decentralization; namely, administrative, fiscal and political decentralization. In this study we focus only on the fiscal decentralization and examine its influence on the public sector size.

Litvack et al. (1998) emphasize that successful fiscal decentralization depends on the institutional design, which can change the impact of decentralization on equity and macroeconomic stability. They particularly emphasize the importance of institutional context in developing countries because their institutions, information and capacities are very weak and that can have an influence on the decentralization process in those countries. Letelier (2005) uses a panel of 64 countries, for the period 1973-1997, to empirically test different hypotheses about the determinants of decentralization. The findings suggest that there is a negative impact of urbanization on the decentralization level. In general, higher per capita income stimulates decentralization, especially in high-income countries. However, the results change when the total government expenditures are divided into different functions.

Makreshanska and Petrevski (2016) empirically investigate the impact of fiscal decentralization on government size using a panel of 28 European countries. The main findings suggest a significant effect of expenditure decentralization on the size of government, especially in former transition economies. However, when they used income decentralization as an explanatory variable, they could not find the evidence to support the Leviathan hypothesis. They also included two measures of vertical fiscal imbalance and provided empirical support for the “common pool” hypothesis only for former transition countries where they rely on tax sharing, central government grants and other forms of intergovernmental fiscal transfers that indeed lead to larger governments. As for the effects of control variables, their results showed that higher public debt leads to larger government, while trade openness is associated with smaller government size. They also found that the effects of population density and dependent population differ between developed and former transition countries (CEE countries), while a higher degree of urbanization reduces government size only in a subset of developed countries. Finally, they confirmed that the global financial crisis has had a strong effect on the level of government spending in Europe.

Fiva (2006) uses data on the decentralization of tax revenues to estimate the relationship between fiscal decentralization and government size, employing panel data from 18 OECD countries from 1970 to 2000. Fiva (2006) differentiates between the revenue measure and the expenditure measure used to calculate the scope of fiscal decentralization, and points to the advantages of the new improved tax revenue decentralization indicator (Stegarescu, 2005).

Jin and Zou (2001) investigate the relationship between fiscal decentralization and the size of government (both total government and different levels of government) using panel data for 17 industrial and 15 developing countries, from 1980 to 1994. They conclude that: (1) decentralization leads to smaller central governments, larger sub-national governments and larger total governments; (2) income decentralization increases sub-national governments less than central governments, leading to smaller aggregate governments; and (3) vertical imbalances tend to increase the size of sub-national, national and aggregate governments.
Cassette and Paty (2009) used panel data for the EU-15 and examine the effect of fiscal decentralization on the aggregate, national and sub-national size of government, separating the long-term effects of decentralization from its short-term dynamics over a 33-year period (1972-2004). They find that in the long run, tax autonomy reduces central-level spending, but increases, to a large extent, sub-national spending, leading to more spending by aggregate levels of government. They also find that vertical imbalances tend to increase the size of sub-national, national and aggregate governments.

2. METHODOLOGY

In order to test the previously stated hypotheses, we employ data for twenty European Union countries in the period 1999-2016. The dependent variable in the estimated model is the public sector size, measured as a share of general government final consumption expenditures in GDP. The independent variable of interest is the extent of fiscal decentralization, measured as the share of sub-national government expenditures in total government expenditures. The control variables used in this model refer only to the economic aspects, and include: economic welfare (measured by GDP per capita), trade openness (measured as the share of imports and exports in GDP) and inflation (measured as the annual change of consumer prices). The choice of control variables is based on the relevant literature on the public sector size determinants. By means of the GDP variable, it is possible to account for the so-called Wagner’s law. Wagner’s law implies that the size of the government is related positively to the degree of economic development. Since the income elasticity of demand for public goods is greater than one, a higher level of economic development leads to a larger public sector, in absolute and relative terms. In addition, process of urbanization and socio-economic progress in general increases the complexity of the whole system and consequently calls for the expansion of state activities (new laws, institutions, regulations, urban public services). The second control variable; namely, the share of the sum value of imports and exports in GDP, controls for Rodrik’s compensation hypothesis. In his seminal paper, Rodrik (1996) suggests that the exposure of an economy to international trade increases the size of its government and demonstrates empirically the robustness of the relationship; namely, it holds for different measures of government expenditures, for both low- and high-income countries, and for a wide range of control variables. The rationale for this finding is that government expenditures play an important role in reducing the external risk that open economies are exposed to.

Using an appropriate econometric strategy and the sample of twenty EU countries in the period 1990-2016, we aim to test the following hypothesis:

\( H_1 \) – Fiscal decentralization has an effect on the size of government.

Panel fixed effect model is a simple linear model where the constant term changes with each unit of observation, but is constant over time. The fixed effect model is defined by:

\[
y_{it} = \alpha_i + \beta_1 x_{it,1} + \beta_2 x_{it,2} + \ldots + \beta_k x_{it,k} + \epsilon_{it}
\]

where \( i = 1, \ldots, N \) and \( t = 1, \ldots, T \)

where \( N \) denotes the number of observation units, \( T \) denotes the number of periods, \( x_{it,k} \), \( k = 1, \ldots, K \) denotes the value of the k-th independent variable, the i-th unit of observation in the period \( t \). Parameter \( \alpha_i \) is a constant term different for each observation unit, \( \beta_1, \ldots, \beta_k \) are the parameters

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3 The choice of EU countries included in the sample was led by the data availability.
to be estimate. Furthermore, $\varepsilon_{it}$ is the error of estimation of $i$-th observation unit at time $t$ and it is assumed that $\varepsilon_{it}$ are randomly and identically distributed random variables by observation units and time, with mean 0 and variance $\sigma_{\varepsilon}^2$. It is also assumed that all $x_{it}$ are independent with $\varepsilon_{it}$ for all $i$, $t$, $k$.

Random effect model is a simple linear model where it is assumed that the observation units are randomly selected and that the differences between the units of observation are random. Random effect model has the following form:

$$y_{it} = \mu + \beta_1 x_{it,1} + \beta_2 x_{it,2} + \ldots + \beta_k x_{it,k} + \varepsilon_{it}$$

where $\mu$ is a common constant member for all observation units.

The expected impact of independent variables on the dependent variable is given in Table 1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Name</th>
<th>Source</th>
<th>Expected effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public sector size</td>
<td>exp</td>
<td>World Bank Data</td>
<td></td>
</tr>
<tr>
<td>Fiscal decentralization</td>
<td>sub</td>
<td>OECD Fiscal Decentralization Database</td>
<td>- or +</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>gdpc</td>
<td>World Bank Data</td>
<td>+</td>
</tr>
<tr>
<td>Trade openness</td>
<td>medt</td>
<td>World Bank Data</td>
<td>- or +</td>
</tr>
<tr>
<td>Inflation</td>
<td>infl</td>
<td>World Bank Data</td>
<td>- or +</td>
</tr>
</tbody>
</table>

Source: Author's calculation

In what follows we estimate first the fixed effect model:

$$\exp_{it} = \alpha_i + \beta_1 sub_{it,1} + \beta_2 gdpc_{it,2} + \beta_3 medt_{it,2} + \beta_4 infl_{it,2} + \varepsilon_{it}$$

The results of estimation are presented in Table 2. It is shown that a statistically significant effect was found for the control variables used; namely, GDP per capita, trade openness and inflation, but our independent variable of interest; namely, fiscal decentralization appears to be statistically insignificant.

<table>
<thead>
<tr>
<th>Variable</th>
<th>estimated coefficient</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal decentralization</td>
<td>.0235211</td>
<td>1.31</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>.0000356</td>
<td>3.88</td>
</tr>
<tr>
<td>Trade openness</td>
<td>-.0172209</td>
<td>-3.62</td>
</tr>
<tr>
<td>Inflation</td>
<td>-.0789251</td>
<td>-2.28</td>
</tr>
<tr>
<td>constant</td>
<td>20.04915</td>
<td>31.76</td>
</tr>
</tbody>
</table>

Source: Author's calculation

We then proceed with the estimation of the random effect model and the obtained results are listed in the second column in Table 3. The results are quite comparable to the results obtained in the fixed effects model; namely, GDP per capital, trade openness and inflation are statistically significant. In this model, however, the fiscal decentralization variable proves to be statistically significant, suggesting a positive effect of fiscal decentralization on the size of government.
Table 3. Random effects model: estimation results

<table>
<thead>
<tr>
<th>Variable</th>
<th>estimated coefficient</th>
<th>z-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal decentralization</td>
<td>.0329468</td>
<td>2.03</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>.00000323</td>
<td>3.61</td>
</tr>
<tr>
<td>Trade openness</td>
<td>-.0154417</td>
<td>-3.47</td>
</tr>
<tr>
<td>Inflation</td>
<td>-.0822643</td>
<td>-2.39</td>
</tr>
<tr>
<td>constant</td>
<td>19.75228</td>
<td>24.90</td>
</tr>
</tbody>
</table>

Source: Author’s calculation

3. RESULTS AND DISCUSSION

In order to decide which of the two models, fixed effects or random effects, is more appropriate, Hausman test is employed. The results suggest that fixed effects model is preferred compared to random effects model; hence, we focus on the obtained results from the fixed effects model estimation.

As shown in Figure 2, all variables, except for the fiscal decentralization, are statistically significant. In other words, we accept the hypothesis that fiscal decentralization has no real effect on the size of government. The rationale for this finding lies in the possibility that the two opposing effects of fiscal decentralization on public sector size cancel each other out, rendering the overall effect insignificant. As for other significant effects, GDP per capita exerts a small, but positive effect on the size of government, which is in line with Wagner’s Law. The negative sign of the trade openness variable indicates that more open economies seem to have smaller governments, which is opposite to Rodrik’s compensation hypothesis, but supports the idea that countries are competitors in the international market and by reducing the government size, they attempt to become more attractive in the international market. The effect of inflation is also negative, suggesting that countries with a higher level of inflation have smaller governments.

4. CONCLUSION

This research is an essential empirical study of the relationship between fiscal decentralization and the size of the public sector. The countries investigated are the following EU-20: Belgium, France, Italy, Luxembourg, the Netherlands, Germany, Denmark, Ireland, the United Kingdom, Greece, Portugal, Spain, Austria, Sweden, the Czech Republic, Estonia, Latvia, Hungary, Slovakia and Slovenia, and the time coverage is 1999-2016. The advantage of this research is that our panel data are balanced, that is, data are available for each observation unit in each period and for all selected variables. After estimating the specified model using both the fixed and random effects model, the preferred model proved to be the fixed-effects. The obtained fixed effect estimates indicate fiscal decentralization has no impact on the size of the public sector in the selected European countries. In other words, this study finds no evidence for the Leviathan hypothesis which suggests that countries with higher degree of fiscal decentralization have smaller governments.

Within the empirical literature on the size of government and fiscal decentralization, there is still much room for improvement. One of the issues particularly important is the problem of measurement for both fiscal decentralization and public sector size.
REFERENCES


