Democracy and government spending

Balamatsias, Pavlos

6 March 2018

Democracy and government spending

Balamatsias Pavlos

Abstract

In this paper, we argue that democracies positively affect government expenditure. We hypothesize that democracies produce more public goods for their citizens because they are better at using tax revenues, while autocracies misappropriate taxes. We empirically test the validity of this argument using data on 61 countries from 1993 to 2012. The explanatory variable used is a dichotomous measure of democracy, but we alter our analysis from earlier research by assuming that democracy is not an exogenous variable based on the theory of Huntington (1991) and the methodology of Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a) about regional democratization waves. According to this theory, democratization occurs in regional waves; consequently, diffusion of demand for or discontent with a political system is easier to happen in countries in the same area due to socio-political and historical similarities. This measure shows us that demand for or discontent with a political system in a geographical area influences the power of a country's political regime and its effect on government policies. Our results using a number of estimations and robustness tests show us that regional democratization waves positively correlate with democracy. Furthermore, our main 2SLS regression as well as our OLS, fixed effects and GMM estimations show us that democracy increases production of public goods and services and education spending. When controlling for a smaller dataset, without African and Middle-eastern countries our first-stage results remain the same and the positive effect of democracy on government spending is now quantitatively bigger suggesting wealthier democracies produce more public goods and services when compared to poorer ones. This hypothesis is further substantiated when we use a sample consisting of non-OECD countries and find that democracy has no effect on government spending. Our results show that democracies where large segments of the population belong in the middle-income class, vote in favour of these policies because they can utilize government spending to increase production and output, lower inequality and attract foreign capital, unlike poorer democracies.

JEL P16, H5, E62

Keywords Democracy, Political development, Regional democratization waves, Fiscal policy, Government expenditures

1. Introduction

Fiscal policy and more specifically government spending is a major issue in economics and politics. Research on the design and implementation of government spending programmes is at the forefront of economic policy analysis and is also one of the most debated subjects in the political arena. A number of studies on this subject have shown that the political system in every country plays an important role in the size, scope and composition of spending programmes. More specifically fiscal policy choices in democracies are made by the median voter and as a result, government spending in democracies is much greater when compared to autocracies because voters demand increased expenditures which produce public goods and redistribute incomes (Meltzer and Richards (1981,1983), Acemoglu and Robinson (2000b)). In non-democratic countries, powerful economic and political groups influence public policy choices. In such systems, governing elites choose to spend less on producing public goods and on redistribution because they stand to gain less from such policies and instead reallocate funds to increase their economic and political power as well as that of their political friends and allies (Hausken, Martin and Plumper (2004)).

In addition to the role that political systems play in spending policies, some authors have also studied how government expenditures affect political regimes and have found that the composition and size of spending programs can have an effect on the political regime. More specifically in autocracies, increased government spending targeted at specific parts of the population increases discontent leading to revolts which install a democracy which provides increased government spending in favour of the majority of the population(Wintrobe (2001)). In addition, concessions made by the ruling élite, in the form of increased government spending, can lead to democratization because the poor may view these concessions as a sign of weakness; consequently the lower classes revolt and establish a democratic regime which further increases expenditures in favour of the majority (Acemoglu and Robinson (2000a)).

These two different ways of analyzing the relationship between government spending and political regimes actually suggest that there exists a two-way causal relationship between democracy and government spending where one variable influences the other and is in turn influenced by it; to the best of our knowledge, this possible two-way causality between democracy and government spending has not been the research subject of any other author in the past as well. It is this gap in the literature that we try to cover with this paper; more specifically we will alter our analysis from that of other authors by analyzing this possible two-way causality and trying to find how it influences spending policies.

In addition to examining the two-way causal relationship between democracy and government spending, this paper will also be contributing to existing theories about the determinants of democracy in a country. In the past authors (Helliwell (1994), Rodrik (1999), Persson and Tabellini (2006), Aidt and Jensen (2009), Mutascu(2011)) have always treated a country's political system as an exogenous variable, affected by political and economic conditions within a country, or only influenced by the regime of neighbouring countries, (Persson and Tabellini (2009)). But we will alter our estimation strategy from that of earlier authors by using the methodology of regional waves of democratization seen in Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a) based on the theory of Huntington (1991). This approach is different from earlier ones because we do not treat democracy as an exogenous index or as a variable affected only by democracy in neighbouring countries; instead, we examine how the political system of countries in the same geographical area creates

regional waves of demand for or of discontent with a political system. We then use these regional democratization waves to explain how they affect democracy and consequently government spending in a country, using a 2SLS model.

Initially, we focus on the relevant literature and explore how government spending impacts on democratization; in addition, we also study the effect of democracy on spending policies. Furthermore, we briefly look at some of the most common determinants of government spending and how they interact with the political regime to shape the level and composition of government spending.

In our econometric analysis, we look at the equation and the variables we use to find the impact that the political regime has on government spending. As our dependent variable, we use a dichotomous measure of democracy; but we alter our analysis from that of earlier authors by assuming that the political regime is not an exogenous variable. Instead, we assume that the political regime of countries in the same area impact on a country's own regime by creating regional waves of democratization or repression in a geographical area, as in Huntington (1991), Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a). These regional waves show us the demand for or discontent with a given political system in a geographical area, which in turn influence the power of a country's political regime and subsequently impact on government spending. In order to capture the endogeneity that regional political systems have on a country's own political system and consequently on government spending, we use a two-stage least square (2SLS) fixed effects estimation with data from 61 countries from 1993 to 2012, similar to the methodology of Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a). As an endogenous variable we used a country's democracy index, which is a single dichotomous variable constructed using data on civil and political liberties from Polity IV and Freedom House; the instrumental variable we use is the jack-knifed average of the democracy index of all countries in the same geographical area, which captures the effect that regional democratization waves have on a country's political regime.

Our results using a number of estimations and robustness tests show us that regional waves of democratization have a positive and statistically significant correlation with democracy. Furthermore, our main 2SLS estimation as well as our OLS, fixed effects and GMM estimations show us that democracy has a positive effect on government spending used for producing public goods and general public services and government spending on education. When controlling for a smaller dataset, which does not include African and Middle-eastern countries our first-stage results remain the same while the positive effect of democracy on government spending is now quantitatively much bigger suggesting wealthier democracies produce more public goods and services when compared to poorer ones. This hypothesis is further substantiated when we use a smaller sample consisting of non-OECD countries and find no statistically significant effect of democracy on government spending. These results seem to suggest that democracy increases government expenditure mostly on developed countries because they can use increased government spending more effectively in order to increase productivity and output, decrease inequality (Meltzer and Richards (1981, 1983), Boix (2001)) and attract foreign capital (Schulze and Ursprung (1999)) therefore most voters in these countries are in favour of such policies.

The rest of the paper is organized as follows: In section 2 we present the literature related to our subject. In section 3 we present a simple theoretical model which helps us present our main idea, section 3 has an analysis on the data that we use descriptive

statistics on our variables and a detailed method of construction of our regional democratization index and of the equations we use. In section 5 we present our regression results and Section 6 concludes.

2. Literature Review

According to many authors, government spending has an impact on democratization. For example, Acemoglu and Robinson (2000a) use a political economy model of an autocracy were social unrest due to economic inequality can lead to the toppling of politico-economic elites and pave the way for the consolidation of democracy. In this model the authors argue that concessions by the ruling elite, in the form of increased voting rights and increased government spending, can, in fact, lead to full-scale democratization because the poor can view these concessions as a sign of weakness; consequently the lower classes choose to revolt since they perceive the government as weak and establish a democratic regime. Furthermore, Wintrobe (2001) reviews the behaviours of dictatorships and tries to propose and develop policies towards them. When examining the spending policies which autocracies follow the author argues that they tend to redistribute more but only to specific socio-economic groups which support them and this selective use of government spending increases the cost and the difficulty of repressing the rest of the population. As a result, in the case of many autocratic regimes increased but selective government spending can lead to increased discontent for an autocracy and cause the people to revolt and install a democracy which then provides increased redistribution for more people.

Some authors have also argued that democracy leads to increased public goods production and increased redistribution. Acemoglu and Robinson (2000b) argue that the redistributive programs which occurred in Western Europe during the 19th and 20th centuries were the result of democratization and examine this hypothesis using a model in which autocracies choose if they will extend the voting franchise or not. In case they do, government spending rises since the median voter is now much pooper and demands greater redistribution. After the elite's decision, the poor decide if they will revolt or not. If they revolt, the poor always succeed, seize the elite's wealth and capital and use it in economic and home production, receiving all incomes. The authors conclude that autocracies prefer to democratize in order to avoid the loss of capital and wealth, which results in increased government spending. Hausken, Martin and Plumper (2004) develop a theoretical model where governments choose between providing rents or pure public goods in order to remain in power. The authors argue that when the level of democracy remains low then rents are preferred to the provision of public goods. However, as democratic participation increases, rents become increasingly costly as a source of political support and governments resort to increasing public goods production and provision instead. The authors empirically test the validity of their theoretical result and conclude that robust democratic regimes tend to increase the quantity of public goods they produce and offer to their citizens.

When examining the effect of the political regime on different types of spending, the literature suggests that democracies increase redistribution and public goods production to decrease inequality. Meltzer and Richards (1981, 1983) examine the way majority rule voting and redistributive needs affect fiscal policy using a general equilibrium model with income differences. Their results show that democracies increase taxes and redistribution in order to lower inequality and increase per capita

incomes. Additionally, increased democratization, population growth and increases in inequality and incomes also raise taxes and spending. Boix (2001) examines how democracy and economic growth impact on fiscal policy. His results lead to two conclusions. First, as the economy grows and per capita income increases, production of public goods and capital rises to increase productivity, output and income and reduce inequality. However, since taxes are decided by the median voter a necessary condition for increasing government spending is a democratic political system where the majority of the population belongs to the middle-income class because only they benefit from increased government spending and are in favour of it; neither very poor nor very wealthy people benefit from government spending. Therefore, only relatively wealthy democracies increase government spending. On the other hand, some authors argue that inequality increases government spending regardless of the political regime by magnifying government spending multipliers. Auclert and Rognlie (2016) use an NK, DSGE model where skill differences and labour demand shortfalls limit labour supply and income, leading to inequality and different MPC. In this model, inequality lowers output because the negative covariance between income and the MPC is too small to offset income losses. However, inequality increases government spending multipliers, raising output, investments and income. Balamatsias (2017b) uses an NK macroeconomic model of an economy with imperfectly competitive goods market due to firms' market power and inequality due to skill and wage differences and examines their impact on government spending multipliers, output and expenditure. Results show that government spending multipliers are always greater than unity due to imperfect competition and inequality since in highly unequal economies more people have a higher MPC. As a result, the net increase in output and expenditure caused by increasing government spending is greater in more unequal economies.

Finally, the combined effect of democracy and globalization has been the subject of many studies and authors. Schulze and Ursprung (1999) review the literature on the impact of globalization on fiscal policies and the effect of political competition combined with economic integration. According to this survey, government expenditures under globalization, particularly welfare spending have not been reduced because they protect workers from economic uncertainty, unemployment and income losses which are caused by market integration. In addition, government spending on economic activities such as infrastructure, energy production and manufacturing as well as spending on production of public goods and services such as education has remained relatively stable because it raises productivity, output and profitability in an economy and helps attract private capital. Furthermore, democracy has a positive effect on government spending even in a globalized economic environment because median voters demand compensation and provision of public goods for worker and firms in sectors which are exposed to risks associated with globalization.

3 Theoretical considerations

This section elaborates on the theoretical link between democracy and government spending in order to formalize the testable empirical implications of the theoretical literature. At first sight, this model may appear simple, maybe even simplistic. But our goal is not theory for its own sake. We simply use theory to guide our empirical investigation. This model simply helps us explain how the political system in a country affects the size and composition of government expenditure.

We assume that we have a country ruled by an autocrat. The economy is populated by a continuum of identical individuals indexed by *i* that do not have any control over government choices. Individuals in the economy own the capital stock which they rent to firms; in addition, they supply labour to firms. They consume a single consumption good produced by the firms as well as a public good produced by the government. The utility of the representative individual *i* when an autocracy is in place is given by the following function:

$$U_{i,\alpha} = C_{i,\alpha} + \log\left(G_{ci,\alpha}\right) \quad (1)$$

Where $C_{i,\alpha}$ and $G_{ci,\alpha}$ are the quantities of the private and public consumption goods respectively. Consumption of private goods equals the income that individuals receive from labour and capital i.e.:

$$C_{i,\alpha} = Y_{i,\alpha} \quad (2)$$

Where $Y_{i,\alpha}$ equals the income people receive from labour and income when under an autocratic regime.

Firms in the economy use labour and capital supplied by individuals in the economy in order to produce a single consumption good. In addition to these two inputs, firms also use public capital which is provided by the government. The production function is a simple Cobb-Douglas function with public and private capital:

$$Q_{\alpha}\left(K, L, G\right) = AK_{a}^{a} L_{a}^{(1-a)} G_{k,a}^{\theta} \quad (3)$$

Where A is the total factor productivity, K_a capital in the economy, L_a labour and $G_{k,\alpha}$ the public capital produced by the government, under an autocratic regime. It is easy to prove that, since both capital and labour are owned by the economy's population, the total income received by the individuals in the economy equals total output:

$$Y_a = Q_a \quad (4)$$

Government in our model is endowed with a fixed budget *B* which is allocated between producing government consumption goods ($G_{ci,a}$), government capital ($G_{k,a}$) and rents (*R*) which are used solely by the elite similarly to Hausken, Martin and Plümper (2004):

$$B = G_{ci,a} + G_{k,\alpha} + R \quad (5)$$

In an autocracy rents compose a large part of the government budget compared to democracies; on the other hand democratic governments allocate recourses according to the choice of the majority; therefore under a democratic regime the sum of the government budget is used to produce public capital and public goods and rents are equal to zero.

In the beginning of each period the economy's population can choose to stage a revolution and take power in their hands by establishing a democracy. We assume that once a revolt takes place it is always successful; however it comes at a cost as in Acemoglu and Robinson (2000b) where a share μ of private capital, and labour is destroyed as a result of the revolutionary process. As a result only the remaining share $(1-\mu)$ is used in production. The above imply that the new quantities of private capital (K_d) and labour (L_d) in a democracy are equal to:

$$K_d = (1-\mu)K_a \quad (6)$$

$$L_d = (1-\mu)L_a \quad (7)$$

Public capital and public consumption goods are also similarly affected, however since the political system in place now is a democratic the share of the government budget which was used for rents (*R*) is now used to produce public capital and public consumption goods. Consequently the quantity of public consumption goods and well as public capital can now be less than, equal to, or greater than it was before. Assuming that a percentage λ of the rents is used to increase public capital and (*1-*λ) to increase public consumption goods, we formulate the following relationships about public capital ($G_{k,d}$), public consumption goods ($G_{ci,d}$) and total output in the economy respectively ($Q_d(K,L,G)$), under a democratic regime:

$$G_{k,d} = (1-\mu)G_{k,a} + \lambda R \quad (8)$$

$$G_{ci,d} = (1-\mu)G_{ci,a} + (1-\lambda)R \quad (9)$$

$$Q_d(K,L,G) = AK_d^a L_d^{(1-a)} G_{k,d}^{\theta} \quad (10)$$

Finally the utility of the representative citizen *i* under a democratic regime is equal to:

$$U_{i,d} = C_{i,d} + \log(G_{ci,d}) \quad (11)$$

In this model, the decision to revolt and install a democracy is made by the citizens once they examine the effect that democratization will have on output and income, but more importantly on consumption and utility. We denote the probability that a country *i* exits from autocracy and installs a democracy in time period *t* as $D_{c,t} \in \{0,1\}$, where 0 means that country *c* remains an autocracy and 1 that country *c* becomes a democracy. We then obtain the following relationship:

$$D_{c,t} = \begin{cases} 0 \ if \quad U_{i,d} < U_{i,\alpha} \\ 1 \ if \quad U_{i,d} > U_{i,\alpha} \end{cases} \quad (12)$$

According to (12) if increased government spending cannot compensate for the losses the economy would suffer as a result of the revolutionary process and increase

citizens' utility then $D_{c,t} = 0$ and citizens choose not to revolt and the country's regime remains autocratic. If instead increased government spending not only can compensate for the losses the economy suffers due to the revolutionary process but can also increase the utility of citizens then $D_{c,t} = 1$ and citizens choose to revolt and install a democracy.

4. Data and methodology

4.1 Data

In order to construct our main dependent variable we will use a classification of government expenditures based on Profeta, Puglisi and Scabrosetti (2013). More specifically we group government expenditures in four separate categories which we will then interchangeably use as our dependent variable: Government expenditure on production of public goods and services (*General spending)* spending on healthcare *(Health spending)* spending on education, (*Education spending)* and finally spending on social protection (*Social protection spending*).

Data on expenditure are taken from the IMF government finance statistics as percentage of GDP.

4.2 Construction of the regime measure

In this section, we specify the methodology we use to measure and construct our political regime variable which will help us illustrate how democracy affects government spending. Previous research has treated a country's political system as a exogenous variable only influenced by sociopolitical and economic conditions within a single country and unaffected by the conditions in other countries (Helliwell (1994), Rodrik (1999) Persson and Tabellini (2006), Aidt and Jensen (2009), Mutascu (2011)). Among the few authors who have examined how political regimes in other countries influence a country's own political system, Persson and Tabellini (2009) use neighbours' inverse distance-weighted democracy indexes to control for democratic transitions.

Our empirical strategy makes completely different assumptions about democracy and has not been used before in examining the relationship between democracy and government spending. More specifically, we use the theory of Huntington (1991) and the method of Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a) about regional democratization waves. According to this theory, democratization or reversals to autocracy occur in regional waves because countries in the same region have common historical backgrounds and share close economic, political and cultural ties. Therefore the diffusion of demand for or discontent with a political system is much easier to happen in countries in the same geographical area. These regional patterns reflect the diffusion of a political regime across countries and affect the strength of political systems. Following this theory, we construct a single dichotomous variable used to define a country as democratic or autocratic and a jack-knifed average of the democracy index for all other countries in the same geographical area to examine how the political system of countries in the same area affects a country's political system. We then use this jack-knifed average as the

instrumental variable in a 2SLS estimation and examine its impact on a country's political regime and spending policies.

Following Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a) we use data from the Polity IV project and Freedom House. We choose to rely on these two datasets because they are the most complete in terms of the number of countries and timeline covered, but more importantly because they collect information about each country's institutional components in order to categorize them as democratic or autocratic. More specifically Polity IV uses data on free elections, the existence of legal limitations to the exercise of executive power by a government and its chief executives and inclusive participation and representation by political parties. Freedom House uses an index related to the protection of civil and political rights in a country.[1]

Based on the datasets of Polity IV and Freedom House and on Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a) we build a measure of the political regime $D_{ct} \in \{0,1\}$ for a country c on time t. More specifically the political system in a country is defined as autocratic or democratic by employing a single dichotomous variable $D_{ct} \in \{0,1\}$ where 0 means that the country in question is an autocracy and 1 means that the country is a democracy. We calculate the regime variable using the following specification:

We code a country c as democratic (D_{ct} =1) in year t if Polity IV gives it a positive score (The Polity IV index takes prices between -10 and +10) or if Freedom House categorizes the country as "Free" or "Partially Free". Alternatively, if a country receives a negative score on Polity IV or is categorized as "Not Free" in Freedom House then it is coded as autocratic (D_{ct} =0).

Finally, in order to test the robustness of our estimation technique we also employ a continuous rather than a dichotomous variable in order to denote a country as democratic or autocratic. For this reason, we simply employ the Polity IV scores as our democracy index. Using this dataset, we code a country c in year t as democratic if it has a value between 1 and 10 in Polity IV ($D_{ct} \in \{1,10\}$). Countries given a value of -1 to -10 in the Polity IV dataset are coded as autocratic ($D_{ct} \in \{-1,-10\}$).

4.3 Control Variables

In addition to our main explanatory variable we use a number of control variables in order to ensure a robust econometric result. These are some of the factors which the relative literature considers having some kind of effect on government spending aside from the political regime. Data for all the control variables we use come from the World Bank World Development Indicators (WDI), the IMF Government Finance Statistics and the OECD public sector, taxation and market regulation databases. We also use simple historical data based on election dates and the political history of our sample countries in order to construct two of our dummy control variables.

More specifically we use data on GDP per capita (*income*), expressed in constant 2010 US$ prices. This variable allows us to control for the overall productivity and wealth in an economy and how this affects spending policies. We expect the effect of this variable to be positive for most of our dependent variables because higher per

[1] For a more detailed analysis on the institutional variations used to categorize countries as democracies and autocracies, see Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a)

capita income is associated with increased government spending for redistribution, production of public goods and government investments.

In addition we use data on economic integration (*openness*) by using the sum of imports and exports as percentage of GDP. This variable will probably have a positive effect on *Social protection spending*, *Education spending* and *General spending* because economic integration increases spending on welfare programs in order to lower economic uncertainty and unemployment as well as production of public goods which increase output and productivity and help attract capital.

An additional dataset which we make use of is that of income inequality (*inequality)* by using the Gini index. We expect a positive relationship between this variable and our dependent variables because greater economic inequality is associated with increased government spending, because median voters in democracies demand redistributive government expenditure and also because inequality increases the size of government spending multipliers.. We also control for the population of a country (*population*). We expect that population will have a positive effect on government spending because income inequality tends to increase when the population increases and also because of median voter pressure for redistribution.

In order to achieve the best overall fit for our estimation we also employ a number of variables which are typically considered as having an effect on macroeconomic policy. We use data on gross capital formation as a percentage of GDP (*Investment*) following the hypothesis that productive government spending and private investment acts as complementaries while other types of public spending crowd out investment (Argimón, González-Páramo and Alegre (1995), Xu and Yan (2014)). We also employ data on the number of people over the age of 65 as a percentage of the entire population (*Elderly*) a variable which we believe has a positive effect on government spending due to increased demand for government welfare programs from older people (Lassila, Valnoken and Alho (2014), Bloom et. al. (2015)). We will also use data on higher educational attainment (*Education*) as in Mutascu and Danuletiu (2013) and three dummy variables: *Socialist* a dummy variable equal to 1 if a country was a former socialist state and 0 otherwise, (Rodrik (1999)).We also use data on election years (*elections*) a variable equal to 1 in year t if a country holds elections and equal to 0 otherwise (Drazen and Elsava (2010)) Finally we use a dummy on oil exports as percentage of GDP (*oil exporter*) which gives a country a value of 1 if it collects revenues from oil equal to 30% of GDP or higher and 0 otherwise, (Fearon and Laitin (2003)).

4.4 Descriptive statistics

Table 1 presents the descriptive statistics for our dependent and our independent control variables. Table 2 is the correlation matrix of our variables

[Table 1 here]

[Table 2 here]

4.5 Econometric model

The main econometric equation we will use in order to examine the effect of the political regime in a country's government spending will be based on Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a). Following this method we will be making use of a Two–stage least squares (2SLS) regression. In the first stage we will be using an instrumental variables (IV) regression with a country's political regime index (*Democracy*) as the dependent variable. This index will be based on the index seen in Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a) which is constructed using data on political and civil liberties and which was explained in greater detail in section 4.2. The instrumental variable will be a jack-knifed average of this democracy index in all countries in the same geographical area. We construct a panel dataset made by 61 countries from 1993 to 2012. Data on government spending as well as all control variables will be expressed in logarithmic form.

4.6 Basic econometric specification

The basic estimation that we will use in order to examine the effect of a country's political regime on its government spending is based on the estimation used in Balamatsias (2017a):

$$Spending_{ct} = a_0 + \beta_1 Democracy_{ct-1} + \beta_{it} Contols_{ct-1} + \gamma_c + \varepsilon_{ct} \quad (1)$$

Where $Spending_{ct}$ represents interchangeably general government spending, spending on education, spending on healthcare, and social protection spending. $Democracy_{ct-1}$ is the democracy index of country c time for the time period t-1. $Controls_{ct-1}$ stands for the set of control variables of country c for the time period t-1. We also control for country and time effects which are denoted respectively by γ_c and δ_t. Finally ε_{ct} is the error term and α_o our constant.

In order to properly capture the effect of democracy on tax revenues, we employ instrumental variables (IV) estimation. The reason we are using this specific method is that, as we have seen in Wintrobe (2001), Acemoglu and Robinson (2000a, 2000b) and Hausken, Martin and Plumper (2004) the size and composition of government expenditure can bring transitions to democracy and at the same time democratic transitions can bring increases in government spending. Therefore it is safe to assume that these two variables have a two-way causal relationship between them where both of them influence and can be influenced by the other.

For the reasons stated above, and in order to properly examine the impact of democracy on government spending, which is our main explanatory variable, we make use of the methodology of Acemoglu, Naidu, Restpero, and Robinson (2014) and Balamatsias (2017a). Following this methodology, we use the regional waves of democratization and the regional transitions to autocracies as an instrumental variable that influences the endogenous variable, $Democracy_{-1}$. We posit that democracy in country c is influenced by the political regime in other countries which are in the same geographical area as country c. To formally investigate these patterns we begin by defining the set of countries that influence demand for democracy in a given country. For every country c, we use the country's democracy index at the start of our

sample, D_{ct0} to denote this country's political regime (democracy or autocracy). Then we use R_c to denote the geographical region in which country c lies. Democracy in country c is influenced by democracy in the set of countries $I_c = \{c': c' \neq c, R_c' = R_c, D_{c't0} = D_{ct0}\}$. This set includes all countries which are in the same region as country c that share a common political history.

Using these sets we define the regional influence to democratize that country c faces, Z_{ct} with the following equation:

$$Z_{ct} = \frac{1}{|I_c|} \sum_{c' \in Ic} D_{c't} \qquad (2)$$

Where Z_{ct} is the jack-knifed average of democracy in a region times the initial regime cell, which leaves out the own country observation. This equation shows how the political system in a given country is affected by the regimes in countries in the same geographical area by creating diffusion of demand for or discontent with a political system.

Using (2) gives us our first stage equation we will use:

$$Democracy_{ct-1} = \phi_j Z_{ct-1} + u_{ct\text{-}1} \qquad (3)$$

Combining (1) and (3) we have the two-stage least squares panel data model which we estimate:

$$\begin{aligned} Spending_{ct} &= a_0 + \beta_1 Democracy_{ct-1} + \beta_{it} Contols_{ct-1} + \gamma_c + \varepsilon_{ct} \\ Democracy_{ct-1} &= \phi_j Z_{ct-1} + u_{ct\text{-}1} \end{aligned} \qquad (4)$$

5. Results

The sample that we use consists of 61 countries from 1993 to 2012. All of our regressions have been made using robust standard errors. We first run an ordinary least squares (OLS) model. However OLS does not control for unobserved individual effects in the countries we use in our sample nor does it control for the potential endogeneity of our main explanatory variable. For this reason we will also use a simple fixed effects (F.E.) regression, an Arellano-Bond (GMM) regression and a two stage least square (2SLS) fixed effects regression with country and time effects. This way we can control not only for individual unobservable effects in our sample of countries but also for the endogeneity of the main explanatory variable, *Democracy-1*.

Regarding our postestimation tests we run a Wooldridge test and a Crag Donald F-statistic test to check for serial correlation and to see if the instruments we use are valid i.e. not correlated with the error term respectively. The results show that there exists no serial correlation, that we have valid instruments and that the excluded instruments are correctly excluded from the estimated equations. We also run an endogeneity test to check if we need to use 2SLS regression or if a simple OLS model will suffice. The results indicate that a 2SLS model is in fact the model we need to use. Finally we want to ensure that our instrumental variables have not direct effect on

our dependent variables, in other words we want to ensure that there exists no imperfect exogeneity. This can be easily tested if, Following Baum (2008) we simply include our instrumental variable as a repressor both in our OLS and in our fixed effects estimations. We find that Z_{ct-1} negatively affects *Social protection spending* at a 10% significance level in the OLS estimation with a very big coefficient (-0.226). Therefore we can safely conclude that imperfect exogeneity is not an important problem in our estimations of *General spending*, *Education spending* and *Health spending* since it only seems to affect *Social protection spending*.

In the following tables we present our estimation results. Each one of the columns presents the results when the dependent variable is respectively *General spending*, *Education spending Health spending* and *Social protection spending*. We begin our analysis by estimating the OLS and the fixed effects (F.E.) estimators for each one of our dependent variables interchangeably. Following that we run an Arellano-Bond GMM estimation. We then run a 2SLS fixed effects regression, which we present in two tables; the first table gives us the results of the first stage regression and the second table the results of our second stage regression. We begin with Table 3, which gives us the results of our OLS regression.

[Table 3 here]

In Table 3, we present our OLS estimations. Our main finding is that *Democracy*$_{-1}$ positively affects *Education spending and Social protection spending* at a 1% significance level, negatively affects *General spending* also at a 1% significance level while *Health spending* seems to be unaffected by this index.. The magnitude of the coefficients is also quite big, being 0.102 for *Education spending*, 0.269 for *Social protection spending* and 0.051 for *General spending*. We also find evidence that regional democratization waves, presented here by our variable *Zct*$_{-1}$ do not have a direct impact on most spending variables; the only exception being the positive effect they have on *Social protection spending*. The magnitude of this coefficient is also very big, (-0.226) so the direct effect of regional democratization waves on social protection is quite significant.

[Table 4 here]

Our estimation for the fixed effects estimations are given in Table 4. As seen from the results *Democracy*$_{-1}$ has a positive effect on *General spending* at a 10% significance, level with a coefficient of 0.064; however none of the other dependent variables area affected by this variable. Looking at the effect of our control variables we find that most of them perform as we expect them to, according to the relevant literature.

[Table 5 here]

Table 5 gives us the results of our Arellano-Bond GMM estimation. We used two-period time lags for our democracy index and a single period time lag of our government spending variables in order to deal with issues of autocorrelation and acjieve the best overall fit for our estimation. The main finding in this estimation is that our democracy index *Democracy*$_{-1}$ has a positive impact on *General spending* at a 10% significance level, and a negative effect on *Health spending* and *Social protection spending* at a 10% and 1% significance level respectively. Furthermore, past government spending, presented here by the *Spending*$_{-1}$ seems to have a

significant impact on current spending policies. More specifically we can see that *Spending*$_{-1}$ positively affects *General spending* (0.526), *Education spending* (0.564), *Health spending* (0.495) and *Social protection spending* (0.552), all at a 1% significance level. When it comes to our control variables we find that most of them do not have an effect on our spending variables.

[Table 6a here]

[Table 6b here]

Our main findings are given in Tables 6a and 6b, where we present the results of our 2SLS estimation in which we used our regional waves of democratization index as our instrumental variable. We begin with our first stage estimation, given in Table 6a and then we move on to our second stage results in Table 6b.

Looking at the results in Table 6a we see that the impact of regional democratization waves index Z_{ct-1}, is statistically significant at a 1% level in all our specifications, being 0.518 for *General spending*, *Education spending* and *Health spending*, and 0.545 for *Social protection spending*. This result indicates that regional waves of democratization have a positive and highly significant effect on a country's political system; a result which appears to be in accordance with the theory of Huntington (1991) as well as the methodology used by Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a) about the positive impact of regional waves of democratization on a country's political regime.

In Table 6b we present our second stage results. The most important finding is that *Democracy*$_{-1}$ has a positive effect on *General spending* at a 10% significance level, with a coefficient of 0.285. *Education spending* is also positively affected by *Democracy*$_{-1}$ at a 5% significance level with the coefficient being even bigger, at 0.407. These results seem to suggest that democracy increases government expenditure used for producing goods and general services and also increases spending on education. This outcome can be explained by that fact that these expenditure types can be effectively utilized by firms and individuals in order to increase productivity and output in the economy and decrease inequality (Meltzer and Richards (1981, 1983), Boix (2001)) as well as help governments attract foreign capital by improving output, productivity and profitability (Schulze and Ursprung (1999)). Concerning the rest of our independent variables, we observe that they affect spending as predicted by the relevant literature the only exceptions being *Inequality*$_{-1}$ *Oil exporter*$_{-1}$ and *Elections*$_{-1}$ which do not have any effect on our spending variables and *Education*$_{-1}$ which has a negative effect on *General spending*.

Next, we examine the robustness of our main result. For this reason, we will run three additional estimations. In the first one, we run a regression where instead of a dichotomous democracy index we use a continuous one, in this case, the Polity IV scores for our sample countries. In the second regression, we exclude all countries from Africa and the Middle East. Finally, in the third regression, we use a much smaller sample consisting only of non-OECD countries.

[Table 7a here]

[Table 7b here]

Tables 7a and 7b present the estimates when using our continuous index for the regional waves of democratization. Looking at the results of our second stage regressions in Table 7a we find some considerable differences from our main results. More specifically, the effect of regional waves of democratization Z_{ct-1} is now negative at a 1% level of statistical significance in all our regressions. Additionally we see that the magnitude is now bigger, being -0.433 for *General spending Education spending* and *Health spending*, and -0.383 for *Social protection spending*.

The results of our second stage regressions are given in Table 7b. *Democracy*$_{-1}$ now has a negative effect on *General spending* (-0.054) as well as on *Education spending* (-0.091) both at a 5% significance level. These results further, as well as those in Table 7a, are completely different from the theoretical and empirical results of a positive relationship between regional waves of democratization and a country's political system seen in Huntington (1991), Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a). In addition, these results cast some doubt on the positive impact that democracy has on government spending reported by a number of authors (Boix (2001), Meltzer and Richards (1981, 1983) Schulze and Ursprung (1999)) and by our baseline 2SLS OLS, fixed effects and GMM regressions.

[Table 8a here]

[Table 8b here]

The results of Tables 8a and 8b are extracted when we exclude North African and Middle-Eastern countries from our sample. The results of Table 8a show us that even in this smaller sample, regional democratization waves, (Z_{ct-1}) still have a positive and statistically significant effect on our democracy index, but at a 5% significance level for all our regressions. Furthermore, when looking at the impact of *Democracy*$_{-1}$ on government spending it seems that it positively affects *General spending* at a 5% significance level, with a much bigger coefficient of 1.047. *Education spending* is also positively affected by *Democracy*$_{-1}$ at a 5% significance level with the coefficient being even bigger, at 1.463. These results indicate that government spending mostly increases in wealthier democracies where per capita incomes are higher and where the majority of the population belongs to the middle-income class because only middle-class people can effectively use public goods and services to increase output and incomes and decrease inequality, and as a result vote in favour of increasing expenditure, as seen in Meltzer and Richards (1981,1983) and in Boix (2001). The rest of our control variables affect government spending as suggested by the relevant literature.

[Table 9a here]

[Table 9b here]

Finally, we make use of a much smaller sample, comprised of non-OECD countries, the results of which are given in Tables 9a and 9b. The first stage results in Table 9a shows that the effect of regional waves of democratization remains statistically significant at a 1% level as in our baseline estimations. Additionally, we see that the magnitude is somewhat bigger compared to our baseline estimation, being 0.657 for *General* spending, *Education spending* and *Health spending*, and 0.083 for our *Social protection spending* first stage estimations.

The results of our second stage regression, given in Table 9b, show us that *Democracy*$_{-1}$ has no statistically significant effect on any of our dependent variables These results further substantiate that poorer democracies do not generally increase government expenditure and that increasing state spending is a habit of wealthier more developed democracies as seen in Meltzer and Richards (1981, 1983) and Boix (2001).

To sum up, our empirical results using a number of different specifications and robustness tests, seem to verify our main assumption that regional waves of democratization in a geographical area increase discontent with autocracy and demand for democracy within a country, in line with the theory of Huntington (1991) and the methodology used Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a) about regional democratization waves. In addition, our findings in the second stage estimation show us that democratic regimes seem to increase government spending on education and production of goods and services but mostly in richer countries because voters in wealthier democracies are in favour of increased production of public goods and services in order to increase productivity and output in the economy and to decrease inequality (Meltzer and Richards ((1981, 1983), Boix (2001)) as well as attract foreign capital (Schulze and Ursprung (1999)).

6. Conclusion

In this paper, we investigate the effect of regional waves of democratization on a country's democracy and the effect of democracy on government spending. The analysis is carried out using a dataset of 61 countries from 1993 to 2012. We use the information on the political regime of countries in the same geographical area in order to build an index of regional waves of democratization like the one used by Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a), based on the theory of Huntington (1991). These waves represent the demand for or discontent with a given political system in countries in the same geographical area. We then use this regional democratization index as an instrumental variable in a two-stage fixed effects regression with democracy used as the endogenous variable and try to find the impact of democracy on spending policies. Our first stage estimation shows that regional waves of democratization positively affect a country's political regime as in Huntington (1991), Acemoglu, Naidu, Restpero and Robinson (2014) and Balamatsias (2017a). The results of our main 2SLS estimation, as well as our OLS, fixed effects and GMM estimations, show us that democracy increases government spending used for producing public goods and public services and government spending on education. When controlling for a smaller dataset, which does not include African and Middle-eastern countries our first-stage results remain the same while the positive effect of democracy on government spending is now quantitatively much bigger suggesting wealthier democracies produce more public goods and services when compared to poorer ones. This hypothesis is further substantiated when we use a smaller sample consisting of non-OECD countries and find no statistically significant effect of democracy on government spending. Therefore, we conclude that democracy increases government expenditure on developed countries because individuals and firms in these countries use government spending more effectively to increase productivity and output, decrease inequality and attract foreign capital leading the majority of citizens in these countries to vote in favour of greater spending.

To the best of our knowledge, this is the first study that examines the two-way causal relationship between government spending and democracy, since authors in the past focused only on how spending affects political regimes, or simply on how democracy affects expenditure. In addition, our paper is the first one, which uses regional waves of democratization and examines their effect on a country's political regime and on expenditure policies. Therefore, our findings contribute to the well-established literature about the relationship between government expenditure and democracy and on the determinants of spending policies. Clearly, these results and their policy implications call for a deeper understanding of the intra- and inter-country mechanisms which affect government spending and fiscal policy in general and call for future research on the subject.

7. Appendix

Table 1: Summary statistics for the main variables

Variable	Description	Obs.	Mean	Std.Dev.	Min	Max	Source	Expected Sign
General spending	General spending on public goods and services (%GDP)	1030	9.944	4.239	0	50.598	Calculations based on Profeta, Puglisi and Scabrosetti (2013)	
Education spending	Spending on education (%GDP)	1029	3.427	2.134	0	23.479	Calculations based on Profeta, Puglisi and Scabrosetti (2013)	
Health spending	Spending on healthcare (%GDP)	1029	3.992	2.547	0.145	20.44	Calculations based on Profeta, Puglisi and Scabrosetti (2013)	
Social protection spending	Spending on social welfare (%GDP)	1029	8.543	7.021	0	37.543	Calculations based on Profeta, Puglisi and Scabrosetti (2013)	
Democracy	Democracy index dummy	1240	0.862	0.344	0	1	Calculations based on Acemoglu, Naidu, Restpero and Robinson (2014)	Positive
$Democracy_{(polity)}$	Polity IV index	1220	7.023	2.755	-10	10	Polity IV dataset	Positive
Zct	Jack-knifed average of democracy index	1240	0.864	0.171	0.333	1	Calculations based on Acemoglu, Naidu, Restpero and Robinson (2014)	No effect
Zct_{polity}	Jack-knifed average of Polity IV index	1220	7.023	2.755	0	9.517	Calculations based on Acemoglu, Naidu, Restpero and Robinson (2014)	No effect
Gini	Gini index	1046	39.908	1.650	36.564	46.217	World Bank development indicators	Positive
Income	GDP per capita	1224	17435.13	18534.83	375.14	91593.63	World Bank development indicators	Positive
Openness	Exports plus imports(%GDP)	1228	51.400	25.970	16.062	204.585	World Bank development indicators	Positive
Investment	Gross capital formation (%GDP)	1218	23.601	7.121	0.298	67.910	World Bank development indicators	Negative
Population	Total population	1240	4.84e+07	1.45e+08	242000	1.26e+09	World Bank development indicators	Positive
Elderly	People over the age of 65 (% of population)	1220	10.673	5.175	2.045	21.163	World Bank development indicators	Positive
Education	Tertiary education enrolment (%gross)	995	45.73	23.47	0.208	110.26	World Bank development indicators	Ambiguous
Socialist	Socialist dummy	1220	0.25	0.433	0	1	Historical data	Negative
Election	Election year dummy	1220	0.240	0.427	0	1	Historical data	Positive
Oil exporter	Major oil exporter dummy	1218	0.343	0.474	0	1	World Bank development indicators	Positive

Table 2: Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1.00																	
2	0.25	1.00																
3	0.30	0.74	1.00															
4	0.28	0.82	0.58	1.00														
5	0.07	0.32	0.16	0.35	1.00													
6	0.02	0.34	0.18	0.39	0.61	1.00												
7	0.16	0.43	0.23	0.47	0.38	0.25	1.00											
8	0.10	0.44	0.22	0.46	0.42	0.32	0.85	1.00										
9	0.03	-0.04	0.03	-0.02	0.04	-0.01	0.02	-0.01	1.00									
10	-0.06	0.48	0.13	0.50	0.26	0.29	0.34	0.36	-0.05	1.00								
11	-0.17	0.03	0.09	0.01	-0.08	-0.07	0.04	0.16	-0.03	0.05	1.00							
12	-0.16	-0.15	-0.04	-0.21	-0.08	-0.02	-0.10	0.01	-0.11	-0.18	0.09	1.00						
13	0.07	-0.15	-0.23	-0.22	0.01	-0.12	-0.18	-0.14	0.01	-0.13	0.31	0.07	1.00					
14	0.12	0.51	0.17	0.64	0.39	0.34	0.68	0.71	-0.07	0.52	-0.03	-0.06	-0.25	1.00				
15	-0.03	0.42	0.19	0.46	0.21	0.18	0.41	0.50	-0.08	0.56	0.03	-0.08	-0.16	0.68	1.00			
16	-0.05	-0.10	-0.04	-0.02	0.04	-0.01	0.21	0.26	-0.01	-0.41	0.24	0.18	-0.15	0.21	0.03	1.00		
17	0.01	0.02	0.02	0.05	0.08	0.08	0.01	0.01	0.01	0.03	0.02	0.01	-0.04	0.04	0.04	0.01	1.00	
18	0.01	-0.04	-0.05	-0.15	-0.17	-0.36	-0.13	-0.13	-0.03	0.01	-0.19	-0.14	0.25	-0.13	0.07	-0.09	0.01	1.00

Notes: 1=General spending, 2=Education spending, 3=Health spending, 4=Social protection spending, 5=Democracy, 6=Democracy(polity), 6=Zct, 7=Zct_{polity}, 8=Gini, 9=Income, 10=Openness,
11=Investment, 12=Population 13,=Elderly, 14=Education, 15= Education, 16= Socialist, 17= Elections, 18= Oil exporter

Table 3: OLS regressions

	OLS-General spending	OLS-Education spending	OLS-Health spending	OLS-Social protection spending
Democracy$_{-1}$	-0.051***	0.102***	0.089	0.269***
	(0.020)	(0.043)	(0.063)	(0.053)
Zct$_{-1}$	0.072	-0.093	0.141	-0.226*
	(0.057)	(0.126)	(0.182)	(0.153)
Inequality$_{-1}$	-0.106	-0.016	-1.508	0.015
	(0.330)	(0.723)	(1.047)	(0.866)
Income$_{-1}$	-0.070***	0.090*	0.207***	0.366***
	(0.022)	(0.048)	(0.070)	(0.058)
Investment$_{-1}$	-0.179***	-0.196*	-0.598***	-0.731***
	(0.052)	(0.114)	(0.165)	(0.142)
Education$_{-1}$	-0.091***	0.224***	-0.022	0.375***
	(0.032)	(0.070)	(0.102)	(0.084)
Openness$_{-1}$	-0.067	-0.139	-0.211	-0.020
	(0.043)	(0.094)	(0.136)	(0.112)
Population$_{-1}$	0.041***	-0.198***	-0.191***	-0.025
	(0.014)	(0.025)	(0.036)	(0.031)
Elderly$_{-1}$	0.359***	-0.219*	0.448**	0.610***
	(0.059)	(0.130)	(0.188)	(0.154)
Socialist$_{-1}$	-0.032*	-0.006	0.069	0.245***
	(0.018)	(0.040)	(0.058)	(0.048)
Elections$_{-1}$	0.008	-0.003	0.032	0.020
	(0.013)	(0.028)	(0.041)	(0.034)
Oil exporter$_{-1}$	-0.053***	-0.027	0.078*	-0.019
	(0.014)	(0.031)	(0.046)	(0.037)
R squared	0.150	0.199	0.245	0.547
N	714	714	714	687
F-test	10.33	14.57	19.04	67.96

Note: The table presents estimated coefficients with robust standard errors in parentheses. All estimations are regressed using robust standard errors. * p<0.1, ** p<0.05, *** p<0.01

Table 4: Fixed effects (F.E) regressions

	F.E-General spending	F.E-Education spending	F.E-Health spending	F.E-Social protection spending
Democracy$_{-1}$	0.064**	-0.011	-0.145***	-0.203***
	(0.025)	(0.028)	(0.032)	(0.033)
Zct$_{-1}$	0.114	0.217	-0.056	0.148
	(0.078)	(0.086)	(0.101)	(0.115)
Inequality$_{-1}$	-0.246	-0.005	0.471	-0.172
	(0.243)	(0.269)	(0.314)	(0.347)
Income$_{-1}$	0.054***	0.163**	-0.016	-0.076
	(0.062)	(0.069)	(0.080)	(0.087)
Investment$_{-1}$	-0.198***	-0.094	0.088	-0.241***
	(0.058)	(0.064)	(0.064)	(0.084)
Education$_{-1}$	-0.218***	0.037	1.039***	0.022
	(0.055)	(0.061)	(0.144)	(0.077)
Openness$_{-1}$	0.053	0.097	0.078	0.401***
	(0.083)	(0.092)	(0.108)	(0.122)
Population$_{-1}$	-0.063	0.114**	0.240***	0.208***
	(0.052)	(0.058)	(0.067)	(0.074)
Elderly$_{-1}$	0.312	-0.417*	0.780***	0.819***
	(0.195)	(0.217)	(0.252)	(0.274)
Socialist$_{-1}$	-0.025	0.032	0.113	0.185**
	(0.055)	(0.061)	(0.071)	(0.077)
Elections$_{-1}$	0.012	-0.002	0.007	0.009
	(0.008)	(0.009)	(0.011)	(0.012)
Oil exporter$_{-1}$	-0.017	-0.032	-0.017	0.028
	(0.022)	(0.024)	(0.028)	(0.031)
R squared	0.07	0.04	0.107	0.166
N	714	714	714	687
F-test	3.66	2.13	6.48	10.28
Wooldridge test	70.73	66.72	78.78	25.00

Note: The table presents estimated coefficients with robust standard errors in parentheses. All estimations are regressed using robust standard errors. * p<0.1, ** p<0.05, *** p<0.01

Table 5: Arellano-Bond GMM estimation

	GMM -General spending	GMM-Education spending	GMM-Health spending	GMM-Social protection spending
Spending$_{-1}$	0.526***	0.564***	0.495***	0.552***
	(0.057)	(0.059)	(0.055)	(0.067)
Democracy$_{-1}$	0.094*	-0.053	-0.175*	-0.159***
	(0.052)	(0.051)	(0.095)	(0.058)
Democracy$_{-2}$	-0.013	0.018	0.021	-0.067
	(0.052)	(0.049)	(0.066)	(0.048)
Inequality$_{-1}$	-0.168	-0.028	-0.220	-0.320
	(0.206)	(0.169)	(0.254)	(0.199)
Income$_{-1}$	-0.014	0.093	0.453**	0.003
	(0.144)	(0.117)	(0.183)	(0.133)
Investment$_{-1}$	-0.078	0.013	-0.009	0.023
	(0.079)	(0.066)	(0.100)	(0.080)
Education$_{-1}$	-0.065	0.024	-0.195	0.168*
	(0.103)	(0.085)	(0.127)	(0.097)
Openness$_{-1}$	-0.005	0.077	-0.018	-0.028
	(0.106)	(0.089)	(0.132)	(0.103)
Population$_{-1}$	0.384	0.107	-0.307	0.814**
	(0.368)	(0.296)	(0.457)	(0.374)
Elderly$_{-1}$	0.152	-0.197	0.173	-0.381
	(0.326)	(0.269)	(0.385)	(0.298)
Socialist$_{-1}$	-0.016	0.011	0.001	-0.114
	(0.092)	(0.076)	(0.117)	(0.069)
Elections$_{-1}$	0.015**	-0.003	0.014*	-0.001
	(0.006)	(0.005)	(0.008)	(0.006)
Oil exporter$_{-1}$	-0.043*	0.027	0.068**	0.013
	(0.021)	(0.018)	(0.027)	(0.020)
N	603	603	603	5.77
Wald test	129.81	129.24	171.10	119.33
Arellano-bond AR(1) test	-7.99	-8.44	-8.91	-5.09
Arellano-bond AR(2) test	-0.76	0.56	-0.88	-1.19

Note: The table presents estimated coefficients with robust standard errors in parentheses. All estimations are regressed using robust standard errors. * p<0.1, ** p<0.05, *** p<0.01

Table 6a: 2SLS first stage regression

	First stage regression-General spending	First stage regression-Education spending	First stage regression-Health spending	First stage regression-Social protection spending
Zct_{-1}	0.518***	0.518***	0.518***	0.545***
	(0.119)	(0.119)	(0.119)	(0.127)
$Inequality_{-1}$	0.905**	0.905**	0.905**	0.785***
	(0.374)	(0.374)	(0.374)	(0.368)
$Income_{-1}$	-0.448***	-0.448***	-0.448***	-0.459**
	(0.094)	(0.094)	(0.094)	(0.091)
$Investment_{-1}$	0.293***	0.293***	0.293***	-0.377***
	(0.089)	(0.089)	(0.089)	(0.138)
$Education_{-1}$	0.144*	0.144*	0.144*	0.149
	(0.085)	(0.085)	(0.085)	(0.138)
$Openness_{-1}$	0.338***	0.338***	0.338***	0.419***
	(0.129)	(0.129)	(0.129)	(0.129)
$Population_{-1}$	0.424***	0.424***	0.424***	0.414***
	(0.079)	(0.079)	(0.079)	(0.077)
$Elderly_{-1}$	-0.237	-0.237	-0.237	-0.274
	(0.302)	(0.302)	(0.302)	(0.292)
$Socialist_{-1}$	-0.035	-0.035	-0.035	-0.045
	(0.085)	(0.085)	(0.085)	(0.082)
$Elections_{-1}$	0.004	0.004	0.004	0.001
	(0.013)	(0.013)	(0.013)	(0.013)
$Oil\ exporter_{-1}$	-0.069**	-0.069**	-0.069**	-0.069**
	(0.034)	(0.034)	(0.034)	(0.033)
N	712	712	712	685
F-Test	18.75	18.75	18.75	20.32

Table 6b: 2SLS second stage regression

	2SLS-General spending	2SLS-Education spending	2SLS-Health spending	2SLS-Social protection spending
Democracy$_{-1}$	0.285*	0.407**	-0.253	0.068
	(0.156)	(0.189)	(0.192)	(0.214)
Inequality$_{-1}$	-0.447	-0.385	-0.373	-0.386
	(0.309)	(0.375)	(0.381)	(0.414)
Income$_{-1}$	0.154*	0.351***	-0.064	0.048
	(0.090)	(0.109)	(0.111)	(0.125)
Investment$_{-1}$	-0.263***	-0.217**	0.018	-0.317***
	(0.073)	(0.089)	(0.090)	(0.099)
Education$_{-1}$	-0.250***	-0.023	0.042	-0.009
	(0.061)	(0.074)	(0.075)	(0.082)
Openness$_{-1}$	-0.021	-0.044	0.115	0.287*
	(0.100)	(0.122)	(0.124)	(0.149)
Population$_{-1}$	-0.157*	-0.063	0.286***	0.095
	(0.087)	(0.106)	(0.108)	(0.118)
Elderly$_{-1}$	0.365*	-0.318	0.754***	0.894***
	(0.058)	(0.246)	(0.250)	(0.281)
Socialist$_{-1}$	-0.017	0.047	0.109	0.198**
	(0.058)	(0.070)	(0.071)	(0.079)
Elections$_{-1}$	0.011	-0.003	0.008	0.009
	(0.009)	(0.011)	(0.011)	(0.013)
Oil exporter$_{-1}$	-0.002	-0.003	-0.025	0.047
	(0.024)	(0.030)	(0.030)	(0.034)
N	712	712	712	685
F-test	3.06	1.72	5.20	7.90
R-squared	0.105	0.129	0.130	0.144
Endogeneity test	21.73	6.31	0.31	16.88
Cragg-Donald test	18.75	18.75	18.75	20.32
Wooldridge test	70.73	66.72	78.78	25.00

Note: The table presents estimated coefficients with robust standard errors in parentheses. All estimations are regressed using robust standard errors. * p<0.1, ** p<0.05, *** p<0.01

Table 7a: 2SLS first stage regression- Alternative Z_{ct} variable

	First stage regression-General spending	First stage regression-Education spending	First stage regression-Health spending	First stage regression-Social protection spending
$Zct\text{-}1_{polity}$	-0.443***	-0.443***	-0.443***	-0.383***
	(0.157)	(0.157)	(0.157)	(0.166)
$Inequality_{-1}$	10.59**	10.59**	10.59**	8.709**
	(4.32)	(4.32)	(4.32)	(4.371)
$Income_{-1}$	-2.313**	-2.313**	-2.313**	-2.377**
	(1.10)	(1.10)	(1.10)	(1.092)
$Investment_{-1}$	2.178**	2.178**	2.178**	1.630
	(1.027)	(1.027)	(1.027)	(1.051)
$Education_{-1}$	3.277***	3.277***	3.277***	2.949***
	(0.985)	(0.985)	(0.985)	(0.976)
$Openness_{-1}$	-0.407	-0.407	-0.407	-0.596
	(1.492)	(1.492)	(1.492)	(1.527)
$Population_{-1}$	7.872***	7.872***	7.872***	7.386***
	(0.917)	(0.917)	(0.917)	(0.921)
$Elderly_{-1}$	3.629	3.629	3.629	2.490
	(3.584)	(3.584)	(3.584)	(3.576)
$Socialist_{-1}$	2.204**	2.204**	2.204**	2.103**
	(0.990)	(0.990)	(0.990)	(0.971)
$Elections_{-1}$	0.168	0.168	0.168	0.149
	(0.159)	(0.159)	(0.159)	(0.159)
$Oil\ exporter_{-1}$	-0.600	-0.600	-0.600	-0.699*
	(0.399)	(0.399)	(0.399)	(0.398)
N	712	712	712	685
F-Test	7.96	7.96	7.96	5.30

Table 7b: 2SLS second stage regression- Alternative Z_{ct} variable

	2SLS-General spending	2SLS-Education spending	2SLS-Health spending	2SLS-Social protection spending
$Democracy_{-1polity}$	-0.054*	-0.091**	-0.021	0.018
	(0.029)	(0.039)	(0.026)	(0.037)
$Inequality_{-1}$	0.348	0.871	-0.488	-0.452
	(0.441)	(0.583)	(0.389)	(0.465)
$Income_{-1}$	-0.118	-0.078	-0.021	0.074
	(0.126)	(0.166)	(0.111)	(0.143)
$Investment_{-1}$	-0.061	0.104**	-0.001	-0.336***
	(0.111)	(0.146)	(0.098)	(0.115)
$Education_{-1}$	-0.039	0.323*	0.075	-0.058
	(0.126)	(0.167)	(0.112)	(0.140)
$Openness_{-1}$	0.029	0.017	0.017	0.328**
	(0.127)	(0.168)	(0.112)	(0.136)
$Population_{-1}$	0.385	0.819**	0.336	-0.013
	(0.242)	(0.320)	(0.214)	(0.288)
$Elderly_{-1}$	0.377	-0.291	0.786***	0.885***
	(0.292)	(0.386)	(0.258)	(0.299)
$Socialist_{-1}$	0.087	0.227*	0.160*	0.157
	(0.104)	(0.137)	(0.092)	(0.113)
$Elections_{-1}$	0.022	0.014	0.011	0.006
	(0.014)	(0.019)	(0.012)	(0.015)
$Oil\ exporter_{-1}$	-0.057	-0.092	-0.026	0.059
	(0.040)	(0.052)	(0.035)	(0.046)
N	712	712	712	685
F-test	1.63	1.01	4.81	6.95
R-squared	0.152	0.200	0.134	0.154
Endogeneity test	10.97	18.31	0.40	1.43
Cragg-Donald test	7.96	7.96	7.96	5.29
Wooldridge test	75.69	69.87	80.82	25.08

Note: The table presents estimated coefficients with robust standard errors in parentheses. All estimations are regressed using robust standard errors. * p<0.1, ** p<0.05, *** p<0.01

Table 8a: First stage regression-Excluding African countries

	First stage regression-General spending	First stage regression-Education spending	First stage regression-Health spending	First stage regression-Social protection spending
Zct_{-1}	0.372** (0.165)	0.372** (0.165)	0.372** (0.165)	0.384** (0.177)
$Inequality_{-1}$	0.718** (0.393)	0.718** (0.393)	0.718** (0.393)	0.541 (0.385)
$Income_{-1}$	-0.529*** (0.140)	-0.529*** (0.140)	-0.529*** (0.140)	-0.526** (0.133)
$Investment_{-1}$	0.321*** (0.100)	0.321*** (0.100)	0.321*** (0.100)	0.306*** (0.100)
$Education_{-1}$	0.207** (0.093)	0.207** (0.093)	0.207** (0.093)	0.179** (0.089)
$Openness_{-1}$	0.283** (0.137)	0.283** (0.137)	0.283** (0.137)	0.377*** (0.138)
$Population_{-1}$	0.352** (0.167)	0.352** (0.167)	0.352** (0.167)	0.318* (0.164)
$Elderly_{-1}$	-0.022 (0.321)	-0.022 (0.321)	-0.022 (0.321)	-0.059 (0.310)
$Socialist_{-1}$	-0.136 (0.301)	-0.136 (0.301)	-0.136 (0.301)	-0.221 (0.289)
$Elections_{-1}$	0.004 (0.013)	0.004 (0.013)	0.004 (0.013)	-0.001 (0.013)
Oil $exporter_{-1}$	-0.072** (0.033)	-0.072** (0.033)	-0.072** (0.033)	-0.071** (0.032)
N	631	631	631	604
F-Test	5.08	5.08	5.08	8.66

Table 8b: Second stage regression-Excluding African countries

	2SLS-General spending	2SLS-Education spending	2SLS-Health spending	2SLS-Social protection spending
Democracy$_{-1}$	1.047**	1.463**	0.041	0.570
	(0.522)	(0.722)	(0.375)	(0.555)
Inequality$_{-1}$	-0.933	-1.214	-0.698	-0.305
	(0.651)	(0.900)	(0.467)	(0.588)
Income$_{-1}$	0.598*	1.471***	0.529**	0.639**
	(0.331)	(0.458)	(0.238)	(0.363)
Investment$_{-1}$	-0.511**	-0.793***	-0.238	-0.539***
	(0.208)	(0.288)	(0.150)	(0.204)
Education$_{-1}$	-0.417***	-0.392*	-0.073	-0.178
	(0.146)	(0.202)	(0.105)	(0.135)
Openness$_{-1}$	-0.172	-0.425	-0.077	0.097
	(0.218)	(0.302)	(0.156)	(0.257)
Population$_{-1}$	-0.344	-0.572	-0.012	-0.306
	(0.299)	(0.413)	(0.214)	(0.287)
Elderly$_{-1}$	0.267	-0.861*	0.260	0.182
	(0.376)	(0.520)	(0.270)	(0.364)
Socialist$_{-1}$	0.222	0.845*	0.565**	0.223
	(0.355)	(0.492)	(0.255)	(0.361)
Elections$_{-1}$	0.008	-0.006	0.008	0.002
	(0.016)	(0.022)	(0.011)	(0.016)
Oil exporter$_{-1}$	0.040	0.090	0.017	0.118
	(0.052)	(0.072)	(0.037)	(0.051)
N	631	631	631	604
F-test	1.29	1.26	5.77	3.42
R-squared	0.175	0.242	0.126	0.168
Endogeneity test	9.63	20.69	0.44	3.83
Cragg-Donald test	5.08	5.08	5.08	8.66
Wooldridge test	74.89	49.92	74.31	55.08

Note: The table presents estimated coefficients with robust standard errors in parentheses. All estimations are regressed using robust standard errors. * p<0.1, ** p<0.05, *** p<0.01

Table 9a: First stage regression- Non OECD countries

	First stage regression-General spending	First stage regression-Education spending	First stage regression-Health spending	First stage regression-Social protection spending
Zct_{-1}	0.657***	0.657***	0.657***	0.655***
	(0.178)	(0.178)	(0.178)	(0.202)
$Inequality_{-1}$	1.797**	1.797**	1.797**	2.246**
	(0.851)	(0.851)	(0.851)	(0.923)
$Income_{-1}$	-0.657***	-0.657***	-0.657***	-0.617***
	(0.205)	(0.205)	(0.205)	(0.231)
$Investment_{-1}$	0.335**	0.335**	0.335**	0.396**
	(0.163)	(0.163)	(0.163)	(0.175)
$Education_{-1}$	0.077	0.077	0.077	0.061
	(0.197)	(0.197)	(0.197)	(0.198)
$Openness_{-1}$	0.307	0.307	0.307	0.470*
	(0.254)	(0.254)	(0.254)	(0.285)
$Population_{-1}$	0.154	0.154	0.154	0.409*
	(0.162)	(0.162)	(0.162)	(0.227)
$Elderly_{-1}$	0.227	0.227	0.227	0.046
	(0.507)	(0.507)	(0.507)	(0.737)
$Socialist_{-1}$	0.036	0.036	0.036	-0.079
	(0.132)	(0.132)	(0.132)	(0.147)
$Elections_{-1}$	0.018	0.018	0.018	0.004
	(0.036)	(0.036)	(0.036)	(0.037)
$Oil\ exporter_{-1}$	-0.149**	-0.149**	-0.149**	-0.152**
	(0.075)	(0.075)	(0.075)	(0.078)
N	293	293	293	264
F-Test	13.51	13.51	13.51	10.45

Table 9b: Second stage regression-Non OECD countries

	2SLS-General spending	2SLS-Education spending	2SLS-Health spending	2SLS-Social protection spending
Democracy$_{-1}$	-0.092	0.154	-0.018	-0.115
	(0.154)	(0.145)	(0.178)	(0.249)
Inequality$_{-1}$	-0.222	-0.471	-0.971	-0.551
	(0.579)	(0.546)	(0.668)	(0.983)
Income$_{-1}$	0.015	0.453***	0.220	0.165
	(0.145)	(0.137)	(0.168)	(0.220)
Investment$_{-1}$	-0.196**	-0.061	-0.045	-0.201
	(0.100)	(0.094)	(0.115)	(0.160)
Education$_{-1}$	-0.014	-0.051	-0.064	0.073
	(0.115)	(0.108)	(0.132)	(0.163)
Openness$_{-1}$	0.345**	0.052	-0.049	0.685**
	(0.157)	(0.148)	(0.181)	(0.270)
Population$_{-1}$	-0.022	0.305***	0.195*	0.130
	(0.095)	(0.089)	(0.109)	(0.222)
Elderly$_{-1}$	-0.438	-0.270	0.139	-0.734
	(0.287)	(0.271)	(0.331)	(0.593)
Socialist$_{-1}$	-0.001	0.008	0.062	0.185
	(0.076)	(0.072)	(0.088)	(0.120)
Elections$_{-1}$	0.025	-0.008	0.021	0.015
	(0.020)	(0.019)	(0.024)	(0.030)
Oil exporter$_{-1}$	-0.042	-0.056	0.006	0.138**
	(0.046)	(0.044)	(0.053)	(0.068)
N	293	293	293	264
F-test	1.44	2.89	1.03	2.46
R-squared	0.140	0.132	0.162	0.195
Endogeneity test	1.27	1.20	0.49	0.10
Cragg-Donald test	13.51	13.51	13.51	10.45
Wooldridge test	66.16	93.90	48.07	23.19

Note: The table presents estimated coefficients with robust standard errors in parentheses. All estimations are regressed using robust standard errors. * p<0.1, ** p<0.05, *** p<0.01

References

Acemoglu, D., & Robinson, J. A. (2000a). Democratization or repression? *European Economic Review*, *44*(4), 683-693.

Acemoglu, D., & Robinson, J. A. (2000b). Why did the West extend the franchise? Democracy, inequality, and growth in historical perspective. *The Quarterly Journal of Economics, 115(4)*, 1167-1199.

Acemoglu, D., Naidu, S., Restrepo, P., & Robinson, J. A. (2014). *Democracy does cause growth* (No. w20004). National Bureau of Economic Research.

Auclert, A., & Rognlie, M. (2016). Inequality and Aggregate Demand.

Aidt, T. S., & Jensen, P. S. (2009). The taxman tools up: An event history study of the introduction of the personal income tax. *Journal of Public Economics*, *93*(1), 160-175.

Argimón, I., González-Páramo, J. M., & Alegre, J. M. R. (1995). *Does public spending crowd out private investment? Evidence from a panel of 14 OECD countries (No. 9523).*

Balamatsias, P. (2017a). Democracy and taxation. Economics Discussion Papers, No 2017-100. *Kiel Institute for the World Economy. http://www. economics-ejournal. org/economics/discussionpapers/2017-100 Page, 2(2).*

Balamatsias, P. (2017b). Inequality, imperfect competition, and fiscal policy. *MPRA Paper 82178 University Library of Munich, Germany.*

Baum, C. (2008, July). Using instrumental variables techniques in economics and finance. In *German Stata Users' Group Meetings*. Stata Users Group.

Bloom, D. E., Chatterji, S., Kowal, P., Lloyd-Sherlock, P., McKee, M., Rechel, B., ... & Smith, J. P. (2015). Macroeconomic implications of population ageing and selected policy responses. *The Lancet, 385*(9968), 649-657.

Boix, C. (2001). Democracy, development, and the public sector. *American Journal of Political Science*, 1-17.

Drazen, A., & Eslava, M. (2010). Electoral manipulation via voter-friendly spending: Theory and evidence. *Journal of development economics, 92(1)*, 39-52.

Fearon, J. D., & Laitin, D. D. (2003). Ethnicity, insurgency, and civil war. *American political science review, 97(1),* 75-90.

Hausken, K., Martin, C. W., & Plümper, T. (2004). Government spending and taxation in democracies and autocracies. *Constitutional Political Economy, 15(3)*, 239-259.

Helliwell, J.F., (1994). Empirical linkages between democracy and economic growth. *British journal of political science*, *24(2),* pp.225-248.

Huntington, S. P. (1991). The third wave: Democratization in the late twentieth century (Vol. 4). University of Oklahoma press.

Lassila, J., Valkonen, T., & Alho, J. M. (2014). Demographic forecasts and fiscal policy rules. *International Journal of Forecasting*, 30(4), 1098-1109.

Meltzer, A. H., & Richard, S. F. (1981). A rational theory of the size of government. *The Journal of Political Economy*, 914-927.

Meltzer, A. H., & Richard, S. F. (1983). Tests of a rational theory of the size of government. *Public Choice*, *41*(3), 403-418.

Mutascu, M. (2011). Taxation and democracy. *Journal of Economic Policy Reform*, *14*(4), 343-348.

Mutascu, M., & Danuletiu, D. (2013). The literacy impact on tax revenues (No. 2013-63). *Economics Discussion Papers.*

Persson, T. and Tabellini, G. (2006). Democracy and development: The devil in the details. *American Economic Review, 96(2),* pp.319-324.

Persson, T., & Tabellini, G. (2009). Democratic capital: The nexus of political and economic change (No. w12175). National Bureau of Economic Research.

Profeta, P., Puglisi, R., & Scabrosetti, S. (2013). Does democracy affect taxation and government spending? Evidence from developing countries. *Journal of Comparative Economics*, *41*(3), 684-718.

Rodrik, D., (1999). Democracies pay higher wages. *The Quarterly Journal of Economics, 114(3),* pp.707-738.

Schulze, G. G., & Ursprung, H. W. (1999). Globalisation of the Economy and the Nation State. *The World Economy*, *22*(3), 295-352.

Wintrobe, R. (2001). How to understand, and deal with dictatorship: an economist's view. *Economics of Governance, 2(1)*, 35-58.

Xu, X., & Yan, Y. (2014). Does government investment crowd out private investment in China?. *Journal of Economic Policy Reform, 17(1), 1-12.*