



## **Democracy, government spending, and economic growth: A political-economic explanation of the Barro-effect \***

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**Abstract.** The paper develops a political economic argument for the recently observed inverse u-shaped relation between the level of democracy and economic performance. A model is constructed that shows why and how political participation influences the spending behavior of opportunistic governments that can choose an optimal combination of rents and public goods to attract political support. If the level of democracy remains comparably low, governments rationally choose rents as an instrument to assure political support. With increasing democratic participation, however, rents become an increasingly expensive instrument while the provision of public goods becomes more and more efficient in ensuring the incumbent government's survival in power. As a consequence, an increase in democracy tends to raise growth rates of per capita income. However, the beneficial impact of democracy on growth holds true only for moderate degrees of political participation. If – in semi-democratic countries – political participation increases further, governments have an incentive to over-invest in the provision of public goods. This model allows to derive and test three hypothesis: Firstly, based on a simple endogenous growth model, we empirically substantiate our hypothesis of a non-linear, inverse u-shaped relation between the level of democracy and growth of per capita income. Secondly, we show that the impact of government spending on economic growth is higher in more democratic countries. Thirdly, we demonstrate that the level of democracy and government share of GDP are correlated in a u-shaped manner.

### **1. Introduction**

The notion of political institutions influencing economic outcome has accompanied social scientists since the days of Adam Smith. Over time, it has become generally accepted that economic performance is causally linked to the political and institutional environment of business activities. Still, how-

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ever, the intriguing question of whether democracy and political freedom improve or hinder long-term economic performance remains by and large unresolved.

One reason for this inconclusiveness is theoretical: Proponents of a negative as well as proponents of a positive influence of democracy on growth have delivered equally substantive arguments in support of their competing views. This controversy is best exemplified by reference to two modern classics: Milton Friedman (1962) argues that the ‘two freedoms’ – political and economic freedom – are mutually reinforcing and the impact of democracy on growth operates through quality of economic institutions. The more democratic a country is, the higher the government’s incentive to implement sound economic institutions. Consequently, its economic performance improves.

This view is challenged by another modern classic. Mancur Olson (1965; 1982) believes that democracies are especially prone to divert resources from investment to consumption. In his opinion, special interest groups are more likely to exert their detrimental influence in democratic political systems than in autocracies: “Countries that have had democratic freedom of organization without upheaval or invasion the longest will suffer the most from growth-repressing organizations and combinations.” (Olson, 1982: 77)

An equally important reason for the contradictory results of existing research is empirical in nature: In a substantial review of recent research, Roland Benabou (1996) reports on the remarkably inconsistent findings empirical research has generated when investigating the effect of democracy on economic growth. All possible results – ranging from a significantly positive influence to a significantly negative effect – have been reported over the last decades. Aymo Brunetti observes no clear relationship between democracy, as measured in the empirical studies, and economic growth (1997: 172). Alberto Alesina and Roberto Perotti conclude that the hypothesis ‘democratic institutions reduce growth prospects’ is not supported by the available evidence (Alesina and Perotti, 1997: 24). Sirowy and Inkeles (1990) review 13 empirical investigations with 15 findings. Of these, 11 found no link or only a conditional link between democracy and growth. Przeworski and Limongi (1993) cite 21 results from 18 studies. According to their review, eight results suggest a positive relationship between democracy and growth, eight findings state a negative link, and five indicate no link at all. Dennis Quinn and John Woolley report that from eight studies published between 1994 and 1997, three results show a negative relationship, two a positive link, two find no connection, and one comes up with mixed results (Quinn and Woolley, 2001).

Over the last years, however, a growing number of studies have delivered a potential explanation for the lack of robust empirical estimates. Robert Barro (1996) has demonstrated the existence of a non-linear, inverse u-shaped rela-

tionship between regime type and economic performance. Barro uses Gastil's index of democracy to construct three dummy variables for low, medium, and high levels of democracy, respectively. While the variables for high and low democracy scores did not differ significantly from one another with respect to their influence on economic growth, semi-democracies apparently experienced higher rates of economic growth. Therefore, Barro's findings strongly reject the implicit hypothesis of a linear effect of democracy on growth.

In subsequent research, the empirically observed phenomenon of an inverse u-shaped relationship – the Barro-effect – frequently gained additional empirical support (Barro and Sala-i-Martin, 1995; Barro 1997; Martin and Plümper, 2001; Obinger 2001). Perhaps for the very first time, a robust and reproducible effect of democracy on growth is emerging from empirical investigations. Despite the lack of a theoretical foundation the result is getting more and more accepted as a 'stylized fact' of contemporary research and even made its way into political economic textbooks (Drazen, 2000). This may seem to be imprudent given that a satisfactory theoretical explanation for the observed phenomenon still has to be delivered. As yet, explanatory progress in accounting for this relationship lags behind empirical research.

This paper seeks to fill the apparent theoretical gap. It offers a simple model explaining why and how democracy affects economic growth. Far from arguing that random selection of benevolent and skillful governments is responsible for the apparent differences in economic growth rates, we place rational and opportunistic behavior of governments at the center of our explanation. As the causal mechanism linking political participation to economic growth we identify the amount and quality of government spending. To briefly sketch the argument: If political participation is severely restricted, governments rationally choose rents as an instrument to buy political support. With growing democracy, however, the provision of public goods becomes more and more efficient in ensuring that the government remains in power. The provision of public goods is not only appreciated by those whose support the government needs to stay in office, it can also be growth enhancing. Consequently, an increase in the level of democracy in an autocratic political system tends to increase growth of per capita income. But this holds true only for moderate levels of democracy. If levels of democracy exceed beyond a certain point, governments face an incentive to invest more in the provision of public goods. By doing so, they increase the government share of the economy and reduce private investment. Hence, the model delivers a theoretical explanation for the non-linear relationship between levels of democracy and economic performance based on government spending. Admittedly, to predict and verify what is already known, would be an exercise of limited appeal. Yet, our model allows us to derive two additional hypotheses which

are more closely related to the underlying causal mechanism. Firstly, we demonstrate the existence of a positive interaction term between democracy and government spending regressed on economic growth rates. This result supports our assertion that the quality of government spending (proxied by its impact on growth) improves with increasing democracy. Secondly and perhaps more surprisingly, we demonstrate the existence of the u-shaped relationship between democracy and government spending that our theoretical model predicts.

## 2. The political economy of government spending and economic growth

In this section we develop a political economic model that predicts a systematic non-linear relationship between democracy and government spending as well as between democracy and economic growth. In specifying the political economic setting we start with the assumption that two groups exist in a country, the ‘general population’ (denoted  $V$ ) and the ‘elite’ (denoted  $E$ ), where the whole of a country’s population  $P$  is  $P = V + E \Rightarrow V = P - E$ . Individual members of the elite are denoted by  $e$ , while individuals who do not belong to the elite are denoted by  $i$ .

Starting from here we define an ideal type democracy as political system in which an incumbent government stays in power if it has the political support of the majority of the population  $P$ , while a pure autocrat only needs the support of the majority of the elite  $E$ . The less democratic a country is, the more important the elite and the less important the population becomes for the political survival of the government. Hence, political systems can be distinguished along a single ordering dimension, with  $0 \leq \lambda \leq 1$  representing a country’s level of democracy, where 0 signifies the most autocratic and 1 the most democratic country.

We further assume that individuals derive utility from three sources: consumption of private goods, consumption of public goods and income that is generated by rental transfers from the government. To make the distinction between the two groups  $E$  and  $V$  as clear as possible, we assume that only members of the elite receive rental transfers, while only individuals who do not belong to the elite draw utility from the government’s provision of public goods. Note that allowing for rental transfers to the population and public good consumption of the elite’s members does not change the general argument as long as members of the elite receive more transfers and members of the population gain a relatively larger individual utility from the consumption of public goods. What matters here is the relative size of budgets devoted to transfers and public good investment, respectively. The guiding principle of our model has been confirmed by numerous studies. For instance, in his sem-

inal contribution to the political economy of dictatorship, Ronald Wintrobe concludes: “There tends to be greater redistribution (of income wealth, and the means to earn it) under dictatorship than under democracy.” (Wintrobe, 1998: 338).

In the same vein, it is only too obvious that members of the elite are part of the population and therefore make use of public goods provided by the government. The radicalization of the assumptions underlying the model, however, does not influence the general argument. We use the following utility functions for individuals who belong to the general population and members of the elite. In line with the standard assumption of decreasing marginal utility we write

$$u_i = c_i^{1-\alpha} + q_i^\alpha, \quad 0 < \alpha < 1 \quad (1a)$$

for an individual that does not belong to the elite and

$$u_e = c_e^{1-\beta} + r_e^\beta, \quad 0 < \beta < 1 \quad (1b)$$

for individuals who are members of the elite.  $c$  denotes consumption of private goods,  $q$  consumption of public goods and  $r$  utility from rental transfers. The budget constraint of all individuals – regardless of whether they are members of the elite or not – is  $c = y(1 - \tau)$  with  $\tau$  denoting effective tax rates and  $y$  gross individual income before taxes.<sup>1</sup>

Government revenue,  $\tau Y$ , is spent over two types of public consumption, the transfer of rents to the elite and the provision of a set of public goods. The government’s budget constraint requires that  $Q + R \leq \tau Y = G$ , where  $Q$  denotes total government spending on public goods and  $R$  total rental transfers.  $\tau$  is the effective tax rate and  $Y$  the country’s gross domestic product. Since the elite is smaller than the median share of the population, the government can – for any given tax rate – devote more resources to each member of the elite than to each single individual of the general population. Government spending and taxation is determined by a political support function that consists of three arguments: the consumption possibilities of the total population ( $P$ ), the provision of public goods to the general population ( $V$ ) and rental transfers to members of the elite ( $E$ ).

To attract political support, governments can choose any combination of rents and public goods subject to the budget constraint. To optimize its choice of policy instruments, the government faces a double ‘budget constraint’, that results a) from the trade-off between increasing tax rates and an individual’s consumption possibility and b) from the trade-off between pleasing the elite and the population. Operating under this policy trilemma the government has an apparent incentive to choose the combination of policy instruments that

offers the largest support at the least cost possible. Thus, the government maximizes the following support function

$$S_G(q, r) = C^{1-\alpha-\beta} + \lambda Q^\alpha + (1-\lambda)R^\beta \quad (2)$$

where  $C = Y - G$ . In order to determine the first-order condition we apply the Lagrange-multiplier method, with constraint

$$C + Q + R = C + \tau Y = Y \equiv 1 \quad (3)$$

The Lagrangian F becomes

$$F = C^{1-\alpha-\beta} + \lambda Q^\alpha + (1-\lambda)R^\beta - \mu(C + Q + R - 1) \quad (4)$$

where  $\mu$  is the Lagrange multiplier

$$\frac{\partial F}{\partial C} = (1-\alpha-\beta)C^{-\alpha-\beta} - \mu = 0 \quad (5a)$$

$$\frac{\partial F}{\partial Q} = \alpha\lambda Q^{\alpha-1} - \mu = 0 \quad (5b)$$

$$\frac{\partial F}{\partial R} = \beta(1-\lambda)R^{\beta-1} - \mu = 0 \quad (5c)$$

$$\frac{\partial F}{\partial \mu} = -(C + Q + R - 1) = 0 \quad (5d)$$

These four equations have four unknown, which are easily found. After some simple transformations, we get

$$R = \left( \frac{(1-\alpha-\beta)C^{-\alpha-\beta}}{\beta(1-\lambda)} \right)^{1/(\beta-1)} \quad (6a)$$

$$Q = \left( \frac{(1-\alpha-\beta)C^{-\alpha-\beta}}{\alpha\lambda} \right)^{1/(\alpha-1)} \quad (6b)$$

$$C = \left( \frac{1-Q-R}{1-\alpha-\beta} \right)^{1/(-\alpha-\beta)} \quad (6c)$$

Since  $\alpha, \beta, \lambda$  are endogenously given and fixed parameters, the equation is fully specified. However, equations 6a-c are still too complicated to easily determine the solution to the optimization problem. Nevertheless, it is easy to see that if  $\lambda = 0.5$  and  $\alpha = \beta$  Q must equal R. If  $\lambda > 0.5$ , then  $Q > R$ .

To illustrate the government's optimization problem, we simulate the government's optimal combination of policy instruments over the whole range

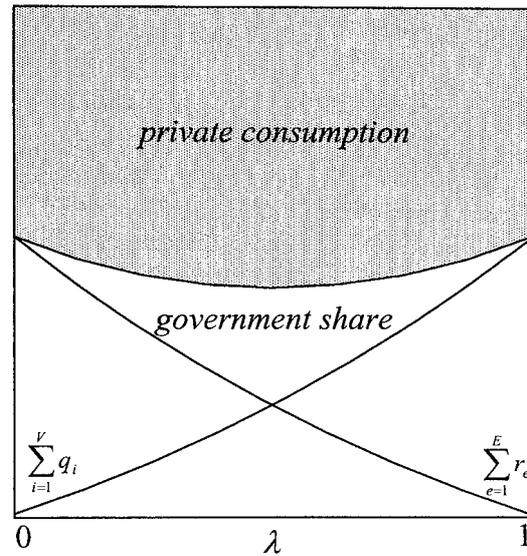


Figure 1. The impact of democracy on the provision of public goods, rental transfers, private consumption and the government share of the economy

of democracy levels. Recall that we have defined democracy as the extend to which voters decide over the political survival of the incumbent government. Since the general population becomes more important with growing levels of democracy while the importance of the elite declines we should expect a growing share of public investment in collective goods and a decline in rental transfers.

Figure 1 is based on the following symmetric parameters:  $\alpha = 0.3$ ;  $\beta = 0.3$ ;  $1 - \alpha - \beta = 0.4$ . It is easy to see that the assumption  $\alpha = \beta$  causes the symmetry in Figure 1. If we allow  $\alpha \neq \beta$  we obtain asymmetric solutions. Allowing  $\alpha$  and  $\beta$  to vary within the defined ranges, however, does not change the general argument. The model shows that with increased levels of democracy the provision of public goods increases, while the share of rental transfers decreases. Second, there exists a non-linear, u-shaped relationship between levels of democracy and government consumption. With levels of democracy increasing, not only the type of government spending changes, but also the government's share in the economy.

Again, the logic of our model corresponds with what we know from political economic research. In evaluating the impact of political institutions on policies, Torsten Persson (2002) forcefully demonstrates that constitutional controls of the parliament reduces government spending by approximately 10 percent. The smaller the number of voters the member of the parliament

is responsive to and dependent upon, the larger is the public sector. Thomas Husted and Lawrence Kenny (1997) show that government spending on the state level in the US increased after poll taxes had been abandoned. Because higher costs of voting disproportionately disenfranchise people at the lower end of the income distribution, their inclusion in the voting franchise lowers the median income. Thus, the demand for redistribution of income rises. On a similar vein, Burton Abrams and Russell Settle (1999) show that in Switzerland, the extension of franchise to women in 1971 not only increased the size of Swiss government, but also changed the composition of the government's budget: their estimate points to a disproportionate 28 percent increase in social welfare spending as an effect of introducing universal suffrage at the federal level. It hardly comes as a surprise that even US Senators believe that "good politics (means) new spending programs, particularly for constituents who would be likely to contribute to (...) one's re-election." (Payne, 1991: 71).

If we restate these findings in the words of our model: the more individuals gain influence on the government's survival in power, the higher the incentives of governments to propel resources into inefficient pork barrel policies. However, the positive correlation between the size of the electorate and the public sector size can be taken for granted only if we analyze democracies. If we turn our attention to autocracies, we immediately observe that government spending in pure dictatorships exceeds government spending in moderately autocratic regimes. A dictator faces two costly challenges: Firstly, with declining levels of individual freedom he has to direct more resources into a repression system powerful enough to prevent citizens from starting a revolution. As Ronald Wintrobe (1998: 33–34) has noted, measures of suppression include restrictions on the freedom of speech, prohibition of the formation of labor unions, associations and opposition parties, military presence. This causes another problem: with a suppression apparatus powerful enough to control the people, the dictator has to fear the opposition of the repressive forces themselves. Ironically, the smaller the elite, the more costly it is to ensure their loyalty. To prevent being overthrown by the leaders of his security forces, the dictator can either install multiple instances of competing services (like Hitler did) or, on a more or less regular basis, kill those of his chief officials that become too powerful and independent (like Stalin did) (Tullock, 1987).

Having explained why levels of government spending differ in response to varying regime-types, it is only a small final step to explain why the level of democracy influences economic growth in a non-linear fashion. Here we borrow two arguments from standard growth models (Romer, 1986; Aghion-Howitt, 1998):

The first causal link – composition of the government’s budget – is drawn between the share of government resources directed into the provision of public goods and a subsequent increase in economic growth. Government spending that goes into infrastructure and schooling, to name just two examples, will do the economy more good than the same amount of resources spent on unproductive rental transfers. This is consistent with findings that posit a positive relationship between the quality of domestic institutions and rates of economic growth (e.g., Knack and Keefer, 1995).

The second causal link between democracy and growth – share of the government in the economy – is subject to the well-known growth depressing effect of high levels of government spending (Barro and Sala-I-Martin, 1995). Because government spending increases beyond a certain level of democracy, income is taxed away from the economy in order to attract political support. This results in less private income that can be saved and invested, which in turn depresses economic growth since investment causes growth. The notion is standard in the macroeconomics underlying national accounting: in the simplest of models – assuming a closed economy –, the total output of the economy  $Y$  is determined by private consumption  $C$ , investment  $I$ , and government consumption  $G$ , such that  $C + I + G = Y$ . If the government seeks to avoid macroeconomic destabilization and foreign debt, an increase in governments spending necessarily reduces the sum of private investment and private consumption. This simplifying assumption of a closed economy is supported by empirical evidence: an increase in government spending is financed roughly equally from both sources.<sup>2</sup> Note that this is not a hypothetical theory, but an accounting identity.

Therefore, with respect to our main variable of interest, democracy, the model makes the following assertions:

First, growth rates should be highest in countries with medium levels of democracy and lower in more autocratic and democratic countries (hypothesis 1), since government spending is higher and private investment lower in pure democracies and in pure autocracies than in countries with medium levels of political participation.

Second, the level of democracy,  $\lambda$ , influences private investment in a non-linear, u-shaped manner (hypothesis 2), because pure autocratic regimes tend to transfer more resources to members of the elite and pure democracies tend to over-invest in public goods.

Third, with increasing levels of democracy, governments spend a larger share of their budget on the provision of public goods. Therefore, the interaction term between government spending and democracy should be significant and positive (hypothesis 3).

### 3. Three simple tests of the model

We begin the threefold test of our model by re-estimating the Barro-effect of an inverse u-shaped relation between democracy and growth. We then continue with a test of the derived hypotheses that this non-linear effect is driven by government spending and therefore estimate the asserted non-linearity between democracy and government spending. The empirical section is completed by an examination of the ‘quality of government spending’-hypothesis.

We assume that rates of investment, growth of technology and growth of the labor force are independent of country specific factors which shift the production function (and therefore independent of the error term). This implies that we can estimate the model with ordinary least squares (OLS). Only if this assumption is deemed inappropriate, estimates with OLS are potentially biased. The sample consists of 83 countries<sup>3</sup> for which data could be collected and covers the years from 1975 to 1997. We excluded all countries with a population less than one million, with centrally planned economies, with oil exports exceeding more than 20 percent of GDP in 1985, and with war or civil war claiming a death toll exceeding 2.5 percent of total population during 1970–88.

We calculate economic growth using purchasing power parity corrected GDP per capita (NY.GDP.PCAP.PP.CD). These data are readily available from the World Bank’s World Development Indicators (version 1999). Investment is gross domestic fixed investment (NE.GDI.FTOT.ZS, % of GDP).<sup>4</sup> We include the natural growth rate of the population in the regression.<sup>5</sup> *Human capital* accumulation is proxied by computing the initial level of educational attainment using data on average years of schooling from Robert Barro and Jong-Wah Lee (1993, 1996). This variable measures years of schooling in the male population aged 15–65.<sup>6</sup> To control for potential effects of a country’s economic openness to the world economy, we apply the openness indicator proposed by Jeffrey Sachs and Andrew Warner (1995). Their proxy is a dummy variable that is denoted 0 if a country has applied non-tariff barriers to trade on more than 40 percent of imported goods or if the average tariff exceeds 40 percent or if the black market exchange rate is more than 20 percent below the official rate or if a state monopoly for the most important export goods is in place (Sachs and Warner, 1995: 22). The operationalization of our main variable of interest, *level of democracy*, is perhaps more controversial. We use the Polity98 dataset, which has become the dominating measure of democracy over the last decade (Brunetti, 1997: 166). Its main focus is on institutional aspects of political participation and employs subjective evaluations. Ted Gurr and Keith Jaggers, the principal investigators of the Polity project, compute a democracy and an autocracy score, both ranging from

0 to 10. To obtain the level of democracy, they recommend to subtract the countries' autocracy from its democracy score (Jagers and Gurr, 1995). The resulting variable ranges from  $-10$  to  $+10$ . Since this does not permit a control for non-linearity, we standardize the variable so that it finally stretches from 0 for pure autocracies to 10 for pure democracies. The Polity variables do not correlate with other variables usually included in growth regressions, nor does the results depend on our choice of the Polity data.<sup>7</sup> Finally, there is no evidence that our inverse u-shaped relation could be driven by an unobserved and uncontrolled influence. An OLS estimate of the underlying empirical model yields the following results:

The coefficients of the convergence variable (*log of per capita income*) are estimated around  $-0.010$  and turn out to be highly significant in all models. The results confirm the relevance of conditional convergence across countries.<sup>8</sup> The share of gross domestic fixed investment to GDP is positively, highly significantly and robustly correlated with growth.<sup>9</sup> The estimated coefficient is about 0.17. The natural growth rate of the population has the expected negative sign and turns out to be significant. The same holds true for the initial stock of human capital, the initial level of human capital and the openness dummy. Most importantly, a comparison of the models shows that the inclusion of a non-linear measure of democracy improves the model significantly.

Model 2 repeats the results of the bulk of empirical research on democracy and growth and shows that "there is no clear relationship between democracy (...) and economic growth" (Brunetti, 1997: 172). However, model 3 allows to reject the nil-hypothesis of no systematic effect. Thus, if one gives up the default assumption of linearity, one can observe a robust, significant and systematic nonlinear relationship.

To test the robustness of growth models the inclusion of regional dummies especially a South-East Asian and African dummy has become a widely used procedure (see i.e., Rodriguez and Rodrik, 2000). The reason to conduct this test is rather intuitive than theoretical. The procedure erects the highest barriers to the robustness of the estimated coefficients. Nevertheless, a theoretical justification is that there are geographical, cultural or even political explanations for the extraordinarily high growth rates of East Asian countries. These countries' democracy levels fall in the medium range. The estimated nonlinearity could therefore be driven by a spurious effect that depends on the inclusion of East Asian countries. Model 4 clearly reveals that it does not. The inclusion of a dummy for East Asian countries leaves the inverse u-shaped relationship between political participation and growth intact, though the conditional effect of political participation on growth is shifted slightly once we control for possible specific effect of these countries.

Table 1. Regressions for growth rate of per capita GDP

	Model 1	Model 2	Model 3	Model 4 test of robustness
Constant	0.0887 (5.930)****	0.0872 (5.836)****	0.0709 (4.872)****	0.0698 (4.827)****
Initial (1975) GDP per capita (log)	-0.0107 (-5.098)****	-0.0113 (-5.282)****	-0.0102 (-5.085)****	-0.0092 (-4.350)****
Investment share of GDP	0.173 (7.161)****	0.175 (7.251)****	0.173 (7.726)****	0.155 (6.166)****
Population growth	-0.442 (-2.335)**	-0.342 (-1.686)*	-0.427 (-2.247)**	-0.430 (-2.282)**
Human capital (lagged)	0.00164 (1.963)*	0.0136 (1.581)	0.0150 (1.874)*	0.00135 (1.682)*
Institutional openness (Sachs-Warner-dummy)	0.0149 (3.398)***	0.0149 (3.392)***	0.0170 (4.146)****	0.0135 (2.881)***
Democracy (polity)		0.00081 (1.246)	0.00693 (3.904)****	0.00585 (3.073)***
Democracy squared			-0.00059 (-3.644)****	-0.00478 (-2.710)***
South-East-Asia dummy				0.0156 (2.538)**
N	83	83	83	83
Adj. R <sup>2</sup>	.641	.649	.674	.679
RMS-residual	.0085	0.0084	.0071	.0069
F-Stat	27.489****	23.403****	25.198****	22.694****

*Note:* All estimates are OLS regressions with t-statistics in parenthesis. The dependent variable is average annual growth rate of per capita income, 1975–1997, based on World Bank World Development Indicators. \* = significant on 10% level; \*\* = significant on 5% level; \*\*\* = significant on 1% level; \*\*\*\* = significant on 0.1% level.

Figure 2 indicates that average levels of democracy of about 6 increases the average growth rate by 0.20 percent compared to a pure autocracy and by 0.10 percent compared to a pure democracy. This level of democracy corresponds to the political system of countries such as Korea, Bolivia and Uruguay. We may therefore conclude that democratic control of the government is *ceteris paribus* conducive to economic growth only up to a certain level of political participation. Beyond this level, an increase in the share of constituents to the population is detrimental for economic growth.

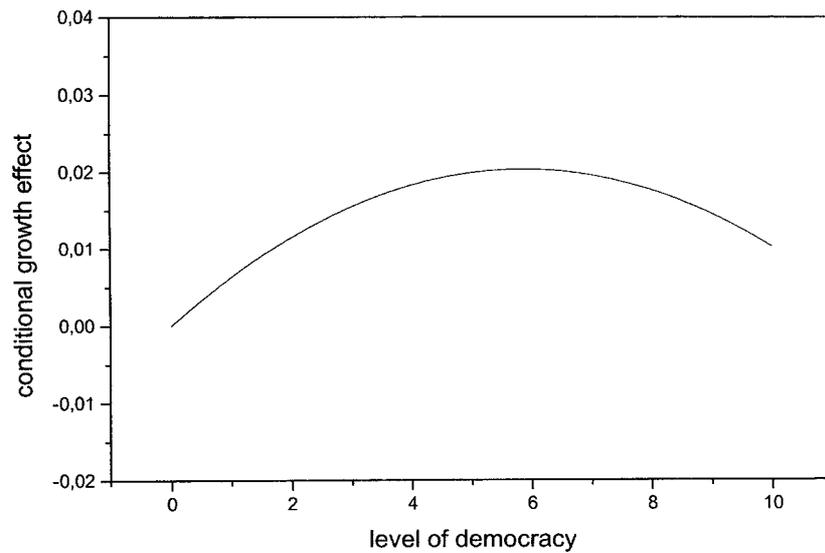


Figure 2. The conditional impact of democracy on growth

Up to this point, we have shown an inverse u-shaped relationship between a measure of democracy and economic growth. To those aware of the empirical growth literature this result does hardly come as a surprise, since it has already been reported in the literature (Barro, 1996, 1997). Thus, the empirical analysis supports the well known and offers only a mild test for our theoretical model. In this section, we confront the model with a more direct evaluation of its causal mechanism: the impact of democracy on government spending (% of GDP).

Recall that the model predicts a non-linear, u-shaped relationship between the level of democracy and government spending. The main problem of an econometric estimate of government spending arises from the almost complete lack of a theoretically founded baseline model. This vacuum has urged scientists to add whatever seems plausible into the regression model under consideration. Our empirical model follows two recently published papers on government spending written by Dani Rodrik (1996) and Geoffrey Garrett (1998). Both models have their strengths and shortcomings. The most important shortcoming from our perspective is the complete lack of institutional political variables in the model put forward by Rodrik. Garrett includes a variable that captures left-labor power, but does not control for variables that measure the degree of political freedom. These kind of control variables are most important for our purpose, because we are interested in the impact of constitutional factors on government spending. Thus, we control for the variables that Garrett and Rodrik found to be significantly related to government

spending (if these variables are available for our cross-section of countries), but additionally include variables that have recently been published by Philip Keefer (Beck et al., 2000) and Witold Henisz (2000): The bicameralism variable is a dummy coded 1 if an upper house exists, if it is elected using different electoral rules and if it does have substantive fiscal authority. The ‘number of veto players’ in the political system is adjusted for whether the veto players are independent of each other. The variable takes larger values as the number of veto players in the political system increases. We expect the government expenditures to rise with the number of veto players in the political system, because the government has to make political bargains to accommodate veto players if it prefers to increase government spending. The dependent variable, government spending, is measured by the World Development Indicator variable dubbed NE.CON.GOV.T.ZS. The following table reports the results:

The regression results reported in Table 2 support the hypothesis of a u-shaped relation between the degree of political participation and government spending. The results imply a nonlinear conditional effect of democracy on government spending of approximately 2 percent, that is: government spending of countries with a medium degree of political participation is about 2 percent below government spending in pure autocracies and pure democracies.

The regressions also show that – along with democracy – only the number of veto players and bicameralism are robustly related to government spending. Neither can we support Wagner’s law nor Rodrik’s claim that more open economies have bigger governments (Rodrik, 1996), nor do we find evidence for Olson’s (1982) suggestion that government spending increases as political systems mature.

The interpretation of the above regression results is, however, restricted by the lack of a consistent theoretical model. As a consequence, we cannot claim to have found the ‘right’ model. This becomes obvious by the significance of the included regional dummies.

For our purposes, it is most important that the estimated coefficients of democracy and the square of this variable are robust over the whole variety of regression models that we run. Additionally, regression diagnostics reveal that the errors are unrelated to the variables that we found significant.

Figure 3 reveals the impact of democracy on government spending. The government share of the economy is highest in autocracies. The budget of governments in countries at medium levels of democracy is almost 6 percent lower than the budget of autocracies. Governments in pure democracies tend to spend a larger share of the gross domestic product. Summarizing this second test we claim to have found additional evidence for our theoretical

Table 2. Democracy and government spending

	Model 5 main model	Model 6 regional dummies	Model 7 linear democracy
Constant	2.003 (0.357)	8.631 (1.548)	-4.160 (-0.791)
Log of per capita income (lagged)	1.629 (1.957)*	1.105 (1.353)	1.9997 (2.344)**
Human capital (lagged)	0.639 (1.899)*	0.441 (1.234)	0.499 (1.448)
Institutional openness (Sachs-Warner)	1.997 (1.039)	-1.269 (-0.866)	2.915 (1.485)
Bicameralism	-3.508 (-2.957)***	-2.972 (-2.369)**	-3.315 (-2.695)***
Durability of political system	0.0143 (0.522)	0.0113 (0.397)	0.0441 (1.706)*
Number of veto players	1.117 (2.390)**	1.230 (2.620)**	1.106 (2.278)**
Democracy	-2.145 (-2.539)**	-2.930 (-3.454)****	-0.0645 (-0.255)
Democracy squared	0.201 (2.572)**	0.237 (3.042)***	
South East Asia dummy	-5.215 (-2.182)**		-6.673 (-2.767)***
OECD-dummy	-6.850 (-3.336)***		-6.346 (-3.018)***
Latin America dummy	-2.704 (-1.850)*		-3.347 (-2.237)**
Africa dummy	2.312 (1.559)		2.321 (1.506)
N	83	83	83
Adj. R <sup>2</sup>	.495	.392	.455
RMS-residual	887.498	1130.860	971.372
F-Stat	7.704****	7.596****	7.231****

Note: All estimates are OLS regressions with t-statistics in parenthesis. The dependent variable is government consumption divided by GDP, 1975–1997, based on World Bank World Development Indicators. \* = significant on 10% level; \*\* = significant on 5% level; \*\*\* = significant on 1% level; \*\*\*\* = significant on 0.1% level.

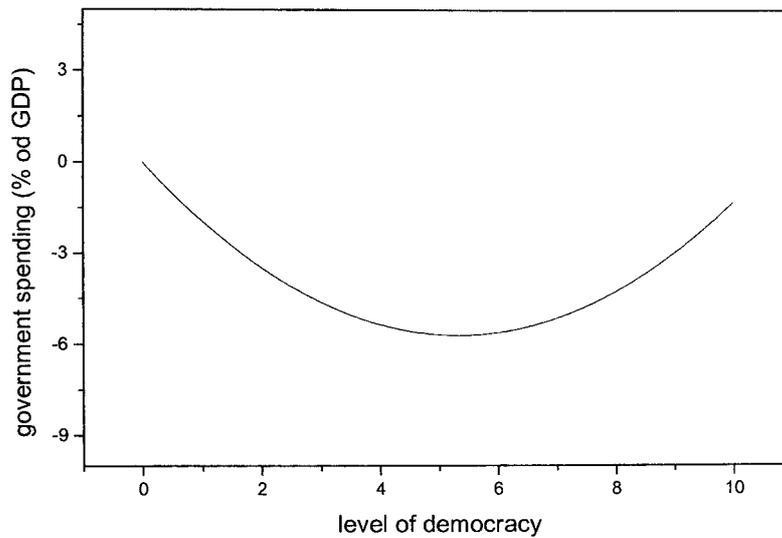


Figure 3. The conditional effect of democracy on government spending

model – or to say the least: we found no evidence that contradicts our theoretically derived hypothesis. At this point, we suggest a more appropriate model of government spending, which includes a non-linear measure of democracy.

The last hypothesis that we have derived from the theoretical model asserts differences in the quality of government spending with varying levels of democracy. The more political participation a system provides for, the more a government spends on public goods. If we control for the reduction in private investment caused by increased government spending, public goods provision has a positive impact on growth. To test this asserted causal relation, we add government spending to our baseline growth model (model 3). From our model, we expect a negative sign of government spending but a positive interaction effect.

Model 9 of Table 3 lends support to our hypothesis that political participation improves the quality of government spending. Both the share of government consumption in GDP and its interaction effect with political participation enter the regression with the predicted signs. While government spending has a negative sign, the interaction effect is positive. As it very often happens in models that include interaction effects, the estimated coefficient of these variables are insignificant. This cannot be interpreted as an indication of a lack of robustness of the variables of our main interest. Instead, the estimation of government spending is disturbed by the high degree of co-linearity between the variables of the interaction term.

Table 3. Regressions for growth rate of per capita GDP

	Model 3 repeated	Model 8	Model 9
Constant	0.0709 (4.872)****	0.0729 (4.883)****	0.0785 (5.232)****
Initial (1975) GDP per capita	-0.0102 (-5.085)****	-0.0100 (-4.954)****	-0.0098 (-4.923)****
Investment share of GDP	0.173 (7.726)****	0.170 (7.430)****	0.179 (-7.767)****
Population growth	-0.427 (-2.247)**	-0.436 (-2.210)**	-0.415 (-2.135)**
Human capital (lagged)	0.0150 (1.874)*	0.00153 (1.844)*	0.00121 (1.450)
Institutional openness (Sachs-Warner-dummy)	0.0170 (4.146)****	0.0169 (4.070)****	0.0165 (4.038)****
Democracy (polity)	0.00693 (3.904)****	0.00666 (3.525)****	0.00527 (2.630)**
Democracy squared	-0.00059 (-3.644)****	-0.00057 (-3.322)***	-0.00058 (-3.445)****
Government spending		-0.0091 (-0.467)	-0.0661 (-1.812)*
Democracy * government spending (interaction)			0.0102 (1.837)*
N	83	83	83
Adj R <sup>2</sup>	.674	.663	.674
RMS-residual	.0071	0.0070	0.0067
F-Stat	25.198****	20.946	19.600****

*Note:* All estimates are OLS regressions with t-statistics in parenthesis. The dependent variable is average annual growth rate of per capita income, 1975–1997, based on World Bank World Development Indicators. \* = significant on 10% level; \*\* = significant on 5% level; \*\*\* = significant on 1% level; \*\*\*\* = significant on 0.1% level.

Obviously, government spending of dictators is less efficient or, to say it more pronounced, much more detrimental to the economy. Moreover, the optimal degree of government spending in autocracies is lower than in democracies. This gives us a final hint that hypothesis 3, proposing higher efficiency of government spending in democracies, cannot be rejected. Though we cannot directly observe the macroeconomic effects of rental transfers, it becomes obvious that the government is not the engine of development

in autocratic regimes. The sometimes celebrated ‘development dictatorship’ (Wade, 1990) is a myth. If undemocratic countries benefit from high growth rates, then this happens because the autonomy of the government is relatively restricted (Plümper, 2001).

#### 4. Conclusion

This paper has argued that an inverse u-shaped relationship between levels of democracy and economic growth can be observed *because* a country’s regime type crucially affects the instruments governments choose to attract political support. Purely autocratic governments tend to over-invest in rent-seeking activities, while pure democracies have an incentive to over-invest in public goods. Additionally, the more democratic a country is, the better the quality of government spending becomes. Consequently, neither purely autocratic nor fully democratic countries achieve rates of economic growth that match those of countries with intermediate levels of democracy.

As to the question of causation, the model put forward in this paper argues that the causal arrow runs from political participation to government spending (as the government’s main instrument to gain political support) to economic performance. Since budget policies are determined by the size of the constituency which in turn is a function of the institutional setting of a country, we can attribute cross-country growth differences to cross-country differences in levels of democracy. This result reproduces the findings of earlier empirical studies (i.e., Barro, 1996). We have provided additional evidence in support of the identified causal mechanism. The model’s underlying logic suggests a u-shaped relationship between political participation and government spending and a higher impact of government spending on economic performance in more democratic countries. The empirical test of both hypotheses showed significant and robust results. We may conclude, therefore, that different levels of democracy influence the government’s share in the economy and the share of public goods in total government spending. Thereby, political regimes systematically influence rates of economic growth.

#### Notes

1. Because rental transfers and provision of public goods are assumed the only instruments of redistribution, we do not allow tax rates to differ across individuals.
2. Own calculation. The data are available upon request.
3. See appendix A.
4. We also ran the regression (not reported here) using WDI’s gross domestic investment and the natural growth rate of the capital stock estimated by the perpetual inventory method

as specified for less developed countries by Harberger (1978) and refined by Nehru and Dhareshwar (1993), using a depreciation rate of  $\delta = 10$  percent. Both alternative measures do not change the results.

5. Using the growth rate of the labor force instead, again has no influence on the variables of our major interest.
6. We experimented with average schooling as well. The results are not influenced by the exchange of proxies.
7. See appendix C.
8. For a discussion of convergence in a growth theory context see Mankiw, Romer and Weil (1992) and Barro and Sala-i-Martin (1995).
9. This correlation is a firmly established fact from the new empirical growth literature, see (among many others) Levine and Renelt (1992); Mankiw, Romer and Weil (1992); DeLong and Summers (1991); Barro (1991).

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## Appendix A. Country list and PWT number

Country	PWT no.	Country	PWT no.
Algeria	01	Colombia	77
Benin	03	Ecuador	78
Burkina Faso	05	Paraguay	80
Burundi	06	Peru	81
Cameroon	07	Uruguay	83
Central African Republic	09	Venezuela	84
Chad	10	Bangladesh	86
Egypt, Arab Rep.	14	India	90
Ethiopia	15	Indonesia	91
Ghana	18	Iran, Islamic Rep.	92
Guinea	19	Israel	94
Cote d'Ivoire	21	Japan	95
Kenya	22	Jordan	96
Malawi	26	Korea, Rep.	97
Mali	27	Malaysia	100
Mauritania	28	Nepal	103
Morocco	30	Pakistan	105
Niger	33	Philippines	106
Nigeria	34	Singapore	109
Rwanda	36	Sri Lanka	110
Sierra Leone	39	Syrian Arab Republic	111
South Africa	41	Thailand	113
Togo	45	Austria	116
Tunisia	46	Belgium	117
Congo, Rep.	48	Denmark	121
Zambia	49	Finland	122
Zimbabwe	50	France	123
Canada	54	Germany	125
Costa Rica	55	Greece	126
El Salvador	58	Ireland	129
Guatemala	60	Italy	130
Haiti	61	Netherlands	133
Honduras	62	Norway	134
Jamaica	63	Portugal	136
Mexico	64	Spain	138
Panama	66	Sweden	139
Trinidad and Tobago	71	Switzerland	140
United States	72	Turkey	141
Argentina	73	United Kingdom	142
Bolivia	74	Australia	145
Brazil	75	New Zealand	147
Chile	76		

*Appendix B. Results from a test of leverage*

	Minimum of coefficients	Maximum of coefficients	Mean of coefficients	Standard deviation of coefficients
Constant	0.07287	0.09287	0.07950	0.00502
Initial (1975) GDP per capita	-0.01110	-0.00855	-0.00996	0.00058
Investment share of GDP	0.00161	0.00194	0.00179	0.00008
Population growth	-0.52011	-0.31862	-0.42339	0.04733
Human capital (lagged)	0.00097	0.00156	0.00123	0.00017
Institutional openness	0.01468	0.01880	0.01642	0.00102
Democracy (polity)	0.00408	0.00640	0.00522	0.00064
Democracy squared	-0.00068	-0.00044	-0.00058	0.00005
Government spending	-0.00086	-0.00041	-0.00066	0.00011
Democracy * government spending	0.00006	0.00013	0.00010	0.00002

All regressions are based on model 9. The augmented Jackknife study is a permutation test, in which subsamples of cases, here countries, are excluded from the sample. To put the model to the toughest test, we have excluded cases according to some underlying data structure, namely their PWT number. This means that we always excluded neighboring countries, where we should expect similar unobserved socio-economic conditions. If our findings were mainly caused by this unobserved variables, the augmented Jackknife test should disclose a lack of robustness. However, it does not. Observe that no coefficient changes its sign and the coefficients remain within narrow bands. Thus, all coefficients are Sala-i-Martin (1997) robust.

*Appendix C. Test of robustness with competing measure of political participation – political constraints*

	DEMOC (Polity98)	POLCON (Henisz 2000)	CONS (Polity98)
Constant	0.0822 (5.805)*****	0.0893 (5.998)****	0.0724 (4.752)****
Initial (1975) GDP per capita	-0.0099 (-4.791)****	-0.0113 (-5.170)****	-0.0105 (-5.108)****
Investment share of GDP	0.165 (7.221)*****	0.165 (6.905)****	0.157 (6.640)****
Population growth	-0.513 (-2.632)**	-0.386 (-2.108)**	-0.444 (2.321)**
Human capital (lagged)	0.0016 (1.930)*	0.0016 (1.982)*	0.0018 (2.106)**
Institutional openness	0.0173 (4.142)****	0.0159 (3.568)***	0.0162 (3.837)****
Democracy	0.00411 (3.348)***	0.0482 (2.930)***	0.0106 (3.056)***
Democracy squared	-0.00044 (-3.520)****	-0.0535 (-2.724)***	-0.00120 (-3.025)***
N	83	83	83
Adj R <sup>2</sup>	.664	.648	.651
RMS-residual	.00732	.00766	.00759
F-Stat	24.123	22.545	22.871

*Note:* All estimates are OLS regressions with t-statistics in parenthesis. The dependent variable is average annual growth rate of per capita income, 1975–1997, based on World Bank World Development Indicators.