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Political Regimes and Economic Growth

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Are political regimes drivers of economic growth? While political institutions are influenced by economic development, they are in turn a key determinant of the development process. This study builds in the Neoclassical Growth theory to identify the influence of political regimes on economic development through a panel data sample of 170 countries from 1960 to 2000. Results suggest that once fixed effects are considered, the positive relationship between income per capita and political regimes measured by different democracy variables disappears.
Keywords: political regimes, democracy, economic development.

Regimenes políticos y crecimiento económico

¿Son los regímenes políticos conductores del crecimiento económico? Mientras las instituciones políticas están influenciadas por el desarrollo económico, son en cambio determinantes claves en el proceso de desarrollo. Este estudio construye sobre la Teoría del Crecimiento Neoclásico para identificar la influencia de los regímenes políticos sobre el desarrollo económico a partir de una muestra de panel de datos de 170 países desde 1960 al 2000. Los resultados sugieren que una vez que los efectos fijos sean considerados, la relación positiva entre ingreso per cápita y los regímenes políticos desaparece una vez que son medidos a partir de diferentes variables democráticas
Palabras clave: regímenes políticos, democracia, desarrollo económico.

Introduction

Democracy fosters or hinders economic growth? Sixteen years later the sentence of Przeworski and Limongi (1993, page 66) "*Clearly, the impact of political regimes on growth is wide open for reflection and research.*" makes complete sense. In fact, over the last two decades the determinants of economic growth have attracted increasing attention in both theoretical and applied research. As focused by Artelaris, Arvanitides and Petrakos (2007) the process underlying economic performance is inadequately conceptualized and poorly understood, something, which can be partly attributed to the lack of a generalized or unifying theory, and the myopic way conventional economics approach the issue.

The relation between political factors and economic growth has come to the fore by the work of Lipset (1959) who examined how economic developments affect the political regime[1]. Since then, research on the issue has proliferated making clear that the political environment plays an important role in economic growth (Kormendi and Meguire, 1985; Scully, 1988; Grier and Tullock, 1989; Lensink, Bo and Sterken, 1999; Lensink, 2001; Glaeser et al., 2004; Papaioannou and Siourounis, 2008a; Acemoglu et al., 2008). At the most basic form, political instability, Bureaucracies or Autocracies would increase uncertainty, discouraging investment and eventually hindering economic growth. Moreover, unlike dictatorships, democracies limit sovereign discretion and thereby more effectively promote economic growth through the "Credible Commitment Problem" solver. In the recent years, a number of researchers have made an effort to measure the quality of the political environment using variables such as political instability, political and civil freedom, and political regimes. Brunetti (1997) distinguishes five categories of relevant political variables: democracy, government stability, political violence, political volatility and subjective perception of politics. As a measure of political regimes we use the democracy variable in the current work.

1 Where regimes are defined as the methods politicians must use to gain and maintain control of the state.

Democratic societies are usually associated with higher levels of economic development than non-democratic societies. The starting point of Acemoglu et al. (2008) derives from this. They reach opposite results, contradicting this theory, arguing that previous works do not establish causation between income per capita and democracy. This was attributed to the fact that previous studies typically do not control for factors that simultaneously affect both variables. By doing the same background work, but regressing democracy on income, and not income on democracy as we do, Acemoglu et al. (2008) find that once fixed effects are introduced, the positive relationship between income per capita and various measures of democracy disappears, where they have been considered in the literature as statistical significant and highly relevant. However, their dependent variable is democracy and not income per capita. On the other hand, Papaioannou and Siourounis (2008a) examine the within effect of democratization in countries that abandoned autocracy and consolidated representative institutions. The panel estimates imply that on average democratizations are associated with a one half to one percent increase in annual per capita growth. The evidence supports development theories of democracy and growth that highlight the positive impact of representative institutions on economic activity.

However, the authors do not control their results by the state of initial income, obtaining good estimate results. In the same year, the authors (Papaioannou and Siourounis, 2008b) reveal that democratization is more likely to emerge in affluent and especially educated societies, and that economic development and education are also key factors determining the intensity of democratic reforms and how quickly democratic transitions will occur, in a cross-sectional study for 174 countries in the period 1960-2005. Given this, should we believe in a positive relationship between economic growth and democratization? Barro (1996) and Rodrik (1997) find no impact of democracy on economic growth. Moreover, Przeworski et al. (2000) find no differences in long run growth between democratic and autocratic regimes. Rodrik and Wacziarg (2005) find a positive effect of democratization on economic growth. Rodrik, Subramanian and Trebbi (2004), Mauro (1995), Hall and Jones (1999), and Acemoglu, Johnson and Robinson (2001) suggest that countries with better political institutions, more secure pro-

perty rights and a well functioning system of checks against government's power will invest more in both physical and human capital and will use these factor efficiently to produce a greater level of income. In fact, living in democracy is internationally recognized as a human right (Universal Declaration of Human Rights). Therefore, understanding how democratic regimes affect economic growth becomes indispensable.

By opposition, Levine and Renelt, in 1992, show that democracy is not a robust determinant of growth using cross-sectional regressions. Barro (1996) shows in decade average panel regressions that democracy has a weekly negative effect on growth. Przeworski et al. (2000) study annual panels and argue that there is no real difference in growth between dictators and democrats. Gerring et al. (2005) argue for using a cumulative stock of democracy rather than a current level. They say about level of democracy regressions: "It matters not how one measures the level of democracy in a given year; it still has no effect on subsequent economic performance." To add up this empirical consensus that democracy has either no measurable effect on, or actually retards, growth rates, Grier and Munger (2006) analyze 134 countries using an unbalanced annual panel over the period 1950-2003 defining dictatorship simply as a dummy variable. They conclude that on average non-democracies grow approximately 1% per year more slowly, holding regime duration constant, and that regime length has a significant impact on growth that is both non-linear and regime type specific.

After this brief exposition a question arises: Are results that do not favor democracy as an explanatory variable for economic growth valid or a result of the lack of variables control? In other words: Results change relative to previous empirical conclusions if we control for country and time fixed effects? Given different literature results, this paper re-examines whether the determinants of economic growth are sensitive to political regimes. In this line of research, Papaioannou and Siourounis (2008a) control for country and time fixed effects, and highlight the positive impact of representative institutions on economic activity. However, from our point of view, their major problem was not to include GDP per capita in the previous period in their empirical specification, which is not in agreement with the neoclassical growth theory, and this inclusion will contradict the

author's results. Moreover, we include also as explanatory variables schooling, the log population and the savings rate, in lags. Like in Acemoglu et al. (2008) we will take into account factors that simultaneously affect both variables and that haven't been taken into account by previous research (as far as we know, the exception is for Papaioannou and Siourounis, 2008a, but we use a different regression specification) through fixed effects estimations.

The main finding obtained through the analysis is that once fixed effects are considered, the positive relationship between income per capita and political regimes, measured by the democracy variables, disappears. The basic finding holds when using both indicators for democracy, with different econometric specifications, and is also robust to the inclusion of additional covariates. Therefore, results point out reasons to suspect that there is a strong causal effect of political regimes on income when the initial GDP level per capita is used as an exogenous regressor.

The present work develops as follows. In section 1 the data description will be provided. In section 2 the econometric approach adopted is discussed. Section 3 presents the basic results, where results are also interpreted. Section 5 concludes pointing out directions for future research.

1. Data definitions and sources

Major sources of potential bias in a regression of income (in level or per capita) on democracy and political regimes are country specific, having historical factors influencing both political and economic development. Therefore, if the omitted characteristics are time-invariant the inclusion of fixed effects will remove them and this source of bias.

We consider the widely used measures of democracy given by the Polity IV and Freedom House Political Rights Index (see Acemoglu et al., 2008, among others). For example, a regime is defined to be democratic when its Polity IV score is positive. Following Rodrik and Wacziarg (2005), an Established Democracy is any democratic regime that has lasted for longer than 5 years.

In the Freedom House Political Rights Index a country receives the highest score if political rights come closest to some ideals, namely, whether there are free and fair elections, whether those who are elected rule, whether there are competitive parties or other political groupings, whether the opposition plays an important role and has actual power, and also whether minority groups have reasonable self government or can participate in the government through informal consensus.

The other democracy index adopted is the Polity IV dataset which provides information for all countries since independence started in 1800, more precisely the composite Polity Index is used, described as the difference between Polity's Democracy and Autocracy indices. The Polity Democracy Index ranges from 0 to 10 and is derived from coding the competitiveness of political participation, the openness and competitiveness of executive recruitment and constraints on the chief executive. The Polity Autocracy Index also ranges from 0 to 10 and is constructed in a similar way to the democracy score based on scoring countries according to competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment and constraints on the chief executive. We follow Barro (1999) and Acemoglu et al. (2008) and convert each index into a continuous variable ranging between 0 (least democratic regime) and 1 (most democratic regime). Both policy measures are retrieved from Acemoglu et al. (2008). All variables are summarized in table 1, which we describe next.

The dependent variable is the annual log difference in real GDP per capita. The data come from World Bank's World Development Indicators in the 1960-2000 periods. The World Development Indicators is also the source for one of the growth control variables, namely total population. Data correspond by construction to five-year averages. Another growth control variable is schooling statistics retrieved from Barro and Lee (2001). Which mean average years of schooling in the population aged 25 and above (to capture human capital). Once again, the data correspond by construction to five year averages. A simple linear interpolation was used to convert them in annual basis.

Table 1

Variables description and source

Variable	Description
GDP Growth	Real per capita GDP growth - Logarithmic change of real per capita GDP. Source: World Bank World Development Indicators
Population	Total population. Source: World Bank
Schooling	Five year average years of schooling in the population aged 25 and above. Source: Barro and Lee (2001)
Savings	Five year average years of savings rate. Source: Penn World Tables
Measures Policy	
Freedom House Political Rights Index	Freedom House Political Rights Index normalized 0-1. Source: Acemoglu et al (2008).
Polity Composite Democracy Index	Polity IV - Composite index is the democracy score minus the autocracy score normalized 0-1. Acemoglu et al (2008).

Another variable used is the savings rate which also corresponds to five year averages. Since this variable is constructed taking the ratio of investment over GDP we can also assume it to be the investment rate. This variable is taken from the Penn World Tables. More details about the control variables used will be given in the following section.

2. Empirical Methodology

The basic regression model assumed is given by the following specification:

$$y_{it} = \eta d_{it} + \gamma d_{it-1} + \Theta y_{it-1} + \lambda s_{it-1} + x'_{it-1}\beta + \mu_t + \delta_i + u_{it}$$

Where y_{it} is the log income per capita, more specifically the 5-year growth rate of real GDP per capita. y_{it-1} is the lagged value of log income per capita to capture the persistence in income and also potentially mean-reverting dynamics (the tendency supported by the neoclassical growth theory that income will eventually return to some equilibrium value for the country). d_{it} is the democracy score of

country i in period t. The lagged value of this variable is also included. The parameter γ measures whether democracy has an effect on income, capturing lagged effects. In fact, a given change occurring in political regimes or democracy will only impact income per capita in the following period. The variable s_{it} is the savings rate (investment rate) of country i in period t-1. All other potential covariates discussed above are included in the vector x_{it-1}. The δ_i's and μ_t's variables denote a full set of country dummies and a full set of time effects, respectively, which will capture common shocks to the income per capita of all countries. All other omitted factors are captured by the error term u_{it}, where $E(u_{it}) = 0$ for all i and t.

The econometric specification presented above combines the major neoclassical determinants of growth with the political variable. In 2000, Li, Xu and Zou generate cross-sectional regressions for which the average rate of economic growth is the dependent variable and standard lists of regressors are used as independent variables. This list includes the initial level of income per capita, the rate of population growth, the secondary enrollment ratio and the ratio of investment to GDP. We have considered all these variables, but instead of including directly the investment ratio we use the savings rate.

The initial GDP level per capita is used in accordance with the convergence hypothesis. Solow (1956) predicted, and Barro (1991), amongst others, confirmed that poor and developing countries have opportunities available to incorporate the innovation of developed countries into their production process, and hence maintain higher growth levels than developed countries. Thus higher initial GDP levels negatively affect economic growth. Human capital differences are controlled using average years of schooling. The use of education as a measure for human capital lies at the heart of the growth literature illustrated by Barro (1991) and Romer (1990). According to these authors a higher level of secondary school enrolment indicates higher levels of human capital, leading to higher growth levels. These two will work as control variables in the current specification.

Investment is what provides for growth in aggregate wealth. However we cannot increase investment without increasing aggregate savings. The savings rate in the previous five year period is also used in the econometric specification as an explanatory variable since it will influence income in the future through a higher

investment rate[2]. The savings rate is defined as nominal income minus consumption minus government expenditure divided by nominal income (therefore, investment over GDP), and comes from Penn World Tables.

The sample period is 1960-2000 and time periods correspond to five year intervals. The number of countries included in the sample is about 170, being reduced according to data restrictions in the different econometric specifications.

Pooled OLS is a standard regression which is identical to (1) with the exception of the variables δ_i's which capture the fixed effects. In the current setting these country dummies capture any time-invariant country characteristics that affect the economy development equilibrium level. Acemoglu et al. (2008) discuss the implications of having the δ_i's being correlated with y_{it-1} or x_{it-1}, where in that case pooled OLS estimates are biased and inconsistent. However, it can be shown that the fixed effects OLS estimator becomes consistent as the number of time periods in the sample increases ($T\rightarrow\infty$). As such, we consider alternative estimation strategies to deal with the potential biases introduced by the presence of the lagged dependent variable.

We also use the Generalized Method-of-Moments (GMM) estimator using several moment conditions for it to become more efficient. The presence of multiple instruments in the GMM procedure allows us to investigate whether the assumption of no serial correlation in u_{it} can be rejected and also to test for over identifying restrictions.

Results provided in the following section show that once we allow for fixed effects, democracy, or political regimes, is not the major determinant of economic development. In sum, the main conclusion is that the consideration of fixed effects proxying for time invariant country specific characteristics removes the cross-country correlation between political regimes and income, what shed considerable doubt on the conventional wisdom that democracy, or else political regimes, has a strong causal effect on income.

2 Jappelli and Pagano (1994) concluded that a higher savings rate led to higher economic growth. Moreover, Krieckhaus (2002) notes that a higher level of national savings led to higher investment and consequently caused higher economic growth.

3. Empirical results

Tables 2A and 2B report estimates of equation (1) using the country sample. Table 2A uses the Fredom House data and table 2B uses the Polity data for the entire sample period of 1960-2000. Standard errors appear in brackets. Both tables start with column (1) showing the most parsimonious pooled OLS regression of the log income per capita rate on its (five-year) lag, the democracy score and the investment/savings rate.

By column (1) of both tables we can infer that lagged income is not significant and does not show a considerable degree of persistence (mean reversion) in income per capita using both Freedom House Index and the Policy Index being Θ positive for the pooled OLS estimation. However, the Θ coefficient values are negative and statistically significant for all the fixed effects estimations and GMM, in accordance with the neoclassical growth theory. The log democracy variable is significant for the Freedom House Index which illustrates the positive relation between income and democracy. Still, the effect of democracy on GDP per capita is quantitatively small, decreasing even more using the Polity Index (where it loses its statistical significance). As such, the 0,058 (standard error = 0,026) in table 2A, column 1, implies that a 10% increase in the Freedom House score is associated with an increase of less than 0,005 in GDP per capita, which is very small. In fact, if this pooled cross-section regression identified the causal effect of democracy on income, then the long-run effect would be larger than this, because the lag of income on the right hand side would be increasing over time, causing a further increase on GDP per capita. Since lagged GDP per capita has a coefficient of 0,008, the long run effect of a 10% increase in the democracy score would be 0,005 / (1-0,008) ≈ 0,005, which is still quantitatively small.

The remainder of tables 2A and 2B present the basic results with fixed effects. Column 2 shows that the relationship between political regimes and income almost disappears once fixed effects are included. Now, the estimate of γ is 0,045 for the Freedom House Index, and 0,010 for the Policy Index, with standard errors of 0,03 in both cases which makes it highly insignificant.

Table 2A

Political Regimes and Growth Period 1960 - 2000 Measure of Democracy: Freedom House Index

Dependent Variables					
5-Year Growth Rate of per-Capita GDP					
Explanatory Variables	Pool OLS (1)	Fixed Effects (2)	GMM (3)	Fixed Effects (4)	Fixed Effects (5)
Constant	0.005	1.413***	-	3.351***	5.348***
	[0.073]	[0.275]	-	[0.531]	[0.804]
Democracy t-1	0.058**	0.045	0.069	0.015	0.040
	[0.026]	[0.030]	[0.076]	[0.033]	[0.031]
GDP (log) t-1	0.008	-0.229***	-0.291**	-0.256***	-0.305***
	[0.011]	[0.052]	[0.120]	[0.045]	[0.055]
Investment/ GDP t-1	0.072	0.247	0.108	0.334***	0.387**
	[0.082]	[0.158]	[0.209]	[0.125]	[0.162]
Schooling t-1				0.021*	-
				[0.012]	-
Population (log) t-1				-0.214***	-0.249***
				[0.052]	[0.051]
Hansen J-Test			[0.191]		
AR(2) Test			[0.372]		
R2	0.09	0.44	-	0.48	0.46
Number of observations	926	926	715	667	920
Robust standard errors in brackets					
* significant at 10%; ** significant at 5%; *** significant at 1%					

In column 2 we control for global shocks adding time fixed effects. The coefficient on the democracy indicator has decreased to 0,045 relatively to that obtained in column (1). This estimate turns out to be statistically insignificant and differs

from previous results provided by Papaioannou and Siourounis (2008a), where they obtain an increase for this variable. However, their results are only better since the initial period growth variable was not taken into account. We take this one (log GDP_{t-1}) into consideration in the regression specification and the impact of political regimes, as measured by the democracy variables in the previous period, on income per capita decreases. We can even say that it completely vanishes since the coefficient values are not even statistically significant when controlling for time fixed effects (and this occurs in both tables 2A and 2B).

The decrease is even higher when we include other explanatory/control variables. Including only the log population variable (column 5), the democracy coefficient decreases relatively to the pooled OLS regression, but including both population and schooling (column 4) we obtain the lowest coefficient for democracy. The highest value for the political regime variable is obtained by the GMM estimates, although not statistically significant. In sum, the time and country fixed-effects model shows that controlling for global trends will in general decrease the effect of democracy on income per capita.

The coefficient of Human capital proxy is insignificant in table 2B but statistically significant when the political regime proxy is the Freedom House Index (table 2A). As such we have mixed effects. Given its value in table 2B, and although this result disagrees with growth models stressing human capital, the coefficient value is in line with other panel studies revealing weak within correlations between schooling and growth (see for example, Krueger and Lindahl, 2001). Thus, the effect of democratization does not seem to come through human capital. However, it depends on the democracy variable used. By table 2B it has a negligible impact on growth once we control for fixed effects, but the opposite happens if the political regime variable adopted is the Freedom House Index (table 2A), being significant at the 10% level.

We also use the GMM estimator in columns 3 of both tables. The coefficients γ are now even higher relatively to those obtained in column (2) but not statistically significant. With respect to is the lagged log GDP per capita, it is negative in both tables and statistically significant, but the opposite happens for the schooling control variable. With the Freedom House data, the AR(2) test and the Hansen

J test indicate that there is no further serial correlation and the over identifying restrictions are not rejected.

As mentioned before, in column (4) we include both schooling and population variables (different from Acemoglu et al., 2008, which only control for time fixed effects and do not consider control variables). In table 2B, once again, the political regime coefficient decreases when we consider fixed effects and the Human capital and population control variables, being this statistically insignificant and negative. In column (5) we drop the schooling coefficient and the lag effect of GDP per capita over development increases, turning out to be positive and statistically significant. And this happens using both democracy variables. Although, including lagged log GDP per capita in fixed effects estimators is statistically significant, the effect of democracy on income decreases (as measured by the coefficient γ). The same happened with the use of the log population in the previous period and the initial period GDP per capita, although the coefficient value γ is not statistically significant (in both table 2A and table 2B, comparing columns (1) and (5). Moreover, only the results reported for the pooled OLS estimates are not in accordance with the neoclassical growth theory. All the other values for log GDPt-1 are negative and statistically significant

In both tables 2A and 2B we can see the relevance of including the population variable in the estimates, since obtained coefficients were always statistically significant (Papaioannou and Siourounis (2008a) did not considered this variable as a growth control variate). Nevertheless, the log population coefficient becomes negative in column (4) under both proxies of political regime, when all the control variables are included.

Table 2B

Political Regimes and Growth Period 1960 – 2000 Measure of Democracy: Polity Index

Dependent Variables					
5-Year Growth Rate of per-Capita GDP					
Explanatory Variables	Pool OLS (1)	Fixed Effects (2)	GMM (3)	Fixed Effects (4)	Fixed Effects (5)
Constant	0.027	2.039***	-	5.032***	5.393***
	[0.072]	[0.430]	-	[0.863]	[0.830]
Democracy t-1	0.036	0.010	0.064	-0.004	-0.001
	[0.023]	[0.030]	[0.083]	[0.032]	[0.032]
GDP (log) t-1	0.006	-0.220***	-0.378***	-0.259***	-0.302***
	[0.011]	[0.052]	[0.118]	[0.043]	[0.056]
Investment/GDP t-1	0.171*	0.339*	0.161	0.355***	0.493***
	[0.098]	[0.180]	[0.249]	[0.132]	[0.186]
Schooling t-1				0.020	-
				[0.012]	-
Population (log) t-1				-0.217***	-0.255***
				[0.054]	[0.051]
Hansen J-Test			[0.352]		
AR(2) Test			[0.652]		
R2	0.10	0.43	-	0.48	0.46
Number of observations	861	861	651	650	801
Robust standard errors in brackets					
* significant at 10%; ** significant at 5%; *** significant at 1%					

With the Polity data, the GMM procedure leads to smaller (and statistically insignificant) coefficient estimates for democracy, and smaller but still statistically significant coefficients for the initial period log GDP per capita. Moreover, through

the Hansen J and AR(2) tests we still continue to have no serial correlation in u_{it} and the over identification test is not rejected.

We have also included the savings variable has an explanatory variable given its relation with investment and, therefore economic growth. Its coefficient values are positive and statistically significant for the pooled OLS and fixed effects estimations in table 2A, being higher when only the control variable log population in t-1 is included. This result is in agreement with growth models that stress the importance of the savings rate for economic growth. Therefore, the effect of democratization may also come through the savings rate, which despite the democracy variable used has a considerably higher and positive impact on growth once we control for fixed effects. With respect to table 2B the savings rate coefficients are only statistically significant under the fixed effects estimation and when including the control variables.

For comparison purposes we present in table 2C the results estimates when we use the following econometric specification:

$$(2) \qquad y_{it} = \eta d_{it} + \gamma d_{it-1} + \Theta y_{it-1} + x'_{it-1}\beta + \mu_t + \delta_i + u_{it}$$

Being all variables defined as previously, with the exception that now we don´t consider the investment rate as an explanatory variable. To save space we only present the result estimates using the Freedom House Index proxy for political regimes[3].

As we can see results improve when using the investment rate given that coefficients values are in general higher. As such, the inclusion of the savings rate as an explanatory variable plays an important role. Yet, without considering savings (table 2C), when using only the log population in the previous period and the initial period GDP per capita, the political regime coefficient increases with respect to column (4) but decreases with respect to column (1), being now statistically significant. Nevertheless, the main conclusion is maintained, meaning that once we control for fixed effects the overall impact of democracy on economic growth diminishes

3 We have performed the same estimates using the Policy Index but results were even worse. Results will be available upon request to the authors.

Table 2C

Political Regimes and Growth Period 1960 – 2000 Measure of Democracy: Freedom House Index

Dependent Variables					
5-Year Growth Rate of per-Capita GDP					
Explanatory Variables	Pool OLS (1)	Fixed Effects (2)	GMM (3)	Fixed Effects (4)	Fixed Effects (5)
Constant	-0.025	1.270***	-	3.982***	3.124***
	[0.061]	[0.243]	-	[0.758]	[0.951]
Democracy t-1	0.055**	0.044	0.120	0.018	0.052*
	[0.026]	[0.030]	[0.105]	[0.032]	[0.031]
GDP (log) t-1	0.014	-0.201***	-0.161	-0.209***	-0.301***
	[0.008]	[0.044]	[0.117]	[0.041]	[0.045]
Schooling t-1				0.018	-
				[0.012]	-
Population (log) t-1				-0.168***	-0.222***
				[0.049]	[0.084]
Hansen J-Test			[0.356]		
AR(2) Test			[0.362]		
R2	0,090	0,43	-	0,47	0,47
Number of observations	926	926	715	667	920
Robust standard errors in brackets					
* significant at 10%; ** significant at 5%; *** significant at 1%					

In sum, results obtained using the Freedom House Index and those using the Policy Index are very similar, with the coefficients of the democracy score and log GDP per capita in the period t-1 (captured by Θ) of table 2B being even lower than those of table 2A. So, results even change under the measure adopted for the political regime, as measured by democracy in the current work. Likewise, the effect of democratization does not seem to come through human capital, at least

using the Policy Index. But since population, initial period GDP, and savings have an impact on growth, the effect of democratization may come from these variables. However, results point out that once fixed effects are included the positive relationship between income per capita and political regimes, despite the policy measures used, disappears.

Conclusion

The relation between political factors and economic growth has come to the fore by the work of Lipset (1959) who examined how economic developments affect the political regime. Since then, research on the issues has proliferated making clear that the political environment plays an important role in economic growth. While political institutions are influenced by economic development, they are in turn a key determinant of the development process. In this paper the influence of political regimes on economic development was re-examined.

The time and country fixed-effects model shows that controlling for global trends will decrease the effect of democracy on income per capita. As such, our main result points out that when we control the growth regression by the initial period GDP per capita the democracy factors lack their relevancy, independently of the measure adopted for the political regime variable (Freedom House Index or Policy Index). Therefore, results obtained give reasons to suspect that there is a strong causal effect of democracy (and as such political regimes) on income, being consistent with previous literature (Rodrik, 1997; Gerring et al., 2005, among others), but which contradict those obtained by Papaioannou and Siourounis (2008a), where they do not control for the initial period log GDP per capita.

However, the importance of controlling for country and time fixed effects was showed to be relevant and a lot more work is still needed on the field of the relation between GDP per capita and political regimes. Under the attained results we see that there is no causal effect of democracy and political regimes on income. However, there is strong cross-sectional relationship between the two variables. Therefore we may formulate two hypotheses that could explain this fact. *Hypo-*

thesis 1: *Our first prediction is that countries with more democratic structures are better developed, as measured by higher GDP and higher GDP per capita, however it may take a long time for a culture of democracy to influence economic growth and also because political institutions change only slowly.* Given this, we need to look at longer time spans, but: What the right horizon should be? (Acemoglu et al., 2008, explore a similar hypothesis trying to explain the impact of income on democracy). Therefore, we need to investigate the longer-run relationship between income and democracy. *Hypothesis 2*: *Historical factors are influencing the economic and political development of societies.* We then argue that there are some democracy-related determinants of income in short periods of time like post-war period with the abandoning of some dictatorship regimes. In particular, contrary to the implications of modernization theory, it seems also reasonable to assume that democracy drives economic growth mostly after economic crises. This is justified by the fact that dictatorships are more likely to collapse in the face of economic crises, than the reversion of democracies to dictatorship (this hypothesis was also formulated by Acemoglu et al. (2008) but results may change through the use of a different dependent variable). These are hypothesis that are being taken into account in a current work.

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