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Does democracy foster or hinder growth? Extreme-type political regimes in a large panel

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Abstract

Using a panel dataset of 86 countries from 1960-2005, this paper empirically assesses the effect of several democracy proxies (by means of the Polity IV database), together with a set of control variables, such as human capital and the initial level of GDP per capita, on the rate of economic growth. By means of pooled OLS regressions, fixed effects and TSLS estimation procedures our results support the long-run conditional convergence hypothesis and they show a positive and statistically significant effect of democracy and human capital on economic growth. Furthermore, these findings are robust to several sensitivity exercises, such as the consideration of different time spans and groupings (rich and poor countries). Our evaluation allows us to conclude that electoral democracy, by itself, increases GDP growth per capita while almost no support is found for the hypothesis that autocracy, by itself, increases it.

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1 Introduction

There has been a longstanding curiosity among economists, to determine the linkages between democracy and economic growth. Unfortunately, given the lack of a proper theoretical framework, existing empirical findings have been contradictory to a large extent. Our contribution rests on the use of the recent Polity IV Project database together with a large time span of 45 years to a sample of 86 developed and developing countries.

Since the early 1990's economic growth theory, in addition to recognize the importance of the initial income level, the role of education and the rates of marginal return to capital to explain growth, has been asking whether the political regime also plays a significant part on a country's economic performance. That is, does democracy foster or hinder growth and social welfare?

One of the earliest papers addressing the relationships between political regime and economic growth was explored by Lipset (1959). At this stage one can distinguish two different groups: one favouring the hypothesis that democracy hinders economic growth; and a second one claiming the opposite result. The fear that democracy may undermine the economic growth was first presented by Schweinitz (1959) and a similar argument was made by Huntington and Domiguez (1975) and Rao (1984). The latter group of authors argued that with democracy the interest of general voter always lies towards the party supporting immediate consumption rather than future investments. Early empirical evidence include the works by Marsh (1979) and Weede (1983).

On the other hand, more recently, the thesis supporting that democracy actually fosters growth was initially delivered by Scully (1988), Barro (1989) and Helliwell (1994). Nevertheless, as shown by Przeworski and Limongi (1993) out of nineteen empirical studies of economic growth and democracy, only nine studies found evidence for a faster growth of democracies against dictatorships. So, the controversy remained. Nevertheless they also provided the reasons behind the above mentioned empirical disparity (together with Sirowy and Inkeles, 1990): firstly, different studies look at a wide range of countries and a variety of time periods, and most studies focus on a time span of ten to twenty five years. Secondly, there are no such well defined base-economic models that actually capture the effect of democracy on growth. Lastly, there is also the issue causality involved (Heo and Tan, 2001).

Our results suggest that democracy (particularly when considering an extreme-type regime) has a marginally positive impact on economic growth (even when taking into account the role of human capital/education); nevertheless, this statistically significant effect fades away as more controls, such as investment or openness, are included in the regression and endogeneity is considered.

In addition to this introduction the paper has 4 more sections organized as follows. In section 2 we present the data used throughout the paper together with definitions and sources, as well as a brief discussion on the methodological approach. Section 3 presents our preliminary results based on OLS regressions. Section 4 explores the relationship at hands under (additional) different econometric procedures by conducting a number of robustness exercises. The last section concludes.

2 Data sources and methodology

Our dependent variable is the growth rate of per capita GDP (RGDP) retrieved from the Penn World Tables[1]. For the purpose of assessing the "convergence hypothesis", the initial level of development proxied by per capita GDP in 1960 (GDP60) - in logs - has been obtained from the same source. Human capital data come from Barro and Lee database[2].

In Table A1 in the Appendix we present the cross-correlations among different Barro and Lee proxies for human capital. PRI25, SEC25 and HIGH25 are respectively primary, secondary and higher school enrolment ratios of adult population over the age of 25 and PRIC25, SECC25 and HIGHC25 are respectively the primary, secondary and higher secondary schooling completing ratio of total population over the age of 25. Note that the correlations between PRI25 and PRIC25, SEC25 and SECC25, and HIGH25 and HIGHC25 are fairly high, but not perfect, indicating that these measures reflect different features of human capital. From the same table it is clear that only using school enrolment rate/literacy rate is not sufficient to represent effect of human capital on growth. Lastly, the higher correlation of SECC25 and HIGC25 with GDP60, than between PRIC25 and GDPI strengthens our claim of using all levels of educational attainment for estimation purpose[3].

As far as the proxies for democracy, one could use either the Gastil or the Bollen measures. However, both indices didn't have democracy data for the sample period under scrutiny. The Polity IV data set allows us to capture the data for the needed 15 years periods and it now contains a new variable Polity2[4]. The Polity2 is a score given to countries based on annual coding of the existing regimes and it follows five indicators[5]. Furthermore, the correlation between Polity2 score of the countries with the Gastil Index for the years 1975 and 1990 are -0.866 and -0.825, in 1975 and 1990, respectively, that is, there is very high correlation between the two measures of democracy.

To begin with, the following model was estimated by pooled OLS (eq. (1)):

$$RGDP_{i,n} = \beta_0 + \beta_1(GDP60_{i,n}) + \sum_{j=2}^{4}\beta_j(EDU_{i,n}) + \sum_{j=5}^{8}\beta_j(POLITIC_{i,n}) + \varepsilon_{i,n} \qquad (1)$$

where, $X_{i,n}$ represents a general variable as defined above for country i and time t; EDU refers to human capital proxies; $POLITIC$ refers to democracy-related proxies; ε stands for the usual disturbance error, capturing all other omitted factors, with $E(\varepsilon_i) = 0$ for all i.[6].

[1] Averages over the three fifteen years periods, namely from 1960-1975, 1975-1990 and 1990-2005, were taken to all variables and used in Section 3.

[2] http://www.cid.harvard.edu/ciddata/ciddata.html

[3] Even though we have high correlations between the educational variables with per capita growth rate, they are not high enough to cause a problem of collinearity.

[4] The POLITY2 score is computed by subtracting the AUTOC score from the DEMOC score and the resulting unified polity scale ranges from +10 (strongly democratic) to -10 (strongly autocratic). DEMOC: Democracy index, 0 = least democratic, 10 = most democratic. AUTOC: Autocracy index, 0 = least autocratic, 10 = most autocratic.

[5] Refer to Polity IV manual for further information.

[6] In Section 4 - panel data estimation -, we assume that the democracy-based measures are uncorrelated with the country-specific and time-varying growth shock, ε. (see, e.g., Persson and Tabellini, 2006). We

3 Empirical analysis

Table 1 presents our preliminary results and it is organized as follows: columns (1)-(4) refer to the full sample period; columns (5)-(7) to the subperiod 1960-90, and lastly, specification (8) to the subperiod 1975-2005. Specification (1) is our baseline model without any political variable included and the usual conclusions apply, i.e., conditional convergence due to a statistically significant negative coefficient on the initial GDP level, as well as a positive effect of education variables. Columns (2)-(4) include to the baseline model different measures (Cf. footnote 4) to account for "democracy", lacto sensu. Both POLITY2 (capturing the initial level of democracy) and DEMOC (number of democratic features[7]) show a significant positive coefficient at 1% level and AUTOC was estimated a statistically significant negative coefficient, meaning that more autocratic (e.g. dictatorships or totalitarism) hinders growth, ceteris paribus. Furthermore, specifications corresponding to columns (2)-(4) imply a better fit of the model, given by higher R^2. These support, inter alia, Helliwell's (1994) findings[8]. When we restrict our sample to a shorter time span we get similar results for all variables. Additionally, in columns (6) and (7) we extended the concept of democracy a bit further by including a new variable PINSTAB (measuring political instability)[9]. In column (6) we substitute POLITY2 by PINSTAB and we found a negative coefficient and then a sensitivity check of the general observation that democracies experience less political violence than non-democracies and as there is more instability the incentive to invest reduces (so does growth) is done in column (7). Thus, if there were to be a major causal link between democracy and political instability, then the inclusion of PINSTAB should have made POLITY2 insignificant. However, column (7) shows that is not the case, hence, democracy influences economic performance through other channels than achieving political stability. Our findings in specification (8) for the sub-period 1975-2005 are in accordance to the previous discussion.

[insert Table 1]

As an additional exercise, we split our sample into rich and poor countries, based on their 1960's level of per capita GDP. As before the quantitative effects initial GDP and democracy (despite being now insignificant) are consistent to our previous findings - see Table 2. The coefficient on PRIMC25 and SECC25 are much higher for the poor countries, indicating that the growth in developing countries is much more dependent on skills obtained through primary and secondary education (this confirms Barro and Sala-i-Martin's (1992) claim of diminishing returns to marginal capital in richer countries). Moreover, Tavares and Wacziarg (2001) using a different technique, estimate a system of simultaneous equations and find a positive effect of democracy on growth through the channels of enhanced education, inter alia.

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thank an anonymous referee for pointing this out.

[7] Cf. supra note 4.

[8] There is no evidence of heteroscedasticity and each model has a statistically significant F-statistic value, implying joint significance of the variables.

[9] PINSTAB is the average of the number of revolution and coups per year in the country.

[insert Table 2]

4 Robustness Exercises

Taking into account the ongoing methodological concern that rests on the fact that the political regime is likely not to be randomly distributed and may have an endogenous relationship with economic development we strengthen our analysis by conducting a number of robustness exercises. Moreover, what has been established is that is more likely to survive at higher levels of GDP (for a more detailed discussion refer to Przeworski et al., 2000). There is also a debate about the effect of the growth rate of GDP on the emergence and survival of democracy (with growing evidence that democracy is more like to emerge - i.e., authoritarian regimes collapse - under poor economic performance (see Acemoglu and Robinson, 2005, Boix 2003 and Epstein et al. 2006).

With this in mind, we first move to panel data techniques and reshape our sample in terms of 5-year averages, which give us 9 cross-sections for each country. In Table 3 we have run eight fixed effects regressions[10] organized as follows: columns (1)-(2) refer to the whole sample and regress per capita GDP growth on the initial GDP level, the three different measures of educational achievement, PRIC25 SECC25 AND HIGHC25, and finally our proxies for democracy, i.e., DEMOC and POLITY2[11]. Columns (5)-(6) split the sample between rich and poor countries by constructing four interaction terms with our democracy proxies, more specifically, we interact DEMOC and POLITY2 with a dummy variable taking the value 1 for rich countries and 0 for poor countries. As suggested by Rodrick (1997) and Acemoglu et. al (2008) after controlling for other variables, there is no strong relationship between democracy and growth. With this in mind, even though it is not the purpose of this paper to delve into the determinants of economic growth, it is worth investigating other potential channels, in particular, capital accumulation (measured by gross fixed capital formation - World Bank's WDI). The idea, in this case, is that different political regimes could implement different economic policies which would affect investment (one of the main determinants of economic growth). Additionally, as a policy variable we also include openness to trade (measured as imports plus exports over GDP - World Bank's WDI)[12]. These two additional regressors are included in specifications (3) and (4) and (7) and (8), depending on the model under scrutiny[13].

[insert Table 3]

[10] Even though fixed effect regressions are not a panacea for omitted variable biases, they are well suited to the investigation of the relationship between income growth and democracy.

[11] We drop the political instability variable, PINSTAB, for the remainder of the paper.

[12] See Mayda and Rodrik (2005) who documented a relationship between attitudes towards trade and a nationalist sentiment. We thank an anonymous referee for suggesting the inclusion of these two additional regressors in order to improve the subsequent inference analysis.

[13] Democratization is often associated with economic reforms and not controlling for these could bias upward the estimated effect of democracy measures, via positive correlation between the latter and ε in (1).

This second approach to our data suggests (overall) a positive and statistically significant relation between democracy variables and economic development, and this is in accordance to the studies previously discussed. Nevertheless, in specification (1) - Table 3 - such conclusion is not as strong, as the p-value associated with the coefficient DEMOC is very close to 10%. That is, once fixed effects are introduced, the strong positive relationship between income per capita and various measures of democracy, previously encountered by using standard OLS, is weaken. It is worth pointing that in Model II the effect of democracy lacto sensu (DEMOC and POLITY2) in rich countries is stronger vis-a-vis poorer nations (higher magnitude and statistical significance of coefficients). More importantly, when both "GFCF" and "Openness" are included as regressors, democracy measures are no longer significant and sometimes they become negative. Growth is positively (at a 1% level) affected by investment, whereas with respect to trade openness, while positively related to growth, it enters specifications (3), (4), (7) and (8) with coefficients which are significant, at most, at a 80% confidence level (on average). Nevertheless, this result is consistent with Levine and Renelt (1992) in which they could not reject the hypothesis that trade openness affected growth only through its effect on rates of physical capital accumulation. Overall, the results for these growth equations are consistent with previous empirical work, which makes us confident the model as a whole will deliver sensible results[14].

Despite the results found so far, in line with the first paragraph of the present section, in order to address the problem differently (not necessarily more successfully), we construct new (and more meaningful) democracy measures based on the Polity2 variable and estimate new regressions making use of the panel characteristics of the sample, again by fixed-effects and, finally, we also account for possible endogeneity problems by means of two-stage least squares. While the fixed effects estimation is useful in removing the influence of long-run determinants of both income per capita and democracy, it does not necessarily estimate the causal effect of democracy on growth. Hence, the IV strategy seems an appropriate one to carry out at this stage.

The impact of democracy on economic development is assessed by regressing three structural aspects of democracy (to be defined below) on the five-year average growth rate of per capita GDP. Endogeneity[15] between right-hand side measures of democracy and autocracy and a standard set of control variables is corrected for by estimating two-stage least squares (TSLS) fixed country panel regressions where the measures of democracy and autocracy are instrumented as suggested in Mauro (1995), La Porta et al. (1997), Hall and Jones (1999), Acemoglu et al.(2001) and Dollar and Kraay (2003). Democracy measures are instrumented by the durability (age in years) of the political regime type (DURABLE)[16]; latitude[17]; and

[14]Note, additionally, that once both "GFCF" and "Openness" are included the R squared raises, indicating a better overall fit of the regression.

[15]And also the existence of possible measurement errors when accounting for democracy.

[16]Retrieved from Jaggers and Marshall's (2002) database. The average age of the party system is also used in Przeworski et al. (2000) and Beck et al. (2001). This potential instrument is also in line with Bockstette, Chanda and Putterman's (2002) paper which documents the use of the state antiquity index as an appropriate instrument for institutional quality.

[17]Hall and Jones (1999) launched the general idea that societies are more likely to pursue growth-promoting policies, the more strongly they have been exposed to Western European influence - for historical or geographical reasons. In this context, other two possible instruments could be common and civil law,

ethnic fragmentation ("ETHNIC")[18]. Other similarly possible instruments are the historical settler mortality or population density in 1500, as in Acemoglu et al. (2003), the constitutional initiative which allows citizens to amend or demand a revision of the current constitution (as in Poterba, 1996), the share of population that speaks any major European language - Eurfrac -, inter alia. For the three instruments chosen the exclusion restriction is that durability, latitude and ethnic do not have any impact on present economic growth other than their impact on democracy.

To begin with, take our measures of democracy and autocracy, DEMOC, AUTOC, and POLITY2. None of these variables capture two important dimensions of political regimes - either their newness (following, for example, democratization or a return to authoritarian rule) or their more established (consolidated) nature. Rodrik and Wacziarg (2005) propose a way to do so. They define a major political regime change to have occurred when there is a shift of at least three points in a country's score on POLITY2 over three years or less. Using this criterion, we follow Rodrik and Wacziarg's (2005) technique and we define new democracies (ND = 1) in the initial year (and subsequent four years) in which a country's POLITY2 score is positive and increases by at least three points and is sustained, ND = 0 otherwise. Established democracies (ED = 1) are those new democratic regimes that have been sustained following the 5 years of a new democracy (ND). In any subsequent year, if established democracies (ED) fail to sustain the status of ND, ED = 0. Using these criteria, they define sustained democratic transitions (SDT) as the sum of ND and ED. They use the same procedure, mutatis mutandis, to define new autocracies (NA), established autocracies (ES) and sustained autocratic transition (SAT).

This yields six distinct binary-type measures of the character of political regimes - ND, ED, NA, EA, SDT, and SAT - for most years during 1960-2005. Finally, Rodrik and Wacziarg (2005) define small regime changes (SM) as changes in POLITY2 from one year to the next that are less than three points[19].

There are several advantages from defining democracy and autocracy in these ways. First, these new variables allow us to distinguish the impact of new and established electoral democracies and autocracies on economic development, and they also allow us to assess the impact of sustained democratic and autocratic transitions on economic growth.

Estimation results appear in the following Table 4. All regressions include a comparative counterfactual for authoritarian regimes and small changes in existing regimes and the empirics are solely focused on the impact of SDT and SAT on GDP growth.[20]

[insert Table 4]

translating the type of legal origin of each different country in the sample (see La Porta et al., 1998).

[18] On a broad level, the role of ethnic fragmentation in explaining the (possible) growth effect of democracy can derived from the literature of the economic consequences of ethnic conflict. It has been shown that the level of trust is low in an ethnically divided society (Alesina and La Ferrara, 2000). The lack of co-operative behavior between diverse ethnic groups leads to the tragedy of the commons as each group fights to divert common resources to non-productive activities (e.g. Mauro, 1995).

[19] Thus SM = 1 for a small regime change and SM = 0 otherwise.

[20] For reasons of parsimony, other results are available upon request.

Some findings shown in Table 4 stand out. To begin with, focus the attention on specification 1 and note that the simple sustained electoral democratic transition (SDT) and the sustained authoritarian transition (SAT) variables do not perform particularly well, despite having the expected (ex-ante) signs. Because some may be sceptical of these empirical results, more stringent empirical tests on the effects of democracy/ autocracy on growth were carried out, similarly to Rock (2009). This was done by defining democratic transitions as those where the Polity2 variable is greater than 5. In these instances, a new sustainable democratic transitions variable, SDT1 = 1 when Polity2 > 5, otherwise SDT1 = 0. Similarly, a new sustainable autocratic transitions variable was created, SAT1 = 1 when Polity2 is less than 5, otherwise SAT1 = 0. The logic behind this construction is to test for the impact of democracy and autocracy on growth in cases where countries' governments are closer to either pure democracies or pure autocracies.[21] Specification (2) in Table 4 refer to regressions including these new pairs of democracy and autocracy, SDT1 and SAT1. In specification (2) the simple pure democracy (SDT1) and pure autocracy (SAT1) variables perform somewhat better than before. The signs of the regression coefficients are the same as before, i.e., with positive (and significant) impact of SDT1 and negative (and almost significant at 10%) impact of SAT1. It is worth noting that SM presents mixed results throughout the different specifications. As in Table 3, in specifications (3) and (4) we add "GFCF" and "Openness" and, despite observing an increase in the R squared, both the signs and significance levels of the three democracy-based measures alter (to worse). In particular, SAT and SAT1 are not longer negative (but still insignificant) and SDT1 has a smaller magnitude and it is only marginally significant at a 10% level. With respect to the other controls, the same conclusions as before apply. Hence, so far, this suggests that the regime type defined a pure democracy, by itself, probably has impact on economic growth. Furthermore, the R^2's associated with these new specifications are higher than the ones with the SDT and SAT measures.

Finally, Table 4 columns (4) to (8) report the results for the economic growth regressions for the same pairs but it now corrects for endogeneity by estimating through two-stage least squares. Now that we allow for DURABLE, latitude and ETHNIC to be used as instruments[22], the economic growth advantage of democracies (both SDT and SDT1 in specifications (5) and (6) respectively) identified in the regressions shown in Table 4 columns (1) and (2) is still marginally visible. Interestingly enough, if we move to specifications (7) and (8) not only do we lose any remaining statistical credibility of the estimated coefficients for SDT and SDT1 but their estimates change into negative numbers. This finding is in accordance with Helliwell's (1994) who also tries to control for the endogeneity of democracy and finds that it spurs education and investment, but has a negative (and insignificant) effect on growth when investment (in our case, GFCF) and education (in our case, the three proxies for human capital) are controlled for. As for pure autocracies the same conclusions as before

[21] The cutoff point for defining these new and purer measures of democracy/ autocracy was taken directly from Marshall and Jaggers (http://www.systemicpeace.org/polity/polity4.htm).

[22] F-statistics of the first-stage regressions exceeded the threshold value of 10 proposed by Staiger and Stock (1997), so there is a priori no evidence that the present results suffer from weak instruments. Moreover, the Sargan-Hansen test for overidentifying restrictions suggest that the instruments are valid ones (p-values in excess of 10 in the four specifications), i.e, uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation.

apply even after including "GFCF" and "Openness", so we are inclined to conclude that pure autocracies by themselves do not have a major effect (neither fostering or hindering) on economic growth.

5 Conclusion and Final Remarks

This paper explores the effect of democracy and human capital on economic growth on panel of nations over a forty five year time span, with a particular emphasis on extreme-type political regimes. Our results confirm a positive and significant effect of education and democracy on growth, together with the usual convergence hypothesis. We contribute to the understanding whether a higher index of democracy (or lower corruption) enhances economic development. To begin with, some support is found for the hypothesis that electoral democracy, by itself, fosters GDP growth per capita while almost no support is found for the hypothesis that autocracy, by itself, increases it. However, once other controls are included in the regression, in particular, investment and trade openness, than effect disappears. The finding that autocracies by themselves tend not to increase economic growth is not particularly surprising - it just confirms what we know from the literature, not all autocracies are committed to development (lacto sensu), have the capability to implement their development visions, or adopt development policies that work. The finding that democracies by themselves have a mixed and/or unclear impact growth is in accordance with other empirical work on the topic[23].

In sum, more research is clearly needed in order to improve the current understanding of the relationship (and possible bi-causality) between economic growth and democracy (or political regime, lacto sensu). The incorporation of cultural effects of democracy (e.g. trust, social capital), gender and/or specific social groups' characteristic (e.g. including freedom of press or property rights) could be a meaningful extension to provide a more comprehensive understanding of the relationship under scrutiny.

6 References

Acemoglou, D., Johnson, S. and Robinson, J.A. (2001),"The colonial origins of comparative development: an empirical investigation", American Economic Review 91, 1369–1401.

Acemoglu, D. and Robinson, J. (2005), "Economic Origins of Dictatorship and Democracy", Cambridge University Press.

Alesina, Alberto and Eliana La Ferrara (2000), "The Determinants of Trust", NBER Working Papers 7621.

Barro, R. J., and Sala-i-Martin, X. (1992) "Convergence", Journal of Political Economy, 100 (2), 223-251.

[23]Nevertheless, a recent paper by Papaioannou and Siourounis (2008) shows that electoral democracies grow faster than their authoritarian counterparts.

Beck, Thorsten, George Clarke, Alberto Groff, Philip Keefer and Patrick Walsh (2001), "New tools and new tests in comparative political economy: the Database of Political Institutions", World Bank Economic Review 15, 165-176.

Bockstette, Valerie, Chanda, Areendam and Putterman, Louis (2002), " States and Markets: The Advantage of an Early Start", Journal of Economic Growth, 7(4), 347-69.

Boix, C. (2003), "Democracy and redistribution", Cambridge University Press.

Dollar, D. and Kraay, A. (2003), "Institutions, trade and growth", Journal of Monetary Economics 50, 133–162.

Epstein, D., Bates, R., Goldstone, J., Kristensen, I. and Sharyn O'Halloran (2006), "Democratic Transitions", American Journal of Political Science, 50, 551-569.

Hall, R.E. and Jones, C. (1999), "Why do some countries produce so much more output per worker than others?", Quarterly Journal of Economics, 114, 83–116.

Helliwell, J. F. (1994), "Empirical Linkages between Democracy and Economic Growth", British Journal of Political Science, 24 (2)

Heo, U., and Tan, A. (2001), " Democracy and Economic Growth : A Causal Analysis", Comparative Politics, 33 (4), 463-473.

Huntington, S. P., and Dominguez, J. (1975), "Political Development in Macropolitical Theory", F.I. Greenstein and N.W. Polsby (eds), 1-114, Reading, MA: Addison-Wesley.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. (1997), "Legal determinants of external finance", Journal of Finance 52, 1131-1150.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. (1998), "Law and finance", Journal of Political Economy 106, 1113-1155.

Lipset, S. M. (1959), "Some social requisites of democracy: Economic Development and Political Legitimacy" American Political Science Review, 53, 69-105.

Marsh, R. M. (1988), "Sociological explanations of economic growth," Studies in Comparative International Development, 23 (4), 41-76.

Mauro, P. (1995), "Corruption and growth", Quarterly Journa of Economics, 110, 681–712.

Mayda, Ana, Rodrik, Dani (2005), "Why Are Some People (And Countries) More Protectionist Than Others?", European Economic Review, 49, 1393-1430.

Papaioannou, E. and Siourounis, G. (2008), "Economic and social factors driving the third wave of democratization", Journal of Comparative Economics, 36(3), 365-387.

Persson, Torsten and Guido Tabellini (2006), "Democracy and Development: The Devil in the Details", American Economic Review, 96(2), 319-324.

Poterba, James M (1996), "Budget Institutions and Fiscal Policy in the U.S. States", American Economic Review, 86(2), 395-400.

Przeworski, A., and Limongi, F. (1993) "Political Regime and Economic Growth", Journal of Economic Perspectives, 7 (3), 51-79.

Przeworski, A., Alvarez, M., Cheibub, J., Limongi, F. (2000), "Democracy and Development: Political regimes and economic well-being in the World, 1950-1990", New York: Cambridge University Press.

Schweinitz, K., Jr. (1959), "Industrialization, Labor Controls, and Democracy", Economic Development and Cultural Change, 7, 385-. 404.

Scully, Gerald W, (1988), "The Institutional Framework and Economic Development," Journal of Political Economy, 96 (3), 652-62.

Sirowy, L. and Inkeles, A. (1990), "The Effects of Democracy on Economic Growth and Inequality: A Review", Studies in Comparative International Development, 25, 126–57.

Rao, V.,(1984), "Democracy and Economic Development. Studies in International comparative development, 19 (4), 67-81.

Rock, M. (2009), "Has Democracy Slowed Growth in Asia?", World Development, 37(5), 941-952.

Rodrik, D.and Wacziarg, R. (2005), "Do Democratic Transitions Produce Bad Economic Outcomes?", American Economic Review, 95(2), 50-55.

Staiger, D. and J. Stock (1997), "Instrumental Variables Regression with Weak Instruments", Econometrica, 65(3), 557-586.

Tavares, Jose and Wacziarg, Romain (2001), "How democracy affects growth", European Economic Review, 45(8), 1341-1378.

Weede, E. (1983), "The Impact of Democracy on Economic Growth: Some Evidence from Cross-National Analysis", Kyklos, 36 (1), pp. 21-39.

Table 1: Democracy Proxies, Human Capital and Economic Growth
Whole Sample – Pooled Ordinary Least Squares

Time	*1960-2005*				*1960-90*			*1975-2005*
Specification	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
GDP60	-0.009***	-0.011***	-0.012***	-0.0102**	-0.0207**	-0.0165*	-0.023**	-0.0129***
	(-1.965)	(-0.011)	(-2.175)	(-0.01)	(-2.145)	(-1.738)	(-2.339)	(-2.737)
PRIC25	0.009***	0.007***	0.007***	0.0074***	0.0103***	0.0108***	0.0098***	0.0049*
	(5.0955)	(0.0072)	(3.9004)	(0.0074)	(0.0142)	(4.3833)	(3.9775)	(2.108)
SECC25	0.011***	0.0089	0.0090**	0.0092**	0.0142*	0.0175*	0.0138*	0.0181***
	(2.4675)	(2.0343)	(2.035)	(2.0914)	(1.731)	(2.1729)	(1.6963)	(3.8174)
HIGHC25	-0.0046	-0.0084	-0.0082***	-0.0081	-0.0199	-0.0232	-0.0179	-0.0025
	(-0.639)	(-2.175)	(-1.144)	(-1.135)	(-1.093)	(-1.266)	(-0.994)	(-0.328)
POLITY2		0.0109***			0.0107**		0.0101**	0.0042
		(3.049)			(2.1242)		(2.0017)	(1.1319)
DEMOC			0.0193***					
			(2.853)					
AUTOC				-0.0219***				
				(-3.049)				
PINSTAB						-0.1358	-0.1680*	
						(-1.522)	(-1.859)	
R squared	*0.1398*	*0.1769*	*0.7119*	*0.1769*	*0.1736*	*0.1512*	*0.1889*	*0.1005*
F-test	*8.641****	*9.0848****	*8.8098****	*9.0851****	*6.6650****	*5.8488****	*6.2432****	*5.5015****

Note: The dependent variable is GDP growth per capita retrieved from the Penn World Tables. For the different regressors definitions and main sources refer to the main text. All specifications include the estimate of a constant term, not reported for reasons of parsimony. Robust t-statistics using heteroskedasticity consistent standard errors are in parenthesis. ***, **, and * denote significant coefficients at 1%, 5% and 10% respectively.

Table 2: Democracy Proxies, Human Capital and Economic Growth
Split Sample – Pooled Ordinary Least Squares

	Rich		**Poor**	
Specification	*(1)*	*(2)*	*(3)*	*(4)*
GDP60	-0.0089***	-0.0103**	-0.6480***	-0.6366***
	(-2.7384)	(-0.0103)	(-4.2588)	(-4.1739)
PRIC25	0.0052***	0.0047**	0.0141**	0.0142**
	(2.6409)	(2.0974)	(2.3681)	(2.3754)
SECC25	0.0082**	0.0074	0.0382***	0.0335**
	(2.3017)	(2.3682)	(2.9917)	(2.4689)
HIGHC25	-0.0112*	-0.0126	0.0034	0.0014
	(-1.7143)	(-1.5747)	(0.2041)	(0.0863)
POLITY2		0.0058		0.0052
		(1.2918)		(1.0136)
R squared	*0.0701*	*0.0747*	*0.2981*	*0.2984*
F-test	*3.5228****	*3.1665****	*7.2651****	*6.02****

Note: The dependent variable is GDP growth per capita retrieved from the Penn World Tables. For the different regressors definitions and main sources refer to the main text. All specifications include the estimate of a constant term, not reported for reasons of parsimony. Robust t-statistics using heteroskedasticity consistent standard errors are in parenthesis. ***, **, and * denote significant coefficients at 1%, 5% and 10% respectively.

Table 3: Democracy Proxies and Economic Growth
Whole Sample with interaction terms – Fixed Effects

Model	*I*				*II*			
Specification	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
GDP60	-0.022***	-0.028**	-0.0362***	-0.0412***	-0.0186**	-0.0205**	-0.0236**	-0.0142***
	(-2.55)	(-1.96)	(-2.74)	(-3.11)	(-1.98)	(-2.07)	(-2.31)	(-2.86)
PRIC25	0.0651**	0.0501**	0.112***	0.153**	0.0431***	0.0470***	0.0981**	0.121**
	(2.02)	(1.97)	(2.67)	(2.11)	(2.65)	(3.54)	(2.17)	(2.41)
SECC25	0.012*	0.023**	0.018*	0.009	0.0179**	0.0132*	0.0214*	0.0199*
	(1.961)	(2.15)	(1.73)	(1.01)	(2.11)	(1.61)	(1.86)	(2.03)
HIGHC25	-0.0023	0.0512	-0.0018	-0.0046	-0.0071*	0.0012	0.0003	0.0020
	(-0.698)	(1.13)	(-0.92)	(-1.05)	(-1.55)	(0.658)	(1.054)	(0.59)
DEMOC	0.0269*		0.0062					
	(1.96)		(0.543)					
POLITY2		0.0522*		-0.0003				
		(1.83)		(-0.255)				
GFCF			0.452***	0.520***			0.363***	0.419***
			(4.21)	(3.58)			(3.98)	(4.17)
Openness			0.0021	0.0136			0.0031*	0.0101
			(1.22)	(1.45)			(1.42)	(1.392)
DEMOC*rich					0.052*		0.0023	
					(1.64)		(0.963)	
DEMOC*poor					0.018		-0.0023*	
					(0.80)		(-1.51)	
POLITY2*rich						0.042**		-0.0102
						(2.25)		(-1.036)
POLITY2*poor						0.021		-0.0005
						(1.19)		(-0.578)
R squared	*0.3561*	*0.3297*	*0.5814*	*0.5236*	*0.462*	*0.4003*	*0.7422*	*0.7033*

Note: The dependent variable is GDP growth per capita retrieved from the Penn World Tables. For the different regressors definitions and main sources refer to the main text. All specifications include the estimate of a constant term, not reported for reasons of parsimony. Year dummies were included in all regressions. Robust t-statistics using heteroskedasticity consistent standard errors are in parenthesis. ***, **, and * denote significant coefficients at 1%, 5% and 10% respectively.

Table 4: Polity2-based measures *a la* Rodrik and Wacziarg (2005) and Economic Growth
Whole Sample – Fixed Effects and Two-Stage Least Squares

Model	*I*				*II*			
Specification	*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
	Fixed Effects				**Two-Stage-Least Squares**			
GDP60	-0.012***	-0.054***	-0.082**	-0.074***	-0.072*	-0.0547**	-0.077**	-0.081***
	(-2.77)	(-3.02)	(-2.11)	(-2.89)	(-1.62)	(-2.01)	(-2.11)	(-2.97)
PRIC25	0.0694**	0.0871***	0.102**	0.117***	0.0381**	0.0687**	0.112***	0.0977**
	(2.27)	(3.02)	(2.01)	(2.51)	(1.991)	(2.47)	(2.88)	(2.541)
SECC25	0.144*	0.105**	0.0846**	0.137**	0.054*	0.0778*	0.114*	0.109**
	(1.974)	(2.06)	(2.179)	(2.340)	(1.452)	(1.667)	(1.71)	(1.98)
HIGHC25	0.0042	-0.0005	-0.0078	0.0004	0.0078	0.0001	-0.0007	-0.0019
	(0.214)	(-0.954)	(-1.025)	(0.749)	(0.768)	(0.0258)	(-1.044)	(-0.977)
GFCF			0.5102***	0.321***			0.441***	0.502***
			(4.023)	(3.972)			(3.21)	(2.98)
Openness			0.0021	0.015*			0.0125	0.0095
			(0.907)	(1.741)			(1.21)	(0.991)
SDT	0.584		0.210		0.1124*		-0.0997	
	(1.01)		(0.812)		(1.661)		(-1.22)	
SAT	-0.0844		0.0087		0.0084		0.0025	
	(-1.17)		(1.20)		(0.751)		(0.991)	
SM	-0.0071		-0.0177		-0.0114		0.0002	
	(-0.41)		(-1.09)		(-0.106)		(0.014)	
SDT1		0.3601**		0.131*		0.3577*		-0.112
		(1.98)		(1.572)		(1.71)		(-0.336)
SAT1		-0.1844		0.0011		-0.023		0.098
		(-1.31)		(0.953)		(-0.541)		(0.887)
SM		0.0028		-0.113		0.0087		-0.099
		(0.42)		(-1.22)		(0.720)		(-1.074)
R squared	*0.2035*	*0.2879*	*0.3612*	*0.4112*	*0.0774*	*0.109*	*0.154*	*0.182*
within	*0.154*	*0.1229*	*0.051*	*0.223*				
between	*0.2702*	*0.3560*	*0.555*	*0.5804*				
Hansen Test (p-value)					*0.171*	*0.227*	*0.211*	*0.329*

Note: The dependent variable is GDP growth per capita retrieved from the Penn World Tables. For the different regressors definitions and main sources refer to the main text. All specifications include the estimate of a constant term, not reported for reasons of parsimony. Year dummies were included in specifications (1) and (2). In Model II we use as instruments: *durable*, *latitude* and *ethnic*. Robust t-statistics using heteroskedasticity consistent standard errors are in parenthesis. The Hansen's test p-value for over-identifying restrictions is presented for the TSLS regressions - Model II. ***, **, and * denote significant coefficients at 1%, 5% and 10% respectively.

APPENDIX

Table A1: Correlation Matrix – Human Capital proxies and GDP

	PRI25	**PRIC25**	**SEC25**	**SECC25**	**HIGH25**	**HIGHC25**
PRI25						
PRIC25	0.818					
SEC25	0.154	0.287				
SECC25	0.119	0.268	0.92			
HIGH25	0.098	0.207	0.649	0.679		
HIGHC25	0.129	0.235	0.656	0.684	0.944	
GDP60	0.229	0.426	0.664	0.671	0.657	0.598