On Democracy, Regime Duration, and Economic Growth

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Abstract:

In this paper we study a large unbalanced annual panel of 134 countries covering the period 1950 - 2003. We show that autocracies grow almost one percentage point slower than non-autocracies, holding constant the effect of regime length on growth. We also show that regime length significantly affects growth in a non-linear and regime type specific manner. The growth rate in autocracies rises rapidly up to around 35 years of duration and then falls, while the growth rate in non-autocracies rises slowly with duration for at least 100 years. Taking both effects together non-autocracy dominates autocracy, at least on growth grounds.

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The idea that there is a form of government that optimizes economic performance is seductive. Many scholars have worked to show, in particular, that *democracy* is that optimal form. A recent ECONLIT search for papers containing the phrases "democracy" and "economic growth" produced 270 different hits. As we witness both an increase in the number of democracies around the world and an ever increasing economic gap between the richest and poorest countries, the question only increases in importance. Anecdotes abound in both directions: For dictatorships there is Singapore but then also North Korea. For democracies there is the USA but then there is France. Formal empirical analysis to date has been more coherent: the overwhelming consensus in the literature is that growth is either independent of, or else negatively related to, democracy.

We believe there is room for a 271st paper for several reasons. First, following Mancur Olson, the effect of regime type on growth may depend on the duration and stability of that regime. Second, we argue that using a multi-level index of democracy as a linear regressor to explain growth obscures any true relationship between regime type and economic performance. Third, it is highly desirable to expand the sample of countries used in the analysis. This expanded sample comes with a price, however: comparing the performance of more nations forces us to use an extremely parsimonious model, because of data limitations.

In our analysis of 134 countries, using an unbalanced annual panel over the period 1950 – 2003, we define dictatorship simply as a dummy variable. Using this design, we show that dictatorships pay a significant penalty in terms of growth: on average non-democracies grow approximately 1 full percent per year more slowly, holding regime duration constant. We also show that regime length has a significant impact on growth that is both non-linear

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and regime type specific. Interestingly, these results support (in part) predictions made by Mancur Olson.[1]

The following section reviews the empirical literature. Section II elaborates our understanding of Olson's views about the regime-dependent effect of regime duration on economic performance. Section III describes our modeling strategy and data, while Section IV presents our basic results and some robustness tests. Section V concludes.

I. The empirical literature in a nutshell

The empirical literature on regime type and economic performance is enormous and equivocal. In a comprehensive survey of this literature in economics, Brunetti (1997) concludes "Considering the evidence of this survey, it can be safely stated that there is no clear relationship between democracy, at least as measured in these studies, and economic growth." Rather than reprising that survey, we will confine ourselves here to mentioning the five papers we see as most directly relevant to our own work.

- Levine & Renelt (1992) famously show that democracy is not a robust determinant of growth in cross-sectional regressions.

- Barro (1996) shows in decade average panel regressions that democracy has a "weakly negative" effect on growth.

- Przeworski & Limongi (2000) study annual panels and argue that there is no real difference in growth between dictators and democrats.

- Tavares & Wacziarg (2001) use a structural model to examine many channels through which democracy might influence growth, finding some negative effects and some

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[1] Specifically while we find no strong growth penalty for long –lived democracies as Olson argues in The Rise and Decline of Nations, we do find that regime duration rapidly raises growth in autocracies for the first 30 years or so which is consistent with Olson's later work.

positive but conclude that the "overall effect of democracy on economic growth is moderately negative".

- The most recent work of which we are aware, Gerring, Bond, Barndt & Moreno (CBBM, 2005) argues 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".

This work adds up to an empirical consensus that democracy either has no measurable effect on, or else actually retards, growth rates. However, for the reasons we noted in the introduction, we do not think the door is closed to a new approach. To illustrate why consider what are arguably the two best and most influential papers in the economics literature. Barro (1996) studies up to 100 countries from 1965 to 1994, Tavares & Warciag (2001) study 65 countries from 1970 to 1989. Both use the Freedom House index (or a normalization of it) as a linear regressor, as if it were scaled in constant, cardinal increments. And neither consider the possible effects of regime duration on growth, the subject we take up in the following section.

II. On the possibility of duration dependent effects of regime type

Olson (1982) argued that democracies succumb to what he called "institutional sclerosis." Over time, he claimed, "encompassing interests" become weaker, and special interests organize to capture rents and government-enforced monopoly powers. But dictatorships, with their single ruler seeking to maximize revenue, are more encompassing. In short, if

democratic institutions allow a majority to solidify its position, and special interests to gain protection, the power in democracies will be less encompassing than in a dictatorship.

But Olson makes another interesting observation: the "encompassing interest" implication of the centralization of power in a dictatorship is conditional on the time horizon of the ruler, and the prospects for survival of the regime as perceived by citizens and investors. A dictatorship on the verge of losing power can never make a credible commitment not to expropriate property and wealth. Only a dictatorship of considerable duration will exhibit behavior consistent with an encompassing interest.

The prediction, then, is a conditional claim, as this passage from Clague, et al. (1997) illustrates.

> A dictator who does not expect to last long and who wants to maximize his wealth has an incentive to appropriate whatever assets he can…Similarly, an autocrat who is threatened by a coup may take desperate measures to raise resources that can be used to buy political support. On the other hand, an autocrat who expects to remain in power for a long time, and perhaps even to bequeath his domain to his offspring, has an incentive to establish and then respect property rights for his subjects so that they produce more output that the autocrat can tax (pp. 91-2). [2]

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[2] Olson (1997; pp. 47-48) makes this same point again, more colorfully and at a little greater length.
> A rational autocrat with a long time horizon will not confiscate his subjects' assets, because this will reduce investment and future income and, thus, his own long-run tax receipts.
> Now, suppose the autocratic ruler is uncertain about whether he will be in charge much longer. He may be uncertain about this because he fears invasion from a yet-more-powerful domain, a coup d'etat, a revolution, or an assassination. When uncertainty gives him a short-term view, he has an incentive, no matter how gigantic his empire or how exalted his lineage might be, to seize any asset whose total value exceeds the discounted present value of its tax yield over his short-term horizon. With a sufficiently short planning horizon, it pays any autocrat not only to confiscate all readily seizable assets but also to repudiate his debts and to generate inflation by printing money for his own use, no matter how great the long-run cost….
> Any autocracy must sooner or later have a short time horizon. In addition to the external and internal enemies and accidents that can end any autocracy, there is the fundamental problem of succession. If an autocrat were to create a body with the power to guarantee an orderly succession, that body would have to have more power than anyone else in the society. But it could only have this power if it had more power than the autocrat—and thus the capacity to overrule the autocrat—in which case the society by definition would not be an autocracy.

Taken together, these are the predictions made in the logic of the Olson model:[3]

- Democracies have greater minimal incentives to pursue broadly shared growth, at least for a majority of the citizens. This is true even for new, unstable democracies.

- Dictators and autocrats have incentives to pursue growth and to make credible commitments against expropriation. [4]

- However, new dictators may be under so much pressure to survive that their time horizon is very short, and expropriation is the only way for them to survive.

- The key conditioning variable, determining much of the effect of regime type on growth, is the expectation of citizens and investors that they will be able to capture gains from exchange, and protect returns to investment.

For our own empirical work, the key point we take from Olson is that the effect of regime duration on economic performance is regime type dependent. Democracies are likely to suffer over time from the sclerotic effects of interest groups, while autocracies may improve over time (up to a point) as the leader consolidates power. Most empirical studies of regime type on growth have ignored these possible effects or forced duration effects to be common for all regime types. This is not just a criticism of the absence of a theoretical claim in other work. The absence of the appropriate specification of the model sharply conditions the results of estimations. Our claim is that allowing for the appropriate conditional effects of duration on

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[3] For background, see Olson (1982; 1997; 2000), and McGuire and Olson (1997).
[4] This view is not uncontroversial. Wintrobe (1998) presents a categorization of "types" of autocrats, with some types being uninterested in the economic growth pattern of society. Cowen (2000) has an interesting observation in this regard:

> "Much of Olson's argument assumes that the stationary bandit is akin to a profit-maximizer. In reality, stationary bandits, such as Stalin and Mao, may have been maximizing personal power or perhaps something even more idiosyncratic. Second, the stationary bandit might be keener to keep control over the population, given how much is at stake. He may oppose liberalization more vehemently, for fear that a wealthier and freer society will overthrow him."

regime type demonstrates that regime type is in fact an important factor in explaining growth. Democracies demonstrably grow faster, in an appropriately specified model.

III. Modeling strategy and data

The cornerstone of our approach is allowing for regime specific duration effects on growth as described above. However, we also believe that it is important to address the other issues (measurement of autocracy/democracy, sample size, structural vs. reduced form modeling) we noted in the introduction.

In that regard, rather than use a qualitative index as a linear regressor as much of this literature does, we are going to split the sample into autocracies and non-autocracies and report a sensitivity analysis on the splitting criterion.[5] The assumption that each one point increment on a democracy scale should produce an equal percentage point improvement in economic growth is heroic, to put it mildly, and may be helping to cause the pervasive non-findings we discussed in the literature review.

We also have worked to achieve the largest sample size we could. We are using a dataset built on work originally done by Angus Maddison that contains a much wider array of non-democratic countries than does the usual source (the Penn World Tables) used in the literature. In particular, we gain 19 countries that are not in the PWT and greatly increase years of coverage for another 11 countries (and 29 of these countries are autocracies). Of course this increase in coverage comes at the price of not having many conditioning variables in the regressions, but we consider this potential bug to actually be a feature in our analysis.

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[5] While Przeworski et. al also use a 0 1 classification, using an multiple category index as a linear regressor is standard practice in the empirical literature.

In effect, there are two basic modeling options: (a) specify and test a set of structural equations that capture the underlying channels by which effects are transmitted across sectors. (b) Specify a parsimonious reduced form model that controls for the key relationships between growth and institutions. Our sample size puts us into camp (b) by default, but we argue here that (b) is also the best approach on the merits, at least for this problem. There are three reasons. First, structural modeling greatly reduces the sample size and eliminates many cases that may be quite relevant (low growth dictatorships, for example). The most comprehensive structural investigation is that of Tavares & Wacziarg (2001) which ends up with 65 countries in the sample once all the data requirements are met. Second, there is no agreed-upon, fully-specified theory of all the channels by which regime type can influence growth. If we specify the structure incorrectly, we will almost certainly miss the effect even if it is there.[6] Third, just as we have seen an argument that regime duration may affect growth differently for democracies and autocracies, it is likely that many other channels whereby regime type can affect growth vary by country group or other conditioning variables. In other words, even if we knew in theory all the structural channels, finding the correct functional form would remain a formidable challenge. Our strategy is to treat the specific structural channels through which regimes might affect growth as a black box, and instead look directly at the regime – growth relationship in a reduced form model.[7]

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[6] Clearly, our claim echoes Friedman (1953), who favored simple reduced form models over structural models in cases where the correct structure is not known or agreed upon: "Complete 'realism' is clearly unattainable, and the question whether a theory is realistic 'enough' can be settled only by seeing whether it yields predictions that are good enough for the purpose in hand or that are better than predictions from alternative theories."

[7] This is not as strange as it may seem. Growth theory tells us that in the short run, growth can come from changes in the rate of accumulation of inputs, and in the long run from technological progress and a country's ability to use such progress. Any policy variables in growth regressions really must be seen as factors that influence input accumulation, technology progress or the ability to utilize new technology

The data come from the Growth & Development Center at the University of Groningen.[8] Our Appendix lists the countries and years in the sample. The income data is adjusted for inflation and deviations from PPP much in the same manner as the Penn World Tables data. The regime data comes from the Polity IV database that is widely used in political science. We use the 0 – 10 autocracy ranking from Polity IV to form our regime type variable, coding as dictatorships any country years with an autocracy ranking of 5 or above which captures about 45% of the observations in the sample.[9] We use the Polity IV durable variable as our measure of regime length. This variable gives the age in years of the current regime.

The Polity database does not code an autocracy number during regime transition periods but rather codes the variable as -66, -77, or -88 depending on the type of transition. In this study, we simply drop these transition years from our analysis, leaving us with 5866 country-years in our regressions (around 210 country years are dropped as transitional). While there is economic data for many countries before their date of independence, there is no Polity data and we thus exclude these nations from the analysis. We also exclude countries that do not have more than 10 years of coverage. But all other nations are included, giving us a much larger and more diverse sample than has been used in previous work.

We include fixed annual effects to allow for common shocks over time. We do not include country specific fixed effects, for the simple reason that including them would not allow the experiences of countries whose regime type is unchanged over the sample to influence the variable of interest. In other words, employing country specific fixed effects

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[8] We combined data from Angus Maddison's historical statistics database and the GGDC total economy database as suggested on the website, checking where series overlapped to ensure consistency. In the interim, Maddison has updated his historical statistics database, so this combining may no longer be necessary. We will provide our exact data upon request.
[9] We will consider alternative definitions in our robustness section below.

would force the dictatorship coefficient to be determined only by within group variation in the sample (countries whose status shifts at least once during the sample period) and there are a lot of countries in our sample whose regime type is constant throughout the period.

We begin in equation 1 of Table 1 with the simplest possible test. We regress per capita growth on a constant, a set of time dummies and our dictatorship dummy, finding that dictatorships grow significantly slower (by about one half of a percentage point) than non-dictatorships in our sample (allowing for common temporal shocks). Equation 2 adds lagged growth to the model, which improves the fit but does not change the result. Equation 3 adds the regime length variable (called durable), and shows that growth is moderately persistent, that regime length has a weakly positive effect on growth and that dictatorships still grow significantly slower, again by almost a half percentage point. However, since we have argued that the durability – growth relationship is quite likely non-linear, we do not spend a lot of time on the results of equation 3 but rather move on to a model with a non-linear effect of regime length as shown in equation 4.

Here all variables are significant at the 0.01 level, regime durability first raises, then lowers growth, and dictatorship lowers growth by almost exactly one half of a percentage point. We present a picture of the estimated relationship between durability and growth in Figure 1.[10] Initially, regime survival provides an increasing growth dividend that rises quickly over the first 40 years. Then after 70 years or so, regime survival begins to slow down growth.

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[10] CBBM report that the polity IV durability variable is insignificant in their test, but they do not consider any possible non-linear effects of regime durability.

So far, we have shown that, with a more comprehensive data set than has been used previously, dictatorships grow significantly slower than non-dictatorships. Further, we find that regime duration has a significant, but non-linear effect on growth.

However, we argued above that the effect of regime length on growth may well be type dependent, a much more interesting and discriminating claim. We investigate this possibility in equation 4 of Table 1. Again, all variables are significant at the 0.01 level and we see that the effect of regime length on growth is indeed dependent on the type of regime. Allowing for this interdependence almost doubles the coefficient on the dictatorship dummy from .49 to .9 indicating that holding constant the effects of durability, dictatorships grow almost one percentage point slower than non dictatorships. Figure 2 shows the two different estimated regime length – growth relationships. These functions are significantly different from each other at the 0.01 level.

As Figure 2 reveals, Olson's claims are really only borne out for dictatorships. In dictatorships, stability brings a quickly rising growth premium over the first 20 years. Then the effect flattens out, and after 35 years further stability begins to reduce growth. In the non-dictatorship case, the effect of regime durability on growth rises quite slowly, but for almost an indefinite period of time, with the peak occurring at around 100 years of life. We see little evidence of institutional sclerosis in these data. It is worthwhile to note that there are many observations (in terms of country / years) in the sample with dictatorships older than 35 years, so the downward portion of that curve is both estimated with some statistical power and is substantively relevant.

Figure 2 might lead one to think that for the first half century of life, it is better for growth to have a dictatorship. Or put another way, if non-dictatorship is unlikely to last, then

it is not worth trying, at least for growth reasons. However, this would ignore the large

negative dictator dummy estimated in equation 5. In order to judge the dynamic effects of

regime choice we need to combine both elements. Doing this produces the results displayed

in Figure 3.

Here we can see that, from a growth perspective, non-dictatorship dominates

dictatorship. Dictatorship starts with almost a one percentage point disadvantage, almost

catches up within 30 years but then falls further and further behind beyond that point. These

results represent the first clear achievement of a long sought after goal, namely a convincing

empirical case for the growth benefits of non-dictatorship.

Discussion and Robustness Tests

Why do we find these strong results where others have not? There are at least three

reasons. First, we have a broader sample of dictatorships in our data than is usually studied in

the literature. Second, we examine an interaction between regime type and regime durability

in a way that has not been undertaken. Third, we use a simple dummy variable to characterize

regime type rather than using a constructed index directly as a linear regressor. Finally, rather

than specify a structural model of how dictatorship impedes growth (for example that

dictatorship affects productivity which affects growth), we estimate a simple reduced form

model of growth.

Given the unique nature of these results, however, we should consider some

robustness checks. We perform two such types of tests. First we consider how dependent the

results are on the exact sample employed by performing a country-by-country jack-knife on

the data.[11] That is, we re-estimate the model in equation 5 of Table 1 134 times, each time

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[11] That is, rather than excluding a single observation, we exclude all observations for each nation, one at a time.
Rather than testing for influential observations, then, we are testing for influential nations in the sample.

with a different country excluded from the regression. We then consider the properties of the 134 separate coefficients we estimate for each variable in the model. This information is contained in Table 2 and is notable mainly for the tremendous degree of sample independence shown. In no case does excluding a country cause a coefficient sign change and for all 7 variables, the distribution of their coefficients is very tightly packed around the means. For example, the average estimated value of the dictator dummy is -.9 with a minimum of -1.02 and a maximum of -.82 and a standard deviation of less than .03. These results show that our findings are not very sensitive to the exact sample employed.

The second type of robustness check we perform is to vary our statistical definition of dictatorship. Specifically, we relax the criterion by using an autocracy score of 4 or above (instead of 5 or above) to define dictatorship as well as make the criterion more stringent by setting 6 or above as the definition of a dictatorship. Finally we also define dictatorships as cases where a country's autocracy score exceeds its democracy score, which in the Polity IV database are cases where a country's Polity2 variable is less than zero. Table 3 presents estimations of our full model under each of these three alternative definitions of dictatorship. Again, we can see that the results are remarkably robust. In all cases the dictatorship dummy is negative and significant, the durability effect is regime type dependent and non-linear, and the relative curves show the same pattern as those displayed in Figure 3 for our baseline model.[12]

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[12] Another possible criticism of our results is that the true relationship may be causally reversed, that growth causes democracy. There is a large literature that claims the level of living standards predict democracy. However, this effect is not very large. Barro (1999) finds that a doubling of per capita incomes would raise his democracy index by about 1 category after 10 years. We do not think there is much cause for concern about reverse causation in our results.

Conclusions

The relation between political regimes and economic performance has proven hard to pin down. No one doubts that there are important effects, but almost no one agrees on how to measure the differences, or even model the pathways through which such differences might be discerned.

In this paper, we have investigated the relationship among regime type and regime duration and growth rate. Using data from 134 countries, over the period 1950 – 2003, we estimate a reduced form model that allows the effect of duration to be both non-additive and non-linear, and find that this functional form produces estimates consistent with two important claims. First, in sharp contrast to existing work, we find that democracies clearly and persistently enjoy a growth premium. Olson's thesis of institutional sclerosis either does not apply to democracies, or else has such a small marginal effect as to raise questions about its value as a primary explanation of growth patterns over time.

Second, we find support for Olson's thesis *in dictatorships* (measured as satisfying any of a variety of thresholds of the level of central autocratic control, and not depending on the specific threshold we use). New dictatorships pay a steep penalty in growth, but close much of the gap over time. Olson's explanation, that dictatorships lose growth for instability, but gain growth by maintaining more comprehensive interest representation than moderately durable democracies, appears to have considerable explanatory power.

We subject these estimates to a variety of robustness checks, both in terms of functional form and in terms of exclusion of (potentially) unduly influential observations. But

our findings are robust with respect to variations in functional form, and with respect to estimation of jack-knife coefficient distributions.

The simple model estimated here is intended only as a preliminary estimate; a challenge to the prevailing wisdom on the insignificance, or actual damage, of democratic institutions to economic growth and a plea to consider regime duration as an additional important institutional variable. With the reduced form result established, future work can focus gathering additional data to specify more clearly the exact channels by which institutions effect growth, and how the pattern of growth over time promotes institutional change.

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Appendix: Countries and years with both GDPPC income data and Polity IV regime data

Traditional OECD Countries (22)

Australia	1950 – 2003
Austria	1950 - 2003
Belgium	1950 - 2003
Canada	1950 - 2003
Cyprus	1960 - 2003
Denmark	1950 - 2003
Finland	1950 - 2003
France	1950 - 2003
W. Germany	1950 - 1989
Greece	1950 - 2003
Ireland	1950 - 2003
Italy	1950 – 2003
Japan	1950 - 2003
Netherlands	1950 - 2003
New Zealand	1950 - 2003
Norway	1950 - 2003
Portugal	1950 - 2003
Spain	1950 - 2003
Sweden	1950 – 2003
Switzerland	1950 - 2003
UK	1950 - 2003
US	1950 - 2003

Eastern Europe (10)

Albania	1950 - 2003
Bulgaria	1950 - 2003
Czechoslovakia	1950 - 1992
E. Germany	1960 – 1989
Hungary	1950 - 2003
Poland	1950 - 2003
Romania	1950 – 2003
Turkey	1950 - 2003
Yugoslavia	1950 - 1991
USSR	1950 - 1991

Asia (20)

Afghanistan	1950 – 2001
Bangladesh	1972 - 2003

Cambodia	1953 – 2001
China	1950 - 2003
India	1950 - 2003
Indonesia	1950 - 2003
Laos	1954 – 2001
Malaysia	1957 – 2003
Mongolia	1950 - 2001
Myanmar	1950 – 2003
Nepal	1950 – 2001
N. Korea	1950 - 2001
Pakistan	1950 – 2003
Philippines	1950 – 2003
Singapore	1959 – 2003
S. Korea	1950 – 2003
Sri Lanka	1950 – 2003
Taiwan	1950 – 2003
Thailand	1950 – 2003
Vietnam	1976 – 2003

Latin America & Caribbean (22)

Argentina	1950 – 2003
Bolivia	1950 - 2001
Brazil	1950 - 2003
Chile	1950 - 2003
Colombia	1950 – 2003
Costa Rica	1950 – 2001
Cuba	1950 – 2001
Dominican Republic	1950 - 2001
Ecuador	1950 – 2003
El Salvador	1950 - 2001
Guatemala	1950 - 2003
Haiti	1950 - 2001
Honduras	1950 – 2001
Jamaica	1959 - 2001
Mexico	1950 – 2003
Nicaragua	1950 – 2001
Panama	1950 - 2001
Paraguay	1950 - 2001
Peru	1950 – 2003
Trinidad & Tobago	1962 – 2001
Uruguay	1950 - 2001
Venezuela	1950 – 2003

Middle East & North Africa (16)

Algeria	1962 - 2003
Bahrain	1971 – 2003
Egypt	1950 – 2003
Iran	1950 – 2003
Iraq	1950 – 2003
Israel	1950 – 2003
Jordan	1950 – 2003
Kuwait	1963 – 2003
Libya	1951 - 2001
Morocco	1956 – 2003
Oman	1950 – 2003
Qatar	1971 – 2003
Saudi Arabia	1950 – 2003
Syria	1950 – 2003
Tunisia	1959 - 2001
United Arab Emirates	1971 – 2003

Sub-Saharan Africa (45)

Angola	1975 – 2001
Benin	1960 – 2001
Botswana	1966 – 2001
Burkina Faso	1960 – 2001
Burundi	1962 - 2001
Cameroon	1960 – 2001
Central African Republic	1960 – 2001
Chad	1960 - 2001
Comoros	1975 – 2001
Congo	1960 - 2001
Dem. Republic of Congo (Zaire)	1960 – 2003
Cote d'Ivoire	1960 – 2003
Djibouti	1977 – 2001
Equatorial Guinea	1968 - 2001
Ethiopia	1950 – 1993
Gabon	1960 - 2001
Gambia	1965 - 2001
Ghana	1960 – 2003
Guinea	1958 - 2001
Guinea-Bisseau	1974 – 2001
Lesotho	1966 – 2001
Liberia	1950 - 2001

Kenya	1963 – 2003
Madagascar	1960 - 2001
Malawi	1964 - 2001
Mali	1960 - 2001
Mauritania	1960 – 2001
Mauritius	1968 - 2001
Mozambique	1975 – 2001
Namibia	1990 – 2001
Niger	1960 - 2001
Nigeria	1960 – 2003
Rwanda	1961 – 2001
Senegal	1960 - 2001
Sierra Leone	1961 – 2001
Somalia	1960 - 2001
South Africa	1950 – 2003
Sudan	1954 – 2003
Swaziland	1968 - 2001
Tanzania	1961 – 2003
Togo	1961 – 2001
Uganda	1962 - 2001
Zambia	1964 – 2001
Zimbabwe	1970 - 2001

Table 1. Regime Type, Regime Length, and Economic Growth in 134 Countries

Variable	Eq1	Eq2	Eq3	Eq4	Eq5
Intercept	2.056	1.59	1.51	1.34	1.37
	(20.9)	(15.1)	(11.7)	(8.69)	(9.74)
Growth$_{-1}$	---	0.223	0.225	0.223	0.218
		(7.33)	(7.31)	(7.23)	(7.11)
Dictator	-0.611	-0.474	-0.449	-0.496	-0.901
	(3.04)	(2.65)	(2.48)	(2.80)	(3.27)
Durable	---	---	0.003	0.0063	0.0167
			(1.27)	(3.16)	(3.20)
Durable^2	---	---	---	-0.00014	-0.00011
				(3.66)	(3.54)
Durable* Dictator	---	---	---	---	0.05118
					(2.74)
(Durable* Dictator)^2	---	---	---	---	-0.00082
					(3.65)
$\bar{R}^2$	0.049	0.097	0.098	0.099	0.102
AIC	6.25	6.20	6.20	6.19	6.17

Dictator is a dummy variable indicating that a country's Polity IV autocracy score is >=5.
Durable is the age of the current regime in years from Polity IV.
Time dummies are also estimated but not reported
Numbers in parentheses are the absolute values of t-statistics computed using PCSEs.
N=5866 in all regressions.

Table 2. Jack-knife coefficient distributions

Variable	Mean	Standard Dev.	Minimum	Maximum
Intercept	1.3704	0.0198	1.287	1.438
$Growth_{-1}$	0.2185	0.0039	0.2029	0.2438
Dictator	-0.9002	0.0285	-1.0227	-0.8196
Durable	0.0168	0.0010	0.0146	0.02647
$Durable^2$	-0.00011	0.0000099	-0.00022	-0.000098
Dictator* Durable	0.0511	0.0021	0.0419	0.0599
$(Dictator*Durable)^2$	-0.00082	0.000026	-0.00098	-0.00072

Each coefficient was estimated 134 times using data for N-1 of the countries in the sample and the resulting summary statistics are reported above. Period fixed effects were also estimated in each individual regression.

Table 3. Alternative Measures of Regime Type

A: Dictator = 1 if Autocracy >= 4

$Growth_{it} = 1.345 + 0.0164*Durable_{it} - 0.00011* (Durable_{it})^2$
    (9.39)   (3.17)   (3.47)

  $+ 0.0478*(Durable*DICTATOR) - 0.00080*(Durable*DICTATOR)^2$
   (2.69)   (3.65)

  $- 0.759*DICTATOR_{it} + 0.218*Growth_{it-1}$
   (2.92)   (7.10)

B. Dictator = 1 if Autocracy >= 6

$Growth_{it} = 1.363 + 0.0197*Durable_{it} - 0.00013* (Durable_{it})^2$
    (9.77)   (3.43)   (3.76)

  $+ 0.0411*(Durable*DICTATOR) - 0.00071*(Durable*DICTATOR)^2$
   (2.17)   (3.20)

  $- 0.885*DICTATOR_{it} + 0.218*Growth_{it-1}$
   (3.01)   (7.11)

C. Dictator = 1 if Polity2 < 0

$Growth_{it} = 1.446 + 0.0142*Durable_{it} - 0.00009* (Durable_{it})^2$
    (9.71)   (2.72)   (3.12)

  $+ 0.0511*(Durable*DICTATOR) - 0.00082*(Durable*DICTATOR)^2$
   (2.99)   (3.81)

  $- 0.900*DICTATOR_{it} + 0.218*Growth_{it-1}$
   (3.53)   (7.07)

Dictator is a dummy variable defined as indicated in each sub-heading.
Durable is the age of the current regime in years from Polity IV.
Time dummies are also estimated but not reported
Numbers in parentheses are the absolute values of t-statistics computed using PCSEs.
N=5866 in all regressions.

Figure 1. The rise and (eventual) decline of nations:
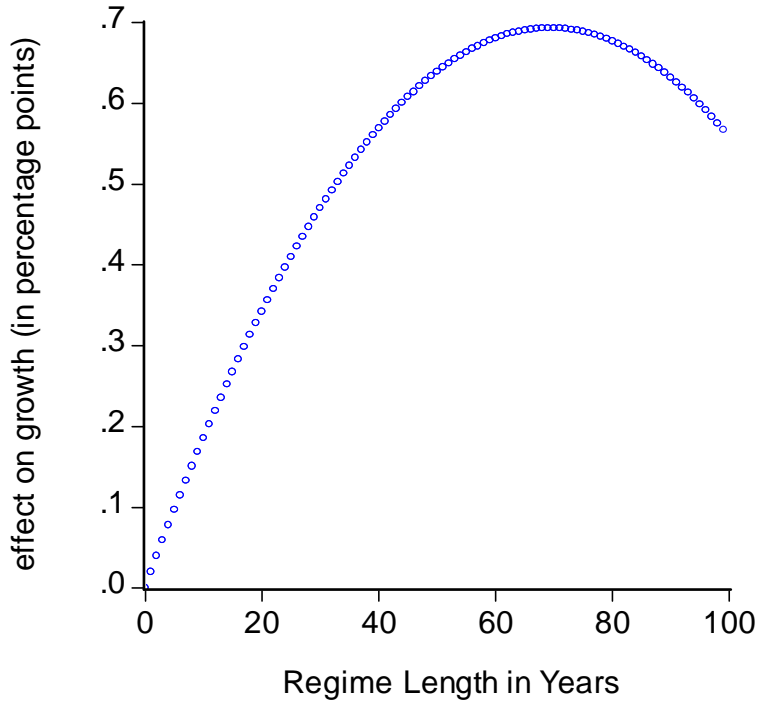Growth effects of Regime Durability

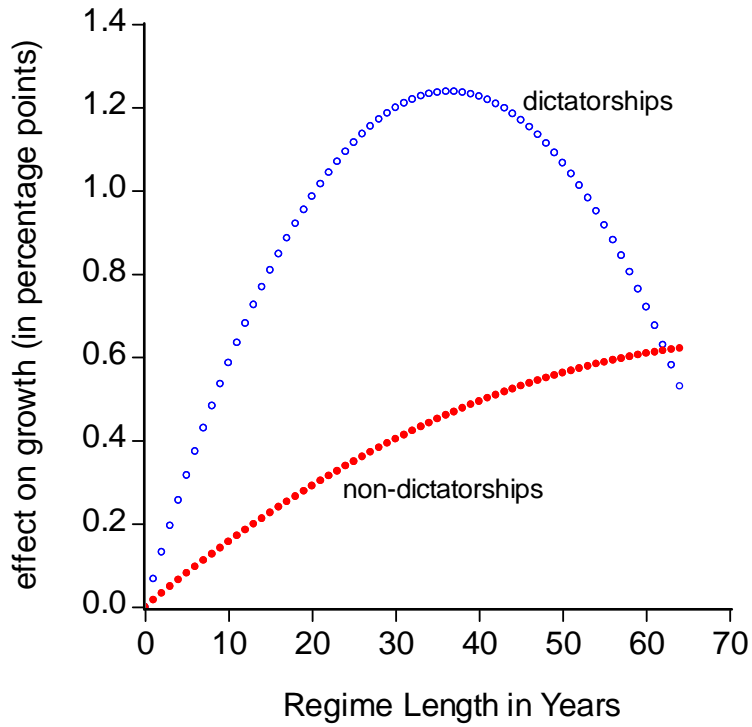Figure 2. The Growth effects of Regime Durability in Dictatorships and Non-Dictatorships

Figure 3. The Combined Growth effects of
Regime Type and Durability