

Why Some Autocracies Perform So Well?

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Abstract

We present evidence that while no democracies perform very poorly, some autocracies perform every bit as well as democracies. We argue that an existing model, the selectorate model, can explain why some autocracies can be expected to perform better than others, but not why some can be expected to perform as well as democracies. We change the model of the economy imbedded in the selectorate model to allow for the possibility that the growth rate in the current periods is an increasing function of the provision of public goods in the prior period. In this more general model high levels of political competition in small winning coalition (W), small selectorate (S) polities creates an incentive for leaders to produce public goods that is not identified in the selectorate model. This added incentive explains why small W, small S polities can be expected to perform as well as democratic regimes. We test a number of implications of our model and find that “overachieving” autocrats tend to be small winning coalition, small selectorate monarchies and military juntas. An important implication of these findings is that democracies promote prosperity because they allow for political contestation, not because they facilitate political inclusion.

The decline of communism at the end of the 20th century brought about yet another “end of ideology.” Capitalism was triumphant, and so, it seems, was democracy. If we were “all socialists” at the end of the 19th century (Harcourt 1887), it seems we became “all democrats” as the 20th century drew to a close.(Dunn 1979.) Across the political spectrum, scholars and pundits agree - if democracy is not the answer, it is an important part of it. Almost all countries use elections to elect at least some of their officials, and those that do not are discussing plans to do so. Leaders in virtually all countries speak well of democracy, though some, echoing Augustine’s prayer for chastity, pray to be made democratic, “but not yet.” Recent administrations in the United States have been so enamored with their own democracy that they have increasingly expressed the desire to export it - either through force or persuasion.

Democracy, like good health, is an unquestioned good. The only debate, it seems, is how to bring it about, and who should pay for it. And yet, there is very little agreement about why democracy is so desirable. More than half a decade ago, Arrow demonstrated that all institutions embody a tension between fairness and decisiveness. Consequently, looking to democracy to provide fair decisions is, at best, problematic. Undaunted by the implications of Arrow’s work regarding the procedural benefits of democracy, many scholars have looked for evidence of democracy’s superiority by examining its consequentialist benefits. Unfortunately, this has turned out to be surprisingly difficult. For example, Przeworski and Limongi (1993) conducted a comprehensive review of the literature on democracy and economic growth and identify that roughly one-third of the papers found democracy to be associated with higher growth, one-third lower growth, and one-third found no statistically significant relationship at all.

We argue that the search for democracy’s benefits have been unproductive because rather than asking “what makes democracy perform so well?”, scholars should be asking “why do some autocracies perform better than expected?” Unfortunately, we suspect that the widespread ideological embrace of democracy has kept many scholars from asking that question. In the next section we show that, across a wide range of indicators, democracy appears to be sufficient, but not nec-

essary, for good social welfare outcomes. It is true, as Amartya Sen has pointed out, that “in the terrible history of famines in the world, no substantial famine has ever occurred in any independent and democratic country with a relatively free press” (Sen 1999) . But it is also true that many non-democratic countries have not experienced famine. In other words, while virtually all democracies have avoided bad outcomes, the converse is not true - non-democracies have no great propensity to avoid good outcomes.

We highlight this visually striking asymmetry in the next section and conclude that if we are to find out what is good about democracies, we need to understand why some autocracies appear to perform every bit as well as democracies - at least in terms of a host of measures of material well-being. In the theoretical section of the paper we argue that selectorate theory provides a clear, microfounded explanation of why some autocracies outperform others (Bueno de Mesquita, Smith, Siverson, and Morrow, 2003), but it can not explain why high performing autocracies *equal* the performance of democracies. We then explain how merging selectorate theory with endogenous growth theory’s assertion that public goods provision can contribute to growth is all that is necessary to produce a theory that allows for a class of autocracies to perform as well as most democracies.

We then present a series of four empirical results. First, because our theory builds directly from selectorate theory, we wish to see test our theory in a way that is comparable to the empirical work of Bueno de Mesquita, Smith, Siverson, and Morrow, 2004. We do this by drawing on the empirical specification of Morrow, Bueno de Mesquita, Siverson, and Smith 2008, except with the modification that the effect of the size of the winning coalition is made conditional on the size of the selectorate. These tests produce three key findings: (1) that the benefits of an increase in the size of the winning coalition are largest and most likely to occur when the selectorate is large; (2) that changes in the size of the winning coalition have no impact on performance once one controls for the ratio of the size of the winning coalition to the size of the selectorate; and (3) that the ratio of the size of the winning coalition to the size of the selectorate positively impact performance.

Combined, these results suggests that performance is a function of the *ratio* of winning coalition size over selectorate size and that improving this ratio (such as increasing the size of the winning coalition when the selectorate is large or shrinking the size of the selectorate when the winning coalition is small) improves performance.

Second, because scholars have raised numerous concerns regarding the measurement of W and S employed by Bueno de Mesquita et al (2003), we also present results from an alternative test that uses the regime classifications from Geddes (1999). These show that “high performing” autocracies tend to be monarchies and military juntas, as our theory predicts. Third, we present results that account for the potential endogeneity present in our empirical specifications: that good performance, particularly a high level of gdp per capita, leads to more democratic institutions. Accounting for this endogeneity using the instrumental variables approach of Acemoglu et al (2001) does not alter our results.

Fourth, [DISCUSS MEDIATION HERE]

We conclude by summarizing our findings and highlighting the similarities between our findings and key insights from a highly influential literature on the predatory theory of the state. That literature allows for the possibility that survival maximizing autocratic leaders might have an incentive to limit their predation and invest in economic growth. We believe we have helped isolate a condition under which such behavior is most likely.

1 Unexplained Heterogeneity in Autocratic Performance

Figure 1 uses cross-sectional averages to show that the relationship between democracy (as measured by higher scores on the widely used Polity index) and a wide range of welfare indicators (logged GDP per capita, Life Expectancy, Skilled Attendance at Birth, Percentage Vaccinated, etc.) exhibits “upper triangularity” - there are almost no observations in the lower right hand corner (countries that score high on the polity index never perform poorly), but there are ample cases

in both the lower left and upper left hand corners (some countries that have low scores on the polity index perform poorly, but some perform very well). This pattern of data suggests that "democracy" is in some sense sufficient, but not necessary for good performance. The one apparent exception is under 5 mortality, which exhibits lower triangularity. While visually different, this plot tells the same story - countries that score high on the polity index never perform poorly with respect in under 5 mortality (i.e. they all have relative low rates of mortality), but there is incredible variety among countries with low scores on the Polity index.

The pattern in these plots is intriguing for at least two reasons. First, and most importantly, what explains the surprising heterogeneity in the policy performances of autocracies? If democracy is as unconditionally beneficial for performance as its proponents suggest, we would expect to find a symmetrical scatter plot - cases in the upper left hand corner would be about as rare as cases in the lower right. But they are not. There is no shortage of cases in the upper left hand corner. While democracy appears to be sufficient to prevent bad outcomes, it is by no means necessary to produce good outcomes. If democracy is the reason why some regimes perform well, why do some regimes perform surprisingly well without it? Following Mackie, (1965) recognizing that democracy is a sufficient, but not necessary for good performance, ought to shift the causal field of inquiry. Mackie argued that exposure to a virus, for example, might be necessary for the transmission of some diseases, but when this is the case, it is not uncommon for only some of the individuals exposed to the virus to contract the disease. Under such circumstances, the causal question shifts from "why did some individuals contract the disease, while others did not," to "why did some individuals who were exposed to the disease contract the disease, while others did not?" Since any statement of a necessary condition is equivalent, by the contrapositive law, to a statement about a sufficient condition, recognition that a factor is a sufficient condition ought to shift the causal field as well. In the present case, recognition that democracy is sufficient to prevent bad outcomes should lead us to shift our inquiry from "why do some countries produce good welfare outcomes?" to "why do some autocracies produce good welfare outcomes, while others do not?"

Second, the triangularity of the relationship between democracy and welfare outcomes may help explain the instability of prior results. If there is a factor that induces autocracies to perform well, then the fact that some studies have found a positive relationship between democracy and performance while others have not may be explained by the fact that the latter used samples containing fewer “high performing” autocracies. In sum, cross-national scatter plots suggest that democracy is sufficient, but not necessary to produce good outcomes. Consequently, attempts to estimate the effects of democracy are likely to produce frustrating results until we understand why some autocracies perform “surprisingly well.”

While modest in number compared to examinations of the effects of democracy, the heterogeneity in the performance of autocratic rulers has garnered increased interest. Acemoglu and Robinson (2005) note that autocratic rulers, if properly motivated, will pursue policies conducive with good economic and social outcomes. However, the mechanism identified by Acemoglu and Robinson is a concern with maintaining popular support so as to avoid widespread civil unrest and insurrection by a sufficiently large number of citizens. This is problematic, as Brownlee (2009) finds that the vast majority of autocratic rulers leave office, not due to widespread riots and unrest, but more quietly via a coup carried out by members of the ruler’s inner circle.

Egorov, Guriev, and Sonin (2009) apply Acemoglu and Robinson’s model to explain how resource abundance can determine why some autocratic rulers provide open media, while others do not. Besley and Kudamatsu (2007) explore the incentive of leaders to provide socially beneficial outcomes more broadly than Egorov, Guriev, and Sonin (by considering high economic growth, high life expectancy, and public schooling), but their theoretical model explains heterogeneous performance in these policy areas as a function of the selectorate’s willingness to tolerate leaders who pursue good policies and leaders who pursue bad policies. Besley and Kudamatsu do not detail what drives the leaders to pursue ‘good’ or ‘bad’ policies. As they state, “We think of this as having a moral stance so that they get no utility from earning rents.” (p. 11).

Ghandi (2008) explores why some authoritarian rulers will create “quasi-democratic” po-

litical institutions, such as legislatures. She claims that such institutions are not merely window dressing, but have real and meaningful implications for the economic performance of the country. However, as Ghandi admits, the mechanism explaining why the broader inclusion of society and its interests within the regime facilitates better economic performance are unclear. She conjectures a number of possibilities. One is that when outside groups have some access to decision-making - even if limited - they may be more willing to make costly and longer term investments because these institutions constitute somewhat of a commitment that, even if not entirely credible, is better than nothing. Another possibility is that institutions facilitate the flow of information between regime and domestic groups so that resources are mobilized and allocated more efficiently. Finally, it may be that because institutions provide a forum in which the requests of domestic groups can be made, those demands are not likely to be made in the street. As she states, “future work lies in determining which mechanisms allow for institutions under dictatorship to improve economic performance.”¹

We begin such future work. Specifically, we draw on the work of Bueno de Mesquita, et.al. (2003), who explain why some autocratic leaders produce better outcomes than others without assuming that leader removal is by popular revolt or that leaders have different preferences over good or bad policies. Instead, they focus on how the way leaders are selected influences the incentives they face. For these reasons we begin our efforts to explain the heterogeneity in autocratic performance, particularly those autocrats who perform just as well as democratic rulers, by building on theirs. Our model will show that, in contrast to Ghandi (2008), it is not *inclusion* that leads to better performance by autocratic regimes, but *contestation* (the threat that the leader can be removed from power).

¹Ghandi 2001, Chapter 5.

2 Explaining Heterogeneity in Autocratic Performance.

In this section we develop an explanation for why some autocracies can be expected to perform as well as the average democracy. We build on the selectorate theory of Bueno de Mesquita, Siverson, Smith and Morrow (2003). Selectorate theory provides a good starting point because it provides a micro founded explanation of why some autocracies perform better than others. However, as currently formulated, selectorate theory predicts that high performing autocracies will, on average, be outperformed by democracies.

Therefore, we build from selectorate theory by incorporating the insights from endogenous growth theory in economics (Romer, 1986). Specifically, we assume that current levels of national income (and, therefore, government revenues) are an increasing function of previous governmental public good provision. This insight from endogenous growth theory enables selectorate theory to explain why some autocracies can perform as well as the average democracy.

A similar argument is made in passing by Knack (2005) in a review of Bueno de Mesquita, Siverson, Smith, and Morrow (2003):

“The authors conclude that ‘doing a bad job is beneficial for those who run a state with the backing of a small coalition.’... The authors are undoubtedly correct in the case of leaders with an insecure hold on power, and therefore short time horizons. But in the long run, revenues for the leader to steal or purchase support will increase if monarchs or other autocrats provide broad public goods - physical infrastructure, legal systems enforcing contract and protecting property, etc. - that promote growth. The selectorate theory neglects feedback from survival to incentives for improved performance.”²

We obviously agree with this argument, but we argue that the variation in leaders ‘time horizons’ is institutionally derived. We argue that the variation in the incentive of autocratic leaders to invest in public goods is institutionally derived. We argue that growth benefits will be felt more in small winning coalition/small selectorate systems (monarchies and military juntas) and, as a result, leaders of such systems will be induced to produce outcomes similar to those expected from

²Knack 2005, p.1070.

large winning coalition/large selectorate systems (i.e. democracies).

2.1 Selectorate Theory Explains Why Some Autocracies Perform better than others

Bueno de Mesquita, Morrow, Siverson, and Smith (Bueno de Mesquita, Siverson, Smith and Morrow 2003) develop a theory, known as the selectorate theory, to explain why some governments produce “peace and prosperity,” while others produce “war and ruin.” We believe their theory goes a long way in explaining why some autocracies perform better than others. According to selectorate theory, an *Incumbent* faces a *Challenger* in competition for a political support coalition large enough to sustain themselves in office. The *Incumbent* (and, potentially, the *Challenger*) has a set of resources at her disposal which can be either consumed, invested in public goods, or distributed to members of her support coalition. The *Incumbent's* goal is to stay in power and to consume as much as possible. Her problem is to distribute public and private goods in such a way as to maintain the support of a sufficiently large coalition to retain office. She does this by offering each member of her coalition a set of public and private goods (x, g) , which they accept in exchange for their continued support, if and only if it is at least as good as what they expect to enjoy under the rule of the *Challenger*. Importantly, members of the incumbent leader's coalition view proposed distributions of public and private goods as credible because they enjoyed such distributions in the last period. They view the *Challenger's* proposed distributions, however, as only partially credible. This is because members of the selectorate suspect that the *Challenger* has an incentive to make offers to more of the incumbent's coalition members than he will actually reward, if given the chance to rule. Specifically, individuals discount the challenger's proposed distributions by their estimation of the probability that they will actually be included in the challenger's support coalition. The *Incumbent* gets the resources it consumes, distributes, or invests by raising revenues through taxation. While, on the one hand, she would like to maximize revenues by raising taxes,

she is constrained from doing so because higher taxes induce members of society to work less and consume more leisure. Since revenues are a proportion of national income, the *Incumbent's* tax policy faces a trade-off: an increase in the tax means a bigger share of a smaller pie. The two core insights from selectorate theory are driven by two key exogenous parameters that capture institutional features of a government: the size of the winning coalition (W) and the size of the selectorate (S). The size of the winning coalition is the minimum number of supporters sufficient to keep a leader in power. The selectorate is the set of people who play a role in choosing the leader. The winning coalition is a subset of the selectorate and each member of the selectorate is a potential member of the winning coalition. Of the two key insights derived from selectorate theory, one has to do with the extent to which leaders consume societal resources, the other has to do with the extent to which they invest or distribute what they do not consume. We will discuss each in turn.

The first result is that leaders will retain a smaller share of the fisc when the ratio of W to S is large, than when this ratio is small. There are two potential intuitions behind this result. On the one hand, when W is small compared to S there is a large number of available substitutes for members of the winning coalition. Thus, since potential supporters (members of S that are not in W) are "a dime a dozen," the incumbent can obtain the support of members of W despite offering them very few private goods. Secondly, members of W cannot credibly threaten to withdraw their support from the *Incumbent* and take up league with the challenger since there is a high probability ($1 - W/S$) that they will be excluded from the challenger's coalition when all is said and done. Thus, when W is small compared to S the *Incumbent* enjoys a "loyalty norm" because members of the winning coalition lack credible exit threats. As a result, the *Incumbent* can buy supporters on the cheap and retain large shares of the fisc for their personal consumption. Put differently, when incumbents do not fear removal at the hands of their political rivals, they will maximize plunder and invest and distribute very little.

The second key result is that a change in the size of the winning coalition (W) changes the

way leaders spend what they do not, themselves, consume. Specifically, as the size of the winning coalition increases, leaders will tend to maintain their support coalition via the provision of public goods (x) rather than through the distribution of private goods (g). The intuition here is that while it is possible to target private goods on the members of the winning coalition when W is small, this becomes difficult when the size of the winning coalition is large.

Eventually, W becomes sufficiently large that it becomes easier to maintain support through the provision of public goods. Put differently, assume a leader has a fixed amount of revenue R to consume, invest, or distribute. If the *Incumbent* spends all of R on public goods this results in a benefit (x) that goes to each member of society - members of the winning coalition and non-members alike. Conversely, if they spend all of R on private goods for their winning coalition, the average member of the winning coalition receives $g = R/W$. If $R/W < x$ then a clientilistic incumbent is vulnerable to replacement by a challenger who promises to provide public goods. In contrast, when $R/W > x$ the converse is true. A "clean government" incumbent is vulnerable to replacement by a challenger who has the potential resources to reward members of the winning coalition with private goods of greater value than the maximal number of public goods consistent with R . Since - holding R constant - an increase in W makes the former easier and the latter harder to satisfy, public goods provision is increasing in W .

The central results of selectorate theory provide a set of expectations about how leader selection affects the policies produced by the leader. Specifically, when W/S is small, leaders will retain a large share of the national fisc for their own consumption, but when W/S is large (i.e. when the leader faces meaningful competition) leaders will retain relatively small shares of the national fisc for their own consumption. Instead, leaders under such circumstances will either distribute private goods to members of their support coalition or invest in public goods. Secondly, all else equal, when W is small, leaders will tend to distribute as private goods to members of their support coalition any share of the national fisc the leaders themselves do not consume. In contrast, all else equal, when W is large, leaders will distribute the share of the national fisc they do not con-

sume in the form of public goods - to be enjoyed by members and non-members of their winning coalition alike. Thus, political institutions affect policy through two channels. Political competition, or what Dahl (1972) called “contestation” (large W/S) deters kleptocracy, while political “inclusion” (large W) induces public goods provision. Systems with a large winning coalition and a large selectorate, therefore, enjoy the benefits of both channels (contestation deters kleptocracy and inclusion induces public goods provision) and, therefore, are expected to produce the best policy outcomes. In contrast, countries with small winning coalitions and large selectorates enjoy the benefits of neither channel — low levels of political competition means rampant theft and corruption by leaders, and a small winning coalition means leaders will stay in power by channeling whatever private goods they do not themselves consume to their cronies. Between these polar extremes, lie systems with small winning coalitions, but relatively small selectorates. Such systems enjoy the benefits of one channel: contestation deters kleptocracy because leaders are forced to share the national fisc with members of their winning coalition, but the small size of the winning coalition leaves the incumbent with little incentive to produce public goods.

If democracy is characterized by large winning coalitions and large ratios of the winning coalition to selectorate size, the selectorate theory explains why democracies perform, on average, better than autocracies. It also explains why some autocracies (small W systems) perform better than others: small W , small S systems perform better than small W , large S systems because the former deters kleptocracy, while the latter does not. But according to the selectorate model, democracies (large W , large systems) are expected to outperform even the best performing autocracies (small W , small S system) because, in addition to deterring kleptocracy, they encourage the provision of public goods. Thus, the selectorate model can explain why some autocracies perform better than others, but it cannot explain why some autocracies perform as good as democracies.

2.2 Selectorate Theory and Endogenous Growth Theory

In this section we argue that the original selectorate theory downplays the investment incentive for public goods provision. In the original selectorate theory, Public goods are consumed by citizens and have no effect on future growth. As a result, there is a straightforward trade off between increased revenues and societal productivity. Because public goods must be paid for by revenues, and revenues are distortionary, the net effect of public goods provision on national income is always negative.

Endogenous growth theory, however, suggest that public goods provisions today can enhance productivity tomorrow (Romer 1986). If this is true, then leaders face a second trade-off. Resources not consumed as private goods - either by themselves or by members of their support coalition - can be invested in public goods, which leads to enhanced productivity tomorrow. But what determines when leaders are willing to accept a smaller share of the pie today, in order to lay claim to a share of a larger pie tomorrow?

The predatory theory of the state and selectorate theory both point to a key characteristic of the leader's environment - political competition. When the size of the winning coalition is small and size of the selectorate is also small, members of the winning coalition have credible exit options. Under these conditions, the leader will retain a smaller share of the national fisc because members of the winning coalition will demand a lot in exchange for their support. Because members of the winning coalition have credible exit threats, the leaders will respond to these demands and be left with an exceedingly small portion of the fisc. This is so because selectorate theory provides the leader with no other option.

If, however, endogenous growth theory is correct and investment in public goods today yields higher levels of national income tomorrow, the leader can increase her utility by investing more in public goods in expectation of reaping a share of a bigger pie tomorrow. If this is true, then selectorate theory may under appreciate the incentive leaders in small W, small S systems have to produce public goods. Note, we are not arguing that leaders invest in public goods because the

members of their coalition will reward them for producing public goods. Instead, we propose that leaders invest in public goods to increase the tax base, thereby enabling them to meet the demands of powerful constituents while retaining a healthy profit.

According to this logic, the general point of the original selectorate theory still pertains: how self-interested leaders are chosen influences the incentives they will have to rule in the public interest or in their own interest. However, if leaders consider the growth implications of current period investments and the potential of that growth to increase their own personal revenues, then this offers a set of predictions that differ in important ways from those of selectorate theory as originally presented by Bueno de Mesquita, Siverson, Smith, and Morrow (2003). As with the original selectorate theory, we expect that performance improves as the ratio of W to S increases. But, if, for the reasons given above, small winning coalition/small selectorate systems perform as well as large winning coalition/large selectorate systems, then the second and, (according to the authors of the selectorate model, primary) insight of selectorate theory - that, holding all else constant, an increase in the size of the winning coalition is expected to lead to better performance - needs to be qualified. Specifically, if our argument is correct, then an increase in the size of the winning coalition will not have a beneficial effect of policy performance or outcomes if the ratio of W/S is held constant.

To understand why this is the case, examine Figure 4. Panel (a) plots expected outcomes for logically possible combinations of W and S . Note that the worst outcomes are expected to occur when the winning coalition size is small and the selectorate is large, the best outcomes are expected to occur when the winning coalition size and selectorate are both large, and middling outcomes are expected when the winning coalition and selectorate size are both small.

Panel (a) of Figure 4 captures the key predictions of selectorate theory. Let us first consider situations in which a country has a large selectorate. Moving from a small winning coalition/large selectorate system to a small winning coalition/small selectorate system is expected bring outcomes from bad to good because the change influences the ratio of W to S and, therefore, the

strength of the loyalty norm. Additionally, moving from a small winning coalition/large selectorate system to a large winning coalition/large selectorate system is expected to bring countries from very poor to very good outcomes because such a change in institutions alters both the ratio of W to S and the size of the winning coalition (thereby influencing both the loyalty norm and the public goods orientation of government). These expectations can be summarized by the following hypothesis:

Hypothesis 1 : *The performance benefits of a change in the winning coalition size will be larger in large selectorate systems than in small selectorate systems.*

We completely agree with this first hypothesis. However, the difference in the predictions of our theory and the original selectorate theory become more clear once one considers small selectorate systems. According to the original selectorate theory (still panel a), a change from a small winning coalition/small selectorate system to a large winning coalition/large selectorate system brings about a change “from good to great.” Thus, even though the loyalty norm (W/S) is held constant, because an increase in W shifts a leader’s focus from private goods to a public goods, an increase in W will lead to an improvement in performance. This can be summarized by the following hypothesis.

Hypothesis 2 : *Holding W/S constant, a change in the winning coalition size will produce better performance.*

Turn now to panel (b). Panel (b) is similar to panel (a) except that it reflects the one important difference between the predictions of our theory and those of original selectorate theory. In our theory, a move from a small winning coalition/large selectorate system to a small winning coalition/small selectorate system moves a country from very poor to very good outcomes because, for the reasons outlined above, it changes both the loyalty norm and the public goods orientation of governments. In contrast, a change from a small winning coalition/small selectorate system to

a large winning coalition/large selectorate system is expected to have little or no effect on policy performance because leaders already have incentives to produce public goods and there is a weakened loyalty norm. Since this last change constitutes a change in the size of the winning coalition, but no change in the ratio of W to S , it leads to the central difference between the predictions of our theory and original selectorate theory: a change in the size of the winning coalition, by itself, is expected to have little effect on policy performance. Rather, a change in the size of the winning coalition is expected to change policy performance and outcomes only if, and *because*, it influences the ratio of W to S . This leads to the final hypothesis:

Hypothesis 3 : *Holding W/S constant, a change in the winning coalition size will have little or no effect on performance.*

Thus, if the original selectorate theory is correct, we should find support for hypotheses 1 and 2. However, if our revised theory is correct, then we should find support for hypotheses 1 and 3.

3 Analysis Using Morrow *et al* 2008 Empirical Specification

3.1 Testing Hypothesis 1

Testing hypothesis one is straightforward. If the effect of the size of the winning coalition depends on the size of the selectorate, then we can evaluate this proposition with a model such as:

$$P = \beta_0 + \beta_1 W + \beta_2 S + \beta_3 W \times S + \Sigma Controls + \epsilon$$

where P is any of a number of indicators of performance such as those in Figure 1, and W and S are indicators of the size of winning coalition and selectorate, respectively. Given this specification, the effect of an increase in winning coalition size is:

$$\frac{\partial P}{\partial W} = \beta_1 + \beta_3 S$$

and hypothesis 1 implies that $\beta_3 > 0$ (if W has an effect, it gets stronger as S increases) and $\beta_1 + \beta_3 S > 0$ (W has an effect) when S is sufficiently large.

To allow our results to be comparable to previous empirical research on selectorate theory, we estimate the above equations using the pooled-cross-sectional time series data from Morrow, Bueno de Mesquita, Siverson, and Smith (2008). This data covers a set of dependent variables similar to those that produced Figure 1.³ We also follow Morrow et al (2008) by including several control variables. First, to separate the effects of division of power and other restraints on the executive from the effects of the size of the winning coalition by including the Polity IV indicator *Executive Constraints* from Marshall and Jaggers 2007 to control for the elements of democracy outside the size of the winning coalition.⁴ Second, following Morrow et al 2008 and Clarke and Stone 2008, we include population size as a control variable. Third, for the five dependent variables that are not GDP per capita, Morrow et al 2008 wish to control for the effect of income that is separate from the effect that political institutions have on income. Therefore, Morrow et al 2008 use two stage least squares to create an instrument for per capita income. Their instrument is to use the predicted values from regressing GDP per capita on variables capturing the proportion of individuals in a country that are Muslim, Protestant, or Catholic and regional dummy variables. Finally, we, like Morrow et al 2008, include fixed effects for the region and the year.

Table 1 presents results using specifications identical to those used by Morrow, et.al. save for the interaction between W and S . For each dependent variable save the first, there are two estimations - first, an extremely sparse specification a second one that controls for population,

³We are grateful to the authors of Morrow, et.al. for making their data and all replication materials publicly available

⁴Morrow et al 2008 normalize XCONST to fall between 0 and 1 to make its range comparable to our measure of W .

executive constraints and Morrow et.al.'s instrument for growth. The equation that uses logged GDP growth as the dependent variable can not be estimated with the Morrow, et.al. instrumental regression strategy because to do so would lead to having the same information on the right and left hand side of the equation.

Table 1 allows us to examine evidence relevant to Hypothesis 1. Both our theory and the original selectorate theory predict that the effect of an increase in the winning coalition will be largest in small selectorate systems. There is some evidence in support of this expectation - the coefficient on the interaction term has the hypothesized sign in every equation and is frequently statistically significant.⁵

In order to see when an increase in W is associated with an increase in performance it helps to plot the estimated effect of a change in winning coalition size across the range of selectorate sizes. Figure 5 reports these plots.⁶ The top row of plots reports results for dependent variables related to broad welfare outcomes while the bottom row of plots address dependent variables that could better be thought of as indicators of health care.

First notice that the plots have positive (negative) slopes whenever the dependent variable is a measure of good (bad) performance. This suggests that the benefits of an increase in the size of W are larger and more likely to occur when the selectorate is large.

Second, these graphs are able to tell us when the estimated effect of an increase in W has a statistically distinguishable effect on performance. An increase in W is estimated to increase the logged per capita GDP whether the selectorate is small or large, but the estimated effect is larger in the latter case. An increase in W is estimated to increase life expectancy and reduce

⁵This coefficient is negative in the infant mortality and low birth weight equations because high infant mortality and a high percentage of low birthweight births are indicators of *poor* performance.

⁶Figure 5 is based upon the models from Table 1 that include controls and the Morrow, et.al.'s strategy to instrument for growth. Stronger results (i.e. smaller standard errors and coefficients more in line with our hypothesis) are obtained when using the sparser specification.

infant mortality only when the selectorate size exceeds about .2. The results are less precisely estimated for the healthcare indicators examined. While the coefficient on the interaction term has the hypothesized sign in each case, the estimated effect of an increase in W is rarely distinguishable from zero. One possible explanation for this increased lack of precision is that these are relatively narrow policy indicators that could be argued to be as much a product of the work of international organizations such as the World Health Organization as reflections of policy decisions by national leaders.

We also estimated, but do not report, models identical to Morrow et.al.'s "model 2" except we replaced their instrument for growth with logged GDP per capita. If political institutions influence life expectancy, infant mortality and health care provision primarily because the increase growth and improvements in these other areas are a consequence of increased growth, we would expect to see the coefficients on W , S and their interaction converge toward zero when growth is included as a control variable - and this is exactly what we observed.⁷ Since we argue that institutions induce good performance in autocratic leaders because they want revenue enhancing growth –not because they have incentives to provide supporters with public goods – it makes sense that there would be little direct relationship between political institutions and indicators of good performance other than growth.

3.2 Testing Hypotheses 2 and 3

To test competing Hypotheses 2 and 3 we need a different model. We are no longer concerned with increases in the size of W under different selectorate sizes. Instead, we want to know if movement along the dotted 45 degree line in Figure 4 (and all lines parallel to it) - i.e. an increase in the size of the winning coalition while holding the loyalty norm constant (W/S) - has an influence on performance. This suggests testing a model in which W and W/S are included as linear additive

⁷The additional results will be made available in an online appendix.

variables.

Table 2 suggests that, at least for logged gdp per capita, life expectancy, and infant mortality, the answer is that it does not. Notice, the pattern that emerges in the first three pairs of columns in table 2. Each pair of columns allows us to compare the effect of a change in winning coalition size while controlling for the ratio of W and S with a specification where such a control is absent. According to Hypothesis 3, the coefficient on W should be statistically significant in the first column in each pair, but be reduced in size and statistical significance in the second column in each pair. Support for Hypothesis 2, however, would be found if the coefficient on W remained relatively unchanged in magnitude and remained statistically significant after controlling for the ratio of W to S .

Since the coefficient for W is greatly reduced and is no longer statistically significant when a control for the ratio between W and S is added in the equations for logged GDP per capita, infant mortality, and life expectancy, the evidence supports hypothesis 3 more than hypothesis 2. Changes in the size of the winning coalition that do not result in a change in the ratio of W to S have little or no influence on policy and performance. As before, the results for the equations using narrow policy measures as the dependent variable are harder to understand. The equations for safe water and prenatal care support neither hypothesis 3, nor hypothesis 2. The equation that uses vaccinations as the dependent variable come closer to supporting hypothesis 2 than 3. There seems to be evidence that an increase in winning coalition size improves vaccination coverage both when the ratio of W to S is included in the equation and when it is not. But the original selectorate model would not anticipate that the effect of an increase in the size of the winning coalition would be five times as large as when the size of the winning coalition is held constant. So these results remain somewhat anomalous.

On the whole, it seems that – at least for broad measures of performance or well-being such as wealth, life expectancy, and the reduction of infant mortality – the evidence supports the revised selectorate model over the original selectorate model. The evidence is consistent with both models

with respect to the conditional effect of an increase in the size of the winning coalition. Such an increase is associated with statistically distinguishable changes in outcomes only when the size of the winning coalition is large. But the data support hypothesis 3 over hypothesis 2 concerning changes in the size of the winning coalition that do not result in a change in the ratio of winning coalition size to selectorate size. This last result suggests that previous evidence related to the benefits of large winning coalition systems have been misinterpreted. In specifications that include both the size of the winning coalition and the size of the selectorate, the coefficient on W should be interpreted as the estimated effect of a change in the winning coalition size *—holding the size of the selectorate constant*. If W changes when the size of the selectorate is held constant, the ratio of W to S necessarily changes. Attempts to infer the effect of a change in W when S is not held constant are also difficult to interpret because many polities with different winning coalition sizes have roughly the same sized selectorate, so changing the size of the winning coalition is once again confounded with a change in the ratio of W to S . Consequently, it is difficult to tell if causal effects attributed to increases in the size of the winning coalition are evidence that changing the size of the winning coalition matters or evidence that changing the ratio of W to S matters. By holding the ratio of W to S constant, our tests suggest that the latter is the case and the former is not. Policy performance seems to improve when the ratio of W to S changes, but not when the size of W alone changes. This is indirect evidence that autocratic countries that perform as well as democracies do so because they are small winning coalition/small selectorate systems. But, and perhaps more importantly, it suggests that good performance is the result of a weakening of the loyalty norm, not the size of the winning coalition. In other words, leaders are induced to invest in public goods and produce favorable material outcomes when members of their winning coalition have credible exit threats. The number of people they “answer to” seems to be much less important.

4 Analysis Using Geddes' 2003 Classification of Autocratic Regimes

Bueno de Mesquita, et. al. suggest that while the size of the selectorate is the salient factor distinguishing varieties of autocracy, traditional classifications of autocratic regimes can be mapped onto differences in selectorate size. Briefly, they assert that single party authoritarian regimes are likely to have small winning coalitions and relatively large selectorates. In contrast, while military juntas and monarchies also have small winning coalitions, they tend to have relatively small selectorates. If this is true and our revision of the selectorate model is correct, democracies ought to perform better than single party authoritarian regimes and personalistic dictatorships, but there should be no systematic difference between the performance of democracies and either military juntas or monarchies. In this section we examine this claim using a cross-sectional data set of 91 developing countries using country averages from 1960-1990.⁸

Geddes (2003) classifies autocratic countries as personalist, military, single-party or amalgams of these pure types. Since every possible combination of the three types occurs in her data set, there are 8 categories in all (including the absence of all three forms of authoritarianism). Geddes classified all authoritarian regimes, except for monarchies, that endured for three or more years between 1946 and 1996. Consequently, the observations in our data set for which each of Geddes' three types are absent can be assumed to be either democracies or monarchies. We used an indicator from the Polity IV data set that identifies constraints on the competitiveness and openness of executive recruitment (i.e. hereditary transfers of power) to identify monarchies. Monarchies and Geddes' authoritarian regimes are disjoint sets except for Haiti from 1971-1985, which Geddes

⁸While time series cross-sectional analysis above makes use of some useful time variant information, the institutional variables with which we are concerned are relatively time invariant, so it is useful to see if the result hold in a cross-sectional analysis. An added benefit of the cross-sectional design is that it releases the analyst from having to specify arbitrary lag structures between independent and dependent variables. (Barro 1998)

codes as personalistic and Polity IV codes as a regime created by a hereditary transfer of power. We have chosen to code Haiti as a personalistic, rather than monarchical regime. Recall that Bueno de Mesquita, et.al., argue that single party systems are likely to be plagued by large selectorates and relatively small winning coalitions. Military regimes and monarchies, in contrast, are likely to have both small selectorates and small winning coalitions. The authors are mute on the structure of personalist regimes and it is uncertain which structural characteristics are likely to prevail in hybrid regimes.

Figure 6 plots the average size of selectorates and winning coalitions of countries during the 1946- 1990 period based on Geddes' regime classifications. As expected, countries not identified by Geddes as having experienced autocracy during this period have, on average, both the largest winning coalitions and the largest selectorates. At the other end of the spectrum, as expected, military regimes have, on average, small selectorates and small winning coalitions. All other autocracies have small winning coalitions compared to democracies, but there is a fair amount of heterogeneity in the size of winning coalitions within autocracies as a group. That said, there is a great deal more heterogeneity across autocratic regimes in the size of their selectorates. As a consequence, there is a great deal of heterogeneity across regimes in terms of the ratio of W to S , and therefore, in the strength of the loyalty norm. As Bueno de Mesquita, et.al. suggest, monarchies are similar to military regimes in having relatively small selectorates to go along with their relatively small winning coalitions. In contrast, single party regimes are likely to have large selectorates and – at least relative to democracies – small winning coalitions. Roughly speaking, these assertions seem to be born out by the evidence. Note also that personalistic dictatorships and most hybrid regimes fall somewhere between single party regimes and monarchies.

If military juntas and monarchies tend to have both small winning coalitions and small selectorates, then our argument suggests they should produce outcomes that are indistinguishable from democracies. If single party autocracies and personalistic dictatorships tend to have small winning coalitions and large selectorates, then our argument predicts they will produce outcomes

that are markedly worse than democracies. To test this claim, we create variables that capture the percentage of time that countries experienced “good” (military juntas or monarchies), “bad” (single party or personalistic dictatorships) or “hybrid” (military regimes that were also either personalistic, single party, or both) forms of autocracy. The percentage of time spent in a democracy is the reference category.

Table 3 reports results from cross-section regressions using the vertical axis of the plots in Figure 1 as the dependent variable and time spent in different types of autocracies as the independent variable (where percentage of time as a democracy is the omitted category). We control for several factors that are expected to be correlated with both performance and regime type. Since we argue that monarchies should outperform many other autocracies and many of the world’s monarchies are mid-east oil states, it is important to separate the effects of monarchy from the effects of oil - whether you believe oil consigns states to under-development or provides them with the means to heap largesse on their citizens. We thus control for the average value of oil and gas production per capita in thousands of constant 2000 US dollars during the period, using data from Ross (2008).⁹ Many scholars have argued that ethnic fragmentation may threaten public goods provision and it may thus have a negative impact on the dependent variables under study. Since ethnic fragmentation has also been linked to the design and viability of political institutions, failure to control could lead to omitted variable bias. Finally, we control for region because the literature on development economics suggests that there are important inter-regional differences in performance and political institutions seem to be regionally clustered.

As Table 3 shows, the percentage of time spent in ‘good’ autocracies is never a statistically significant predictor of government performance, as measured in these six models. This is consis-

⁹Ross (2008) uses oil and gas rents per capita by subtracting country-level extraction costs from the value of oil and gas production and then dividing by population. In private correspondence, however, he suggested foregoing accounting for extraction costs due to the unreliability of those data. We thank Michael Ross for sharing his data as well as for that advice.

tent with our claim that there is no systematic difference between the performance of democracies and military juntas or monarchies. In contrast, the coefficient on the percentage of time spent in ‘bad’ autocracies is statistically significant in all but the infant mortality and vaccinations equations and is signed as expected (positively in the infant mortality equation, negative elsewhere). This suggests that such regimes perform poorly in comparison with democracies (the reference category). Similarly, the coefficient for hybrid regimes is negative (positive for infant mortality) in all equations and statistically significant in four out of six equations. Moreover, a Wald test comparing the coefficients on ‘bad’ versus hybrid regimes is statistically significant only in the equation for water access.

The most important lesson to be drawn from the specifications in Table 3 is that “good autocracies” do not appear to be different in their performance from democracies and “hybrid regimes” do not appear to be different in their performance from “bad” autocracies. In light of these two results, Table 4 presents an alternative specification that collapses the regime classification scheme. The percentage of time spent under ‘bad’ autocratic regimes now includes all years spent under hybrid regimes as well as single-party and personalistic dictatorships. The percentage time spent under ‘good’ regimes (the reference category) now includes all years spent under military juntas, monarchies, and democracies. Having collapsed the categories in this way, the difference in performance between democracies, military juntas, and monarchies on the one hand, and all other regime types on the other, becomes clear. Democracies, military juntas, and monarchies tend to have higher levels of GDP, life expectancy, greater access to water and prenatal care and lower rates of infant mortality than other forms of autocracy and these differences persist even after controlling for the perturbing effects of oil, ethnic fragmentation and regional differences.

Recall, we argued that “good” autocratic regimes perform well not because their leaders have incentives to provide public goods to members of their winning coalition, but rather because the provision of public goods can raise productivity and, therefore, income and revenues. Leaders in these regimes are hungry for revenues to pay for the private goods that members of their winning

coalitions are in a position to bargain effectively for. If this is true, the relationship between regime type and performance on indicators such as infant mortality, life expectancy, access to water and health care seen in Tables 3 and 4 is probably the result of the fact that regime type effects wealth and these other aspects of performance are simply a consequence of higher wealth levels. According to our argument, good performance on these other indicators is, in other words, a positive externality of the attempt by leaders of small W , small S systems to increase the size of the pie used to generate revenues. If this is true, the observed relationship between regime type and life expectancy, infant mortality, access to water, and healthcare should vanish when we control for wealth. That is precisely what is observed in table 5, indicating that there is no direct relationship between regime type and such performance indicators. Regime type effects income, and high levels of income produces these other desirable outcomes.¹⁰

The relationship between W and S and traditional regime classifications suggests a way to check to see if our revision of the selectorate model provides an explanation for the empirical puzzle with which this paper began. If the high performing autocracies (in the top left of most of the plots in Figure 1) can be explained by the fact that they are small- W , small- S systems, and small- W , small- S systems tend to be monarchies and military juntas, then the countries in the top left hand corner of those graphs should be primarily comprised of military juntas and monarchies. Similarly, if the observations in the bottom left hand corner of the plots in Figure 1 are small- W , large- S systems and these systems tend to be single-party autocracies or personalistic dictatorships, then the observations in the bottom left hand corner ought to be mostly single party

¹⁰Note also that once we control for wealth, none of the regional dummy variables are significant except for Africa are statistically significant. This suggests that if all regions save Africa were equally wealthy, we would not observe regional differences in other areas of government performance. Conversely, the large and significant coefficients on the African dummy variables suggest that relatively poor performance in African states can not be explained by the continent's poverty alone.

and personalistic regimes.

To examine this implication, we create a tripartite classification based on the share of time spent under a “bad” regime. Specifically, “bad” regimes are single party regimes, personalistic regimes, and hybrid regimes that contain elements of these regimes. For ease of presentation, we then divide cases into three categories - countries ruled by a “bad” regime for more than 66 percent of the time, countries ruled by a bad regime less than 33 percent of the time, and countries that spent substantial amounts of time under both good and bad regimes (i.e. they were ruled by a “bad” regime for more than 33 percent and less than 66 percent of the time).

Figure 7 reprises the scatterplots we used to motivate our puzzle, but breaks down observations in terms of the time spent under “bad” regimes. We draw your attention first to the logged GDP per capita plot. Notice that with very few exceptions, the high performing autocracies (i.e. cases in the upper-left quadrant) spent little time under “bad” regimes. This is another way of saying that they were either monarchies or military juntas - as our revision of the selectorate model would predict. Conversely, the observations in the lower left hand corner are comprised almost exclusively of countries that experienced “bad” regimes (single party, personalistic, or hybrid) for most of the observed period. Furthermore, if one removed military juntas and monarchies (observations with low polity scores and marked by +) from the scatter plot, the aforementioned “upper triangularity” of the data would disappear. Put differently, if one removed military juntas and monarchies from the sample it would be easy to apprehend a positive relationship between democracy and growth.

Some qualification of these remarks is required, however, when we look at the other indicators of government performance. According to these other indicators, many of the high performing autocracies are, in fact, military juntas and monarchies. In addition, military juntas and monarchies are almost never present amongst the poor performing autocracies. All of which is consistent with our expectations. What remains to be explained, however, is the presence amongst the higher performing autocracies of countries ruled by “bad” autocratic regimes for substantial portions of

the observed period. As with democracies, being a military junta or monarchy appears, in some sense, to be a sufficient, but not necessary condition for good performance. Thus, some humility is warranted in that we appear to have explained some – but not all – of the high performing autocracies.

5 Accounting for the Endogeneity of Wealth and Institutions

Given the large literature examining the effect of wealth on democracy (Przeworski and Limongi 1993, Londregan and Poole 1996, Boix and Stokes, 2003, Epstein, Bates, Goldstone, Kristensen, and O’Halloran 2006), some readers may be concerned that political institutions such as the size of the winning coalition and selectorate may be endogenous to economic performance. Such a concern is not addressed in Bueuno de Mesquita, et al (2003), the critique of this work by Clarke and Stone (2008), nor in the response by Morrow et al (2008), because the authors of the selectorate model are adamant that W and S are not proxies for democracy. However, W and S are clearly correlated with democracy. Therefore, if democracy is endogenous to wealth, then W and S are also likely to be endogenous to wealth. For this reason, we conduct two tests that account for this endogeneity.

First, in the time series analysis, we lag the independent variables at least 10 years and then regress log GDP per capita in period t on values of the independent variables in period $t - 10$ (the ten period lag can be extended and the results hold). Table 5 shows that, once again, including W/S leads to the effect of W (which is significant without W/S in the model) to become statistically insignificant.¹¹

Second, for the cross sectional analysis, we conduct two stage least squares (2SLS) using the log of settler mortality from Acemoglu, Johnson, and Robinson (2001) as an instrument for percentage of time in a “bad” government system. This instrumental variables regression increases the

¹¹Replication materials for these tests and all tests are available upon request.

magnitude of the negative impact of “bad” institutions on economic development (similar results are obtained on the other dependent variables). Table 6 shows that coefficient in this regression is found to be statistically insignificant at standard confidence levels, but this is due to the 2SLS regression cutting our sample from 91 observations to 51 observations.¹²

6 Identifying the Mechanism with Mediation Analysis

We have argued that leaders of small W , small S countries should be particularly keen to invest in productivity enhancing public goods in order to increase the size of the economic pie - not because they are eager to produce socially optimal outcomes, but because they need to maximize revenue in order to pay of their rapacious coalition members. But to this point we have only demonstrated an association between the ratio of winning coalition to selectorate size and various measure of government performance. In this section we attempt to determine, to the extent possible with the available evidence, whether there is evidence in support of our posited mechanism.

One-way to examine the operation of a causal mechanism is through so called “mediation analysis” (Baron and Kenney 1986). The logic of mediation analysis is that if X causes Y through some mediator variable M , then we can specify two equations aimed at exploring the relationship between X and Y - one where M is present and one where it is absent. The coefficient on the variable capturing the remote cause in the former measures the “total effect” of X on Y - that is, the both the effect through the purported mechanism and directly. In contrast, the coefficient on the variable in the latter equation captures the “direct” effect of X on Y - that is, the relationship between X and Y other than through purported mechanism. The coefficient on M in the latter equation captures the “direct effect” of the mechanism on the outcome of interest. If M is part of the mechanism linking X and Y , then we would expected the coefficient capturing the total effect to be non-zero, the coefficient capturing the direct effect of X on Y to be substantially smaller in

¹²Again, results are available upon request.

than the “total effect” and the coefficient capturing the direct effect of M to be substantively and statistically significant.

Criticisms have been raised about this “causal steps” approach to mediation analysis. For example, MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) point out that the “causal steps” approach does not provide a joint hypothesis test for the coefficients mentioned above and does not extend easily to the case where multiple mediating variables may exist. Imai, Keely, Tingley and Yamamoto (2010) point out that though the traditional approaches to mediation analysis can demonstrate how accounting for the mediator variable in the regression will statistically eliminate the direct effect of the remote cause, it does not properly reflect an underlying, and necessary, assumption of mediation analysis: the observed mediator status is “as if” randomly assigned conditional on the variable capturing the treatment variable (in our case, $\frac{W}{S}$) and the covariates.¹³ However, Imai, Keele, and Tingley (2010) and Imai, Keele, Tingley, and Yamamoto (2010) offer an approach for conducting mediation analysis that accomodates this assumption. Their approach does this by, in essence, simultaneously estimating two models: one model in which the mediator variable is regressed on the treatment variable and the other covariates and a second model in which the dependent variable is regressed on the treatment variable, mediator variable, and control variables. This approach allows the researcher to properly identify the effect of the mediator variable on the dependent variable, the direct effect of the treatment variable on the dependent variable, and the proportion of the effect of the treatment variable that is accounted for by the mediator variable. We report results using this new method here. Similar results were found using the traditional method.¹⁴

Building on endogenous growth theory, we posit that leaders of small W , small S have a previously under-appreciated incentive to invest in productivity enhancing public goods but endogenous growth theory does not provide a either a comprehensive list of such public goods, nor a

¹³See Imai, Keele, Tingley, and Yamamoto 2010, p. 131.

¹⁴available upon request

prediction about which types of investments governments are most likely to make under particular circumstances. Consequently, there is a reason to believe there are a large number of investment strategies that such a government can pursue. Because we have not idea what the complete list of investment options a government might pursue, an analysis of any particular productivity enhancing public good is likely to miss part of the mechanism that is operative. This should make it difficult for us to find evidence for our mechanism through mediation analysis. But if we do find some evidence of mediation, it should encourage us that we are on the right track.

The productivity-enhancing investment most likely to affect national income (and therefore, the revenue desired by the autocratic leader) is likely to depend on the level of development. In the sample examined in this paper, a great deal can be accomplished the investment in basic infrastructure. A need shared by a wide range of countries is the creation of a reliable network of roads. Consequently, we will use government expenditures on new roads as the proxy for our posited mechanism. (foot note data source).

Table 8 reports the results from applying the Imai, Keele, Tingley, and Yamamoto (2010) estimation procedure to our data.¹⁵ The row titled “Mediate Effect of *New Construction*” reports the coefficient on the mediation variable and provides the 0.95 confidence interval. One can see that the confidence interval does not include zero, thereby indicating that *New Construction* has a statistically significant positive effect on GDP per capita. More importantly, the row labeled “Direct Effect of *W over S*” shows that W/S no longer has a statistically significant positive impact on GDP per capita. This is confirmed in the final row, which reports that 88 percent of the total effect of W/S on GDP per capita is explained by the mediating variable *New Construction*. This is rather strong evidence that we have identified a mechanism through which W/S leads to higher levels of wealth.

¹⁵Results obtained using the MEDITATE function in R, written by Imai, Keele, Tingley, and Yamamoto (2010).

7 Discussion: The Predatory Theory of the State

The central question for authors associated with the predatory theory of the state is when will leaders' pursuit of political survival cause them to act in ways that also benefit society. That is, given their (near) monopoly control on the use of violence, why do some leaders extract as much as possible from those they rule, when do some leaders allow citizens to retain larger shares of the value they produce, and when do leaders invest in the productivity of society? We believe each of their answers can be understood from the standpoint of a revised version of the selectorate model. A key insight of the predatory theory of the state is that substantial differences in the strategies of leaders can be found - well before the rise of democracy. The crucial factor is that when leaders must depend on resources created by the citizens they rule over, they may have incentives to see that those citizens are productive. The explanation we offer for high performing autocracies helps us identify when and why this is the case.

The selectorate model can be seen as an outgrowth of a series of studies related to the "predatory theory of the state." A diverse set of scholars including sociologist Charles Tilly, political scientists Margaret Levi, and economists Douglas North and Mancur Olson sought to explain the rise of nation states in western Europe as an unintentional consequence of the survival maximizing behavior of political entrepreneurs. While there are important difference between their accounts, the common thread is this - rulers derive benefits from staying in power and they stay in power by offering protection in exchange for resources. They use these resources for their own consumption and to purchase the means to control violence — and hence, stay in power. The exact nature of the relationship between ruler and ruled is determined by the bargaining power of the actors involved.¹⁶ In the words of Charles Tilly, the leaders' struggle for survival

¹⁶There are three key distinctions between the "predatory theory of the state" and its traditional counterpart, the contractarian view of the state." First, political entrepreneurs do not wait to be "chosen" by populations. They seize power and then use the resources of power they seize to

“involved them willy-nilly in the extraction of resources for war making from the populations over which they had control and in the promotion of capital accumulation by those who could help them borrow and buy. War making, extraction, and capital accumulation interacted to shape European state making.” (1985, p. 172).

The key insight of this literature, which is shared by the selectorate model and much of the related public choice literature, is that variations in the behavior of leaders across space and time are best explained, not by variations in the tastes, goals, or other attributes of the leaders, but by differences in the environment in which they find themselves. Leaders everywhere want to stay in power, but the authors associated with the predatory theory of the state all suggest that under certain conditions leaders’ pursuit of survival may be consistent with choices that also benefit society.

Charles Tilly, for example, emphasizes that geo-political pressures –what he calls the “need to eliminate external rivals” creates a need for leaders to raise an effective army and, therefore, to maximize revenue extraction. This need for revenues causes leaders to encourage capital accumulation in order to expand the tax base.

North similarly stresses competitive pressures:

“The ruler always has rivals: competing states or potential rulers within his own state. The latter are analogous to the potential rivals to a monopolist. Where there are no close substitutes, the ruler is a despot, a dictator, or an absolute monarch. The closer the substitutes, the fewer degrees of freedom the ruler possesses, and the greater the percentage of incremental income that will be retained by the constituents. The opportunity cost of each of the various constituents...will dictate the bargaining power each group has in the specification of property rights, as well as the tax burden it will

attempt to maintain control. Second, leaders are, at least potentially, one of the things that citizens need protection from. Finally, governments do not arise as a result of some moment of conscious choice on the part of citizens.

incur. Opportunity costs will also dictate allocation of services provided by the ruler (to the degree that they are not pure public goods), since the ruler will provide greater services to those with close alternatives than to those with none.”(North, 1982:27)

The selectorate model identifies the institutional conditions under which the incumbent’s constituents will have such alternatives - when the ratio of the winning coalition to the selectorate is large. Under such conditions, members of the leader’s winning coalition can more credibly threaten to accept the challenger’s offer and incumbents will, therefore, have to work harder to retain their supporters. This induces in the leader a need to raise revenues which, in our model encourages autocratic leaders in small winning coalition/small selectorate systems to invest in public goods – not to improve the utility of supporters directly but to enhance revenue-generating income that can be used to supply supporters with private goods.

Olson’s (1993) argument concerning the conditions under which “roving bandits” will settle down and become “stationary bandits” is relevant as well. Roving bandits extract whatever they can from whomever they encounter, stationary bandits establish an ongoing relationship with their victims which induces in them a desire to see their victims prosper. Why? Because they have monopolized extraction and will, therefore, have more to steal if their community is prosperous than if it is destitute. Olson then goes on to compare the extent to which autocrats and democrats are likely to approximate roving or stationary bandits. Importantly, he recognizes that because autocrats can keep what they do not distribute, they have an incentive to be concerned with the overall productivity in society that may be absent in democratic leaders. But he is concerned about autocrats’ inability to credibly commit to forebear from *ex post changes* in property rights. The explanation we offer in this paper suggests such promises are going to be most credible when members of the incumbent’s winning coalition have credible exit options - that is when the ratio of W to S is large.

The central puzzle for the predatory theory of the state is why leaders with a monopoly on the use of force are sometimes constrained from using their power to enrich themselves at the expense

of those they rule. Tilly, North, and Olson all point, in their own way, to the crucial role played by political competition in explaining the variation in state development in the early modern period. With the help of the selectorate model, our explanation and the empirical results presented in this paper suggest that political competition continues to play a crucial role in explaining variation in performance today.

8 Conclusion

Our goal was to explain why, with respect to social welfare outcomes, some autocracies perform as well as democracies. We demonstrated how the original selectorate theory of Bueno de Mesquita, Morrow, Siverson, and Smith (2003) explains why some autocracies perform better than others, but can not explain why they might perform every bit as well as democracies. We then altered the standard conception of the economy in selectorate theory by considering the “endogenous growth theory” claim that current income levels can be increased by government investment in productivity enhancing public goods. We claimed that this growth benefit will be quite strong in small winning coalition/small selectorate systems and, therefore, it should induce leaders of such systems to produce outcomes similar to those expected from large winning coalition/large selectorate systems (i.e. democracies). We then presented evidence that is consistent with our revised version of selectorate theory. Specifically, at least as far as broad outcomes such as growth, infant mortality, and life expectancy are concerned, countries with larger winning coalitions do not perform better than countries with small coalitions if the ratio of W to S is held constant. This suggests that autocrats that perform surprisingly well do so because they are small winning coalition/small selectorate systems.

We also find evidence consistent with our argument using Geddes’ classification of authoritarian regimes. Consistent with the original selectorate model as well as our extension, much of the heterogeneity in autocratic performance can be explained by the fact that high performing autocra-

cies tend to be military juntas and monarchies. Consistent with our extension, but not the original selectorate model, military juntas and monarchies appear to perform as well as democracies. The existence of high performing authoritarian regimes that are not monarchies or military juntas suggest that, like democracies, these later regime types appear to be sufficient, but not necessary for good performance.

While we recognize the preliminary nature of our findings, if these findings are true, they are important. They suggest that it is not the *number* of supporters a leader must satisfy that determines whether the leader will have incentives to produce outcomes that benefit broad segments of society, but rather, it is the *power* of those supporters that matters. Specifically, if members of the incumbent's support coalition can credibly threaten to support a challenger, incumbent autocrats can be induced to behave in a manner quite similar to democratic leaders.

Democratic theory places a great deal of emphasis on the expansion of the franchise and the benefits of institutions that represent the interests of large portions of society. For this reason we may find high functioning autocracies surprising. But there are at least two reasons why we should not be all that surprised. First, modern economic theory tells us that it is not the number of firms in a market that determines whether firms will price their products in ways that allow them to seize the lion's share of consumer surplus. Instead, the key is whether incumbent firms face the real threat of market entry from potential competitors. If there are no barriers to entry, then incumbent firms must set prices at or near the competitive market equilibrium even if one seller dominates the market. Second, Aristotle argued that while it is useful to categorize political systems in terms of the number of rulers (roughly, and recognizing that he was not thinking in terms of representative government, the size of the winning coalition), there were corrupt and virtuous forms of government at any size. The important thing to Aristotle was not, *by whom*, but *for whom* the rulers ruled. Our model suggests that some autocratic leaders have incentives to rule solely for themselves, but others have incentives to rule in the interest of the many. While classical political theory would have explained "rule for the many" by reference to the beneficent character

of the leader, the our model suggests that it is precisely the self-interested character of the leader that opens up the possibility for differences in institutional structures to induce some leaders to act in the interest of the many (McGillivray and Smith 2008). In this paper we demonstrate that there are conditions where this can happen even when the many are ruled by the few. Specifically, we find that when leaders experience serious threats from challengers capable of luring supporters away, they are induced to search for revenues to with which they can purchase the support of fickle coalition members. This search leads them to enact policies that expand national income and, hence, the revenue base. Good performance in this respect, is a positive externality that has little to do with the desire of leaders to shower their supporters, let alone society, with blessings. As a result, it appears to have little to do with the size of the leader's support coalition. In this respect, our results show that it is contestation, not inclusion, that induces socially beneficial policies.

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Table 1: The Effect of W, conditional on S in BdM²S²'s Cross-Sectional Time Series Data Set

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	log GDP per capita: WBDI 2001	Life Expect at birth total in years		Infant Mort rate per 1,000 live births		Immune DPT % children <12 months		Safe Water		Low Birth Weight	
W	0.94*** (0.26)	4.54** (1.86)	3.14 (2.00)	-19.13** (8.80)	-14.00 (10.04)	-3.72 (12.67)	-10.50 (13.40)	8.70 (7.81)	-4.68 (13.26)	-4.80 (5.78)	-0.39 (5.58)
S	-1.08*** (0.08)	-3.69*** (0.60)	-1.02 (0.67)	15.68*** (2.72)	8.33** (3.27)	-7.85* (4.17)	-7.30 (4.76)	2.74 (2.20)	2.14 (3.41)	4.36** (1.71)	1.48 (1.60)
WS	1.51*** (0.28)	7.39*** (1.98)	1.57 (2.17)	-30.38*** (9.29)	-15.87 (10.82)	28.89** (13.91)	28.80* (14.86)	10.12 (8.07)	21.19 (13.63)	-6.00 (6.05)	-3.58 (5.89)
Exec. Constraints	0.22*** (0.08)	1.19* (0.61)	2.48*** (0.70)	-3.64 (2.71)	-5.33 (3.28)	2.61 (4.57)	5.71 (5.19)	-3.65* (2.11)	-1.53 (3.55)	3.64** (1.55)	2.43 (1.63)
log of population			-0.10 (0.10)		1.23*** (0.41)		-2.62*** (0.77)		-1.79*** (0.47)		0.06 (0.21)
Fitted values			3.56*** (0.22)		-12.82*** (0.97)		5.24*** (1.73)		5.24*** (1.12)		-3.02*** (0.46)
Constant	6.82*** (0.06)	56.92*** (0.45)	31.44*** (2.31)	77.06*** (2.10)	159.64*** (10.40)	54.00*** (3.04)	56.47*** (17.60)	57.70*** (1.80)	38.42*** (11.53)	10.91*** (1.40)	32.27*** (4.94)
No.	4255.00	2393.00	1407.00	3000.00	1842.00	489.00	328.00	2363.00	1053.00	584.00	366.00

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table 2: The Effect of W Holding W/S Constant

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	log GDP per capita: WBDI 2001		Life Expect at birth total in years	Infant Mort rate per 1,000 live births	Immune DPT % children <12 months	Safe Water	Low Birth Weigh					
W	1.22*** (0.10)	-1.55** (0.74)	4.34*** (0.86)	2.37 (5.92)	-24.68*** (4.09)	-19.49 (29.78)	9.96 (6.23)	57.44 (40.61)	22.53*** (4.53)	100.54*** (38.63)	-2.60 (1.99)	-3.30 (17.11)
Exec. Constraints	0.64*** (0.08)	0.50*** (0.08)	2.32*** (0.66)	2.83*** (0.66)	-5.62* (3.11)	-7.97** (3.12)	9.04* (4.92)	8.11 (4.98)	-4.07 (3.43)	-2.11 (3.42)	1.96 (1.54)	1.96 (1.55)
log of population	-0.09*** (0.01)	-0.07*** (0.01)	-0.08 (0.10)	-0.11 (0.10)	1.19*** (0.42)	1.26*** (0.42)	-2.61*** (0.77)	-2.62*** (0.77)	-1.68*** (0.48)	-1.78*** (0.47)	0.06 (0.21)	0.06 (0.21)
W/S		3.05*** (0.73)		1.21 (5.84)		-1.61 (29.44)		-46.76 (39.51)		-81.96** (38.60)		0.71 (17.00)
Fitted values			3.63*** (0.22)	3.64*** (0.22)	-13.44*** (0.95)	-13.47*** (0.94)	5.51*** (1.72)	5.61*** (1.72)	4.84*** (1.11)	5.09*** (1.10)	-3.13*** (0.44)	-3.14** (0.44)
Constant	7.85*** (0.17)	7.44*** (0.18)	29.94*** (2.24)	30.47*** (2.22)	169.70*** (10.04)	167.52*** (9.94)	50.63*** (17.23)	50.52*** (17.22)	38.52*** (11.17)	40.35*** (11.03)	33.94*** (4.57)	33.96** (4.59)
No.	4314.00	4255.00	1415.00	1407.00	1850.00	1842.00	328.00	328.00	1063.00	1053.00	366.00	366.00

Note: W/S transformed to avoid division by zero: = $W / (\log((s + 1) * 10) / 3)$

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table 3: Regime Types and Public Goods Provision

	GDP per capita	Life Expectancy	Infant Mortality	Water Access	Vaccinations	Prenatal Care
% time in 'good' non-democracy	-0.05 (0.29)	-1.86 (2.93)	3.64 (15.71)	-11.81 (8.00)	0.43 (7.87)	-10.79 (10.83)
% time in 'bad' non-democracy	-0.49** (0.19)	-4.67** (1.98)	16.11 (10.49)	-9.46* (5.64)	-5.24 (5.31)	-13.89* (7.38)
% time in hybrid regime	-0.49* (0.26)	-5.13* (2.71)	20.27 (14.49)	-25.13*** (7.36)	-3.43 (7.26)	-24.03** (10.53)
Mean oil and gas production per capita	0.00*** (0.00)	0.00* (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00** (0.00)
Ethnic fragmentation	-0.08 (0.32)	-1.66 (3.26)	13.59 (17.43)	-3.77 (8.95)	-3.60 (8.74)	-16.16 (11.99)
East Asia	0.79** (0.32)	4.13 (3.26)	-26.28 (17.32)	-2.10 (8.95)	-1.98 (8.74)	25.01** (11.79)
Latin America	0.84** (0.32)	7.49** (3.26)	-33.02* (17.47)	4.86 (8.82)	-4.30 (8.75)	14.20 (11.72)
Africa	0.06 (0.29)	-8.20*** (3.01)	19.57 (16.12)	-13.90* (8.19)	-14.97* (8.08)	6.79 (10.91)
Middle East	0.85** (0.35)	4.82 (3.57)	-23.95 (19.14)	16.48* (9.67)	3.20 (9.59)	4.63 (13.30)
Constant	7.68*** (0.34)	62.82*** (3.52)	62.40*** (18.86)	75.46*** (9.53)	85.66*** (9.45)	67.54*** (12.71)
No.	91.00	90.00	91.00	86.00	90.00	84.00

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table 4: Regime Types and Public Goods Provision

	GDP per capita	Life Expectancy	Infant Mortality	Water Access	Vaccinations	Prenatal Care
% time in 'bad' regime	-0.47*** (0.15)	-4.24*** (1.60)	16.18* (8.50)	-10.60** (4.64)	-4.85 (4.28)	-13.04** (6.00)
Mean oil and gas production per capita	0.00*** (0.00)	0.00* (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00** (0.00)
Ethnic fragmentation	-0.09 (0.31)	-1.82 (3.21)	13.67 (17.13)	-3.81 (9.12)	-3.70 (8.58)	-16.46 (11.83)
East Asia	0.79** (0.31)	4.03 (3.22)	-26.17 (17.10)	-3.21 (9.18)	-1.98 (8.62)	24.23** (11.75)
Latin America	0.84*** (0.31)	7.40** (3.23)	-32.69* (17.24)	3.70 (9.05)	-4.20 (8.64)	13.36 (11.69)
Africa	0.06 (0.29)	-8.20*** (2.98)	19.35 (15.91)	-12.99 (8.39)	-15.08* (7.97)	7.21 (10.86)
Middle East	0.84** (0.34)	4.35 (3.46)	-22.58 (18.49)	11.77 (9.71)	3.55 (9.26)	0.82 (12.91)
Constant	7.67*** (0.34)	62.47*** (3.45)	63.12*** (18.42)	73.21*** (9.68)	85.75*** (9.23)	65.23*** (12.55)
No.	91.00	90.00	91.00	86.00	90.00	84.00

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table 5: GDP per Capita Model, With W/S lagged 10 years

	(1)	(2)
W	0.17*** (0.03)	0.01 (0.16)
Executive Constraints	-0.07** (0.03)	-0.03 (0.03)
log of population	0.22*** (0.02)	0.22*** (0.02)
W/S		0.11 (0.15)
Constant	4.03*** (0.33)	4.03*** (0.35)
No.	2652	2605

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table 6: GDP per Capita Model, Instrumental Variables Regression Results (Main Equation)

	(1)
Instrument (Fitted Values)	-2.98 (2.98)
Mean oil and gas production per capita	0.00 (0.01)
Ethnic fragmentation	0.37 (0.97)
East Asia	0.89 (0.96)
Latin America	0.96 (0.83)
Africa	-0.01 (0.81)
Middle East	0.88 (1.02)
Constant	8.76*** (1.69)
No.	51

Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

Table 7: W/S With Expenditure on New Road Construction, Logit Results

	Base Model	Base Model w/ New Road Construction
Winning Coalition size	-4.38** (1.72)	-0.86 (1.43)
W/S	5.64*** (1.74)	1.46 (1.45)
Executive Constraints	0.89*** (0.19)	0.73*** (0.15)
log of population (World Bank)	-0.00 (0.03)	-0.31*** (0.03)
Expenditure on Road Construction		1.88*** (0.12)
Constant	6.90*** (0.44)	9.58*** (0.40)
No.	690	690

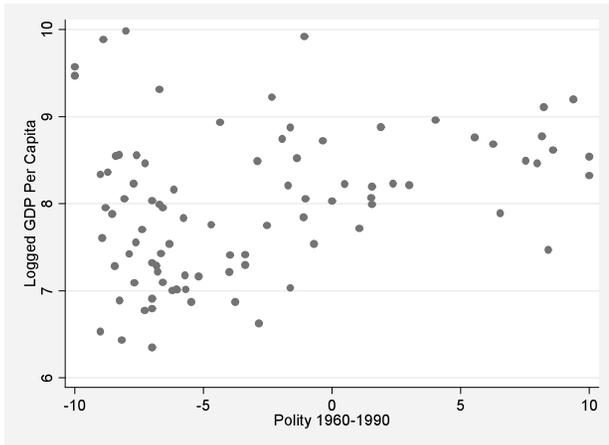
Note: Base Model estimated on observations for which Road Expenditures are available
Standard errors in parentheses

* p<0.10, ** p<0.05, *** p<0.01

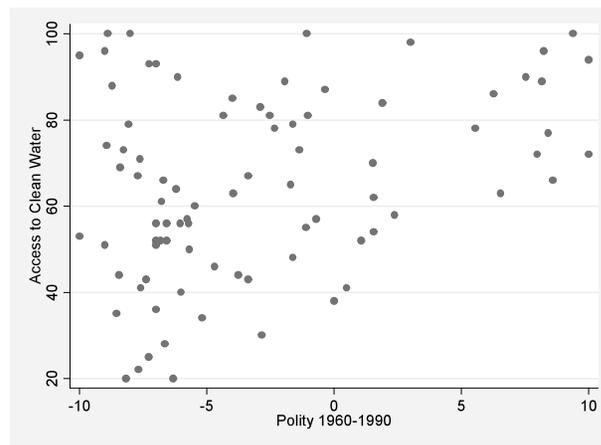
Table 8: Causal Mediation Analysis

Effect	Estimate of Effect	.95 Upper Bound	0.95 Lower Bound
Mediate Effect of <i>New Construction</i>	2.89	4.57	1.14
Direct Effect of <i>W over S</i>	0.42	2.35	-1.51
Total Effect	3.31	5.85	0.74
Proportion of Total Effect via Mediation	0.88	3.18	0.48
Reports Quasi-Bayesian Confidence Intervals			

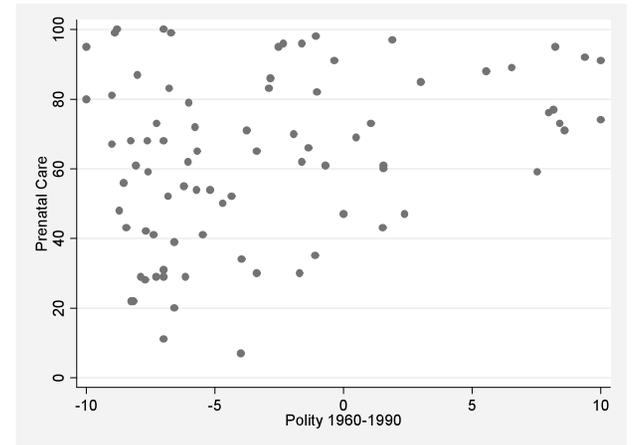
FIGURE 1: Relationship Between Polity Score and Public Good Provision



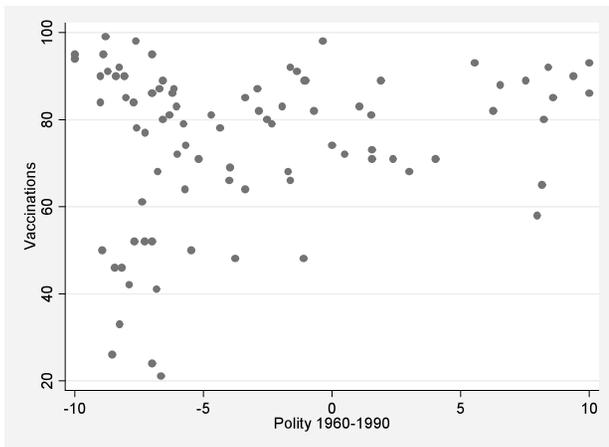
LOG GDP Per CAPITA



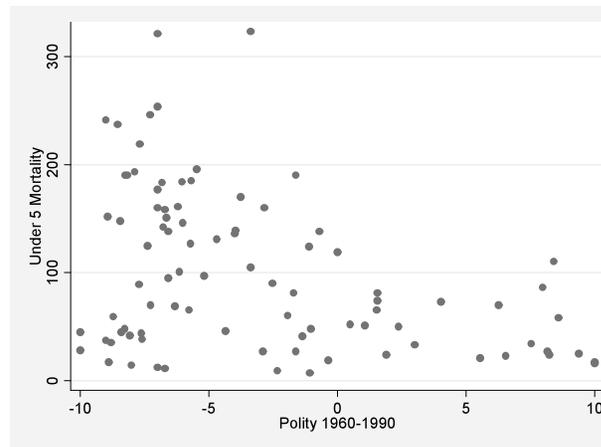
ACCESS TO CLEAN WATER



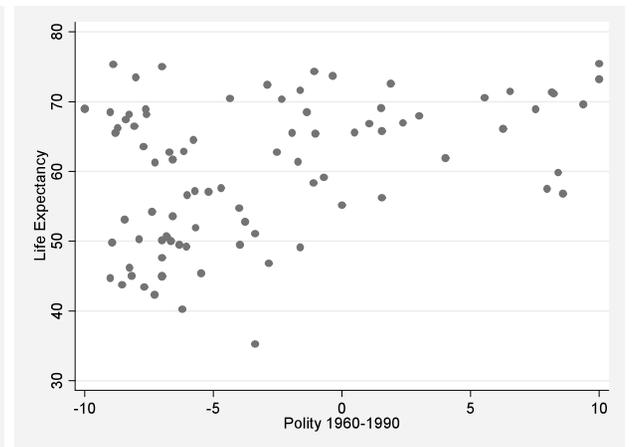
PRENATAL CARE



VACCINATIONS

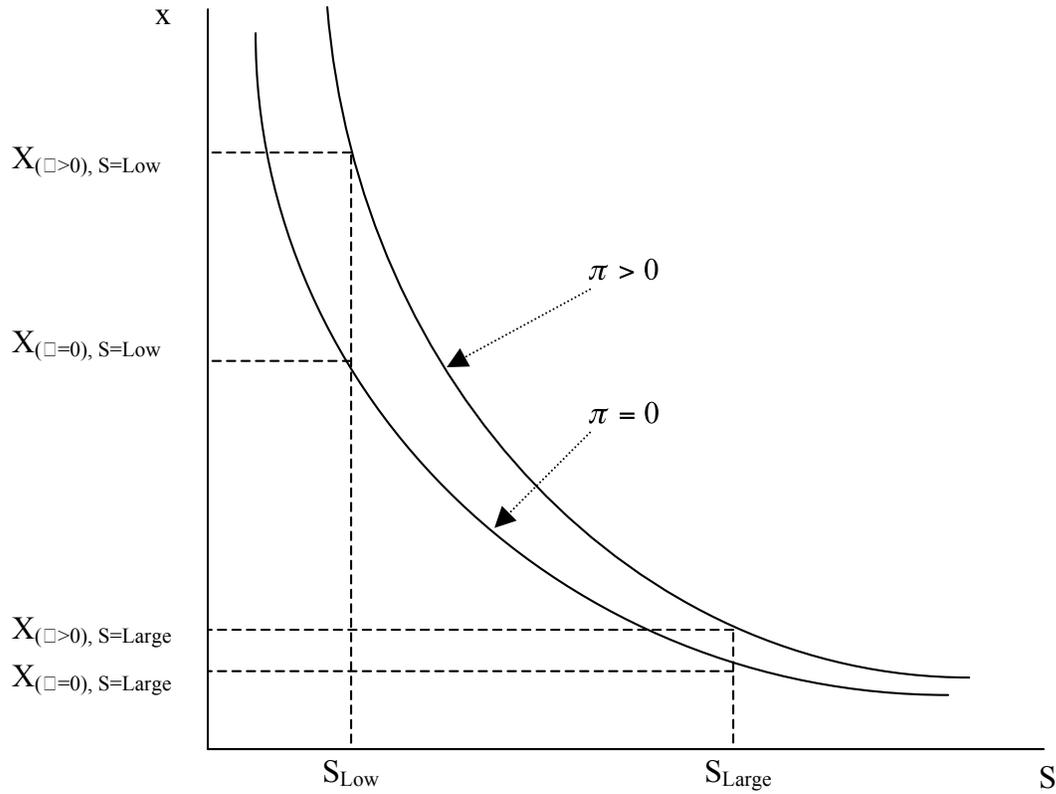


UNDER 5 MORTALITY



LIFE EXPECTANCY

FIGURE 2: S and x Relationship Under Different π values.



CAPTION:

In the original Selectorate Model, where $\pi = 0$, a country with selectorate size S_{Low} would provide public goods at the level $X_{(\pi=0), W=Low, S=Low}$. When $\pi > 0$, regimes with all levels of provide more public good, but the increase in x is larger for countries with a selectorate of size S_{Low} compared to countries with a selectorate of size S_{Large} .

Figure 3 Expected Performance Under Alternative Combinations of Winning Coalition and Selectorate Size according the original (a) and (b) revised selectorate models.

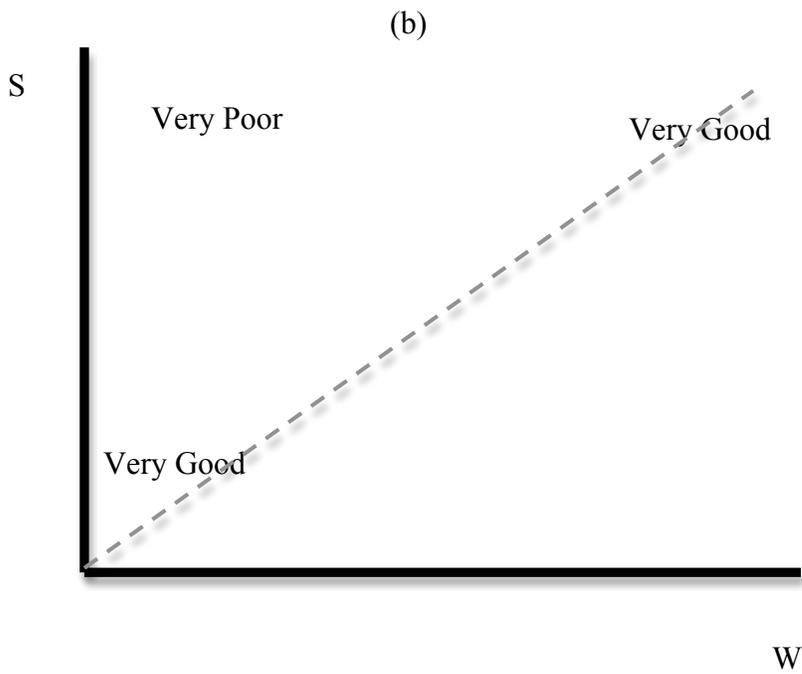
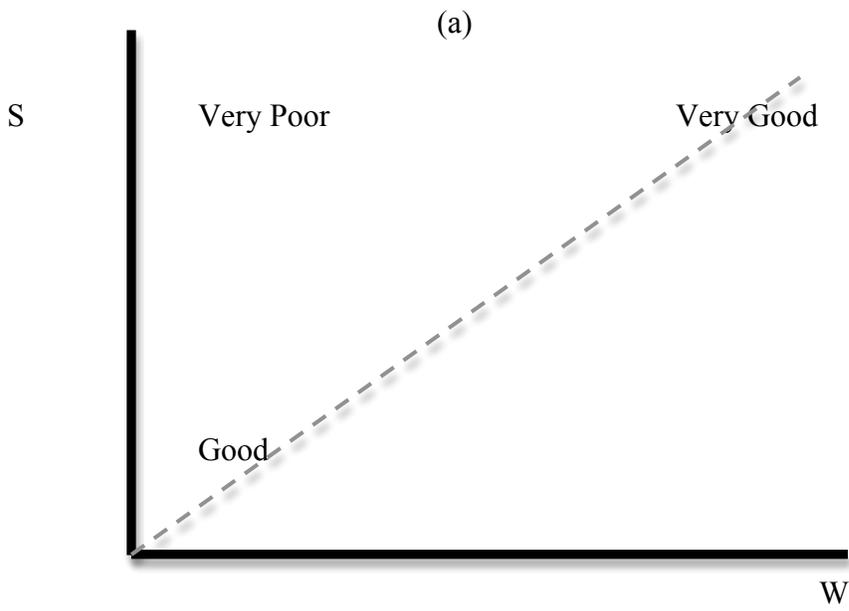
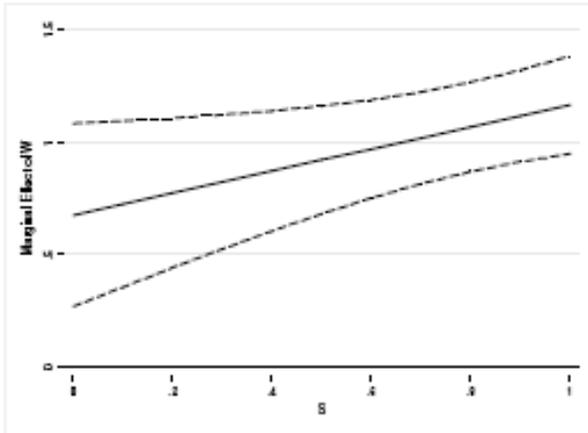
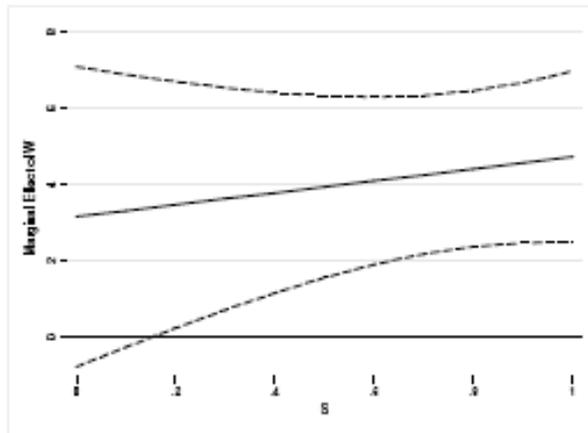


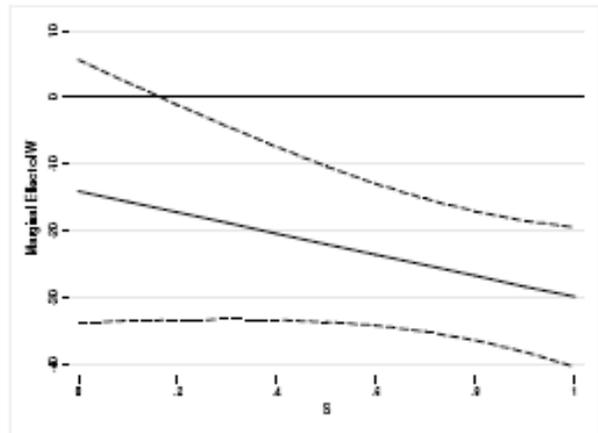
FIGURE 4: Marginal Effect of W for Increasing Levels of S



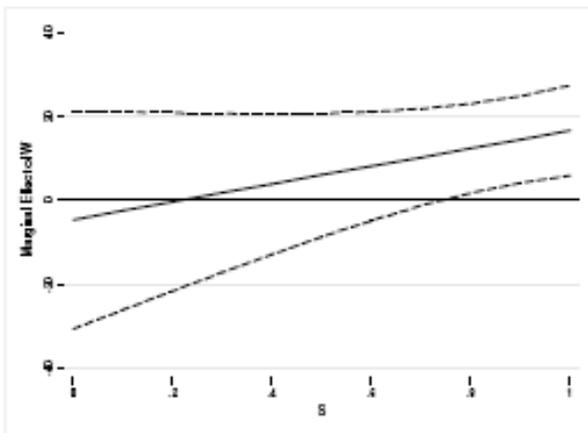
LOG GDP Per CAPITA



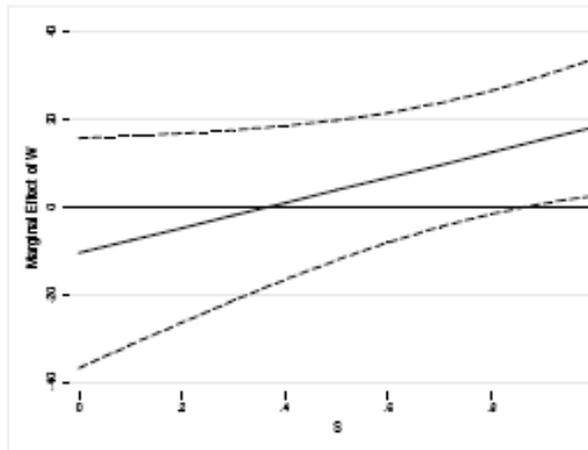
LIFE EXPECTANCY



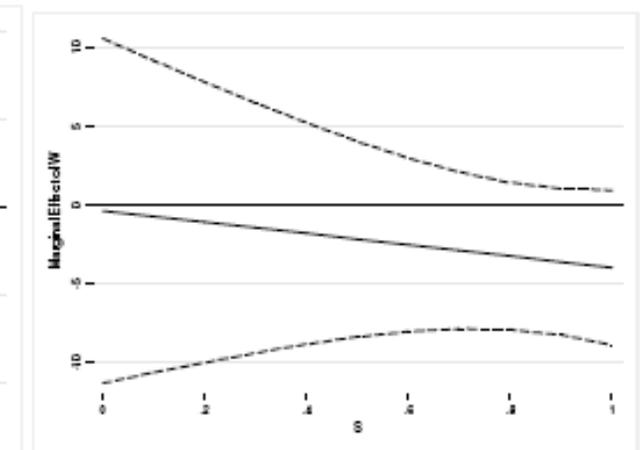
INFANT MORTALITY



VACCINATIONS



ACCESS TO CLEAN WATER



LOW BIRTH WEIGHT

Figure 5 The Relationship (on Average) Between W and S and Geddes's Classification of Authoritarian Regimes

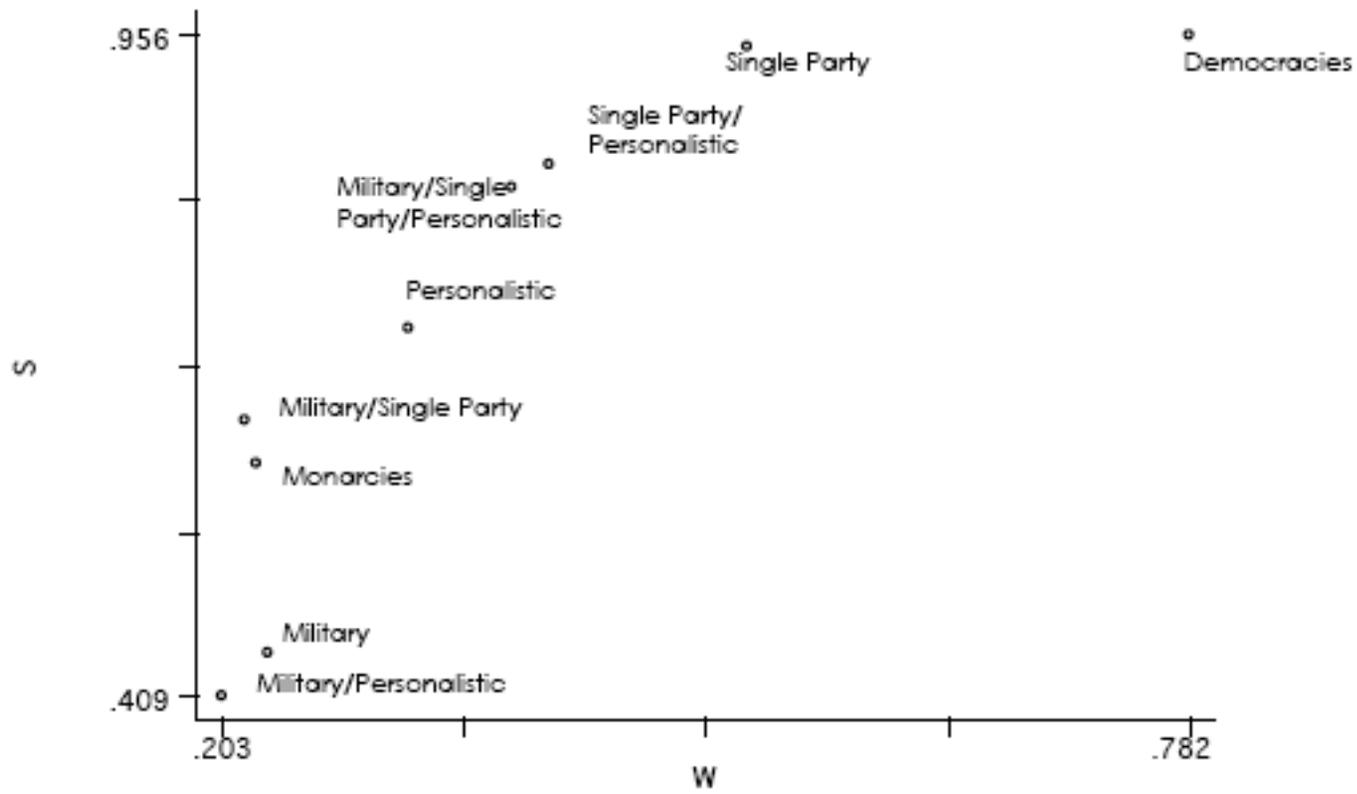
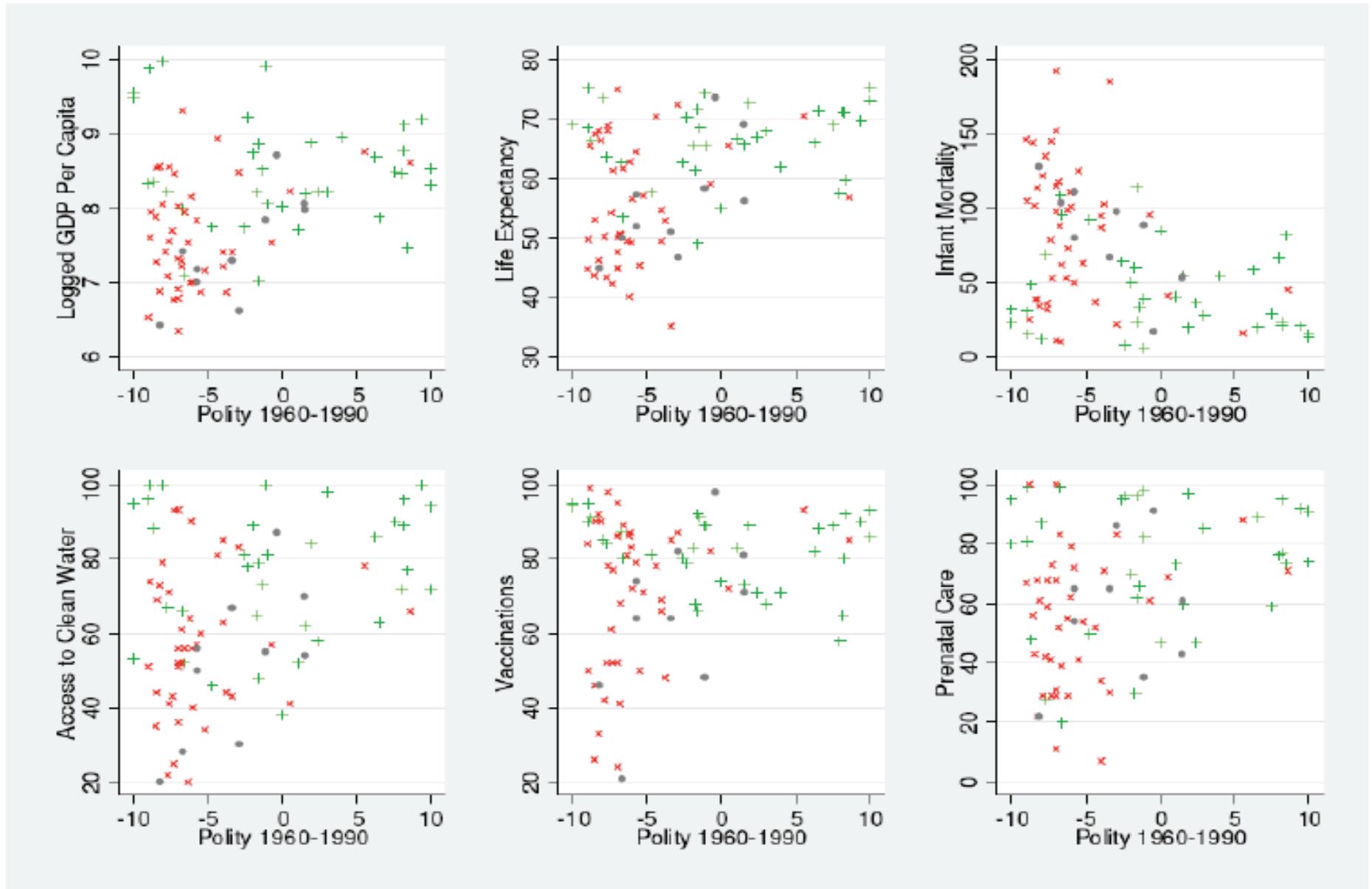


Figure 6 The Relationship between Polity and Performance by regime type.



Key: + = "bad regime" less than 33% of time (i.e. most of the period the country was either a Democracy, Military Junta, or Monarchy), x = "bad regime" more than 66% of time (i.e. most of the time the country was either Personalistic Dictatorship, Single Party Authoritarian or Hybrid Regime), • = "bad regime" more than 33 and less than 66% of time (i.e. spent long periods in each of previous categories).