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# Making Autocracy Work*

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**Abstract**

One of the key goals of political economy is to understand how institutional arrangements shape policy outcomes. This paper studies a comparatively neglected aspect of this - the forces that shape heterogeneous performance of autocracies. The paper develops a simple theoretical model of accountability in the absence of regularized elections. Leadership turnover is managed by a selectorate - a group of individuals on whom the leader depends to hold onto power. Good policy is institutionalized when the selectorate removes poorly performing leaders from office. This requires that the selectorate's hold on power is not too dependent on a specific leader being in office. The paper looks empirically at spells of autocracy to establish cases where it has been successful according to various objective criteria. We use these case studies to identify the selectorate in specific instances of successful autocracy. We also show that, consistent with the theory, leadership turnover in successful autocracies is higher than in unsuccessful autocracies. Finally, we show by exploiting leadership deaths from natural causes that successful autocracies appear to have found ways for selectorates to nominate successors without losing power - a feature which is also consistent with the theoretical approach.

Keywords: dictatorship, democracy

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# 1 Introduction

One of the goals of political economy is to understand how institutional arrangements shape policy outcomes and human well-being. A large literature has now emerged which studies aspects of this. For the most part this has concentrated on studying democratic institutions where elections are the main institution that shapes policy choices. However, throughout most of human history, elections have served a fairly modest role. Far more common are systems based on coercive power – such as monarchies, military dictatorships or one party rule where elections are either a veil or non-existent.

Recent history has seen a significant move towards open and free elections as a means of determining who should hold power. The case for such institutional arrangements is partly based on liberal values that emphasize the political freedoms that such institutions embody. Indeed, this intrinsic case for democracy, emphasized by Sen (1999), would stand regardless of whether it delivered concrete policy benefits to its citizens. But the case for democracy would be cemented further if there were demonstrable benefits in terms of outcomes.

A key observation which motivates this paper is that autocratic government is not always a disaster in economic terms. Indeed, throughout history there has been growth and development in autocratic systems of government. For example, the British industrial revolution predates the introduction of free and fair elections with mass participation. Modern China is also a case in point with a spectacular growth performance in a non-democratic setting. Whether these observations damage the instrumental case for democracy is moot. After all, it is the counter-factual that matters – growth and development might have preceded at a greater pace were democracy present. But it is equally clear that whether one looks at democracy or autocracy there is a great deal of heterogeneity in their performance that cries out for explanation.

This fact is illustrated in Figure 1, which shows estimated density functions for real GDP per capita growth rates among autocratic and democratic regimes that lasted five full calendar years or longer.[1] A "regime" is defined

[1] The density functions are estimated by using the Gaussian kernel and the bandwidth that minimizes the mean integrated squared error. Including regimes that lasted less than five years does not change the distributions substantially except for the inclusion of democratic regimes that existed less than 3 years, which tend to perform very badly (growth rates less than -1 percent).

as a period in which authority characteristics of a country stay the same, according to the POLITY IV data set.[2] Regimes are democratic if the Polity score is positive, and autocratic if it is non-positive.[3] The striking fact that we will explore in more detail is that the distribution of autocracies has fatter tails—there are more very good autocracies and more very bad autocracies compared to democracies.[4]

The key challenge for students of political economy is to extract lessons from historical and contemporary experience about what makes government work in the general interest of its citizens. There is little doubt that building infrastructure, managing macro-economic policy, facilitating private trade and investment and protecting the vulnerable are all facilitated by effective government. In this paper, we will focus somewhat narrowly on the issue of why autocracy can sometimes be successful. This project is not intended as a defense of autocracy, but as means of gaining further insights into the institutional basis of good government. It also contributes to broader discussions about the differences in policy and performance between democracies and autocracies.

The main focus of the paper is on the institutions that make government accountable – specifically finding a means of removing poorly-performing leaders from office. Democracies organize this through regularized contests for power in elections. However, the means of achieving accountability are more murky in autocratic settings. The analysis emphasizes accountability from a "selectorate" comprising insiders who have the ability to depose a leader.[5] We show that autocratic government works well when the power of the selectorate does not depend on the existing leader remaining in office. The framework can be used to contrast the performance of autocracy and democracy in terms of accountability of leaders.

We then turn to identifying successful autocracies empirically. We look at a variety of methods and use these to pick out regimes that are robustly high performers. This sample of regimes provides a structured basis for some case study analysis. We are also able to looking statistically at the patterns

[2] Section 4 provides details.

[3] The shapes of the two estimated density functions are similar if we define a democratic regime as its Polity score being more than 5, as Fearon (2007) does.

[4] Rodrik (1997, 2000), Almeida and Ferreira (2002), and Glaeser et al. (2004, Table 8) make similar observations although the unit of observation in their analysis is a country rather than a regime.

[5] The term "selectorate" is borrowed from Bueno de Mesquita et al. (2003).

of successful autocracies across countries. We then examine the idea that successful autocracies are able to generate accountability mechanisms in the absence of open contests for power.

The remainder of this paper is organized as follows. In the next section, we review some of the voluminous literature on autocracy and democracy by both economists and political scientists to set our paper in context. Section three develops the model. In section four, we look empirically at successful autocracies and how far their incidence can be explained. Section five explores links between the theory and the characteristics of successful autocracies. Section six offers some concluding remarks.

# 2 Background

The background to this paper is a large body of studies on the way in which government and the economy interact. The key question for this research programme known as political economy (or sometimes political economics) is to understand how policy choices are shaped by institutions. One important institutional category is whether a country's political institutions are deemed to be democratic. While the effect of democratic institutions on policy choices has been studied for a long time, there has been a surge in interest among economists in recent years.

Whether the analysis is theoretical or empirical, a precondition for investigating whether democracy or autocracy matters is to find some way of characterizing their differences. From a theoretical point of view, a lot of attention has been paid to whether a country uses elections to determine who governs. The literature focuses on two main roles of elections: determining the pattern of representation (i.e. which groups of citizens hold political power) and holding politicians to account (i.e. whether the incumbents are punished for bad policy).

The influential work by Acemoglu and Robinson (2005) takes the first view, focusing on who controls political office and modeling autocracy as a dictatorship of the rich and democracy as a dictatorship of the poor or middle classes. As a result, income redistribution is greater under democracy compared to dictatorship. The second perspective is taken in Bueno de Mesquita et al. (2002, 2003) who are the first to model accountability in a framework applicable to non-democratic government. In their theory, given the total amount of government expenditures, the larger is the selectorate

whose support is required for the government to stay in power, the higher the level of public goods provided by the government. Elections imply that the government requires the support from a large number of citizens to stay in power. Hence, democracy increases public goods provision. We follow them in putting weight on the role of the selectorate in shaping policy incentives. However, our theory gives greater emphasis to the interplay of accountability and representation issues in making government work.

Elections are conducted differently depending on who can vote, who is eligible to stand and whether there is open access to institutions like the media. The widely used Polity data base provides a more continuous measure of democracy in several categories: how competitive and open the recruitment of chief executives is; to what extent the chief executive is constrained institutionally; and how competitive and regulated political participation is. These continuous measures are then aggregated into the single Polity score, measuring the degree of democracy.[6] It is commonplace to use this Polity score to create a discrete cutoff between democracies and autocracies. For example, Persson and Tabellini (2006, 2007) use a cutoff of zero with democracies being those with a positive Polity score. However, Fearon (2007) prefers a cutoff of five. Since discrete transformations of continuous data series are always somewhat arbitrary, it is important to test the robustness of specific empirical results to alternative definitions.[7]

While elections are a central institution in democracies, there are other important institutions. One of the indicators in the Polity data set is concerned with the checks and balances on a leader. The executive constraints variable "refers to the extent of institutionalized constraints on the decision-making powers of chief executives" (Marshall and Jaggers 2005, p.23). The political economy literature has so far focused on the role of executive constraints in conflict of interest between policy-makers and citizens (e.g. property rights enforcement against government expropriation) and used the executive constraints variable in that context (e.g. Acemoglu and Johnson 2005, Acemoglu, Johnson, and Robinson 2005). However, it could also affect how distributional issues are resolved among citizens.

Mindful of the importance of institutional variation in democracies, Persson and Tabellini (2000, 2003) have explored how institutional variations

[6] See Marshall and Jaggers (2005) for more detail.

[7] See Munck and Verkuilen (2002) for a critical comparison on different democracy datasets including the Polity data base.

matter *within* democracies. The main differences that they focus on are parliamentary versus presidential forms of government and proportional representation versus majoritarian electoral rules. They explore theoretical differences between these regimes in terms of representation and accountability. They also show that policies differ across forms of democracy.

The early theoretical political economy literature on autocracy attempts to explain different economic performances among autocracies in a model in which an autocrat maximizes his private consumption subject to the probability of staying in power. One recurring theme in this literature is what is known as the "stationary bandits" theory of dictatorship, first formalized by McGuire and Olson (1996).[8] The theory argues that if a dictator expects to stay in power for a long period of time, he has an incentive to promote economic development because he will then increase his private consumption through increased tax revenues resulting from economic growth. This mechanism has been incorporated into some subsequent studies of autocracy.[9] Our theory does not incorporate the stationary bandits theory in a strict sense; the dictator in our model has no private gain from choosing welfare-enhancing policies *per se*. However, successful autocracies emerge in our model if the ruling group of citizens are secure in power. In this sense, we incorporate one feature of the stationary bandits theory—the importance of political stability.

One contentious issue in this literature is how welfare-enhancing policies affect the probability of a dictator's survival. Grossman and Noh (1994) and Overland et al. (2005) assume that a dictator's survival is more likely if he adopts welfare-enhancing policies. Grossman and Noh (1994) additionally assume that the probability of survival depends on non-economic factors, arguing that successful autocracies are those whose survival does not depend significantly on non-economic factors. Overland et al. (2005) propose that the dictator's survival chance increases with the level of capital accumulation (and therefore depends on growth-enhancing policies). As a result,

[8] See also section VI of Barro (1990).

[9] Examples include Overland, Simons, and Spagat (2005) and Acemoglu and Robinson (2006), as discussed below. What Acemoglu (2006) calls "revenue extraction" corresponds to this mechanism. Paltseva (2006) incorporates the stationary bandit theory into the theory of democratization. Azam, Bates, and Biais (2005) argue that autocrats may refrain from predation to build up their reputation as benevolent so that the gain from predation in the future will be larger due to increased economic productivity. Caselli (2006) uses this mechanism to explain the natural resource curse.

autocracies with a low level of initial capital do not perform well because the dictator will be removed anyway, failing to reap the benefit from increased tax revenues through economic growth. Acemoglu and Robinson (2006) assume that welfare-enhancing policies directly reduce the dictator's survival prospects while increasing the survival chance through competition for power with a challenger. Consequently, successful autocrats are either those who are secure enough (so that the stationary bandits theory applies) or those who face tough competition from a challenger. In the intermediate level of survival chance, autocrats fail to adopt welfare-enhancing policies because such policies increase the chance that the autocrat is overthrown.

Our theoretical model will show that whether welfare-enhancing policies increase the probability of a dictator's survival depends on the institutional features of autocracy. Autocracy with a strong selectorate as modeled here has some features in common with the notion of a "consensually strong state" of Acemoglu (2005). We emphasize the role of institutions that organize accountability of leaders in the absence of elections.

The political economy literature on autocracy discussed so far fails to explain why poorly-performing autocrats can stay in power for a long period of time (e.g. Mobutu in former Zaire). Acemoglu, Robinson, and Verdier (2004) develop such a theory, arguing that autocrats can exacerbate the collective action problem involved in the ousting of leaders, by bribing loyalists and punishing coup plotters. This implies that autocracy performs poorly if natural resource abundance or foreign aid provision allows dictators to buy off the pivotal group of people. Padro-i-Miquel (2006) offers an alternative explanation, assuming that only the ruling group of citizens can replace the leader and that once the leader is replaced, there is a chance for citizens outside the ruling group to seize power. Consequently, autocrats expropriate citizens outside the ruling group, and the ruling group cannot replace poorly-performing autocrats for fear of losing power and being expropriated under new leadership. Our theoretical model below assumes away the collective action problem in leadership replacement, but incorporates Padro-i-Miquel (2006)'s insight and therefore derives an equilibrium in which poorly-performing autocrats nevertheless stay in power.

While the above studies treat autocracy as a unitary form of government, more recent studies have focused on the internal organization of autocracy. Egorov and Sonin (2006) and Debs (2007) explore the incentive for an autocrat to keep incompetent cabinet ministers in his government while Acemoglu, Ticchi, and Vindigni (2007) examine why rich people in auto-

cratic regimes may want to support a bloated bureaucracy. Myerson (2006) and Svolik (2006) investigate under what condition an autocrat seeks support from members of the political elite instead of establishing personal rule. Egorov, Guriev, and Sonin (2006) examine an autocrat's incentive to restrict media freedom. These studies all try to endogenize autocratic institutions.[10]

More sociological approaches in political science have long been aware of institutional heterogeneity among autocracies.[11] However, these are not easily translated into the kind of empirical differences which can be used for statistical analysis. Moreover, they are poorly tied into the kinds of theoretical categories that shape policy incentives which can inform measurement.[12]

The literature on the "developmental state" (Deyo 1987, Amsden 1989, Haggard 1990, Wade 1990, Evans 1994) can also be seen as focusing on autocratic institutions which are successful in achieving economic growth. These studies identify two seemingly contradictory institutional features as key for understanding economic success: autonomy of the state and constraints that prevent predatory behavior of the state. Our theory may explain why these two features of the developmental state can coexist in autocracy: the state is autonomous only from opposition groups while the ruling group disciplines the state to avoid it from becoming predatory.

There is a growing empirical literature asking whether democracy or autocracy is superior in terms of economic outcomes. The evidence that democracy promotes prosperity is neither strong nor robust. Przeworski

[10] One study close to our model in spirit is Egorov and Sonin (2005), which study how the types of autocracy (hereditary versus non-hereditary) affect the mode of leadership succession. Wintrobe (1990, 1998) is an early attempt of formal modeling to compare different types of autocracy. Dixit (2006) investigates how the type of an autocrat (benevolent or predatory) affects how public goods are provided.

[11] This political sociology literature has produced a wide array of terminology to classify autocratic regimes. Examples include totalitarianism (Linz 2000), one-party systems (Huntington and Moore 1970), bureaucratic authoritarianism (O'Donnell 1979), sultanistic regimes (Chehabi and Linz 1998), neopatrimonialism (Bratton and van de Walle 1997, chapter 2), the rentier state (Beblawi and Luciani 1987), and, perhaps most recently, competitive authoritarianism (Levitsky and Way 2002). Geddes (1999) classifies autocracies into personal, military, and single-party rules to investigate how the type of autocracy affects its duration and the way it terminates. Haber (2006) attempts to bridge the gap between this political sociology literature and the political economy approach by classifying autocracies into three types according to the way dictators stay in power: terror, cooptation, and organizational proliferation.

[12] An exception is Gandhi and Przeworski (2006), who try to find the determinants of institutional choices in autocracy by linking a theory of autocracy to data.

and Limongi (1993) review early empirical research on the effect of democracy on economic growth, concluding that the correlation is weak and not robust. Persson and Tabellini (2006) try a novel econometric approach finding some support for the proposition that persistent democracy is associated with improvements in economic performance. Papaioannou and Siourounis (2005) and Rodrik and Wacziarg (2005) find that democratization is associated with subsequent growth. Jones and Olken (2005) find that economic growth rates change significantly when autocratic leaders are unexpectedly removed from office while such changes are less clear under democracy. Persson and Tabellini (2007) find evidence of heterogeneity with transitions out of democracy being damaging to growth, while transitions into democracy out of autocracy are less clearly marked by improved growth performance.

Which aspects of policy making and human well-being are promoted by democracies is also a subject of debate. For example, Mulligan et al. (2004) find few cross-country differences between socio-economic policies enacted in democracies and autocracies. On the other hand, Persson (2005) finds that, conditional on country fixed effects, democracy with a parliamentary system of government or a proportional representation electoral system enacts more open trade policy than autocracies. Besley and Kudamatsu (2006) find that there is a strong and robust cross-country correlation between democracy and life expectancy while this correlation is not very robust to controlling for country fixed effects. Kudamatsu (2006), in turn, finds that the mortality of infants born to the same mother drops after democratization in sub-Saharan Africa in the 1990s.

Pretty much all prior empirical efforts to contrast the performance of democracy and autocracy treat the latter as a homogeneous institution.[13] But, as we have seen, heterogeneity in the working of autocratic institutional arrangements comes out of a broad range of theoretical treatments. A key aim of this essay is to explore one dimension of this.

[13] An important exception is Gandhi (2003a,b), who finds that autocracies with legislatures and/or political parties, compared to those without, have better economic performance, more spending on education and less on the military. The finding that a certain degree of institutionalization of autocracy yields better development policies and outcomes is broadly consistent with our theory.

# 3 The Model

We lay out a simple agency model of autocracy which studies the incentives of an incumbent policy maker to implement a costly action that yields benefits to all citizens. It differs from a standard model of democracy as in Besley (2006, chapter 3) in that there is no regularized contest for public office. We begin by assuming that such contests only arise when the ruling group replaces its leader. We will show that this institutional feature can lead to autocracy working in the interests of all citizens (section 3.1). After discussing the robustness of our results (section 3.2), we compare the outcome of this model with a stylized representation of democracy where power is contested regularly (section 3.3).

The world comprises $N$ citizens each of whom belongs to either group $A$ or $B$. Group $A$ comprises a fraction $\beta$ of the population. There are two time periods denoted by $t \in \{1, 2\}$. In each period, there is a policy maker in office who is a member of one of the two groups of citizens. Without loss of generality, we assume that the period one policy maker is from group $A$.[14]

The policy maker in office in period $t$ makes two policy decisions. The first is a discrete "general interest" policy denoted by $e_t \in \{0, 1\}$. This could be thought of as a wealth creation decision for the citizens which requires the policy maker to forego private benefits such as bribery by a special interest. The payoff to citizens and the policy maker from this policy depends on a state of the world, $s_t \in \{0, 1\}$, which is only observed by the policy maker. Each state occurs with equal probability. Citizens and the policy maker receive a payoff $\Delta$ if $e_t = s_t$ and zero otherwise.

The second policy decision is purely distributive. This divides an exogenous revenue of size $T$ between the groups. Let $\sigma_{Jt} \in [\underline{\sigma}, \bar{\sigma}]$ denote the fraction of this revenue allocated to group $J \in \{A, B\}$ in period $t$. In the most extreme case $\bar{\sigma} = 1$ and $\underline{\sigma} = 0$. However, institutionalized checks and balances may limit this possibility.

As well as having a group identity, each policy maker is either good or bad. This is not observed by the citizens. Let $\pi$ be the probability that a randomly picked individual from either group is good.[15] Both types of policy makers receive $\Delta$ as a citizen if they choose $e_t = s_t$. However, a good policy

[14] Whether group $A$ is in the majority does not affect our analysis.

[15] We require that $\pi > 0$. However, $\pi$ could be very small and many people plainly believe that it is in many practical settings. The key issue, however, is that the *possibility* of a good policy maker existing creates a role for signalling.

maker gets the payoff of 0 by choosing $e_t \neq s_t$. We think of this as having a moral stance so that they get no utility from earning rents. Hence, a good politician will always act in the interests of all citizens on the general interest issue. A bad politician gets a private benefit of $r$ from picking $e_t \neq s_t$, where $r$ is drawn independently each period from a distribution whose cumulative distribution function is $G(r)$ with $E(r) = \mu$, $G(\Delta) = 0$, and $G(r) > 0$ for $r > \Delta$.[16] Denote the realized value of the rent available in period $t$ by $r_t$.

A fraction of the citizens in each group is enfranchised, i.e. are endowed with the power to influence the choice of policy maker when there is a contest for power. Let $n \leq N$ be the total number of enfranchised citizens, of which a fraction $\phi$ belongs to group $A$. Enfranchised citizens from the ruling group ($A$) decide whether to retain the incumbent as the policy maker for period two. If they so choose, then the incumbent remains in power. However, if group $A$'s enfranchised citizens decide to replace the incumbent, there is an "open" contest between two candidates, one from group $A$ and the other from group $B$. Following Bueno de Mesquita et al. (2003), we refer to group $A$'s enfranchised citizens as the *selectorate*.[17]

Suppose that in the event of an open contest, group $A$'s candidate has the support of a fraction $\kappa$ of the enfranchised citizens. We allow for a uniformly distributed shock to the popularity of group $B$'s candidate to affect the outcome which we denote by $\eta \in \left[-\frac{1}{2}, \frac{1}{2}\right]$. The group $A$ candidate then wins if

$$\kappa > (1 - \kappa) + \eta.$$

Then the probability that a candidate from group $A$ wins the contest, denoted by $\gamma(\kappa)$, is:

$$\gamma(\kappa) = \begin{cases} 1 & \text{if } \kappa > \frac{3}{4} \\ 2\kappa - \frac{1}{2} & \text{otherwise} \\ 0 & \text{if } \kappa < \frac{1}{4}. \end{cases}$$

This model conveniently nests the standard probabilistic voting model of democracy in which all citizens are enfranchised and each citizen has one

[16] We could think of $r$ as embezzling public funds that are supposed to be spent on public goods provision. Making $\Delta$ the lower bound on rents guarantees that it is never possible to motivate a bad policy maker to act in the general interest on the basis of his personal payoff at the current period only.

[17] As we assume the same preference among citizens of each group, we do not allow a faction from the selectorate to join with the opposition to topple the regime. This possibility is interesting as a power struggle within the ruling elite in an autocracy is often cited as a force leading to democratization (see O'Donnell and Schmitter 1986).

vote. Then if all citizens vote along group identity lines, the probability that group $A$ wins is $\gamma(\beta)$.[18]

In an autocratic world, not all citizens are enfranchised (e.g. as in South Africa during apartheid), in which case $\kappa = \phi$ if all enfranchised citizens support their own group's candidate. We also allow for group $B$'s enfranchised citizens being repressed by being denied access to polling stations or because group $A$ monopolizes coercive forces. We represent this simply by a repression parameter ($\upsilon \geq 1$) with $\kappa = \upsilon\phi/(\upsilon\phi + (1-\phi)) \geq \phi$. If most enfranchised citizens are from group $A$ (a large $\phi$) or if there is strong repression (large enough $\upsilon$), then $\gamma(\kappa) = 1$, i.e. group $A$ is certain to hold onto power in the second period. This represents the case of an effectively institutionalized autocracy along the lines of (say) modern day China.

Finally, if the period one policy maker is removed from office, he receives a period two payoff as a citizen from group $A$.

The timing of the game is as follows:

1. Nature determines $(s_1, r_1)$ and whether the period one policy maker is good or bad. These are private information to the policy maker.

2. The policy maker picks $(\sigma_{A1}, \sigma_{B1}, e_1)$ and period one payoffs are realized.

3. Members of the selectorate decide whether to retain the policy maker.

4. If the policy maker is removed from office, then nature determines whether two candidates in an open contest are good or bad. An open contest then ensues in which enfranchised citizens of groups $A$ and $B$ decide which candidate to support. The group $A$ candidate wins with probability $\gamma(\kappa)$.

5. Nature determines $(s_2, r_2)$.

6. The period two policy maker chooses $(\sigma_{A2}, \sigma_{B2}, e_2)$ and period two payoffs are realized.

[18] The purpose of making the contest outcome probabilistic is to allow the probability of group $A$'s candidate winning to be between 0 and 1 even if the size of support for candidate $A$ exceeds that for $B$. With a finite number of citizens in our model, group $A$'s winning probability can be a step function of $\kappa$. This does not affect our analysis because $\kappa$ only changes discretely in response to the period one policies in our model (see below).

A key feature of the model is that there is a contest for power only if the selectorate of group $A$ chooses to replace the current leader. It is the absence of a guaranteed contest at the end of period one that characterizes autocracy in the model. Below, we contrast this with a situation where there is an election at the end of period one as in the standard agency model of democracy.

## 3.1 Equilibrium

We solve for the perfect Bayesian equilibrium of our model. This requires that, in every period, each type of policy maker behaves optimally given the contest rule in place. Members of the selectorate use Bayes rule to update their beliefs on the type of the period one policy maker accordingly and decide optimally whether to replace the policy maker at the end of period one.

It is very easy to work out the equilibrium behavior of policy makers in period two. In terms of the general interest policy, every kind of policy maker takes his short term optimal action. Thus $e_2 = s_2$ for a good politician and $e_2 = 1 - s_2$ for a bad politician. In terms of the distributive policy, the policy maker of group $J$ chooses $\sigma_{J2} = \bar{\sigma}$ and $\sigma_{K2} = \underline{\sigma}$ for $K \neq J$, i.e. giving the biggest reward that he can to his own group.

Given these period two policy choices, consider the decision of enfranchised citizens in an open contest between two randomly chosen candidates from groups $A$ and $B$. As the type of candidates is unknown to them, both candidates will produce $\Delta$ with probability $\pi$ if elected. Group $J$ citizens prefer their own group's candidate who will choose $\sigma_{J2} = \bar{\sigma}$ to the other group's candidate who will choose $\sigma_{J2} = \underline{\sigma}$. Therefore, all group $A$ enfranchised citizens support the group $A$ candidate while all group $B$ enfranchised citizens support the group $B$ candidate, implying that the share of support that a group $A$ candidate receives is $\upsilon\phi/(\upsilon\phi + (1-\phi))$. The probability that group $A$ retains power in an open contest is therefore:

$$\gamma(\upsilon\phi/(\upsilon\phi + (1-\phi))) \equiv \Gamma(\phi, \upsilon).$$

This probability is key to understand whether autocracy is successful.

Turning now to period one, the distributive policy is again straightforward. As the period one policy maker is a member of group $A$, he will set $\sigma_{A1} = \bar{\sigma}$ and $\sigma_{B1} = \underline{\sigma}$. Good policy makers always make the right decision

on the general interest policy so that $e_1 = s_1$. The only issue concerns how bad policy makers behave. To work out the bad policy maker's incentive to produce $\Delta$, we must compare his payoffs from the good and bad actions. If he stays in power, his expected period two payoff is $\mu + \bar{\sigma}T$. If he is removed from office, then he will get the payoff of a group $A$ citizen: $\pi\Delta + \bar{\sigma}T$ with probability $\Gamma(\phi, \upsilon)$, and $\pi\Delta + \underline{\sigma}T$ with probability $1 - \Gamma(\phi, \upsilon)$.

Let $\rho(\delta)$ be the probability that the period one policy maker will stay in office if he produces a payoff of $\delta \in \{0, \Delta\}$ from the general interest policy. The bad policy maker's period two payoff from producing a payoff of $\delta$ to the citizens in period one is:[19]

$$\rho(\delta)(\mu + \bar{\sigma}T) + (1 - \rho(\delta))[\pi\Delta + \Gamma(\phi, \upsilon)\bar{\sigma}T + (1 - \Gamma(\phi, \upsilon))\underline{\sigma}T].$$

Using this, it is easy to see that the bad policy maker will produce the good action in period one if:

$$[\rho(\Delta) - \rho(0)][\mu - \pi\Delta + (1 - \Gamma(\phi, \upsilon))(\bar{\sigma} - \underline{\sigma})T] + \Delta > r_1.$$

Consequently, the probability that a bad policy maker chooses the right general interest action in period one, denoted by $\lambda$, is

$$\lambda = G([\rho(\Delta) - \rho(0)][\mu - \pi\Delta + (1 - \Gamma(\phi, \upsilon))(\bar{\sigma} - \underline{\sigma})T] + \Delta).$$

The bad politician is motivated to choose the right general interest policy by two sources of future rents. The first is the personal rent $\mu$ that he earns. The second is the group specific rent $(\bar{\sigma} - \underline{\sigma})T$. The latter is relevant only if his group may lose office in an open contest, i.e. if $\Gamma(\phi, \upsilon) < 1$.

To understand $\rho(\Delta) - \rho(0)$, we need to examine the behavior of the group $A$ selectorate. Observe that if the policy maker generates $\Delta$, then it is always optimal to retain him. He creates higher group specific rents from the redistributive policy (strictly so if $\Gamma(\phi, \upsilon) < 1$), and there is a higher probability of good behavior than would arise in an open contest. To see the second point, the posterior probability that the incumbent policy maker is good having produced the good outcome in period one (by Bayes rule) is:

$$\frac{\pi}{\pi + (1 - \pi)\lambda},$$

[19] Note that $\Gamma(\phi, \upsilon)$ does not depend on $\delta$. This is because in an open contest both candidates are equally likely to be good. Group $B$ enfranchised citizens, therefore, only care about the distributional policy and always support their own candidate regardless of $\delta$. This is no longer the case if an open contest ensues even when the selectorate of group $A$ prefers keeping the incumbent in office. See section 3.3 below.

which is at least as large as $\pi$. Therefore, we have $\rho(\Delta) = 1$. If the policy maker does not generate $\Delta$, then the selectorate will fire him if:

$$(1 - \Gamma(\phi, \upsilon))(\bar{\sigma} - \underline{\sigma})T < \pi\Delta.$$

Thus $\rho(0) = 0$. Poor quality policy makers will be fired as long as the selectorate has a sufficient grip on power so that they will keep their group specific rents if they decide to replace the policy maker. Otherwise $\rho(0) = 1$.[20]

For notational simplicity, define $\tau \equiv (\bar{\sigma} - \underline{\sigma})T$, which captures the degree of salience of the distributional policy. The above discussion then leads us to the following result:

**Proposition 1** *In the unique perfect Bayesian equilibrium, the probability that a bad policy maker picks the right general interest action in period one is given as follows:*

1. *If* $(1 - \Gamma(\phi, \upsilon))\tau < \pi\Delta$ *then:*

$$\lambda = G(\mu - \pi\Delta + (1 - \Gamma(\phi, \upsilon))\tau + \Delta). \tag{1}$$

2. *If* $(1 - \Gamma(\phi, \upsilon))\tau \geq \pi\Delta$ *then:*

$$\lambda = 0. \tag{2}$$

This result says that the selectorate will be able to discipline policy makers in autocracy leading to a good general interest policy choice if their grip on power is sufficiently strong. If not, they will fear that removing the policy maker will trigger a contest in which the other group can seize power.[21] This suggests that successful autocracies will tend to be those with strong selectorates who can commit to removing bad leaders.

The case where $\Gamma(\phi, \upsilon) = 0$ is interesting here and could be thought of as a case of personal rule where the selectorate's grip on power is dependent on

[20] We assume that if

$$(1 - \Gamma(\phi, \upsilon))(\bar{\sigma} - \underline{\sigma})T = \pi\Delta,$$

then the selectorate chooses to retain the incumbent.

[21] Padro-i-Miquel (2006) uses the same logic to analyze why African dictators have implemented inefficient policies.

the specific policy maker remaining in power. If $\tau \geq \pi\Delta$, then personal rule in this sense will always result in $\lambda = 0$. This is because the accountability mechanism via the selectorate has no bite. This accords with intuition and often-made empirical claim that personal rule is not conducive to good government. We develop a case study to illustrate this in section 5.3 below.

The role of checks and balances $(\bar{\sigma} - \underline{\sigma})$ in disciplining autocrats turns out to be subtle. First, if group $A$ retains power for sure ($\Gamma(\phi, \upsilon) = 1$), there is no role for constraints on the distributional policy making in improving the quality of government. The complete lack of checks and balances could still lead to good policy outcomes if the selectorate is securely in power. Otherwise, improvements in checks and balances have a non-monotonic impact on the incentive of autocrats to make a good policy. On one hand, improvements in checks and balances make the case of successful autocracies more likely. On the other hand, once checks and balances start disciplining bad politicians, further improvements in checks and balances actually undermine their incentive to take the good action. This is because a high level of checks and balances makes an autocrat less concerned about the seizure of power by group $B$ as a result of his bad performance. Finally, if we compare two autocracies with the same level of checks and balances, we could see a stark difference in performance between the two, depending on how salient the distributional issue is due to the size of $T$.

As we observed above, a key feature of our model is the assumption that a contest for power is triggered only if there is a decision to replace the leader in period one. The role of this assumption can now be assessed. Suppose instead that there is a probability $\xi$ that a contest ensues even if the selectorate chooses to retain the incumbent. The incumbent then competes with a challenger from group $B$ for office in period two. This does not change the optimal strategy of enfranchised citizens in the contest if $(1 - \pi)\,\Delta < \tau$.[22] However, it weakens the incentive of the leader in case 1 of the Proposition since we would now have:

$$\lambda = G\left(\left[\xi\Gamma(\phi, \upsilon) + (1 - \xi)\right]\left[\mu - \pi\Delta + (1 - \Gamma(\phi, \upsilon))\,\tau\right] + \Delta\right)$$

[22] This condition implies that the policy maker's group membership is the salient issue if there is a contest for power. Were this not the case, then the group $B$ enfranchised citizens would be content to support a group $A$ incumbent who had taken the good general interest action in period one if there were a contest for power at the end of period one. Thus a guaranteed contest would strengthen incentives for good behavior in an autocracy as it does in the analysis of democracy with low polarization presented below.

which is decreasing in $\xi$. Thus the model predicts that, conditional on having an effective selectorate disciplining the leader, political stability (low $\xi$) is an asset. This offers a perspective on autocracy that is reminiscent of Olson (1993) who put weight on the power of longer time horizons in improving the quality of government within autocracy.[23] However, the exact mechanism in which political stability induces a better quality of autocratic government is different. In Olson (1993)'s theory, political stability allows an autocrat to internalize the benefit from good economic policies through an increased amount of tax revenue. In our model, political stability allows the selectorate to discipline an autocrat who otherwise chooses bad policies for his private gains.

## 3.2 Repression and Bribery of the Selectorate

The basic model assumes that the selectorate is powerful enough to replace the leader if they want to. But autocratic leaders frequently take actions to entrench their power. If such actions were costless, then the leader would always would stay in office while setting $\lambda = 0$. However, in reality, such tactics – whether repression by force or bribery – are costly. We now explore the implications of this to illustrate how the good performance of autocracy in Proposition 1 is dependent on limits on actions by incumbents to entrench their power.

Assume that the period one policy maker can pay a cost $b > 0$ to repress the selectorate when the latter wishes to remove him from power. If $(1 - \Gamma(\phi, \upsilon))\,\tau < \pi\Delta$, then the bad policy maker prefers repression to choosing the bad policy and being ousted as long as the cost of repression is not too high, specifically:

$$b < \mu - \pi\Delta + (1 - \Gamma(\phi, \upsilon))\tau.$$

Under this condition, the bad policy maker will choose repression if:

$$r_1 - b > \Delta.$$

As a result, the probability that the bad leader chooses the good policy is

$$\lambda = G\left(\Delta + \min\left\{b, \mu - \pi\Delta + (1 - \Gamma(\phi, \upsilon))\,\tau\right\}\right).$$

[23] This idea is later formalized in McGuire and Olson (1996).

It is clear from this that possibility of repression (weakly) reduces the incidence of good period one behavior under autocracy. Thus if $b = 0$ (costless repression), then $\lambda = 0$ and we are back to the case of bad autocracy (case 2 in Proposition 1).

Bribery to stay in office is also a possibility. Suppose that the policy maker can make a transfer to each member of the selectorate in exchange for supporting him to stay in office after he has taken the bad action. Then he may prefer this strategy to taking the good action if the bribe that he would have to pay is small enough. The total cost of bribing the selectorate is:

$$n\phi\left[\pi\Delta - \left(1 - \Gamma(\phi, \upsilon)\right)\tau\right].$$

This makes bribery preferable if:

$$\left[\pi\Delta - \left(1 - \Gamma(\phi, \upsilon)\right)\tau\right]\left(1 + n\phi\right) < \mu.$$

This is more likely to be satisfied when the selectorate is small – the result in Proposition 1 still holds for large enough $n\phi$. This case, in particular, emphasizes that it need not be the benevolence of the selectorate that drives good autocracy but having a large enough group to make bribery unattractive.

This extension further emphasizes the need for an effective group to manage leadership transitions. To the extent that prevention of repression and bribery can be institutionalized, we expect autocracy to work better. This analysis also makes clear that $\mu$ (the future value of staying in office) is important in shaping incentives. Severe punishments for poorly performing leaders after they leave office are doubled-edged. On one hand, they improve incentives if repression and bribery are absent. On the other, they increase the incentive to use malign tactics to stay in office. Thus the model shows why negotiating attractive exit arrangements for bad leaders could sometimes improve policy outcomes.

## 3.3 Comparison with Democracy

We now contrast the model above with a stylized representation of democracy. This is a non-trivial comparison since it is well-known from the literature on political agency models (see, for example, Besley 2006) that elections are an imperfect way of providing incentives for good policies.

Now assume that all citizens are enfranchised with each having one vote: $n = N$, $\phi = \beta$, and $\upsilon = 1$.[24] The key feature of democracy that we model here is a guaranteed contest for power at the end of period one even when group $A$ citizens prefer retaining the incumbent policy maker. The timing of the game is the same except for steps 3 and 4, which are now as follows:

3. Citizens from group $A$ decide whether to support the incumbent policy maker or a randomly picked citizen from group $A$ whose type (good or bad) is unobservable to citizens (i.e. a primary election).

4. All citizens decide which candidate to support, the group $A$ candidate chosen in step 3 or a randomly picked citizen from group $B$ whose type (good or bad) is unobservable to citizens. The group $A$ candidate wins with probability $\gamma(\kappa)$.

The remaining structure of the game is otherwise the same as before.

If group $A$ citizens decide not to support the incumbent in a primary election, the electoral outcome that follows is exactly the same as that of an open contest in the model of autocracy with group $A$'s winning probability being $\Gamma(\beta, 1) = \gamma(\beta)$. The difference comes from a case in which group $A$ citizens decide to support the incumbent in a primary election. This case emerges if the incumbent takes a good action in period one, because otherwise group $A$ citizens are strictly better off by replacing the incumbent with a randomly picked candidate.[25] A key issue in a democracy concerns

[24] If $\upsilon > 1$, the model of democracy in this subsection can be that of what Levitsky and Way (2002) call competitive authoritarianism, a regime in which elections with universal suffrage are regularly held with opposition groups systematically harassed so that the number of effective votes per person is less than one for opposition groups.

[25] To see this, let $\gamma(\kappa')$ be the probability that the incumbent who did not produce $\Delta$ wins in an election, and $\gamma(\kappa'')$ be the probability that a randomly picked group $A$ candidate wins. Group $A$ citizens' expected period two payoff is

$$\gamma(\kappa')\overline{\sigma}T + (1 - \gamma(\kappa'))(\pi\Delta + \underline{\sigma}T)$$

if they let the incumbent run for re-election, and

$$\pi\Delta + \gamma(\kappa'')\overline{\sigma}T + (1 - \gamma(\kappa''))\underline{\sigma}T$$

if they support a randomly picked candidate. Therefore, they prefer kicking out the incumbent in a primary election if

$$\gamma(\kappa')\pi\Delta + [\gamma(\kappa'') - \gamma(\kappa')](\overline{\sigma} - \underline{\sigma})T > 0.$$

whether citizens from group $B$ reward the group $A$ incumbent for taking the general interest action. This depends on how salient is the general interest policy relative to the distributional policy.

We first look at the case in which the distributional policy is more salient:

$$(1-\pi)\,\Delta < \tau.$$

This condition says that group $B$ voters will always support a candidate from their own group even if the group $A$ candidate is known to be good. In this case, the share of votes the incumbent undertaking a good action in period one obtains will be $\kappa = \beta$. Consequently, if a bad incumbent chooses a good policy so that group $A$ citizens support him in a primary election, his expected period two payoff is

$$\gamma(\beta)(\mu + \bar{\sigma}T) + (1-\gamma(\beta))(\pi\Delta + \underline{\sigma}T).$$

If he chooses a bad policy, he will be removed in a primary election and his expected period two payoff is therefore

$$\gamma(\beta)(\pi\Delta + \bar{\sigma}T) + (1-\gamma(\beta))(\pi\Delta + \underline{\sigma}T).$$

Comparing these two payoffs, it is straightforward to see that the probability that a bad incumbent chooses a good action is

$$\lambda = G\left(\gamma(\beta)(\mu - \pi\Delta) + \Delta\right). \tag{3}$$

Since group $B$ citizens are not responsive to the policy maker's reputation, only private rents motivate good behavior. This is because the distribution of group specific rents does not depend on which general interest policy is adopted in period one. In addition, private rents are discounted by the probability of re-election, $\gamma(\beta)$, which can be less than one. The regularized contest for power coupled with the lack of responsiveness by group $B$ citizens even undermines the motivation of policy makers stemming from private gains.

We next turn to a situation where the general interest policy is more salient:

$$(1-\pi)\,\Delta \geq \tau$$

---

$\gamma(\kappa'')$ is always equal to $\gamma(\beta)$. $\gamma(\kappa')$ is also equal to $\gamma(\beta)$ if group $A$ never supports group $B$ candidate (i.e. $\pi\Delta < (\overline{\sigma} - \underline{\sigma})T$). If group $A$ prefers group $B$ candidate to a bad group $A$ politician (i.e. $\pi\Delta \geq (\overline{\sigma} - \underline{\sigma})T$), $\gamma(\kappa') = 0$. Therefore, the above inequality always holds.

We will look at the best performance of democracy that can be sustained in this case. Suppose that all group $B$ citizens will support a candidate from group $A$ who takes the good action in period one. Then, the outcome is equivalent to the good autocracy case in section 3.1. It is straightforward to see that

$$\lambda = G\left(\mu - \pi\Delta + \left(1 - \gamma(\beta)\right)\tau + \Delta\right). \tag{4}$$

Good behavior by the period one policy maker is now rewarded with personal rents in period two for sure and by an increase in the probability of retaining group specific rents. This will be an equilibrium consistent with Bayes rule provided that at this value of $\lambda$:

$$\pi\left[\frac{\left(1-\pi\right)\left(1-\lambda\right)}{\pi + \left(1-\pi\right)\lambda}\right]\Delta > \tau,$$

which will always hold for a sufficiently low value of $\tau$.[26]

We now compare the performance of autocracy and democracy in terms of the probability of disciplining the bad incumbent. Table 1 shows which political system is better in each of four main parameter regions. When

[26] If this condition does not hold, then there will be a mixed strategy equilibrium with a lower level of $\lambda$. This is a little tricky as it is not entirely obvious how to put mixed strategies together with probabilistic voting. However, define:

$$\pi\left[\frac{\left(1-\pi\right)\left(1-\hat{\lambda}\right)}{\pi + \left(1-\pi\right)\hat{\lambda}}\right]\Delta = \tau$$

Then we require that $\hat{\lambda}$ is a fixed point of the mapping

$$\hat{\lambda} = G\left(\psi\left(\hat{\lambda}\right)\left(\mu - \pi\Delta\right) + \left(\psi\left(\hat{\lambda}\right) - \gamma(\beta)\right)\tau] + \Delta\right)$$

where $\psi\left(\lambda\right) < 1$ is the probability of re-election given that the incumbent has produced $\Delta$. Since all group $B$ voters are, by construction, indifferent between group $A$ and group $B$ candidates at $\hat{\lambda}$, we suppose that a proportion $\zeta$ of the group $B$ voters support the group $A$ candidate ex ante (i.e. before the aggregate shock takes place) so that:

$$\psi\left(\hat{\lambda}\right) = \gamma\left(\beta + \zeta(1-\beta) - \left(1-\zeta\right)\left(1-\beta\right)\right).$$

The key observation is that any equilibrium where $\lambda = \hat{\lambda}$, must have less good behavior by the leader so that the equilibrium behavior in (4) is an upper bound on the performance of democracy consistent with the level of checks and balances in place.

the distributional issue is of little importance (a very small $\tau$ as in the top-left cell), democracy performs better as long as $\gamma(\beta) < \Gamma(\phi, \upsilon)$ (compare equations (1) and (4)), i.e. power is more contestable in a democracy. Thus democracy is better in so far as it strengthens the power of the opposition and increases the group specific rent that motivates a bad politician to stay in office.

When the distributional issue is very important (a very large $\tau$ as in the bottom-right cell in Table 1), we see, by comparing equations (2) and (3), that democracy performs better as long as democratic competition does not entirely prevent group $A$ from holding power ($\gamma(\beta) > 0$). When the distributional issue is very salient, the selectorate in autocracy is unable to discipline the policy maker. However, in democracy the fact that group $A$ citizens regularly face competition from group $B$ allows them to discipline a bad politician.

Which of the off-diagonal cells in Table 1 is the relevant parameter region depends on the size of $\Gamma(\phi, \upsilon)$. If $(1-\pi)(1-\Gamma(\phi, \upsilon)) \geq \pi$, then the bottom-left cell is relevant. In this case, democracy always performs better (compare (2) and (4)). In this case, $\Gamma(\phi, \upsilon)$ is not large enough for the selectorate to credibly threaten to remove a bad politician if he behaves badly. On the other hand, in democracy, group $B$ citizens are responsive to the policy maker's good behavior, giving the incumbent an incentive to behave well. Broader political participation in a democracy is beneficial in this case.

If $\Gamma(\phi, \upsilon)$ is large enough so that $(1 - \pi)(1 - \Gamma(\phi, \upsilon)) < \pi$, we are in the top-right cell in which autocracy performs better than democracy (compare (1) and (3)). In this case, the distributional issue is relatively important, making group $B$ citizens unresponsive to the good action by the incumbent. In a democracy, this unresponsiveness undermines a bad politician's incentive for good action. In an autocracy, however, group $B$ has very little influence on leadership selection due to a high $\Gamma(\phi, \upsilon)$. This exclusion of group $B$ from political participation creates an incentive for a bad politician to undertake good policy because group $A$ does not fear losing power after replacing the leader.

The above analysis suggests that, as long as the selectorate has a strong hold over power, autocracy is a better form of government if the distributional issue is neither too salient nor too irrelevant. In all other cases, however, democracy is a better form of government, at least under the plausible condition that $0 < \gamma(\beta) < \Gamma(\phi, \upsilon)$. Thus, while the approach that we have taken shows why successful autocracy is a possibility, it is suggestive of

why democracy is broadly superior in promoting general interest policies.

While the analysis is very simple indeed, it gives a novel take on the difference between autocracy and democracy in delivering policies. There is no easy ranking between democracy and autocracy—it depends on the institutional setting and the environment in which system of government is implemented. For a given level of the salience of the distributional issue (a fixed $\tau$), the model suggests a natural ordering among a cross-section of democracies and autocracies in terms of implementation of general interest policies. Best of all is responsive democracy where general interest policies are salient (a large $\Delta$). Second best is successful autocracy, requiring an effective selectorate. Next is polarized democracy where elections do not reward good general interest policies. Worst of all is bad autocracy where leaders are able to hold on to power regardless of their performance while in office. This could explain the longer lower tail of the performance distribution among autocracies, as seen in Figure 1.

However, Figure 1 also shows that autocracy has a longer upper tail in the performance distribution. Our model can explain this by assuming that the extent of constraints on distributional issues (as proxied by $(\bar{\sigma} - \underline{\sigma})$) is lower in a political system without regularized contests for power. Comparing equations (1) and (4) reveals that even if $\gamma(\beta) < \Gamma(\phi, \upsilon)$, autocracy can perform better because the policy maker is motivated more by group specific rents. The lack of constraints on autocratic leaders in making distributional policies may explain why some autocracies perform better than the best of all democracies. Thus there are likely to be important interaction effects between the different dimensions of government institutions as measured in data sets like POLITY IV.

## 3.4 Discussion

Padro-i-Miquel (2006) is many ways the closest contribution to this paper. Although it is not discussed explicitly, his model also predicts that secure power of the selectorate (high $\Gamma(\phi, \upsilon)$) improves the policy-maker's performance. What distinguishes our model from his is the effect of institutionalizing participation by the opposition group in leadership selection. In Padro-i-Miquel (2006)'s model, the institutionalized participation by the opposition prevents an autocrat from expropriating them at his will, which in turn reduces the ruling group's fear of losing power and allows them to discipline the autocrat. In our model, allowing the opposition to participate

in leadership selection may not improve the policy choice if the distributional policy is more salient. The difference stems from our assumption that distributional policy making depends on checks and balances and the group identity of the policy maker. Moreover, the contest for power does not discipline the incumbent in this policy dimension.

The model has deliberately focused on the incidence of common interest policy decisions in democracy and autocracy. This makes sense as the performance metric that it invokes is uncontroversial. However, it is clear that the distributional outcomes under all the cases that we have studied may be quite different. Thus, there could be a preference for one regime or another on distributional grounds. For example, in the case of successful autocracy, power is monopolized by group $A$ and this may not be good from a social point of view. A more complete treatment of the issues would clearly have to widen the perspective that we have taken here by taking a stance on a welfare criterion that pays attention to distributional issues.

We also assumed that the fraction of good politicians $\pi$ is fixed in comparing across political regimes. However, the model makes clear that $\pi$ can affect the quality of government, both directly in determining whether good actions are taken and indirectly by changing the political equilibrium. Besley (2005) emphasizes the importance of selection mechanisms in political regimes both in history and comparing contemporary political regimes. More open access to political life could be an important difference between autocracy and democracy which would affect the comparison in a way that is not modeled in our baseline case.[27]

Perhaps the most interesting possibility for future work is to appraise the way in which this framework predicts the evolution of institutional choices over time. We should expect autocracy and democracy to prevail when they are successful. Thus there should be a bias (among long-lived regimes) towards cases where (in terms of the model) the equilibrium policy outcomes are (1) and (4). But for that democracy requires good checks and balances with general interest policies being more salient. Equally, successful autocracy requires a strong, hard-to-repress or hard-to-bribe, selectorate. However, coping with weak checks and balances (and polarization) should be less of an issue for producing general interest actions in autocracy.

Perhaps the main attraction of the approach taken here is that it gets

[27] Rauch (2001) can be seen as an attempt to endogenize $\pi$ in our model in the context of autocratic regimes.

the focus on institutional features that shape policy incentives. Within the confines of institutional variants such as autocracy and democracy, we have emphasized the sources of heterogeneous outcomes which are typical of the data.

# 4 Successful Autocracies?

In this section, we look at autocracies empirically. This analysis serves two purposes. The first is to show that there are indeed cases of successful autocracies according to objective criteria. Although we have some sense of which autocracies are more successful than others (e.g. the Chinese communist regime versus African dictatorships), to the best of our knowledge, there has been no systematic analysis to identify good autocracies empirically. The second aim of this section is to identify the cases of successful autocracy which we will use to investigate the validity of our theory in the next section. By relying on objective criteria to identify successful autocracies, we avoid arbitrarily selecting only cases that are consistent with our theory.

To identify successful autocracies, we first need to decide how to define an autocracy empirically. Ideally, the definition should closely follow the characterization of autocracy in our theory: the absence of regularized contest for leadership. In addition, to capture heterogeneous institutional features among autocracies, we should separate periods of autocratic rule by the degree of constraints on the executive in making distributional policy ($\bar{\sigma} - \underline{\sigma}$), the proportion of the selectorate among enfranchised citizens ($\phi$), and the way enfranchised citizens exercise their power ($\upsilon$).

Due to lack of such data covering a long period of time, however, we rely on the Polity data base (POLITY IV, version 2004) because its coverage of the sample period is the longest among appropriate datasets. We adopt the following procedure to divide country-years into autocratic and democratic regimes. First, for each country, we divide years from 1800 or independence until 2004 between democratic and autocratic periods according to the Polity score. The Polity score, ranging from -10 to 10, measures the degree of democracy.[28] If the Polity score is positive, we treat such a year as demo-

[28]If the Polity score is either -66 (foreign occupation), -77 (anarchy), or -88 (regime transition periods), we see it as a year without a regime.

cratic. Years with a non-positive Polity score are autocratic.[29] To capture heterogeneity among autocracies and democracies, we further divide consecutive democratic and autocratic years into different regimes if there is a change in authority characteristics according to the Polity data set: the method of chief executive recruitment (EXREC), the constraint on chief executive (EXCONST), and political participation (POLCOMP). These three dimensions of authority characteristics measured in the Polity data base loosely correspond to institutional features of autocracy in our model: EXREC for the presence of regularized contest for executive power, EXCONST for checks and balances on the distributional policy, and POLCOMP for the probability that the selectorate stays in power when the incumbent is replaced ($\Gamma(\phi, \upsilon)$).

In sum, we define a "regime" as consecutive years with the same authority characteristics. A regime is autocratic if its POLITY score is non-positive. Below, we restrict our attention to regimes that lasted at least five full calendar years. Autocratic regimes of shorter length may perform very well simply because of luck or just by "inheriting" a good performance from the previous regime.

In the following subsections, we first identify autocracies successful in achieving economic growth. We then turn to autocracies successful in human development: health and education. These two investigations identify the core set of successful autocracies, successful in at least two dimensions of performance among the three (growth, health, and education). We check the robustness of the selection of these autocracies to alternative definitions of autocracy. Finally, we show that "standard" exogenous characteristics of countries identified by the literature on the quality of government and institutions do not fully predict whether a country has a successful autocracy.

## 4.1 Economically Successful Autocracies

We measure each regime's economic performance as follows. Suppose that a regime starts in year $s$ and ends in year $t$. We calculate the regime's annual economic growth rate as

$$\frac{\ln Y_{t-1} - \ln Y_s}{t-1-s}, \tag{5}$$

[29] See below for the robustness to choosing a different cut-off value.

where $Y_t$ is real GDP per capita in year $t$, taken from the Penn World Table version 6.2 (the variable RGDPCH).[30]

We then obtain the 80th percentile of the distribution of annual growth rates among all regimes, including democratic ones (313 in total). We regard an autocratic regime as successful if its annual growth rate exceeds this 80th percentile of the distribution.[31]

Table 2 shows the list of economically successful autocracies obtained by the above procedure. There are 35 autocratic regimes whose annual growth rate is above the 80th percentile of the distribution. The list includes East Asian autocracies well-known for high economic growth such as China, Indonesia, Singapore, South Korea, Taiwan, and Thailand. Dictatorships in southern Europe are also in the list. On the other hand, there are lesser-known autocracies as well: a couple of African countries in the 1960s (Gabon and Togo), those in the Middle East (Iraq in the 1970s, Syria in the 1960s), communist regimes in East Europe (Poland, Romania), and a few Latin American countries (Ecuador in the 1970s, Peru and Venezuela in the 1950s). Overall, the table shows that there are indeed successful autocracies in terms of economic growth.

Measuring success based on annual growth rates may not be an accurate way of assessing economic performance of regimes, however. One concern is that a regime's growth rate may pick up the effect of country characteristics. Whatever regime may exist, it can be that a country's economy grows anyway. Another concern is that an economy under a certain regime may grow rapidly solely due to the convergence effect if the regime starts with very low per capita GDP. Finally, a regime may perform well simply because it succeeds the previous regime which devastated the economy.

To deal with these concerns, we conduct three alternative assessments of success. First, we subtract the *country*'s annual economic growth rate from each regime's growth rate, obtain the 80th percentile of the demeaned growth rates among all regimes, and check whether autocratic regimes in

[30] We choose $t-1$ rather than $t$ as the end year for calculating annual growth rate because $Y_t$ may reflect an economic turmoil caused by the regime change and/or the succeeding regime. In a few cases where the succeeding regime starts on January 1 of the next year, we use $Y_t$ instead of $Y_{t-1}$. If GDP observations are not available for the entire period of a regime, we use the first and/or the last observation to calculate the growth rate. In doing so, we drop regimes with less than five years of GDP observations.

[31] Note that this procedure would yield very few successful autocracies if most regimes in the top quintile of the growth distribution were democratic.

Table 2 are above the 80th percentile. This procedure removes "country fixed effects" from the measure of performance of each regime. Second, we group regimes into five quintiles according to their initial GDP per capita ($Y_s$ in equation (5)), obtain each quintile's average growth rate, subtract it from each regime's growth rate, calculate the 80th percentile of the demeaned growth rates among all regimes, and check whether autocratic regimes in Table 2 are above the 80th percentile. As a result, the convergence effect is removed from each regime's performance measure. Finally, we discount a regime's success if it does not survive ten years or longer *and* if it follows a three-year period of negative growth (i.e. $Y_s - Y_{s-3} < 0$), because such a regime can perform well simply due to a "reconstruction" effect.[32]

The three columns to the right in Table 2 show the results from these three robustness checks. Among the 35 successful autocracies, 21 survive all the robustness checks that are applicable. The first robustness check turns out to be tough for East Asian autocracies since these countries grew consistently over time. Notwithstanding, China since 1976, South Korea in the 1980s, Thailand in the 1960s, and Indonesia since 1967 survive this test, proving to be very successful autocracies.

## 4.2 Autocracies Successful in Human Development

We now turn to human development. To measure success in this sphere, we first remove the effect of real GDP per capita by obtaining the residuals from the following equation estimated for each cross-section of countries in year $t$:

$$H_t = \alpha + \beta Y_t + \gamma (Y_t)^2 + \varepsilon_t, \tag{6}$$

where $H_t$ is either life expectancy at birth in year $t$, obtained from *World Development Indicators* (September 2006 edition), or the gross primary school enrollment ratio in year $t$ obtained from UNESCO Institute for Statistics (through the EdStats web site maintained by the World Bank).[33] We include

[32] Note that this procedure is not applicable to regimes for which $Y_{s-3}$ is not available in the data.

[33] For life expectancy, years 1960, 1962, 1967, 1970, 1972, 1977, 1980, 1982, 1985, 1987, 1990, 1992, 1995, 1997, 2000, 2002, 2003, and 2004 are chosen because data for a sizable number of countries is available for these years. For primary school enrollment ratio, years 1970, 1975, 1980, 1985, 1990-1996, and 1999-2004 are chosen for the same reason. For Taiwan, we use data taken from the 1987 (for health), 1994 (for education), and 2005 (for both) issues of *Statistical Yearbook of the Republic of China*.

the squared term of per capita income as a regressor because health and education exhibit a strong non-linear relationship with income in a cross-section of countries.[34] We can interpret the residuals as partly reflecting government efforts to promote human development through public health interventions and developing schooling systems.

We average the residuals for each regime and calculate the 80th percentile of its distribution among all regimes (307 for health and 275 for education).[35] We also perform the first of the three robustness checks that we conducted for economic performance (i.e. removing "country fixed effects"). Tables 3 and 4 list successful autocracies in terms of health and education, respectively. Communist regimes in China, Cuba, Poland, Romania, and Vietnam appear in these tables. For health, regimes in the Middle East and North Africa enter the list (Algeria, Iraq, Jordan, Morocco, Syria, Tunisia) while the list for education includes a number of African regimes.

Figures 2 and 3 show the distributions of the mean residuals across democratic and autocratic regimes for health and education, respectively. Figure 2 confirms the finding by Besley and Kudamatsu (2006) that democracies have higher life expectancy than autocracies conditional upon income per capita. In addition, both figures show that the performance of autocracies is more heterogeneous than that of democracies for human development.[36]

## 4.3 Robustness

In order to identify autocracies that are successful in at least two dimensions of performance among the three (economic growth, health production, and education), we assign the score of success to each regime which is equal to the number of the league tables in which a regime appears. If a regime passes all the applicable robustness check in each table, one more point is added to the score in each case. The highest score is, therefore, six. We choose four as the cut-off because this ensures success in at least two dimensions

[34] Preston (1975) finds this non-linear relationship for health. It turns out that a similar non-linear relationship can be found for primary school enrollment.

[35] In calculating the average residual for each regime, we exclude the residuals in the first year of each regime because they may reflect political instability caused by regime change or the achievement by the previous regime.

[36] The lower tail of the distribution for democracies in Figure 2 (below -15 years) only includes two regimes: South Africa (since 1994) at -19.3 years and Botswana (since 1997) at -30 years, both of which suffer severely from HIV epidemics.

and at least one robust success. Table 5 shows the list of autocracies whose score is four or higher. The list includes dictatorships in southern Europe (Greece, Portugal, and Spain), communist regimes in China, Cuba, Poland, and Romania, and military dictatorships in Latin America (Brazil, Chile, and Panama) and in East Asia (South Korea and Thailand).

Below, we check the robustness of this list to alternative definitions of autocratic regimes.

#### 4.3.1 Definition of Regimes

Our definition of a "regime" entirely depends on the coding in the Polity data base. As the original aim of the Polity data set is to analyze the duration of regimes (see Marshall and Jaggers 2005, p.3), we have much confidence in the coding of regime change timing in the data set. However, defining the beginning and end of regimes in a different way may yield a different list of successful autocracies. To check this possibility, we use an alternative definition of regimes. We first divide years for each country between democratic and autocratic periods according to the Polity variable as we did above. For autocratic periods, we then divide them into different regimes if chief executives of government are different according to the Archigos data set (version 2.5).[37] In other words, an autocratic regime terminates either if a country is democratized or if a different person assumes executive power. Consequently, each autocratic regime now represents one dictator. For a democratic period, we treat it as one regime, because leadership changes are so frequent in democracies that many democratic regimes would not survive five full calendar years or longer if we divided them by leadership changes.

With this definition of a regime, we conduct exactly the same analysis as in the previous subsections. Table 6 lists dictators under whose rule annual economic growth exceeds the 80th percentile of the growth distribution among all regimes. The table also reports whether human development performances are above the 80th percentile of the distribution and whether each autocrat passes the robustness checks. The majority of successful autocratic regimes identified in Table 5 also appear in this table and perform well in health and/or education, too. Brazil (1965-74) and Thailand (1958-68) do not appear here because both regimes have relatively frequent leadership changes and are therefore split into multiple regimes of less than five full

[37] Jones and Olken (2007) use this dataset, which is downloadable at Hein Goemans's website: <http://mail.rochester.edu/~hgoemans/data.htm>.

calendar years. Chile (1973-81) and Cuba (1961-76) are dropped because these regimes are part of a dictator's long-lived rule (Pinochet and Castro) and these dictators perform less successfully during the rest of their rule.

As our theory in Section 3 emphasizes the role of leadership changes under the fixed parameters of regime characteristics, we prefer the definition of regimes according to the authority characteristics coded by the Polity data set, which allows leadership changes to happen within each autocratic regime. However, Table 6 shows that the definition of regimes does not affect the list of successful autocratic regimes substantially.

#### 4.3.2 Definition of Democracy

We define democracies as regimes with their Polity score being positive. As Fearon (2007) argues, however, this definition allows some dubious cases to be classified as democracies. It also does not strictly coincide with the presence of regularized contest for executive power as our model characterizes democracy. Table 7 shows the list of regimes whose Polity score is between 1 and 5 inclusive and whose growth rate is above the 80th percentile of the distribution of all regimes. Ten more regimes now enter the league table for economic growth. Among them, South Korea (1963-1972) and Greece (1949-1967) join the core set of successful autocracies in Table 5.

We further check the robustness of our definition of democracy to the use of a completely different democracy data set, the one by Przeworski et al. (2000).[38] We define a regime as a period in which three aspects of political institutions remain the same: (1) how the chief executive is elected (directly, indirectly, or not elected by popular elections); (2) how the legislature is elected (elected by popular elections, not elected, non-existent); and (3) the number of legal political parties (more than one, one, none).[39] A regime is democratic if all of the following five conditions are met: (1) the chief executive is elected directly or indirectly; (2) the legislature is elected by popular elections; (3) there is more than one legal political party; (4) the current chief executive will not establish non-party or one-party rule or unconstitutionally close legislature in subsequent years; and (5) there was, or will be, partisan power alternation via elections.[40] Otherwise a regime is autocratic.

[38] The dataset was obtained from Jose Cheibub's website in December, 2005.

[39] These three aspects correspond to variables EXSELEC, LEGSELEC, and PARTY in their dataset, respectively.

[40] See Chapter 1 of Przeworski et al. (2000) for details.

Table 8 provides the list of successful autocracies when we define democratic and autocratic regimes in this way. Since Przeworski et al. (2000)'s data ends in 1990, all the autocracies since the 1990s do not appear in this table.[41] Autocracies in Romania, Spain, South Korea, China, Panama, Portugal, and Thailand appear in this table as well though, except for South Korea, the robustness of their good performances is more tenuous than in Table 5. Brazil and Greece drop because these two regimes are split into multiple autocracies according to Przeworski et al. (2000)'s coding. Chile and Poland drop because the less successful period of autocracy (the 1980s) is now integrated into the same regime. Cuba drops due to the lack of Przeworski et al. (2000)'s coding.

The last three columns in Table 8 show three institutional features of these successful autocracies according to the coding by Przeworski et al. (2000). Successful autocracies do not seem to share institutional characteristics in terms of the way executive office and legislature seats are filled and the number of legal political parties.

## 4.4 Correlates of Successful Autocracies

In what kind of countries do successful autocracies tend to emerge? In this section, we seek exogenous characteristics of countries that are correlated with the incidence of successful autocracies. It turns out that exogenous country characteristics often used in the literature to explain socioeconomic performances, on the whole, do not seem to explain (in a statistical sense) the emergence of successful autocracies.

We estimate the following probit regression for the sample of autocratic regimes (defined by the Polity data set), to see if any country characteristics predict successful autocracies:

$$\Pr(SUCCESS_{ic}^{k} = 1) = \Phi(\alpha + \mathbf{X}_{c}\boldsymbol{\beta} + \mathbf{Z}_{ic}\boldsymbol{\gamma}), \tag{7}$$

where $SUCCESS_{ic}^{k}$ is 1 if an autocratic regime $i$ in country $c$ appears in the list in Table $k \in \{2, 3, 4, 5\}$ and 0 otherwise, $\Phi(\cdot)$ is the cumulative distribution function of the standard normal distribution, $\alpha$ is a constant, and $\mathbf{Z}_{ic}$

[41] The updated versions of Przeworski et al. (2000)'s data by Boix and Rosato (2001) or by Cheibub and Gandhi (2004) do not provide information on disaggregated aspects of political institutions. Therefore, we cannot exploit heterogeneity across autocracies in terms of institutional characteristics.

is a vector of controls including region dummies[42] and dummies for decades (1960s, 1970s, 1980s, 1990s) in which regime $i$ emerges. $\boldsymbol{X}_c$ is a vector of exogenous characteristics of country $c$ that are known as determinants of the quality of government and institutions in the literature (ethnic fractionalization, legal origins, European settlers' mortality).

Table 9 shows the results from this analysis. Columns (1) to (3) look at success in economic growth ($k = 2$). Column (1) shows that ethnic fractionalization, which Alesina et al. (2003) identify as a significant determinant of economic growth, does not predict the emergence of successful autocracies. Column (2) shows that European settlers' mortality, which Acemoglu et al. (2001) argue affects the degree of secure property rights and thus the level of economic development today, does not predict the economic success of autocracies, either.

In column (3), we deal with a concern that economically successful autocracies simply reflect oil booms. Autocratic regimes in oil producing countries like Ecuador, Equatorial Guinea, Gabon, Indonesia, Iran, Iraq, UAE, and Venezuela appear in Table 2. It may be the case that these successful autocracies simply coincide with periods of high oil prices. We first identify net oil exporting countries in 2003 according to *International Energy Annual 2004* (Table 3.1).[43] Next, we create a dummy variable which is equal to one if a country's net oil export is more than 100 barrels per day.[44] We also obtain the world crude oil prices (in US dollars per barrel) from *International Financial Statistics* (March 2007),[45] and deflate them by the World Bank's Manufactures Unit Value Index (100 in 1990).[46] We then calculate the av-

[42] East Asia and Pacific, Eastern Europe and Central Asia, South Asia, Middle East and North Africa, Sub-Saharan Africa, and Latin American and the Caribbean (with Western Europe - Greece, Portugal, and Spain - omitted). We follow the World Bank's classification of regions.

[43] See <http://www.eia.doe.gov/iea>. We calculate net oil exports by subtracting the sum of "crude oil imports" and "total imports of refined petroleum products" from the sum of "crude oil exports" and "total exports of refined petroleum products".

[44] We do not use time-variant oil exporter dummies because oil export data does not date back to the 1950s. The amount of oil export is also likely to be endogenous over time.

[45] The average prices of UK Brent (light), Dubai (medium), and West Texas Intermediate crude oil (line number 00176AAZZF).

[46] See <http://go.worldbank.org/VDQ5AA3VP0>. The Index measures the price of developing country imports of manufactures in U.S. dollar terms. We follow Deaton (1999), who uses this index to deflate commodity export price indices.

erage deflated oil price for each autocratic regime and subtract the average deflated oil price during the period between 1960 and 2004 to measure the extent to which each autocratic regime enjoys an oil price boom. Finally, we interact the oil exporter dummy with the regime-specific oil price deviation from the 1960-2004 average, and replace $\mathbf{X}_c$ in equation (7) with this interaction term. If the coefficient on this interaction term is positive, then successful autocracies simply reflect the oil price boom that these regimes enjoy. Column (3) shows that the coefficient is significantly *negative*, suggesting that oil price booms actually make autocracies less likely to be successful.[47] If we interpret oil export revenues as the source of distributional conflict (a large $T$ in our model), this finding is consistent with our theory though we cannot exclude alternative explanations such as Caselli (2006).[48]

In columns (4) and (5), we look at success in health production ($k = 3$). La Porta et al. (1999) find that ethnic fractionalization and the French legal origin are positively correlated with infant mortality. Column (4) shows that autocratic regimes successful in health production tend to be in countries with lower ethnic fractionalization. Thus the performance of autocracies in terms of health partly reflects the effect of ethnic homogeneity. However, as a low value of the Pseudo $R^2$ indicates, it is not the whole story. Column (5) shows that the French legal origin does not explain success of autocracies in health production. Countries with the socialist legal origin tend to have autocracies successful in terms of health. This result may be in line with our theory to the extent that communist regimes tend to have a strong selectorate. The positive correlation of German legal origin and success in health is difficult to interpret because only regimes in South Korea and Taiwan have German legal origin in the sample.

The dependent variable in columns (6) and (7) is success in education ($SUCCESS^4_{ic}$). La Porta et al. (1999) also find that ethnic fractionalization and the French legal origin are negatively correlated with school enrollment. We do not find these two exogenous country characteristics are correlated

[47] The standard deviation of the deflated oil price is 12.4 US dollars per barrel. Therefore, one standard deviation of the oil price decreases the probability of economic success by 24.8 percentage points for autocracies in oil-exporting countries.

[48] If we choose the cut-off of 500 barrels per day to create the oil exporter dummy, the coefficient on the interaction term becomes larger in magnitude. If we choose the cut-off of 0 barrel per day instead, the coefficient is no longer significant. However, a small amount of oil exports is unlikely to push up GDP per capita substantially during the period of oil price booms.

with success in education among autocracies, either.[49]

Finally, columns (8) and (9) investigate whether the core set of successful autocracies identified in Table 5 have any particular characteristics ($k = 5$). Since the number of successful autocracies is very limited in these regressions, a large number of observations are dropped because some decade dummies and region dummies perfectly predict success. Neither ethnic fractionalization nor European settlers' mortality is significantly correlated with success. Compared to the British legal origin, countries with the French legal origin are *more* likely to see successful autocracies, contrary to the negative correlation between the French legal origin and the quality of government, found by La Porta et al. (1999). Countries with the socialist and German legal origins are also more likely to have successful autocracies than those with the British legal origin. Indeed, only Thailand has the British legal origin among the countries listed in Table 5.

A positive correlation between socialist legal origin and the likelihood of successful autocracy might seem counter-factual. Our theory implies that communist regimes are successful to the extent that the ideology of communism ensures the secure hold of power by the selectorate (typically top communist party officials). Perhaps communism encourages groups of citizens outside the regime to accept autocratic rules while opposition groups in dictatorships without any ideology find it hard to accept such rule and thus pose a significant threat to the selectorate. Alternatively, the presence of ideology such as communism may enhance coordination among members of the ruling group to establish an effective repression mechanism to suppress the opposition. Either way, our model does not predict that communism *per se* breeds success. The later years of Ceausescu's rule in Romania (see Section 5.1 below) is an example where a communist regime can be transformed into personal rule.

[49] If we re-define $SUCCESS_{ic}^{k}$ for $k = 2, 3, 4$ by making it zero if regime $i$'s success is not robust, results for economic and educational success do not substantially change. For health success, the coefficient on ethnic fractionalization is no longer significant. If we run OLS regressions with economic growth rates, conditional life expectancy or school enrollment ratio as the dependent variable, results for educational success do not change. Ethnic fractionalization and the French legal origin are now negatively correlated with economic growth and health performance, respectively. These results imply that aside from top performers, the negative effect of ethnic fractionalization on economic growth and that of the French legal origin on health outcomes persist among autocratic regimes. The correlation between the oil price boom and economic success and between ethnic fractionalization and health success, on the other hand, is no longer significant.

These results suggest that the previous literature on the quality of government and institutions cannot fully explain why some autocracies are successful in achieving high economic growth, better health, and better education. A theory to explain successful autocracies is necessary to make further progress. We now investigate how well institutional features identified in our model relate to cases of successful autocracy as identified by this empirical exercise.

# 5 Link to the Theory

The previous section identified the core set of successful autocracies. In this section, we link these autocracies to our theory in Section 3. We first provide several case studies of successful autocracies to motivate the institutional context suggested by our theory. Next, we provide evidence that autocracies are more likely to be successful if the rate of leadership change is high, which is consistent with our theory. Finally, we exploit the natural death of leaders as a natural experiment to see if the selectorate's grip on power is indeed secure in successful autocracies, as predicted by our theory.

## 5.1 The Selectorate in Successful Autocracies: Some Case Studies

A core idea in our model is the role of the selectorate in organizing leadership contests *within* regimes in successful autocracies. We begin by looking at five case studies suggested by Table 5. Of these, we will argue that Brazil (1965-1974), China (1976-2004), and Romania (1948-1977) appear to be consistent with our theory. On the other hand, Spain (1939-1975) does not seem to match very well with our theoretical predictions. Finally, we consider South Korea (1973-1981). Although this does not seem to fit with our theory either, the advent of this autocratic regime can be explained by our theoretical framework.

**Brazil (October 1965 - January 1974)** According to the Polity data set, the Brazilian military dictatorship from 1964 to 1985 went through three regime changes in 1965, 1974, and 1982. Tables 2 and 4 reveal that the second phase was successful in economic development and primary school enrollment. During this period, Humberto Castelo Branco, Artur da Costa

e Silva, and Emilio Grrastazu Medici were the chief executives (Presidents) according to the Archigos data set.

The *de facto* selectorate of this regime was the armed forces. The national legislature (Congress) had the formal right to elect President.[50] However, it was only allowed to rubber-stamp the sole presidential candidate presented by the military both when the presidential term for Castelo Branco came to an end in 1967 and when Costa e Silva was incapacitated due to a stroke in 1969. In both cases, top military officers chose a candidate behind whom the armed forces could be united (Skidmore 1988, pp.18-21, 51-53; Stepan 1971, pp.248-252).

The replacement of Castelo Branco in 1967 appears to be consistent with our theoretical prediction that the selectorate can oust a poorly-performing incumbent in a successful autocracy. Kaufman (1979, pp.172-3) argues that Castelo Branco's economic policy resulted in only a moderate reduction in inflation and that the recession in the industrial southeast showed few signs of abating. Castelo Branco was determined to step down in 1967 (see Stepan 1971, p.248), but he tried to nominate his successor and prevent Costa e Silva from assuming office (see Skidmore 1988, pp.51-2). It appears that he failed to do so in part due to the unpopularity of his economic policies among military officers. Upon assuming presidency, Costa e Silva appointed Delfim Neto as finance minister, under whose economic management the Brazilian economy grew rapidly.

The presidential succession after the incapacitation of Costa e Silva also shows that the Brazilian armed forces' grip on power was secure. Although the Constitution stipulated that vice-president would succeed the incapacitated president, the military did not allow Vice President Pedro Aleixo, a veteran Congressman, to take office. Those outside the regime, including Congressmen, had no say in leadership selection.

This episode is consistent with our theory in that successful autocracies are those with the selectorate whose power is secure in the case of a leadership replacement.

**China (since September 1976)** Since the death of Mao Zedong, who had been Communist Party Chairman since the proclamation of People's Republic of China in 1949, China has been a stable autocratic regime according to the Polity data set. As Tables 2 to 4 show, the communist regime of

[50] *Keesing's Contemporary Archives*, pp.21063, 21939, 23706.

China during this period has been successful in economic and human development (though success in human development is less spectacular than in Mao's era). According to the Archigos data set, Hua Guofeng, Deng Xiaoping, Jiang Zemin, and Hu Jintao were the chief executives under this regime.

Members of the Politburo of the Chinese Communist Party appear to correspond to the selectorate in our theory. Formally, the Party's leader (Party Chairman until 1982 and General Secretary afterwards) is elected by the Central Committee of the Party whose several hundreds members are in turn elected by the Party Congress. However, members of the Central Committee are *de facto* appointed by around 20 members of the Politburo.[51]

After the death of Mao Zedong, Hua Guofeng assumed party chairmanship by the Politburo's appointment.[52] During the subsequent years until his resignation as Party Chairman in June of 1981, Hua's power was gradually transferred to Deng Xioaping, apparently because the Politburo members were dissatisfied with Hua's attempt to continue Mao's policies (Lieberthal 2004, pp. 125-7). This gradual power transfer paralleled with the replacement of Hua's supporters with Deng's in the Politburo membership.[53]

As Deng never assumed leadership formally, it is hard to tell whether members of the Politburo disciplined him during his rule. However, the selection of General Secretary of the Party does appear to have been in the hands of the Politburo. Hu Yaobang, Deng's designated successor and General Secretary since 1982, resigned in January of 1988, when several members of the Politburo were dissatisfied with his economic policies and tolerance on pro-democracy student protests.[54] Zhao Ziang, who succeeded Hu as General Secretary, was in turn dismissed by the Politburo for similar reasons in May of 1989.[55]

[51] See Lieberthal (2004, pp.173-5) for the formal organizational structure of the Party.

[52] See *Keesing's Contemporary Archives*, pp.28205-7 and 28719.

[53] Deng's supporters (Chen Yun, Deng Yingchao, Hu Yaobang, and Wang Zhen) joined the Politburo in December of 1978 (*Keesing's Contemporary Archives*, p.30488). Lieberthal (2004, p.126) regards Wang Dongxing, Wu De, Ji Dengkui, and Chen Xilian as Politburo members supporting Hua. All of them resigned from the Politburo in February of 1980 (*Keesing's Contemporary Archives*, p.30498).

[54] See the account by Ruan (1994, pp. 165-9, 175-6), who was Hu's friend.

[55] *Keesing's Record of World Events*, p. 36640. An immediate reason for Zhao's dismissal was his support for pro-democracy student protests in Tianamen Square. However, Zhao's support had already waned since late 1988 due to his too radical economic reform causing inflation. Also, Zhao's sons were alleged to be corrupt businessmen in Guangdon

The handover of power from Deng to Jiang Zemin, who was appointed as General Secretary in June of 1989, took place gradually.[56] Jiang was formally re-elected as General Secretary by the Central Committee in October of 1992 and September of 1997. Given that Central Committee members are effectively appointed by the Politburo, the re-election of Jiang implies that the Politburo supported him. In November of 2002, Hu Jintao became General Secretary. Lieberthanl (2004, p.156) notes that "Jiang reportedly tried to convince his colleagues to allow him to stay on as General Secretary". But he failed, indicating that members of the Politburo supported Hu's succession.

In every case of leadership succession over this period, the opposition to the Communist Party rule did not manage to participate in leadership selection. In our model's term, $\Gamma(\phi, \upsilon)$ was close to one because the opposition group is effectively disenfranchised ($\phi \approx 1$) and/or their voice counts little ($\upsilon \approx 0$). When Zhao Ziang was dismissed in May of 1989, for example, there had been student-led anti-government demonstrations in Beijing since April. The communist government, however, managed to stay in power by mobilizing the army to suppress the demonstrations (the Tiananmen Square massacre).[57]

Overall, China since 1976 fits well with our model of autocracy and case 1 of Proposition 1.

**Romania (January 1948 - January 1977)** Since the proclamation of People's Republic of Romania until Nicolae Ceausescu consolidated his personal rule, Romania's communist rule is coded as one regime by the Polity data set. According to the Archigos data set, Gheorghe Gheorghiu-Dej and Nicolae Ceausescu were the rulers during this period. As Tables 2 to 4 show, the regime's performance is impressive in all the three dimensions of development.

Top officials in the communist party are clearly the selectorate under this regime. At a meeting in October of 1945, the party's central committee secretaries agreed that Gheorghiu-Dej became general secretary, the top position to lead the party (Tismaneanu 2003, p.121). At the central

Province. See Gilley (1998, pp.129-31) and Lieberthal (2004, pp. 144-5).

[56] By the end of 1995, Deng was effectively incapacitated and no longer commented on policies (Gilley 1998, p.288).

[57] *Keesing's Record of World Events*, pp. 36587, 36640, 36720.

committee plenum in March of 1956, two members of the Politburo (Iosif Chisinevschi and Miron Constantinescu) openly challenged Gheorghiu-Dej's authority. When Gheorghiu-Dej died of lung cancer in March of 1965, members of the Politburo chose Ceausescu as his successor (*Ibid.*, pp.185-6).

It appears that Gheorghui-Dej decided to promote industrialization after his Stalinist background became the source of criticism due to Khrushchev's Secret Speech, denouncing Stalinism, in 1956. In this context, the leadership challenge by Chisinevschi and Constantinescu, mentioned above, took place. Determined to promote industrialization, he even resisted Khrushcev's plan to transform Romania into the agricultural base in the Soviet bloc.[58]

Ceausescu continued this effort of industrialization. By the time this centrally-planned industrialization caused economic problems in the late 1970s, however, Ceausescu managed to consolidate his power and established his personal cult, appointing his wife as the number two in the communist party hierarchy and promoting his son as heir-apparent.[59] The selectorate's grip on power appears to have become dependent on Ceausescu, unable to discipline his devastating economic policies in the 1980s.

**Spain (April 1939 - November 1975)** Franco ruled Spain during this period (from the end of the Civil War until his death). Although the regime began in 1939, the data that we used to identify Franco as an successful autocrat comes from the 1950s at the earliest.

We are unable to find any characteristics of Franco's regime consistent with our theory. The formal rule of leadership succession (Law of Succession), adopted in a popular referendum on July 6, 1947, stipulated that Spain was a monarchy which Franco would govern until his death and that Franco had the right to appoint his successor.[60] Therefore, there was no selectorate, at least formally.

[58] See Tismaneanu (2003, pp.142-180) for a series of events from the Secret Speech to the adoption of industrialization plans.

[59] See Fischer (1989) for a series of events leading to the consolidation of Ceausescu's power. It is perhaps not just a coincidence that Ion Gheorghe Mauer and Emil Bondras, two members of the politburo instrumental to the appointment of Ceausescu as Gheorghiu-Dej's successor in 1965 (Tismaneanu 2003, pp.185-6), voluntarily resigned from the politburo and died in office, respectively, in the mid-1970 (*Ibid.*, p.193), after which Ceausescu's rule became out of control of any member of the communist party.

[60] See Payne (1987, pp.372-5), Grugel and Rees (1997, pp.42-3), and Fusi (1987, pp.66-7) for the background of the adoption of the Law of Succession.

Franco's regime supporters consist of *Falangists* (Spanish fascists), the military, the Catholic church, and monarchists. These groups might be seen as the selectorate, but there is little evidence that any of them seriously challenged Franco's leadership (Grugel and Rees 1997, pp.30-43, 51-8). Franco's balancing act looks like the divide-and-rule tactic, which Acemoglu, Robinson, and Verdier (2004) identify as the source of long-lasting kleptocracy.

Given this personal-rule characteristics of the regime, Franco's flexibility on economic policies is remarkable. When the policy of an autarky and import-substitution industrialization ended up with government deficits, inflation, and current-account imbalances by the mid-1950s, culminating in strikes and student protests, Franco shuffled the cabinet, appointing two technocrats, Alberto Ullastres and Mariano Navarro Rubio, to economic ministers in 1957. When the two ministers proposed the abandonment of the autarky policy and the plan for macroeconomic stabilization, Franco accepted the proposal even though this was against Franco's ideology (Payne 1987, p.470). We cannot relate this policy change to the selectorate's pressure on Franco. If any, there appears to have been the pressure from the opposition outside the regime—protesting workers and students in the 1950s. Weirdly enough, the logic of successful democracy in our model seems to apply here, if not through regularized elections but through strikes and protests. Alternatively, Franco might have been a good policy maker in the terms of our model.

**South Korea (February 1973 - March 1981)** According to the Polity data set, South Korean military dictatorship, initiated by a coup in 1961, went through four changes of authority characteristics (1963, 1972, 1973, 1981).[61] We have identified the fourth regime as the most successful.[62] During this period, Archigos identifies four leaders ruling the country: Park Chung Hee until his assassination in 1979, Choi Kyu Hah from 1979 to

[61] Park Chung Hee staged a military coup and became president in 1961; held multiparty presidential elections and won in 1963; disbanded the national legislature, banned political parties temporarily, and introduced the indirect presidential election by non-partisan electoral college (see below for more detail) in 1972; and held multiparty legislative elections for the two-thirds of the seats in 1973 (the remaining one-third is appointed by the president). In 1981, members of the electoral college were allowed to be affiliated with political parties.

[62] Table 6 shows that, if we define democracy as a regime with its Polity score larger than 5, the second phase (1963-1972) is also a successful autocracy.

1980, Park Chung Hun briefly in 1980, and Chun Doo Hwan from 1980, who continued to rule the country until 1988.

Formally, the selectorate was an electoral college, the *National Conference for Unification* (NCU), whose members were elected by popular votes on a non-partisan basis. The Constitution (proposed by Park Chung Hee and approved in a referendum in November of 1972) stipulated that the NCU would elect the President for six years with no term limits. Elections for the NCU took place in December of 1972 (5,876 candidates contested the 2359 seats with 225 unopposed in their constituencies) and in May of 1978 (boycotted by opposition parties), both followed by the re-election of Park as President.[63] After Park's assassination, the NCU elected Choi Kyu Hah, who had been Prime Minister since 1975, as new President in December of 1979. After the resignation of Choi in August of 1980, the NCU elected Chun Doo Hwan as new President in the same month.[64] It is not entirely clear whether members of the NCU had any influence on leadership selection, however.[65]

Informally, the Korean CIA (KCIA), the regime's secret police organization, could have been the selectorate. It was the KCIA chief who assassinated Park in 1979. However, the assassin's predecessors as the KCIA chief were repeatedly purged by Park (Clifford 1998, pp.80-90). There is little evidence that anyone within the regime credibly threatened to oust Park.

A threat does appear to have come from those outside the regime, especially the opposition party leader Kim Dae-Jung.[66] He ran for the presidency in the 1971 election, only narrowly defeated by Park, even though Park's export-led industrialization policy since the mid-1960s had been successful. This electoral result appears to have prompted Park to abolish multiparty direct presidential elections in 1972.[67] We can interpret this series of events in terms of our model. South Korea in the early 1970s could have been the

[63] See *Keesing's Contemporary Archives*, pp.25747, 29795).

[64] Chun Doo Hwan seized the control of the military in December of 1979 and imposed martial law in May 1980, shortly after which he became the head of an advisory body (consisting of military officers) to President Choi. See Clifford (1998, pp.143-163).

[65] We are unable to find any scholarly research on the NCU, which Korea specialists appear to dismiss as a rubber-stamping organization.

[66] Clifford (1998, p.86) notes that, according to a former KCIA director, Park feared two things: Kim Dae Jung and the U.S. Congress.

[67] Sohn (1989, pp.31-2) quotes Park's remark on the 1971 electoral result: "... I have done my best to get rid of poverty. ... [D]o I deserve only this margin against Kim Dae Jung?"

case of high polarization where $(1-\pi)\Delta < \tau$. Although the economy grew rapidly and therefore the size of the pie to share among the population, $T$, became larger, workers did not benefit much from it due to wage suppression by the regime.[68] The opposition group, therefore, would never reward the incumbent's good behavior. Park's supporters including the business community—and Park himself if he was a good policy maker in the terms of our model—therefore preferred the autocratic regime in which the selectorate could discipline the incumbent (or Park as a good policy maker could keep choosing a good policy without being ousted).

## 5.2 Turnover

Our theory predicts that autocracies are successful if the selectorate can credibly remove poorly-performing leaders. This implies that an autocratic regime with a high rate of leadership change is more likely to be successful on average than those with less turnover.[69]

To test this empirical implication, we obtain the number of leadership changes for each autocratic regime, from the Archigos data set.[70] We then calculate the number of leadership changes per year for each regime. The raw data support the idea that there are turnover differences in successful and unsuccessful autocracies (as identified in the base case of section 4.1 above). The probability of turnover in a successful autocracy is 13% compared to 7% in an unsuccessful autocracy (the difference being statistically significant at 5%). This implies that leaders in successful autocratic regimes spend on average seven and half years in office compared to nine years for unsuccessful

[68] See the account on worker protests in the early 1970s by Sohn (1989, pp.34-6).

[69] Note that if we look at the *same* successful autocratic regime over time, our theory predicts the opposite: leadership change follows a bad performance. This prediction is *not* what we try to provide empirical support for here. Also note that leadership turnover and regime performance are jointly determined in our theoretical model. The aim of empirical analysis in this subsection is, therefore, not to establish causality but to show correlations which are consistent with our theory.

[70] We match POLITY IV and Archigos on a daily basis to avoid assigning leadership changes to regimes that emerge later in the same year. If a leadership change and the emergence of a new regime take place on the same date, we assign the leadership change to the preceding regime. Finally, if the Archigos data set indicates that there is no national leader, we regard only the beginning of such a period as a leadership change rather than counting two leadership changes at the beginning and the end, because we are interested in whether the selectorate can replace the incumbent.

autocratic regimes. Interestingly, this contrasts with a much higher rate of annual turnover of leaders (26%) in regimes classified as democracies implying an average leadership tenure of just over four years.

To examine this further, we estimate equation (7) where $\mathbf{X}_c$ is replaced with the number of leadership changes per year for regime $i$. Table 10 shows the estimated marginal effect of the rate of leadership changes. The dependent variable in column (1) is a dummy indicating economic success (whether an autocratic regime is listed in Table 2). The higher rate of leadership changes is significantly associated with a higher likelihood of economic success, consistent with our theoretical prediction. One standard deviation of the number of leadership changes per year (0.11) changes the probability of economic success by around 11 percentage points.

If we restrict economic success to robust cases, the significant positive correlation between leadership turnover and success remains (column (2)). For success in health and education, however, columns (3) to (6) show no significant correlation between the rate of leadership changes and regime performance. In column (7), the dependent variable is a dummy indicating whether an autocratic regime is in the core set of successful ones identified by Table 5. There is no correlation for this group either.[71]

In sum, this evidence suggestively supports a key idea from our theory when economic success is used as the outcome. The results on health and education suggest that the selectorate in autocracy is less responsive to leadership performance in human development, perhaps because members of the selectorate can privately afford better health and education.

## 5.3 Death of Leader as a Natural Experiment

Our theory predicts that an autocracy is successful if the selectorate's grip on power is secure ($\Gamma(\phi, \upsilon)$ is high). More specifically, an autocrat is disciplined by the selectorate if overthrowing him does not lead to the seizure of power by citizens outside the selectorate.

Observing $\Gamma(\phi, \upsilon)$ for each autocratic regime is not an easy task. We may observe a leadership change in a poorly-performing autocracy with the selectorate remaining in power afterwards. This may be interpreted as an

[71] These results are robust to excluding leadership changes due to natural causes (natural deaths, resignation for health reasons, and suicides) from the calculation of the rate of leadership turnover.

unsuccessful autocracy with a high $\Gamma(\phi, \upsilon)$ which is apparently inconsistent with our theory. However, it can also be interpreted as an equilibrium outcome of our model where the policy maker chooses the bad policy and thus gets removed from office by the selectorate with a high $\Gamma(\phi, \upsilon)$. The problem here is that leadership changes are endogenous to the regime performance.

However, if a leader dies or becomes incapacitated due to natural causes, whether the selectorate remains in power afterwards does indicate $\Gamma(\phi, \upsilon)$. Our theory, therefore, predicts that an autocratic regime performs well if a random death or incapacitation of the leader does not lead to the loss of power by the selectorate. It also should be the case that after a poorly-performing dictator dies due to natural causes, the selectorate is likely to change afterwards.[72]

Table 11 shows the list of autocratic regimes (with data on either growth, health, or education) under which the chief executive died in office due to natural causes, according to the Archigos data set. Among the core set of successful autocracies identified in Table 5, regimes in China, Poland, Portugal, Romania, Spain, and Thailand went through a natural death of the leader. We already saw above that the deaths of Deng Xiaoping in China and Gheorghe Gheorghiu-Dej in Romania did not lead to the loss of power by the selectorate, indicating that these two regimes had a high value of $\Gamma(\phi, \upsilon)$ and this might have allowed the selectorate to discipline their leader. We find that Portugal and Thailand are also consistent with our theory.[73] To see whether unsuccessful autocracies confronted with a random death reveal a poorly entrenched selectorate, we also look at Guinea.

We proceed as follows. For each autocratic regime, we (i) describe the performance of an autocrat who died in office; (ii) identify the selectorate under the dead leader's rule; and (iii) investigate whether the selectorate remained in power after the death.

**Portugal (July 1930 - April 1974)** Prime Minister Oliveira Salazar suffered a cerebral thrombosis and hemorrhage, lapsing into a coma on September 16 of 1968.[74] Salazar had been premier since 1932. His rule was

[72] Jones and Olken (2005) first exploit the random death of leaders as a natural experiment.

[73] A random death in Poland occurred before we observe performance measures. The death of Franco in Spain does not fit with our theory as it led to democratization.

[74] Salazar was alive until 1970. Wiarda (1977, footnote 3 in Chapter 9) notes, however, that "he no longer made decisions and ... had no impact on the policies of the new

successful in economic growth and health production as seen in Table 6.

The selectorate under Salazar's rule appears to be the armed forces.[75] Before Salazar became prime minister in 1932, the armed forces had controlled the government since its seizure of power in 1926. The Constitution of 1933 stipulated that the ceremonial president had the power to appoint and remove premiers, and the post of presidency was consistently given to military men (Wiarda 1977, pp. 100, 122-3).

The armed forces retained the control of the country after Salazar's incapacitation (Wiarda 1977, pp. 253-4). President Americo Thomaz, a retired admiral, summoned the Council of State, a constitutional advisory body consisting of the nation's prominent figures, and also met with other powerful figures of the regime. On September 26, Thomaz announced publicly that he released Salazar from his post and appointed Marcello Caetano as prime minister. Caetano remained in power until 1974.[76]

This sequence of events after the incapacitation of Salazar indicates that the selectorate's grip on power was rather secure. Salazar, whose rule could be seen as personal rule, may have actually been disciplined by the military, and thus had an incentive to promote economic development and improve people's health.

**Thailand (October 1958 - February 1968)** Prime Minister Sarit Thanarat died from heart and lung ailments on December 8, 1963 (Lentz 1994, p.749). Sarit, a military officer, seized power in a bloodless coup in October of 1958. His dictatorial rule since then performed well in economic growth and health production.[77]

The selectorate under Sarit's regime appears to be King Bhumibol Adulyadej and the military. In February of 1959, Sarit was formally elected prime minister by the Constituent Assembly whose members were appointed by royal

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government."

[75] Maxwell (1986, p.112) provides an alternative view, however, by noting that "[t]he Portuguese dictatorship was preeminently civilian and legalistic."

[76] Maxwell (1986, p.112) notes that the appointment of Caetano as premier was conditional on his acceptance of the military's position on what to do with Portugal's territories in Africa. This further suggests that the selectorate was the military.

[77] Thailand's economic growth rate from 1958 to 1962 is 5.5 percent. Life expectancy at birth conditional on real GDP per capita is 11.4 years (the average of 1960 and 1962), comparable to the whole regime performance (see Table 3). Sarit does not enter Table 6 because his rule did not last more than five full calendar years.

decree.[78] According to Chaloemtiarana (2007, p.187), 152 out of the 220 members of the Assembly were military officers. Chaloemtiarana (2007, chapter 6) argues that Sarit needed the support from the military and the king. The support from the king appears to have been the most crucial for Sarit, as he "accorded the throne much more power and prestige than [his] predecessors had" to seek the military regime's legitimacy (*Ibid.*, p.205).

After the death of Sarit, the selectorate remained the same. The king's influence got even stronger. Thanom Kittikachorn, a military officer who had been Deputy Minister and Defence Minister since 1959, succeeded Sarit by King Bhumibol's appointment.[79] Thanom "turned increasingly to the king for support and advice" (*Ibid.*, p.217). The military had the last say in keeping Thanom in power. When Thanom's government faced student demonstrations in 1973, the military refused to suppress them, forcing Thanom to flee the country (Nelson 2001, p.262).[80]

The above episode suggests that the selectorate – the king and the military – had a tight grip on power. Our theory implies that this allowed them to credibly threaten to oust Sarit or Thanom in the case of a poor performance. Impressive performance of the Thai military regime by Sarit and Thanom on economic growth and health may have been due to the discipline imposed by the king and the military.

**Guinea (October 1958 - April 1984)** On March 26 of 1984, President Ahmed Sekou Toure died in an US hospital to which he was taken by air from Guinea after suffering a heart attack on the day before.[81] Sekou Toure ruled Guinea since its independence. As Table 11 shows, the performance of his rule is miserable: a negative economic growth rate (-0.67%), lower life expectancy and lower primary school enrollment compared to countries with the same level of real GDP per capita.[82]

[78] *Keesing's Contemporary Archives*, p.16691.

[79] *Keesing's Contemporary Archives*, p.19814.

[80] Although the Polity dataset codes 1968 as the end of Thai military regime, Thanom remained in power by holding multiparty parliamentary elections in which his party won. He then dissolved the parliament and banned political parties in 1971, restoring the military dictatorship.

[81] *Africa Research Bulletin*, March 1-31, 1984, p.7178.

[82] Kaba (1977, p.40) lists Sekou Toure's failures in health production: the shortage of hospital beds in the capital city, the appointment of inexperienced individuals to hospital administration, medicine shortage, and Sekou Toure's denial of a cholera epidemic in 1973.

The ruling selectorate appears to have been members of the political bureau of the sole legal party, the *Parti Democratique de Guinea* (PDG).[83] By Constitution, the political bureau of the PDG would meet to choose a new leader within 45 days after the incapacitation of the president.[84]

After the death of Sekou Toure, Prime Minister Lansana Beavogui became interim president and was supposed to succeed formally by the appointment of the PDG political bureau.[85] On April 3, however, young military officers staged a bloodless coup with Colonel Lansana Conte becoming a new president. The PDG was then dissolved.

This episode indicates that the selectorate, the PDG political bureau, stayed in power solely due to Sekou Toure's presence. They plausibly expected that they would lose power if they removed Sekou Toure ($\Gamma(\phi, \upsilon) \approx 0$). This lack of secure power on the part of the selectorate may explain why Sekou Toure performed so badly while remaining in office.[86]

## 5.4 Summary

This tour of the evidence conducted through the lens of our model is sketchy. However, it does breathe life into the institutional setting that we modeled. The case studies suggest that the power of the selectorate and their role in disciplining poorly performing leaders could be a force in shaping the performance of autocracy in the absence of an electoral sanction. This leads to more turnover on average in successful autocracies than in unsuccessful ones.

[83] Sekou Toure was a founding-member of the PDG and became Secretary General of the Party in 1952 (Johnson 1970, p.350). In 1957, the PDG won multiparty elections for the Territorial Assembly under French rule. In November of 1958, one month after independence, the PDG became the sole legal party by Constitution (see Brune 1999).

[84] *Keesing's Record of World Events*, p.32955.

[85] According to Momoh (1984), "the powerful Toure family including the ambitious Minister of Mines and Geology, Ismael Toure, had persuaded ... Beavogui to accept the post of acting president. ... Beavougui, as it was understood, would have held the post for two or three years..."

[86] According to Jackson and Rosberg (1982, p.210), Guinea under Sekou Toure's rule saw "persistent attempts by the government to hold to the ruler's ideological approach while ignoring the lessons to be learned from economic and planning failures."

# 6 Conclusion

This paper is a contribution to on-going debates about the institutional basis of successful government. It tries to understand differences between good and bad autocracies in terms of the forces that shape accountability in the absence of regularized elections. It does so in three steps. The first has been to develop a simple model of incentives to generate good policy when the decision to retain the leader is vested in a selectorate comprising citizens from some ruling "group". Second, it has identified "successful autocracies" using objective empirical criteria. Third, it has used the group of autocracies identified from this exercise as a basis for case studies in successful autocracy with a view to matching the theory to real world experience.

Our modeling approach makes clear that democracies can be better or worse than autocracies in terms of accountability although it suggests a presumption in favour of democracy on this basis. This is consistent with the raw data. In our model, successful autocracies are those where poor quality leadership leads to removal of leaders from office. While it is asking too much of a simple theory to do justice to the richness of the real world experience, we find some suggestive evidence that the forces shaping leadership replacement in the way that the model suggests may be at work in successful autocracies. Leadership turnover is greater in successful compared to unsuccessful autocracies. Moreover, studying the sample of successful autocracies that handled leadership deaths from natural causes reinforces the view that successful autocracies are those where the ruling group has a hold over power.

The analysis in this paper is a first step in a wider project. It seems essential in collecting data that characterizes differences in political regimes to be guided by what theory suggests could be important. Among the large array of impressive data collection exercises, there is very little that provides a persuasive mapping between things that shape political incentives and outcomes. For a broad category like autocracy, it is essential to bridge this gap more in future work to understand the lessons for the genesis of good government.

This paper provides a complement to other on-going work in this area. The approach emphasizes the value of rooting our understanding in simple theoretical models, not least as a lens to focus empirical exercises. It also suggests a way of applying agency models to the democracy-autocracy comparison which may have other fruitful applications. While it is evident that

much remains to be done to bring theory and data together in understanding the forces that shape the quality of government, the theoretical tools that are being developed in political economy and the rich data now available provide a secure starting point for this endeavour.

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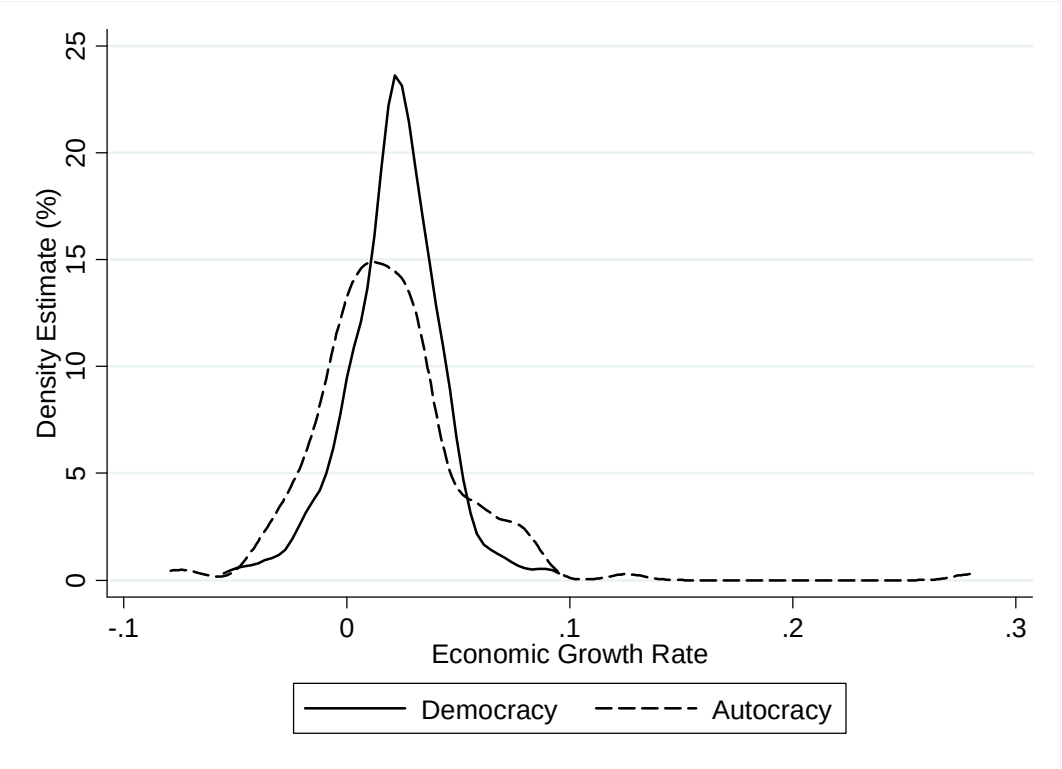


**Figure 1: Economic Growth Distributions among Democracies and Autocracies**

*Sources*: Penn World Table 6.2 and POLITY IV (version 2004)
*Notes*: Plotted are the density functions estimated by using the Gaussian kernel and the bandwidth that minimizes the mean integrated squared error (the *kdensity* command in STATA with the *gaussian* option).

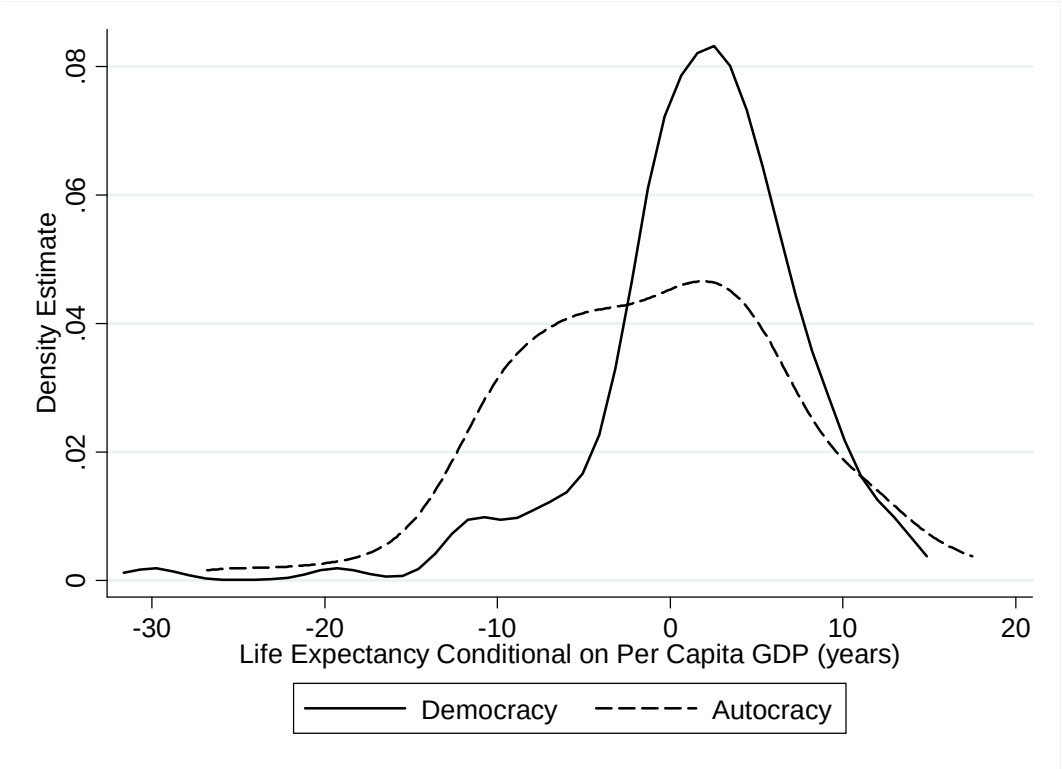


**Figure 2: Health Performance Distributions among Democracies and Autocracies**

*Sources*: World Development Indicators (September 2006), Penn World Table 6.2, Statistical Yearbook of the Republic of China (1987, 2005), and POLITY IV (version 2004)
*Notes*: See Figure 1.

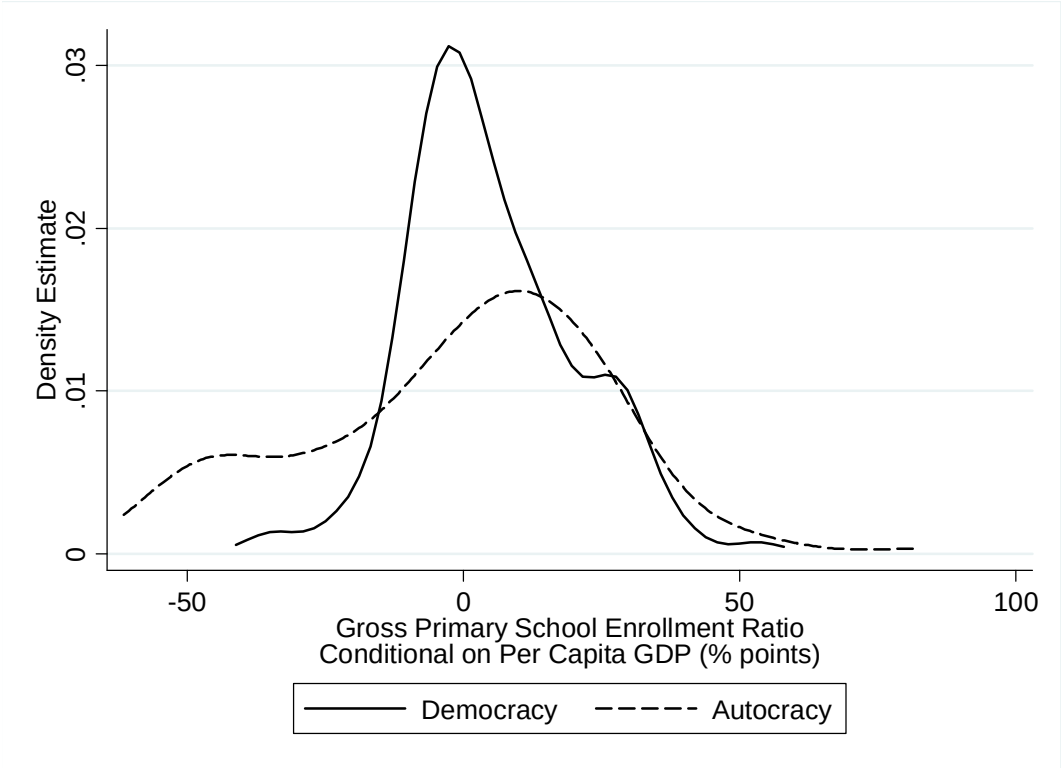


**Figure 3: Education Performance Distributions among Democracies and Autocracies**

*Sources*: UNESCO Institute of Statistics, Penn World Table 6.2, Statistical Yearbook of the Republic of China (1994, 2005), and POLITY IV (version 2004)
*Notes*: See Figure 1.

**Table 1: Comparison of Autocracy and Democracy**

| | Good Democracy: $\tau \leq (1-\pi)\,\Delta$ | Bad Democracy: $\tau > (1-\pi)\,\Delta$ |
|---|---|---|
| Good Autocracy: $(1-\Gamma(\phi,\upsilon))\tau < \pi\Delta$ | Democracy if $\Gamma(\phi,\upsilon) > \gamma(\beta)$ | Autocracy |
| Bad Autocracy: $(1-\Gamma(\phi,\upsilon))\tau \geq \pi\Delta$ | Democracy | Democracy if $\gamma(\beta) > 0$ |

**Table 2: Economically Successful Autocracies**

| Regime | Years of Observations | Annual Growth | Robustness 1 | 2 | 3 |
|---|---|---|---|---|---|
| Equatorial Guinea(1996-2004) | 1996-2003 | 28.04% | Y | Y | Y |
| Rwanda(1994-2000) | 1994-1999 | 12.56% | Y | Y | N |
| Gabon(1960-1968) | 1960-1967 | 8.59% | Y | Y | - |
| Belarus(1996-2004) | 1996-2003 | 8.15% | N | Y | - |
| Liberia(1997-2003) | 1997-2002 | 7.94% | Y | Y | Y |
| China(1976-2004) | 1976-2004 | 7.87% | Y | Y | - |
| Greece(1967-1974) | 1967-1973 | 7.85% | Y | Y | Y |
| Ecuador(1972-1979) | 1972-1978 | 7.73% | Y | Y | Y |
| Romania(1948-1977) | 1960-1976 | 7.63% | Y | Y | - |
| South Korea(1981-1987) | 1981-1986 | 7.23% | Y | Y | Y |
| Azerbaijan(1998-2004) | 1998-2003 | 7.15% | Y | Y | Y |
| Taiwan(1975-1987) | 1975-1986 | 6.81% | N | Y | - |
| Niger(1974-1981) | 1974-1981 | 6.27% | Y | Y | N |
| Iraq(1968-1979) | 1970-1978 | 6.17% | Y | Y | - |
| Taiwan(1949-1975) | 1951-1974 | 5.98% | N | Y | - |
| Brazil(1965-1974) | 1965-1973 | 5.89% | Y | Y | Y |
| Spain(1939-1975) | 1950-1974 | 5.77% | Y | Y | - |
| Poland(1947-1980) | 1970-1979 | 5.76% | Y | Y | - |
| Portugal(1930-1974) | 1950-1973 | 5.75% | Y | Y | - |
| Togo(1960-1967) | 1960-1966 | 5.68% | Y | Y | - |
| South Korea(1973-1981) | 1973-1980 | 5.50% | N | Y | Y |
| Thailand(1958-1968) | 1958-1967 | 5.34% | Y | Y | Y |
| Venezuela(1941-1958) | 1950-1957 | 4.93% | Y | Y | - |
| Singapore(1965-2004) | 1965-2004 | 4.80% | N | Y | - |
| Indonesia(1967-1998) | 1967-1997 | 4.56% | Y | Y | - |
| Vietnam(1976-2004) | 1989-2003 | 4.47% | N | Y | - |
| Bhutan(1953-2004) | 1970-2003 | 4.28% | N | Y | - |
| China(1969-1976) | 1969-1975 | 4.04% | N | Y | N |
| Iran(1955-1979) | 1955-1978 | 4.01% | Y | Y | - |
| Tunisia(1971-1981) | 1971-1980 | 3.86% | N | N | Y |
| Syria(1963-1970) | 1963-1969 | 3.82% | Y | Y | Y |
| North Korea(1966-2004) | 1970-2003 | 3.75% | N | Y | - |
| Peru(1950-1956) | 1950-1955 | 3.73% | Y | N | - |
| Pakistan(1977-1985) | 1977-1984 | 3.70% | Y | Y | Y |
| UAE(1971-2004) | 1971-2003 | 3.70% | N | N | - |

*Notes*: "Years of Observations" indicate the period for which the annual economic growth rate is calculated. Robustness 1 is "Y" if the regime's growth rate minus the country average is above the 80 percentile of the distribution; "N" otherwise. Robustness 2 is "Y" if the regime's growth rate minus the average among regimes in the same initial income quintile is above the 80 percentile; "N" otherwise. Robustness 3 is "Y" if the growth rate during the 3-year period preceding the regime is positive; "N" if negative; and "-" either if the regime lasted 10 years or longer or if there is no data on GDP for the preceding period.

**Table 3: Autocracies Successful in Health Production**

| Regime | Years of Observations | Conditional Life Expectancy | Robustness | Economic Success |
|---|---|---|---|---|
| Cuba(1961-1976) | 1970-1972 | 17.48 | Y | N |
| Romania(1948-1977) | 1960-1972 | 17.48 | Y | Y |
| Taiwan(1949-1975) | 1960-1972 | 16.34 | Y | Y |
| China(1969-1976) | 1970-1972 | 13.89 | N | Y |
| Poland(1947-1980) | 1970-1977 | 12.68 | Y | Y |
| China(1976-2004) | 1977-2004 | 12.43 | N | Y |
| Paraguay(1954-1967) | 1960-1962 | 12.28 | Y | N |
| Syria(1970-2000) | 1972-1997 | 11.89 | N | N |
| Azerbaijan(1998-2004) | 2000-2003 | 11.83 | N | Y |
| Vietnam(1976-2004) | 1990-2003 | 11.49 | N | Y |
| North Korea(1966-2004) | 1970-2003 | 11.35 | N | Y |
| Cuba(1977-2004) | 1980-2003 | 11.22 | N | N |
| Panama(1969-1978) | 1970-1977 | 11.03 | Y | N |
| Thailand(1958-1968) | 1960-1967 | 10.69 | Y | Y |
| Taiwan(1975-1987) | 1977-1985 | 10.08 | Y | Y |
| Jordan(1992-2004) | 1995-2003 | 9.67 | Y | N |
| Morocco(1998-2004) | 2000-2003 | 8.73 | Y | N |
| Paraguay(1967-1989) | 1970-1987 | 8.49 | N | N |
| Kyrgyzstan(1991-2004) | 1995-2002 | 8.09 | N | N |
| Greece(1967-1974) | 1970-1972 | 7.88 | Y | Y |
| South Korea(1973-1981) | 1977-1980 | 7.80 | Y | Y |
| Chile(1973-1981) | 1977-1980 | 7.67 | Y | N |
| Uzbekistan(1991-2004) | 1997-2003 | 7.58 | N | N |
| Spain(1939-1975) | 1960-1972 | 6.80 | Y | Y |
| Morocco(1992-1998) | 1995-1997 | 6.79 | Y | N |
| Syria(1963-1970) | 1967 | 6.39 | N | Y |
| Portugal(1930-1974) | 1960-1972 | 6.15 | Y | Y |
| Tunisia(1987-1993) | 1990-1992 | 6.08 | N | N |
| Algeria(1995-2004) | 1997-2003 | 6.00 | Y | N |
| Iraq(1979-2003) | 1980-1997 | 5.85 | N | N |
| Tunisia(1993-2002) | 1995-2000 | 5.82 | N | N |

*Notes*: "Years of Observations" indicate the first and last years of observations on life expectancy at birth for each regime. "Conditional Life Expectancy" is the number of years in life expectancy at birth unexplained by the Preston curve (the quadratic function of per capita real GDP). "Robustness" is "Y" if the regime is above the 80 percentile of the distribution of conditional life expectancy minus the country average; "N" otherwise. "Economic Success" is "Y" if the regime appears in Table 2; "N" otherwise.

**Table 4: Autocracies Successful in Education**

| Regime | Years of Observations | Conditional Enrollment Ratio | Robustness | Economic Success |
|---|---|---|---|---|
| Equatorial Guinea(1969-1993) | 1990 | 81.55 | Y | N |
| Congo-Brazzaville(1963-1979) | 1970-1975 | 57.44 | Y | N |
| Congo-Brazzaville(1979-1991) | 1980-1990 | 50.68 | Y | N |
| Cuba(1961-1976) | 1970-1975 | 48.13 | Y | N |
| Brazil(1965-1974) | 1970 | 42.25 | Y | Y |
| Uganda(1996-2004) | 1999-2003 | 40.87 | Y | N |
| China(1969-1976) | 1970-1975 | 38.01 | N | Y |
| Romania(1948-1977) | 1970-1975 | 34.27 | Y | Y |
| Madagascar(1975-1991) | 1980-1990 | 32.39 | Y | N |
| Mongolia(1952-1990) | 1970-1985 | 31.72 | Y | N |
| China(1976-2004) | 1980-2004 | 30.98 | N | Y |
| Panama(1969-1978) | 1970-1975 | 29.78 | Y | N |
| Spain(1939-1975) | 1970 | 29.58 | Y | Y |
| Lesotho(1973-1986) | 1975-1985 | 29.40 | N | N |
| Peru(1968-1976) | 1970-1975 | 28.87 | N | N |
| Philippines(1972-1981) | 1975-1980 | 28.59 | N | N |
| Togo(1979-1991) | 1980-1990 | 28.12 | N | N |
| Laos(1975-2004) | 1980-2003 | 27.62 | N | N |
| Equatorial Guinea(1996-2004) | 1999-2002 | 26.74 | N | Y |
| Mexico(1930-1977) | 1970-1975 | 25.41 | Y | N |
| South Korea(1973-1981) | 1975-1980 | 24.98 | Y | Y |
| Ecuador(1972-1979) | 1975 | 24.60 | N | Y |
| Gabon(1991-2004) | 1999-2004 | 24.52 | N | N |
| Dominican Republic(1966-1978) | 1970-1975 | 24.41 | Y | N |
| Mexico(1977-1988) | 1980-1985 | 23.96 | Y | N |
| Zimbabwe(1987-2000) | 1990-1999 | 23.77 | N | N |
| Tunisia(1981-1987) | 1985 | 23.77 | Y | N |
| Indonesia(1967-1998) | 1970-1996 | 23.64 | N | Y |
| Chile(1973-1981) | 1975-1980 | 23.15 | Y | N |
| Togo(1993-2004) | 1994-2004 | 22.77 | N | N |
| Paraguay(1967-1989) | 1970-1985 | 22.29 | N | N |
| Vietnam(1976-2004) | 1990-2003 | 22.13 | N | Y |
| Cameroon(1966-1972) | 1970 | 21.82 | Y | N |
| Syria(1970-2000) | 1975-1999 | 21.03 | N | N |

*Notes*: "Years of Observations" indicate the first and last years of observations on gross primary school enrollment ratio for each regime. "Conditional Enrollment Ratio" is the percentage points in gross primary school enrollment ratio unexplained by the quadratic function of per capita real GDP. "Robustness" is "Y" if the regime is above the 80 percentile of the distribution of conditional enrollment ratio minus the country average; "N" otherwise. "Economic Success" is "Y" if the regime appears in Table 2; "N" otherwise.

**Table 5: Core Set of Successful Autocracies**

| Regime | Score | Economic Growth | | Health | | Education | |
|---|---|---|---|---|---|---|---|
| | | Success? | Robust? | Success? | Robust? | Success? | Robust? |
| Romania(1948-1977) | 6 | Y | Y | Y | Y | Y | Y |
| Spain(1939-1975) | 6 | Y | Y | Y | Y | Y | Y |
| South Korea(1973-1981) | 5 | Y | N | Y | Y | Y | Y |
| Brazil(1965-1974) | 4 | Y | Y | N | - | Y | Y |
| Chile(1973-1981) | 4 | N | - | Y | Y | Y | Y |
| China(1976-2004) | 4 | Y | Y | Y | N | Y | N |
| Cuba(1961-1976) | 4 | N | - | Y | Y | Y | Y |
| Greece(1967-1974) | 4 | Y | Y | Y | Y | N | - |
| Panama(1969-1978) | 4 | N | - | Y | Y | Y | Y |
| Poland(1947-1980) | 4 | Y | Y | Y | Y | N | - |
| Portugal(1930-1974) | 4 | Y | Y | Y | Y | N | - |
| Thailand(1958-1968) | 4 | Y | Y | Y | Y | - | - |

*Notes*: For each performance measure (Economic Growth, Health, Education), "Success?" is "Y" if the regime's performance is above the 80 percentile, "N" if not, and "-" if data is unavailable. For Economic Growth, "Robust?" is "Y" if the regime does not fail to pass the three robustness checks shown in Table 2, "N" if it does, and "-" if "Success?" is "N". For Health and Education, "Robust?" is "Y" if the regime passes the robustness check of subtracting the country average (see Tables 3 and 4), "N" if it does not, and "-" if "Success?" is "N". "Score" is calculated as the number of "Y" in each row.

**Table 6: Successful Autocrats**

| Country | Years | Name of Autocrat | Annual Growth | Robust for Growth? | Health | | Education | |
|---|---|---|---|---|---|---|---|---|
| | | | | | Success? | Robust? | Success? | Robust? |
| Rwanda | 1994-2004 | Paul Kagame | 10.19% | N | N | - | N | - |
| China | 1980-1997 | Deng Xiaoping | 8.51% | Y | Y | Y | Y | N |
| Equatorial Guinea | 1969-1979 | Macias Nguema | 8.07% | Y | N | - | - | - |
| Liberia | 1997-2003 | Charles Taylor | 7.94% | Y | N | - | N | - |
| Greece | 1967-1973 | Papadopoulos | 7.90% | Y | Y | Y | N | - |
| South Korea | 1972-1979 | Park Chung Hee | 7.74% | Y | Y | Y | Y | Y |
| Belarus | 1995-2004 | Lukashenko | 7.23% | N | N | - | N | - |
| China | 1997-2003 | Jiang Zemin | 7.20% | Y | Y | N | Y | N |
| Portugal | 1968-1974 | Caetano | 7.03% | Y | Y | Y | N | - |
| Equatorial Guinea | 1979-2004 | Nguema Mbasogo | 7.02% | N | N | - | Y | N |
| South Korea | 1980-1987 | Chun Doo Hwan | 6.61% | Y | N | - | N | - |
| Taiwan | 1978-1988 | Chiang Ching-Kuo | 6.25% | N | Y | N | N | - |
| Iraq | 1968-1979 | Hassan Al-Bakr | 6.17% | Y | N | - | N | - |
| Swaziland | 1968-1982 | Subhuza II | 6.14% | Y | N | - | N | - |
| Taiwan | 1950-1975 | Chiang Kai-shek | 5.98% | N | Y | Y | - | - |
| Nicaragua | 1947-1956 | Anastasio Somoza Garcia | 5.91% | Y | - | - | - | - |
| North Korea | 1948-1994 | Kim Il-Sung | 5.83% | Y | Y | N | - | - |
| Spain | 1939-1975 | Franco | 5.77% | Y | Y | Y | Y | Y |
| Singapore | 1965-1990 | Lee Kuan Yew | 5.77% | N | N | - | N | - |
| Poland | 1970-1980 | Gierek | 5.76% | Y | Y | Y | N | - |
| Romania | 1965-1989 | Ceausescu | 5.68% | Y | Y | N | Y | Y |
| Vietnam | 1991-1997 | Do Muoi | 5.55% | N | Y | N | Y | Y |
| Portugal | 1932-1968 | Salazar | 5.01% | N | Y | Y | - | - |
| Venezuela | 1950-1958 | Perez Jimenez | 4.93% | Y | - | - | - | - |
| Qatar | 1995-2004 | Amad Al Thani | 4.87% | Y | N | - | N | - |
| Bhutan | 1972-1998 | Jigme Singye Wangchuck | 4.83% | N | N | - | - | - |
| Mexico | 1976-1982 | Lopez Portillo | 4.63% | Y | N | - | Y | Y |
| Indonesia | 1966-1998 | Suharto | 4.30% | N | N | - | Y | N |
| Iran | 1989-1997 | Rafsanjani | 4.17% | Y | N | - | N | - |
| Congo-Brazzaville | 1969-1977 | Ngouabi | 4.16% | Y | N | - | Y | Y |
| Iran | 1955-1979 | Mohammad Reza | 4.01% | N | N | - | N | - |
| Pakistan | 1977-1988 | Zia | 3.78% | Y | N | - | N | - |
| Nigeria | 1966-1975 | Gowon | 3.73% | Y | N | - | N | - |
| Peru | 1950-1956 | Odria | 3.73% | N | - | - | - | - |
| UAE | 1971-2004 | An-Nahayan | 3.70% | N | N | - | N | - |
| Panama | 1968-1981 | Torrijos Herrera | 3.68% | N | Y | Y | Y | Y |
| Mexico | 1952-1958 | Ruiz Cortines | 3.65% | N | - | - | - | - |

*Notes* : Included in the list are autocrats under whose rule annual growth rate exceeds the 80 percentile of the distribution. "Years" indicate the period in which an autocrat rules the country non-democratically. "Robust for Growth?" is "Y" if an autocrat's rule does not fail to pass the three robustness checks described in the note for Table 2. For columns titled Health and Education, see the note for Table 5.

**Table 7: Successful Regimes with their Polity Score between 1 and 5**

| Regime | Annual Growth | Robust for Growth? | Health | | Education | |
|---|---|---|---|---|---|---|
| | | | Success? | Robust? | Success? | Robust? |
| South Korea(1963-1972) | 6.57% | Y | Y | Y | Y | Y |
| Greece(1949-1967) | 5.33% | Y | Y | Y | - | - |
| Pakistan(1962-1969) | 4.66% | Y | N | - | - | - |
| Malaysia(1971-1995) | 4.63% | N | N | - | N | - |
| Turkey(1954-1960) | 4.55% | Y | - | - | - | - |
| France(1958-1969) | 4.27% | Y | N | - | - | - |
| Cambodia(1998-2004) | 4.14% | Y | N | - | Y | N |
| Brazil(1947-1958) | 3.77% | N | - | - | - | - |
| Sri Lanka(1982-2001) | 3.62% | N | Y | N | Y | N |
| Thailand(1978-1988) | 3.59% | N | Y | N | N | - |

*Notes* : Listed in the table are regimes with their Polity score between 1 and 5 inclusive whose annual economnic growth exceeds the 80 percentile of the distribution. See also notes for Table 5 for the last five columns in the table.

**Table 8: Successful Autocracies defined by Przeworski et al. (2000)**

| Regime | Annual Growth | Robust for Growth? | Health | | Education | | Executive Selection | Legislature Selection | Number of Parties |
|---|---|---|---|---|---|---|---|---|---|
| | | | Success? | Robust? | Success? | Robust? | | | |
| Botswana(1966-1990) | 7.90% | N | Y | N | N | - | Indirect | Elective | 2+ |
| Ecuador(1972-1979) | 7.73% | Y | N | - | N | - | Non-elective | No legislature | 2+ |
| South Korea(1981-1988) | 7.67% | Y | N | - | N | - | Direct | Elective | 1 |
| South Korea(1973-1980) | 7.41% | Y | Y | Y | Y | Y | Indirect | Elective | 2+ |
| Jordan(1955-1966) | 7.21% | Y | N | - | N | - | Non-elective | Elective | 0 |
| Singapore(1965-1981) | 7.05% | N | N | - | N | - | Indirect | Elective | 1 |
| Iraq(1963-1980) | 6.77% | Y | Y | N | N | - | Non-elective | No legislature | 1 |
| South Korea(1963-1972) | 6.57% | N | Y | Y | Y | Y | Direct | Elective | 2+ |
| Taiwan(1952-1990) | 6.20% | N | Y | N | N | - | Indirect | Elective | 2+ |
| Portugal(1951-1974) | 5.60% | Y | N | - | N | - | Indirect | Elective | 1 |
| Romania(1961-1990) | 5.31% | N | Y | N | N | - | Non-elective | Elective | 1 |
| China(1961-1990) | 5.18% | N | Y | N | Y | N | Non-elective | Elective | 1 |
| Spain(1951-1977) | 5.01% | N | N | - | N | - | Non-elective | Non-elective | 1 |
| Niger(1974-1983) | 4.96% | N | N | - | N | - | Non-elective | No legislature | 0 |
| Morocco(1956-1963) | 4.85% | Y | N | - | N | - | Non-elective | No legislature | 2+ |
| Thailand(1957-1969) | 4.71% | N | Y | Y | N | - | Non-elective | No legislature | 0 |
| Togo(1961-1967) | 4.70% | Y | N | - | N | - | Indirect | Elective | 1 |
| Panama(1978-1984) | 4.67% | Y | Y | N | N | - | Indirect | Elective | 0 |
| Pakistan(1962-1969) | 4.66% | Y | N | - | N | - | Indirect | Elective | 2+ |
| Singapore(1981-1990) | 4.35% | N | N | - | N | - | Indirect | Elective | 2+ |
| Malaysia(1971-1990) | 4.31% | N | Y | N | N | - | Indirect | Elective | 2+ |
| Iran(1963-1979) | 4.28% | N | N | - | N | - | Non-elective | Elective | 1 |
| Uruguay(1976-1982) | 4.11% | Y | N | - | N | - | Non-elective | No legislature | 0 |
| Indonesia(1971-1990) | 4.02% | N | N | - | Y | N | Indirect | Elective | 1 |
| Lesotho(1970-1984) | 3.95% | N | N | - | Y | N | Non-elective | Non-elective | 1 |
| Philippines(1972-1978) | 3.93% | N | N | - | Y | Y | Direct | No legislature | 0 |
| Syria(1963-1970) | 3.82% | Y | Y | N | N | - | Non-elective | No legislature | 1 |
| Egypt(1979-1990) | 3.34% | N | N | - | N | - | Direct | Elective | 2+ |
| *Successful in Human Development only* | | | | | | | | | |
| Panama(1969-1978) | 2.59% | - | Y | Y | Y | Y | Non-elective | No legislature | 0 |
| Togo(1979-1990) | -3.76% | - | Y | Y | Y | Y | Direct | Elective | 1 |

*Notes* : Listed in the table are autocracies, as defined by Przeworski et al. (2000), whose annual economic growth exceeds the 80 percentile of the distribution. Also included are autocracies successful in human development only (the last two rows). "Executive Selection" indicates how the chief executive is chosen (Non-elective: assuming power without elections; Indirect: elected by legislature; Direct: elected by popular votes); "Legislative Selection" indicates how legislative members are chosen (No legislature: there is no legislature; Non-elective: appointed by the executive or hereditary succession; elective: elected by popualr votes); "Number of Parties" indicates the number of legal political parties. These three columns are obtained from Przeworski et al. (2000). For the rest of the columns, see notes for Table 5.

**Table 9: Exogenous Country Characteristics and Successful Autocracy**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
|---|---|---|---|---|---|---|---|---|---|
| Dependent Variable: | Growth | Growth | Growth | Health | Health | Education | Education | Core | Core |
| Ethnic Fractionalization | -0.12 | | | -0.54** | | -0.01 | | -0.35 | |
| | [0.16] | | | [0.25] | | [0.19] | | [0.47] | |
| Log European Settlers' Mortality | | -0.0270 | | | | | | | 0.0377 |
| | | [0.0336] | | | | | | | [0.1599] |
| French Legal Origin | | | | | -0.10 | | 0.12 | 0.89*** | |
| | | | | | [0.25] | | [0.09] | [0.11] | |
| Socialist Legal Origin | | | | | 0.52* | | 0.40 | 0.98*** | |
| | | | | | [0.28] | | [0.30] | [0.02] | |
| German Legal Origin | | | | | 0.59*** | | -0.16 | 0.78*** | |
| | | | | | [0.15] | | [0.11] | [0.08] | |
| Oil Price Boom | | | -0.02** | | | | | | |
| | | | [0.01] | | | | | | |
| Constant | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Decade dummies | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Region dummies | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 176 | 74 | 170 | 89 | 90 | 148 | 149 | 38 | 19 |
| Pseudo R-squared | 0.25 | 0.15 | 0.30 | 0.19 | 0.22 | 0.16 | 0.20 | 0.32 | 0.12 |

Notes: Reported are the marginal effect for continuous regressors and the discrete change in the probability of success for dummy regressors (legal origins), both evaluated at the mean of all regressors. Robust standard errors are reported in brackets. The unit of observation is an autocratic regime. The dependent variables are: a dummy for success in economic growth (included in Table 2) in columns (1)-(3); a dummy for success in health production (included in Table 3) in columns (4)-(5); a dummy for success in education (included in Table 4) in columns (6)-(7); and a dummy for being included in the core set of successful autocracies (Table 5). "Decade dummies" refer to dummies indicating the decade in which the regime begins (1960s, 1970s, 1980s, 1990s, with decades before 1960 omitted). "Region dummies" include East Asia and Pacific, Eastern Europe and Central Asia, South Asia, Middle East and North Africa, Sub-Saharan Africa, and Latin America and the Caribbean (with Western Europe omitted). Depending on the specification, some dummies perfectly predict the dependent variable, which causes reductions in the number of observations.

* significant at 10%; ** significant at 5%; *** significant at 1%

**Table 10: Leadership Turnover and Successful Autocracies**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| Dependent Variable: | Success in Growth | Robust Success in Growth | Success in Health | Robust Success in Health | Success in Education | Robust Success in Education | Core Success |
| # of leadership changes per year | 0.99*** | 0.61*** | -0.22 | -0.34 | -0.29 | 0.08 | 0.09 |
| | [0.28] | [0.20] | [0.57] | [0.58] | [0.38] | [0.28] | [0.96] |
| Constant | YES | YES | YES | YES | YES | YES | YES |
| Decade dummies | YES | YES | YES | YES | YES | YES | YES |
| Region dummies | YES | YES | YES | YES | YES | YES | YES |
| Observations | 177 | 177 | 90 | 84 | 149 | 149 | 38 |
| Pseudo R-squared | 0.31 | 0.26 | 0.15 | 0.20 | 0.17 | 0.12 | 0.23 |

Notes: Reported are the marginal effect evaluated at the mean of all regressors. Robust standard errors are reported in brackets. The unit of observation is an autocratic regime. The dependent variables are: in column (1), a dummy for being included in Table 2; in column (2), a dummy for being included in Table 2 and not failing to pass any robustness checks; in column (3) a dummy for being included in Table 3; in column (4), a dummy for being included in Table 3 and passing the robustness check; in column (5) a dummy for being included in Table 4; in column (6), a dummy for being included in Table 4 and passing the robustness check; in column (7), a dummy for being included in Table 5. See Table 9 for details on decade and region dummies.

* significant at 10%; ** significant at 5%; *** significant at 1%

**Table 11: Autocratic Regimes with Leader's Natural Death**

| Regime | Year of Leader's Death | Score | Annual Growth | Economic Growth | | Conditional Life Expectancy | Health | | Conditional Enrollment Ratio | Education | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Success? | Robust? | | Success? | Robust? | | Success? | Robust? |
| Romania(1948-1977) | 1965 | 6 | 7.63% | Y | Y | 17.48 | Y | Y | 34.27 | Y | Y |
| Spain(1939-1975) | 1975 | 6 | 5.77% | Y | Y | 6.80 | Y | Y | 29.58 | Y | Y |
| China(1976-2004) | 1997 | 4 | 7.87% | Y | Y | 12.43 | Y | N | 30.98 | Y | N |
| Poland(1947-1980) | 1956 | 4 | 5.76% | Y | Y | 12.68 | Y | Y | 19.82 | N | - |
| Portugal(1930-1974) | 1968 | 4 | 5.75% | Y | Y | 6.15 | Y | Y | 8.46 | N | - |
| Thailand(1958-1968) | 1963 | 4 | 5.34% | Y | Y | 10.69 | Y | Y | | - | - |
| China(1969-1976) | 1976 | 3 | 4.04% | Y | N | 13.89 | Y | N | 38.01 | Y | N |
| Taiwan(1949-1975) | 1975 | 3 | 5.98% | Y | N | 16.34 | Y | Y | | - | - |
| Taiwan(1975-1987) | 1978 | 3 | 6.81% | Y | N | 10.08 | Y | Y | 5.56 | N | - |
| Vietnam(1976-2004) | 1986 | 3 | 4.47% | Y | N | 11.49 | Y | N | 22.13 | Y | N |
| Gabon(1960-1968) | 1967 | 2 | 8.59% | Y | Y | -26.81 | N | - | | - | - |
| Jordan(1992-2004) | 1999 | 2 | 0.89% | N | - | 9.67 | Y | Y | -6.92 | N | - |
| Morocco(1998-2004) | 1999 | 2 | 1.19% | N | - | 8.73 | Y | Y | 2.24 | N | - |
| North Korea(1966-2004) | 1994 | 2 | 3.75% | Y | N | 11.35 | Y | N | | - | - |
| Syria(1970-2000) | 2000 | 2 | 2.18% | N | - | 11.89 | Y | N | 21.03 | Y | N |
| Bhutan(1953-2004) | 1972 | 1 | 4.28% | Y | N | 0.92 | N | - | | - | - |
| Lao PDR(1975-2004) | 1992 | 1 | 1.35% | N | - | -3.72 | N | - | 27.62 | Y | N |
| Algeria(1965-1989) | 1978 | 0 | 1.35% | N | - | -0.75 | N | - | 4.01 | N | - |
| Egypt(1952-1976) | 1970 | 0 | 1.29% | N | - | -0.20 | N | - | -3.77 | N | - |
| Guinea(1958-1984) | 1984 | 0 | -0.67% | N | - | -14.59 | N | - | -44.54 | N | - |
| Haiti(1961-1971) | 1971 | 0 | | - | - | -3.24 | N | - | -15.74 | N | - |
| Iran(1982-1997) | 1989 | 0 | 0.86% | N | - | 1.78 | N | - | 11.13 | N | - |
| Kenya(1969-1979) | 1978 | 0 | -0.47% | N | - | 3.66 | N | - | 12.64 | N | - |
| Kuwait(1965-1971) | 1965 | 0 | | - | - | 2.25 | N | - | 8.57 | N | - |
| Liberia(1909-1980) | 1971 | 0 | -1.13% | N | - | -9.03 | N | - | -35.24 | N | - |
| Mauritania(1962-1991) | 1979 | 0 | -0.19% | N | - | -5.44 | N | - | -42.17 | N | - |
| Nepal(1962-1981) | 1972 | 0 | 0.49% | N | - | -4.75 | N | - | -18.18 | N | - |
| Nicaragua(1936-1979) | 1966 | 0 | 2.45% | N | - | -7.86 | N | - | -6.87 | N | - |
| Saudi Arabia(1926-2004) | 1953,1982 | 0 | 0.20% | N | - | -12.30 | N | - | -40.52 | N | - |
| Swaziland(1973-1993) | 1982 | 0 | 3.31% | N | - | -9.63 | N | - | 10.28 | N | - |

*Notes* : Listed are autocratic regimes under which the chief executive died in office due to natural causes. "Year of Leader's Death" indicates the year of such death. For the rest of the columns, see notes for Tables 3 to 5.