

COOPERATION, COOPTATION, AND REBELLION UNDER DICTATORSHIPS

JENNIFER GANDHI* AND ADAM PRZEWORSKI

Dictatorships are not all the same: some are purely autocratic but many exhibit a full panoply of seemingly democratic institutions. To explain these differences, we develop a model in which dictators may need cooperation to generate rents and may face a threat of rebellion. Dictators have two instruments: they can make policy concessions or share rents. We conclude that when they need more cooperation dictators make more extensive policy concessions and share fewer rents. In turn, when the threat of rebellion is greater, they make larger concessions but also distribute more spoils. Assuming that policy concessions require an institutional setting of legislatures and parties, we test this prediction statistically for all dictatorships that existed between 1946 and 1996.

1. INTRODUCTION

DICTATORSHIPS ARE not all the same. Some are purely autocratic: a single man¹ or a clique rules, unconstrained by any institutions. In contrast, some dictatorships exhibit the full panoply of seemingly democratic institutions. Even if the dictator cannot be removed from office by means of the people's vote, which is how we define dictatorship,² some dictatorial regimes have legislatures, allow more than one political party, and even observe rituals they call elections. Indeed, this was the basis of Montesquieu's (1995, p. 97) distinction between "despotic" and "monarchical" regimes: regimes in which "a single person directs everything by his will and caprice" and those where a single person rules "by fixed and established laws." Our purpose is to explain these differences.

We develop a model in which dictators may need cooperation to generate rents and may face a threat of rebellion. The rents available for distribution – monetary rewards, perks, and privileges – increase when more people cooperate with the dictatorship. Yet dictatorships differ in their need for cooperation: those which can extract rents from mineral resources need little of it, while those which must rely on bankers to loan them money, peasants to produce food, and scientists to do research need extensive cooperation.

*Corresponding author: Jennifer Gandhi, Tarbutton Hall, Department of Political Science, Emory University, 1555 Dickey Drive, Atlanta, GA 30322, USA. E-mail: jgandh2@emory.edu

¹The gender is not accidental. Except for women who served as interim leaders – Queens Dzeliwe and Ntombi in Swaziland during the early 1980s, Ertha Pascal-Trouillot in Haiti in 1990 and Ruth Perry in Liberia in 1996 – dictators are men.

²This definition is justified and operationalized in Przeworski et al. (2000).

In turn, dictators are dictators because they cannot win elections, because their preferences diverge from those of the majority of the population. Hence, dictators may face a threat of rebellion, and the magnitude of this threat is again not the same for different dictators.

Dictators have two instruments to mobilize cooperation and to prevent rebellion: policy concessions and distribution of rents. Since some people will cooperate with the dictatorship if it offers policies more to their liking, dictators generate cooperation and, if need be, thwart the threat of rebellion by making policy concessions. Alternatively, dictators can prevent threats to their power by sharing rents.

The dictator chooses policies and a distribution of rents. Then the opposition decides whether or not to rebel. If the opposition rebels, nature decides whether the dictator survives in power or is replaced. The model generates three equilibria. When the opposition is sufficiently weak, the dictator chooses policies that maximize his utility from cooperation and shares no rents with the opposition, which does not rebel. When the opposition is strong, the dictator makes more extensive policy compromises and shares some rents, just enough to prevent the opposition from rebelling. Finally, when the opposition has little chance of overthrowing the dictator but the dictator cannot inflict much damage on the opposition, the dictator offers few compromises and the opposition does rebel. Hence, there are conditions under which we would expect dictatorships to experience constant turmoil.

Policy concessions require a forum in which demands can be revealed and agreements can be hammered out. Hence, we assume that the presence of institutions, specifically of parties in legislatures, is an indicator of policy concessions and predict that the number of parties in the legislature should increase in the need for cooperation and in the strength of the opposition. These predictions are tested for all the countries for which the requisite data are available between 1946 and 1996.

The idea that dictators maintain themselves in power by coopting, "encapsulating" in the language of O'Donnell (1979, pp. 51, 91), some sectors of the potential opposition is not new. Yet our model offers several new insights into the functioning of dictatorships:

1. We distinguish two problems of governance facing dictatorships: the need to secure economic cooperation and the need to thwart open resistance. We assume that dictators want to maximize their rents, which they can enjoy only if they survive in power. This implies that they always seek to maximize the total output: even if they are forced to share rents with some groups of the potential opposition, their rents are higher when the total output is higher. Yet maximizing output requires different degrees of cooperation from society in countries with different economic structure. In the extreme, where a large part of the output

can be extracted by exploiting mineral resources, dictators need no or little cooperation. Such countries are typically studied separately as “rentier states” (Karl, 1997; Luciani, 1987). Our model allows us to derive comparative statics with regard to the need for cooperation and thus places rentier states in a comparative context (joining other recent attempts, such as Ross, 2001; Smith, 2004). One question we study is whether it is true, as this literature posits, that governments in countries with mineral resources are more prone to use rents in order to thwart threats emanating from the opposition.

2. Other models of cooptation either do not specify the instruments used by dictators to implement their objectives (Bertocchi and Spagat, 2001; Ginkel and Smith, 1999) or assume that the only instrument of dictators comes in monetary form: the sharing of rents or the setting of tax rates (Acemoglu and Robinson, 2002; Grossman and Noh, 1990; Kirstein and Voigt, 2000; McGuire and Olson, 1996; Wintrobe, 1990). We distinguish two instruments – policy concessions and the sharing of rents – and show that depending on their need for cooperation and the strength of the opposition, dictators mix these two instruments differently.
3. Models of cooptation differ in the equilibria they generate. In some models, incumbents are never overthrown (Bertocchi and Spagat, 2001; Bueno de Mesquita et al., 1999), or if revolutions do occur, they happen because information is incomplete (Ginkel and Smith, 1999). Our model, even though it is based on complete information, does admit an outcome in which a dictatorial ruler may be overthrown. In contrast to Grossman (1999), where the probability that the opposition would triumph were it to revolt is high, this outcome is possible in our model when the opposition has a low probability of overthrowing the dictator, but the dictator is unable to punish the opposition for trying.
4. Most importantly, the literature on dictatorships either treats institutions as forums for distributing rents (Binder, 1964; Collier, 1982; Zolberg, 1969) or maintains that policy concessions are never made through institutions (Linz, 1973; O'Donnell, 1979). Either way, dictatorial institutions are regarded as mere window-dressing. For example, announcing their plan for a seminal analysis of “totalitarianism,” Friedrich and Brzezinski (1961, p. 18) refused to even bother with institutions: “The reader may wonder why we do not discuss the ‘structure of government,’ or perhaps ‘the constitution,’ of these totalitarian systems. The reason is that these structures are of very little importance. . . .” The words “institution,” “legislature,” or “law” do not appear in the index of Brooker's (2000) comprehensive treatment of non-democratic regimes. In contrast, we make the case that institutions are crucial for any cooptation strategy that involves policy compromises. Assuming that policy compromise can be made only

within a specific institutional framework, namely legislatures, we relate the observable conditions that represent the need for cooperation and the strength of the opposition to the institutional frameworks of dictatorships. By explaining systematically why some dictators care to dress their windows, we elucidate the puzzling role of seemingly democratic institutions – legislatures, parties, and elections – under dictatorship.

We begin with the model, derive comparative statics, test the empirical predictions, and conclude.

2. THE MODEL

2.1 Assumptions

Policy is a number $x \in [0, 1]$. The policy in question may concern religious instruction in schools or censorship, but it may be also economic, say minimum wage or interest rates. Let x^i stand for the peak of quasi-concave preference of individual i . Peak preferences are distributed according to $f(x^i)$ over the population of a unit mass. The ideal point of the dictator, x^D , is larger than the median ideal point, x^M : that the dictator has preferences different from those that would prevail in free and competitive elections is generically true of dictatorships, while the assumption that $x^D > x^M$ is made just for convenience and without a loss of generality. In turn, even if anti-dictatorial coalitions sometimes fall apart as soon as they are victorious, whether the dictatorship is succeeded by democracy (“Solidarity” in Poland) or another dictatorship (Iran after the fall of the Shah), to fight against the current dictator, any opposition must present itself as “the people united.” Hence, whoever resists the dictator must appeal to the individual with the median preference and we will characterize the potential opposition by $x^O = x^M \equiv F^{-1}(1/2)$.

The set of people who might oppose the dictator is thus $\Omega = \{x^i | x^i \leq x^O + \frac{1}{2}(x^D - x^O)\}$. Letting the distance $\theta \equiv x^D - x^O$ stand for the degree of policy polarization, the measure of this set is $F[x^D - \frac{1}{2}\theta] > 1/2$. We define policy concessions as

$$\gamma \equiv \frac{x^D - x^*}{x^D - x^O} = (x^D - x^*)/\theta, \quad (1)$$

where x^* is the actual policy chosen by the dictator. When the dictator makes policy concession $\gamma > 0$, the opposition becomes reduced to $F[x^D - \frac{1}{2}\theta(1 + \gamma)]$. Hence, a proportion $F(\gamma\theta/2)$ is induced to cooperate with the dictator.

Rents, which consist of monetary payoffs, perks, and privileges, are produced in cooperation between the dictator and some part of the potential opposition. Since cooperation occurs when the dictator makes policy

concessions, total rents, R , are an increasing function of policy concessions, $dR/dy > 0$. Dictatorships differ, however, with regard to the need for co-operation, α . Dictators who can rely on mineral resources need little co-operation to secure rents, $\alpha \approx 0$. Other dictators need varying degrees of cooperation. Hence, rents are produced according to

$$R(\gamma) = \gamma^\alpha, \quad 0 \leq \alpha \leq 1. \quad (2)$$

Both the dictator, D , and the opposition, O , have a linearly separable utility function

$$U^j(R^j, x) = v(R^j) + u^j(x), \quad j \in \{D, O\}, \quad (3)$$

where R^j stands for the total amount of rents accruing to j .

The function $u(x)$ is given by³

$$u^j \equiv u(x^j, x) = -(x^j - x)^2. \quad (4)$$

Rents are divided with the opposition receiving share s of the total and the dictator keeping share $(1-s)$. The function $v(\cdot)$ is simply $v(R) = R$.

Using (1) through (4), we can rewrite the dictator's utility function as

$$U^D = (1-s)\gamma^\alpha - (x^D - x^*)^2 = (1-s)\gamma^\alpha - (\gamma\theta)^2. \quad (5)$$

The derivative of the dictator's utility with regard to the policy concession is then

$$\frac{\partial U^D}{\partial \gamma} = (1-s)\alpha\gamma^{\alpha-1} - 2\theta^2\gamma, \quad (6)$$

which is positive when γ is low and negative when it is high. Hence, a dictator may have an incentive to make some policy concessions if only to induce cooperation.

Similarly, we can rewrite the utility function of the opposition as

$$U^O = s\gamma^\alpha - (x - x^O)^2 = s\gamma^\alpha - \theta^2(1-\gamma)^2, \quad (7)$$

which increases in the policy concessions:

$$\frac{\partial U^O}{\partial \gamma} = s\alpha\gamma^{\alpha-1} + 2\theta^2(1-\gamma) > 0. \quad (8)$$

The opposition always wants concessions.

The timing is as follows. The need for cooperation, α , the degree of polarization, θ , and the strength of the opposition, z , to be defined below, are given and observed by everyone. The dictator offers policy concessions and

³The assumption that the loss from policy distance is quadratic, even if standard, is not innocent. One way to justify the concavity of this function is that while political leaders care about spoils from office, their followers care about policy, and the followers' preferences constrain the leaders on both sides.

a share of rents, $\{\gamma, s\}$. Then the opposition decides whether or not to rebel. If the opposition does not rebel, policy and rents are allocated according to this offer. If the opposition decides to fight, nature moves and resolves the conflict.

To characterize the strength of the opposition, z , let the probability that the opposition overthrows a dictator if it acts against him be $q < 1$.⁴ If the opposition wins, it gets all the rents and its ideal policy. If the opposition is defeated, the dictator imposes the policy that maximizes his utility and punishes the opposition. The net severity of punishment is $L \leq 0$.⁵ Note that q and L are fixed features of the environment in which decisions are made. Hence, they are exogenous. Putting these assumptions together, the expected value of acting against the dictator is

$$q[V(R^O = 1) + u^O(\gamma = 1)] + (1 - q)L = q + (1 - q)L \equiv z, \quad (9)$$

where $z(q, L)$ summarizes the strength of the opposition. The opposition is strong when it has a good chance to overturn the dictator and when the loss it would suffer from defeat in a struggle against the dictator is small.

2.2 Equilibria

The problem of the dictator is to

$$\max_{\gamma, s} U^D(R^D, x), \quad (10)$$

s.t.

$$\begin{aligned} U^O &\geq z \\ 0 &\leq s \leq 1 \\ 0 &\leq \gamma \leq 1, \end{aligned}$$

with the Lagrangean

$$\begin{aligned} \mathcal{L} = &(1 - s)\gamma^\alpha - \gamma^2\theta^2 + \lambda[s\gamma^\alpha - \theta^2(1 - \gamma)^2 - z] \\ &+ \mu_0 s + \mu_1(1 - s) + \eta_0\gamma + \eta_1(1 - \gamma), \end{aligned} \quad (11)$$

where λ is the multiplier on the opposition's incentive constraint and the μ 's and the η 's are, respectively, multipliers for the constraints on s and γ .

⁴We assume that $q < 1$, since if the opposition were certain to be able to overthrow the dictator, the dictator would not be around. This assumption excludes some corner solutions; see the Appendix.

⁵This is net punishment because when the dictator maximizes his utility he makes policy concessions that maximize his gains from cooperation. But he also takes reprisals against the opposition, so that in the end the severity of loss is L , which we take to be exogenous.

To avoid the proliferation of cases, we focus on the complementary slackness condition

$$\lambda \left[s\gamma^\alpha - \theta^2(1-\gamma)^2 - z \right] = 0 \quad (12)$$

and consider corner solutions only as they arise.

Consider first the case $\lambda = 0$, $s\gamma^\alpha - \theta^2(1-\gamma)^2 - z > 0$. The dictator does not need to fear the opposition and all he does is maximize his utility from cooperation. First-order conditions are then

$$\frac{\partial \mathcal{L}}{\partial s} \Big|_{\lambda=0} = -\gamma^\alpha + \mu_0 \leq 0 \quad (13)$$

and

$$\frac{\partial \mathcal{L}}{\partial \gamma} \Big|_{\lambda=0} = \alpha\gamma^{\alpha-1} - 2\gamma\theta^2 = 0, \quad (14)$$

implying that the dictator offers $s_c = 0$ and

$$\gamma_c = \left(\frac{\alpha}{2\theta^2} \right)^{\frac{1}{2-\alpha}}, \quad (15)$$

where the subscript c stands for “pure cooperation” offer.⁶

This offer is accepted by the opposition if

$$z < -\theta^2(1 - \gamma_c)^2, \quad (16)$$

which defines the conditions for the “pure cooperation equilibrium,” in which the dictator offers $\{\gamma_c, 0\}$ and the opposition does not rebel.

Now consider the case $\lambda > 0$, $0 < s < 1$, $0 < \gamma < 1$. First-order conditions are now

$$\frac{\partial \mathcal{L}}{\partial s} \Big|_{\lambda>0} = -\gamma^\alpha + \lambda\gamma^\alpha = 0 \Rightarrow \lambda = 1 \quad (17)$$

and

$$\frac{\partial \mathcal{L}}{\partial \gamma} \Big|_{\lambda>0} = \alpha\gamma^{\alpha-1} - 4\gamma\theta^2 + 2\theta^2 = 0, \quad (18)$$

with the implicit solution γ_z , where the subscript z stands for “cooptation.” Observe that when the dictator fears rebellion, he makes a policy concession at least as large as that needed to maximize his rents from cooperation, $\gamma_z \geq \gamma_c$. This can be seen by rewriting (18) as $\alpha\gamma_z^{\alpha-1} - 2\gamma_z\theta^2 = 2\theta^2(\gamma_z - 1) \leq 0$. Comparing this expression with (14) shows that it cannot be

⁶This solution is logically consistent when $\gamma_c = 1$ or $\alpha \geq 2\theta^2$. Note that if $\gamma = 1$, $x = x^M$, so that the dictator sets policy according to the median preference but he takes all the spoils.

satisfied by the same value of γ .⁷ In turn, since the left-hand side declines in γ , it must be true that $\gamma_z \geq \gamma_c$.

Finally, since $\lambda > 0$, it must be true that $s\gamma^\alpha - \theta^2(1 - \gamma)^2 - z = 0$, so that s_z is given by

$$s_z = \frac{z + \theta^2(1 - \gamma_z)^2}{\gamma_z^\alpha}. \quad (19)$$

We will refer to $\{\gamma_z, s_z\}$ as the “cooptation offer.”

Note that since $\gamma_c \leq \gamma_z$, dictator's utility under cooperation, U_c^D , is strictly larger than his utility under cooptation, U_z^D . But if the opposition is sufficiently strong to reject the cooperation offer, will dictators always make the offers necessary to deter the opposition from acting against them? The expected value for the dictator of facing a revolt is

$$\begin{aligned} q[V(R^D = 0) + u^D(\gamma = 1)] + (1 - q)U_c^D \\ = -q\theta^2 + (1 - q)[\gamma_c^\alpha - \theta^2\gamma_c^2], \end{aligned} \quad (20)$$

and the dictator makes the cooptation offer as long as his utility from cooptation is at least as high as the expected value of rebellion:

$$U_z^D \geq -q\theta^2 + (1 - q)U_c^D. \quad (21)$$

Substituting s_z into U_z^D , writing out z from (9), and rearranging terms, the above condition can be rewritten as

$$q(U_c^D + \theta^2 - 1 + L) \geq U_c^D + \theta^2 - [\gamma_z^\alpha + 2\theta^2\gamma_z(1 - \gamma_z)] + L. \quad (22)$$

Let $C = U_c^D + \theta^2 - [\gamma_z^\alpha + 2\theta^2\gamma_z(1 - \gamma_z)]$ and $D = U_c^D + \theta^2 - 1$. Then this condition becomes $(D + L)q \geq C + L$. Now, for all feasible values of parameters it is true that $C \leq D$, which leaves three cases: (1) If $C \leq D < -L$, this condition is satisfied for all $q < 1$; (2) If $C < -L < D$, the condition is satisfied for all $q \geq 0$; (3) If $-L < C \leq D$, the condition is satisfied only for $q \geq (C + L)/(D + L)$.

Hence, the game has three equilibria. They are best characterized in the $\{q, -L\}$ space.

Proposition 1. (1) If

$$-L \geq \frac{\theta^2(1 - \gamma_c)^2 + q}{1 - q},$$

⁷Equality will hold only if $\alpha \geq 2\theta^2$ and $\gamma_c = 1$.

a cooperation equilibrium ensues: the dictator makes a cooperation offer and the opposition does not rebel.

(2) If

$$U_c^D + \theta^2 - \frac{\gamma_z^\alpha + 2\theta^2\gamma_z(1 - \gamma_z) - q}{1 - q} \leq -L < \frac{\theta^2(1 - \gamma_c)^2 + q}{1 - q},$$

a cooptation equilibrium occurs: the dictator makes a cooptation offer and the opposition does not rebel.

(3) If

$$-L < U_c^D + \theta^2 - \frac{\gamma_z^\alpha + 2\theta^2\gamma_z(1 - \gamma_z) - q}{1 - q},$$

a turmoil equilibrium transpires: the dictator makes a cooperation offer and the opposition rebels.

Proof. Part (1) results from solving (16) for L in terms of q . In turn, when

$$-L < \frac{\theta^2(1 - \gamma_c)^2 + q}{1 - q},$$

the dictator does not make a cooptation offer only if $q < (C + L)/(D + L)$. Substituting for C and D and solving for L yields the condition in Part (3).

Finally, we have to check that

$$U_c^D + \theta^2 - \frac{\gamma_z^\alpha + 2\theta^2\gamma_z(1 - \gamma_z) - q}{1 - q} < \frac{\theta^2(1 - \gamma_c)^2 + q}{1 - q}$$

or

$$(1 - q)(\gamma_c^\alpha - \theta^2\gamma_c^2 + \theta^2) - \gamma_z^\alpha - 2\theta^2\gamma_z(1 - \gamma_z) + q < \theta^2(1 - \gamma_c)^2 + q.$$

This must be true for $q = 0$, so that $\gamma_c^\alpha - \theta^2\gamma_c^2 + \theta^2 - \theta^2(1 - \gamma_c)^2 < \gamma_z^\alpha + 2\theta^2\gamma_z(1 - \gamma_z)$, or after rearranging $2\theta^2[(\gamma_c - \gamma_z)(1 - \gamma_z + \gamma_c)] < \gamma_z^\alpha - \gamma_c^\alpha$. But $(\gamma_c - \gamma_z) \leq 0, 1 - \gamma_z + \gamma_c \geq 0$. Hence LHS ≤ 0 and RHS ≥ 0 so for all values of parameters

$$U_c^D + \theta^2 - \frac{\gamma_z^\alpha + 2\theta^2\gamma_z(1 - \gamma_z) - q}{1 - q} < \frac{\theta^2(1 - \gamma_c)^2 + q}{1 - q}. \quad \square$$

These equilibria are best seen graphically (the thick line separates cooperation from cooptation equilibria; the thin line cooptation from turmoil) (Figure 1).

We have thus learned that when the opposition is weak, so that the probability that it could overthrow the dictator is low and the loss it would suffer in the eventuality that it would fail is high, the dictator will set the policy so as to maximize his rents from cooperation and not share them,

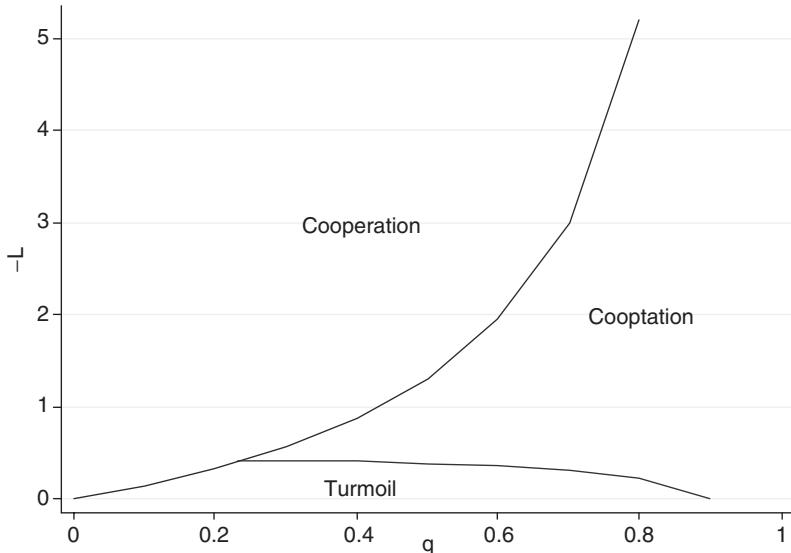


Figure 1. Equilibria in the $\{-L, q\}$ space.

while the opposition will not rebel. When the loss the dictator could inflict on the opposition, were a rebellion to fail, is smaller, or the probability the opposition would prevail is higher, the dictator will make additional policy compromises and share the rents from cooperation, while the opposition will again not rebel. When, however, the opposition has a low chance to overthrow the dictator but the dictator can do little to hurt the opposition, the dictator is not willing to move beyond a pure cooperation offer and the opposition does rebel. The dictator is not afraid of the opposition when the prospects that it would overthrow him are low and the opposition does not fear to rebel when the dictator cannot punish it. Since additional policy compromises as well as the sharing of rents are costly to the dictator, he is not willing to make a cooptation offer. And since the opposition has little to lose by rebelling, a turmoil ensues.

2.3 Comparative statics

Note that neither q nor L affect the content of the cooperation offer. These parameters, however, determine what type of offer is made and they affect the size of rents offered under the cooptation equilibrium.

Consider first the cooperation offer. Policy concessions increase as the need for cooperation grows:

$$\frac{\partial \gamma_c}{\partial \alpha} = \left(\frac{\alpha}{2\theta^2} \right)^{\frac{1}{2-\alpha}} \frac{1}{2-\alpha} \left[\frac{1}{2-\alpha} \ln \frac{\alpha}{2\theta^2} + \frac{1}{\alpha} \right] > 0, \quad (23)$$

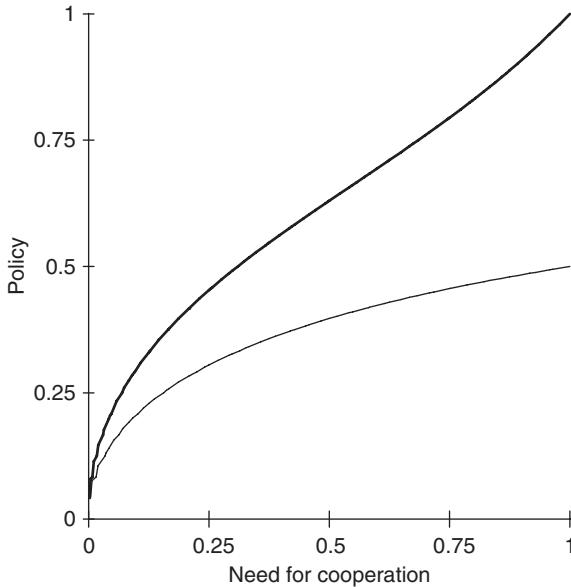


Figure 2. Policy concessions under cooperation.

if $2 - \alpha(1 - \ln(\alpha/2\theta^2)) > 0$, or $\ln(2\theta^2) \leq 1$, or $\theta \leq 1.16$, which is true by construction (since $x \in [0, 1]$, so is θ).

In turn,

$$\frac{\partial \gamma_c}{\partial \theta} = \left(\frac{\alpha}{2}\right)^{\frac{1}{2-\alpha}} \left(\frac{2}{\alpha-2}\right) \theta^{\frac{2}{\alpha-2}-1} < 0, \quad (24)$$

which shows that as policy polarization increases, the dictator finds additional policy concessions to be more costly. Figure 2 shows cooperation policy concessions as a function of the need for cooperation, for different degrees of policy polarization. (The thick line indicates policy concessions when $\theta^2 = 1/2$, the thin line when $\theta^2 = 1$.)

To derive comparative statics under cooptation equilibria, recall from (18) that the policy concession is characterized by $F(\alpha, \theta, \gamma_z) = \alpha\gamma_z^{\alpha-1} - 4\gamma_z\theta^2 + 2\theta^2 = 0$, with the second-order condition $\partial F/\partial \gamma = \alpha(\alpha-1)\gamma_z^{\alpha-2} - 4\theta^2 < 0$. By the implicit function theorem, an increase in the need for cooperation raises the policy concession if

$$\frac{\partial \gamma_z}{\partial \alpha} = -\frac{\partial F/\partial \alpha}{\partial F/\partial \gamma} = -\frac{\gamma_z^{\alpha-1}(1 + \alpha \ln \gamma_z)}{\alpha(\alpha-1)\gamma_z^{\alpha-2} - 4\theta^2} > 0, \quad (25)$$

or if $1 + \alpha \ln \gamma_z > 0$. This is obviously true for $\alpha = 0$, $\gamma_z(\alpha = 0) = 1/2$ and for $\alpha = 1$, $\gamma_z(\alpha = 1) = 1/2 + 1/4\theta^2$. While we cannot show analytically that it is also true for $0 < \alpha < 1$, the implicit plot in Figure 3 shows that this derivative

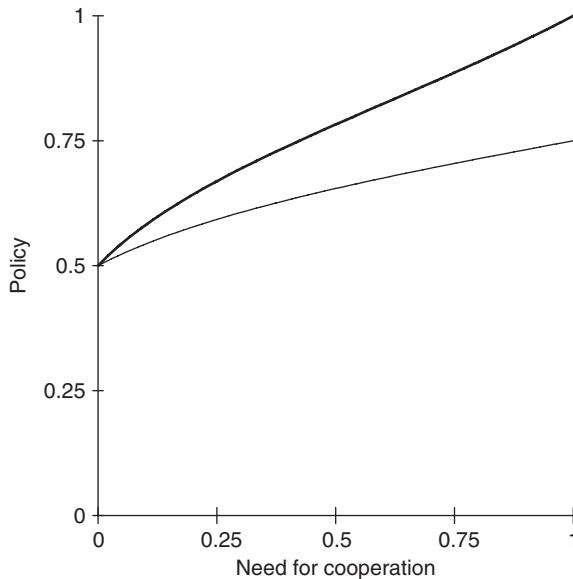


Figure 3. Policy concessions under cooptation.

is positive in the entire range. Hence, under the threat of rebellion as well, an increase in the need for cooperation results in greater policy concessions.

The impact of a change in polarization on policy concession is

$$\frac{\partial \gamma_z}{\partial \theta} = -\frac{\partial F / \partial \theta}{\partial F / \partial \gamma}.$$

We know from above that

$$\frac{\partial F}{\partial \gamma} < 0,$$

while

$$\frac{\partial F}{\partial \theta} = -8\gamma\theta + 4\theta < 0$$

for $\gamma \geq 1/2$, which is guaranteed by $\gamma_z(\alpha=0)=1/2$ and $\partial \gamma_z / \partial \alpha > 0$. Increasing polarization makes policy concessions relatively more expensive for the dictator, resulting in smaller concessions, or

$$\frac{\partial \gamma_z}{\partial \theta} < 0. \quad (26)$$

Figure 3 shows cooptation policy concessions as a function of the need for cooperation, for different degrees of policy polarization. (Again, the thick and thin lines track policy concessions when $\theta^2 = 1/2$ and 1, respectively.)

These conclusions may be intuitive, but comparing Figures 2 and 3 also shows that in our model “rentier states,” which need little or no cooperation to generate rents, make substantial policy concessions whenever the power of the dictator is threatened. This conclusion goes against the vast rentier state literature, which typically claims that dictators in resource-rich countries counter political threats only by distributing rents (Karl, 1997; Luciani, 1987; Ross, 2001). We see no reason to believe that dictators have a lexicographic preference for policy over rents, that is, that they would give away all the rents before making any policy concessions. Smith (2004, p. 242), finding no evidence that regime survival is contingent on oil booms and busts within the oil-rich states, also concludes that “there is more to the durability of regimes in oil-rich states than patronage and coercion.” He speculates that the types of coalitions supporting resource-rich regimes, may better explain their durability.

Yet while we expect even resource-rich dictators to make policy concessions, we do agree with the rentier state literature that these rulers will rely more on the sharing rents than those who need more extensive cooperation. Rents and policy concessions are substitutes:⁸

$$\frac{ds_z}{d\gamma_z} = -\frac{1}{\gamma^\alpha} \left\{ 2\theta^2(1-\gamma) + \frac{\alpha}{\gamma} [\theta^2(1-\gamma)^2 + z] \right\} < 0. \quad (27)$$

In turn, since

$$\frac{ds}{d\alpha} = \frac{ds}{d\gamma} \frac{d\gamma}{d\alpha} < 0,$$

dictatorships which need less cooperation, give away a larger share of spoils when they are threatened.

To summarize, our predictions relate dictators’ need for cooperation and the strength of the opposition they face to the degree of policy concessions they make. Because any cooptation strategy entailing policy concessions requires institutions (an assumption we discuss in the following section), we expect policy concessions to be greater, and therefore the number of legislative parties to be larger, when the dictator needs more cooperation, when polarization between the dictator and the opposition is lower, when the opposition is more likely to succeed in overturning the dictator, and when the loss the opposition would suffer were it to fail is small. These are the conclusions to be tested statistically.

3. DICTATORIAL INSTITUTIONS: RELATING THE THEORY TO FACTS

To relate the model to observations of actual institutions, we think as follows. Since policy compromises can be made only within an institutional

⁸That the expression in square brackets is positive is guaranteed by the condition (16) and $\gamma_z \geq \gamma_c$.

framework, we expect the number of legislative parties to be increasing in γ . Hence, while we cannot observe γ , we can use the comparative statics of γ with regard to the particular parameters, provide an empirical interpretation of these parameters, and by implication, formulate hypotheses relating the number of legislative parties to the observed conditions.

Policy compromises require an institutional forum access to which can be controlled, where demands can be revealed without appearing as acts of resistance, where compromises can be hammered out without undue public scrutiny, and where the resulting agreements can be dressed in a legalistic form and publicized as such. Legislatures are ideally suited for these purposes:

1. The dictator can select the groups to be granted access. Polish communists, for example, repeatedly sought participation of some Catholic groups: in a 1990 interview (Rolicki, 1990), the former first secretary of the Polish United Workers' (Communist) Party, Edward Gierek, revealed that he "intended to introduce to the Sejm [Parliament] a significant group of 25 percent of Catholic deputies. It would have permitted us . . .," Gierek continued, "*to broaden the political base of the authorities*" (italics supplied).
2. The participating groups can reveal their demands without having to oppose the dictatorship. Once King Hussein of Jordan, for example, offered the Muslim Brotherhood some influence over educational and religious policies, the group shifted from denouncing the regime on the streets to articulating its demands within the legislature (Schwedler, 2000).
3. The flow of information about negotiations can be controlled. The subcommissions of the Supreme Soviet, for example, "[could] collate suggestions from experts and the public on the circulated draft, then deliberate upon the incorporation of these suggestions without revealing the dirty linen" (Vanneman, 1977, p. 162).
4. The mere existence of a legislature implies both that the dictator at least announces his current wishes and that there are some internal rules that regulate the prerogatives of respective powers (Machiavelli, according to Bobbio, 1984).

For dictators, legislatures are a good instrument because they are not the inner sanctum of the dictatorship. Most important decisions are made by the dictator or by a narrow clique around him: a royal family council, a military junta, or a party committee. For the opposition, participation in legislatures provides an opportunity to pursue its interests and values within the framework of a dictatorship, to transform the dictatorship from within. When the opposition sees no chance to overthrow a dictator in the foreseeable future, it may prefer limited influence to interminable waiting.

In turn, as Friedrich and Brzezinski (1961, p. 29) observe, “it is the role of the party to provide a following for the dictator.” A party offers individuals willing to collaborate with the regime a vehicle for advancing their careers within a stable system of patronage. In exchange for perks, privileges, and prospects of career advancement, members of a single party mobilize popular support and supervise behaviors of people unwilling to identify themselves with the dictator. A party is an instrument by which the dictatorship can penetrate and control the society (Gershenson and Grossman, 2001). It is, in Mussolini’s phrase, the “capillary” through which the blood of the dictatorship diffuses through the society.

Yet a single party may not suffice to coopt a sufficient range of the opposition. Multiple parties can be an effective instrument of dictatorial rule if they can be tightly controlled by the dictatorship: these are “fronts.” Consider communist Poland. Even though in 1948 communists forced their major rival, the Polish Socialist Party, into a “merger,” thus creating the Polish United Workers Party (PUWP), they tolerated a pre-war left-wing United Peasant Party (ZSL), a small private business party (SD), and a Catholic group with direct ties to Moscow. After 1956, two other Catholic groups were allowed to organize. Even though these parties functioned under separate labels in the legislature, they were presented to voters as a single list, with all candidates approved by the communists. Hence, elections only ratified the distribution of parliamentary seats and the specific appointees of the Communist Party. One way to think of this “multipartism” is that it represented a menu of contracts, allowing people characterized by different political attitudes (and differing degrees of opportunism) to sort themselves out. Membership in each party entailed a different degree of identification with the regime: highest for members of the PUWP, lower for those joining the Peasant Party, the lowest for the Catholic groups. In exchange, these memberships offered varying amounts of perks and privileges, in the same order. Someone not willing to join the Communist Party, with the social opprobrium this membership evoked among Catholic peasants, may have joined the Peasant Party. This choice entailed a less direct commitment and fewer perks, but it did signify identification with the regime, and it did furnish perks and privileges. This separating equilibrium maximized support for the regime and visibly isolated those who were not willing to make any gesture of support.

A combination of a legislature that absorbs the political energies of groups that otherwise might attempt to overthrow the dictator, coupled with a single party or a front that extends the reach of the regime into the society, represents an ideal arrangement for a dictator. But sometimes it does not suffice. When the opposition sees a possibility of overthrowing a dictator, it must be given more to desist, namely, institutional autonomy, in the form of political parties.

Our dependent variable, therefore, is the number of parties within legislatures, *LPARTY*, which takes the value $j=0$ where there are no parties or

TABLE 1 INSTITUTIONAL STRUCTURE OF DICTATORSHIPS, BY TYPE OF DICTATOR
(In country-years)*

	No legislature	Legislature	Total	% of total observations
Monarchs				
No parties	206	218	424	71.3
One party	3	18	21	3.5
Many parties	33	117	150	25.2
Total	242	353	595	
% of total obs.	40.7	59.3		
Military dictators				
No parties	291	64	355	24.8
One party	112	380	492	34.4
Many parties	167	416	583	40.8
Total	570	806	1,430	
% of total obs.	39.9	60.1		
Civilian dictators				
No parties	28	70	98	4.7
One party	68	1,157	1,225	59.1
Many parties	60	689	749	36.2
Total	156	1,916	2,072	
% of total obs.	7.5	92.5		

*Here, and throughout the text, “fronts” are classified as single parties.

when there are multiple parties but no legislature, $j=1$ where there is one party, and $j=2$ where there is more than one autonomous party in the legislature. The reason we ignore multiple parties existing outside the legislature is that these parties are not an instrument of the dictator.⁹

Descriptive information concerning these institutional arrangements is shown in Table 1. We present the data by type of dictator, since dictatorships differ significantly in their institutional structure depending on whether the dictator is a professional military, a monarch, or a civilian. Note *in passim* that under democracy, heads of governments are easy to identify: they are either presidents or prime ministers. But the dictatorial zoo exhibits a bewildering diversity: dictators bear titles of emperors or kings, presidents, leaders (“*fuhrer*,” “*caudillo*”), chiefs (“*jefe*”), first secretaries, leaders of Faith, Councils of National Salvation, Supreme Commands of the Nation, administrators of the state of emergency, and simply “dictators.” To make

⁹Note that in Table 1 there are 260 instances in which there are multiple parties but no legislature. Most of them fall into two transitional categories: either the dictatorship emerges from democracy and the dictator did not yet get around to formally banning parties or multiple political parties are allowed to form on the eve of opening the legislature; the latter pattern is particularly prevalent in the African “national conferences” (Mbaku and Ihonvhere, 1998). Other instances of this kind occur when a dictator temporarily closes the legislature.

sense of this variety, we distinguish three types of dictators: monarchs,¹⁰ military, and non-royal civilians (hereafter simply “civilians”). Our sample, of 199 countries that existed at any time between 1946 and 1996, contains 513 dictators observed during 4,119 years, of whom 45 were monarchs (595 years), 212 were military (1,430 years), and 256 were civilian (2,072 years).¹¹

Perhaps because the monarchy is a powerful institution in its own right, monarchs are least likely to rely on other institutions. Military dictators build institutions more often. Finally, civilian dictatorships are almost always institutionalized in one form or another. These differences are best understood by observing that both monarchies and military dictatorships have by their nature a ready-made institution to both organize their rule and neutralize threats from within the ruling elite: respectively, the royal family or, more broadly, the aristocracy, and the armed forces. To mitigate the threats stemming from within the ruling elite, dictators frequently set up inner sanctums where real decisions are made and potential rivals are kept close. Monarchs rely on consultative councils to give advice and on family members to staff key governmental posts.¹² Among military dictators, real power typically lies within the governing junta. A collegial body is necessary to incorporate key members of the armed forces, usually heads of the various branches, who may be peers of the dictator and who can guarantee the support of those they command. Civilian dictatorships, however, must create such an institution: they must work harder to organize cooperation. Indeed, the great technological innovation of Lenin, emulated widely during the second half of the twentieth century, was the dictatorship of a single party. A smaller body within the party is where real decision-making power lies and is used to coopt rivals.

Consultative councils, juntas, and political bureaus are the first institutional trench for dictators. These smaller institutions neutralize threats from within the ruling elite while legislatures and parties, constituting the second institutional trench, are designed to counteract threats posed by groups within society. Here we assume that the challenges posed by the ruling elite and by outsiders from society are independent of each other.

To test the predictions derived from the model, we need to find indicators of the need for cooperation and of the threat originating from the opposition. Within the limits of the available data, we consider such indicators in turn.

¹⁰Note that we are classifying *effective* heads of government: the people who in fact rule. Constitutional monarchs of the European variety or the Emperor of Japan are not effective rulers.

¹¹Whenever the numbers in the subsequent analyses diverge from the totals given here, it is because some other information is not available.

¹²Since these councils do not issue laws but only advise the monarch, we did not consider them as constituting legislatures.

The need for cooperation is lower in economies that can rely on mineral exports, “enclave economies” in terms of Cardoso and Faletto (1978).¹³ In such economies, the dictator does not need the cooperation of broad sectors of society to maximize state revenue. Moreover, resource wealth makes it easier for dictators to maintain their rule by sharing rents in exchange for political acquiescence (Wantchekon, 2002). To measure mineral resource endowments, we use a dummy variable, *RESOURCE*, coded 1 if the average ratio of mineral exports to total exports exceeds 50 percent.¹⁴

We already know that civilian dictators need more cooperation than military rulers and monarchs. To rule the country, to supervise the state bureaucracy, they must organize a political party or parties. In contrast, monarchs and military dictators can rely on pre-existing organizations. We use dummy variables, *CIVILIAN* and *MILITARY*, to indicate the type of dictator with monarchs the omitted category.

The best proxy for policy polarization would be income inequality. Unfortunately, income distribution data (Deininger and Squire, 1996) are scarce, not comparable between countries, and highly unreliable (Atkinson and Brandolini, 2001). One can also expect, however, that societies which are fragmented in religious terms would be more polarized with regard to some policy issues. Hence, we treat religious fractionalization, a variable called *RELD*, as an indicator of policy distance.¹⁵

The threat presented by an opposition depends on its chances to overthrow the dictator and the stakes entailed in being violently defeated. We assume that the opposition has a better chance of overthrowing the dictator who inherited political parties. In such situations, some segments of society are already organized and capable of using pre-existing structures. Banning existing parties is a more difficult task than simply not allowing new parties to form: dictators who inherit them may be unable to prevent the opposition from being organized in parties even when it is otherwise weak. A variable

¹³“Enclave” economies require little labor inputs, as distinct from “plantation” economies, which also export primary commodities but are labor intensive.

¹⁴We also experimented with several alternative measures that distinguish between fuels and mineral ores: two dummy variables, each coded 1 if the average ratio of oil and mineral ores, respectively, exceeds 50 percent (IMF, 1999); ores and metal exports as a percentage of merchandise exports (World Bank, 2000); fuel exports as a percentage of merchandise exports (World Bank, 2000); and, crude oil and natural gas production in thousand barrels per day (EIA). They all have the same sign and are all significant. Given that the qualitative results do not depend on the particular operationalization of the need for cooperation, we stick to our cruder measure to minimize the loss of observations. See the Codebook for the definitions of all variables.

¹⁵Again, we experimented with several alternative indicators: ethnic fractionalization created from data provided by Fearon (2003) and religious and ethnic polarization, separately, as constructed by methods detailed in Reynal-Querol (2002). Each of these indicators had the same sign as *RELD*, but were insignificant. This is not surprising: measures of fractionalization and polarization suffer both from conceptual problems and poor information, and they are notoriously not robust.

called *INHERIT* is the number of parties inherited by the particular dictator either from the previous democratic regime or his immediate predecessor.¹⁶

The loss the opposition would suffer were rebellion to fail is difficult to measure. For lack of other indicators, we assume that countries differ in their propensity toward repression of opposition movements and that this propensity is revealed by the number of past instances in which democracy was overthrown, a variable we call *STRA* (the mnemonic is Sum of TRansitions to Authoritarianism). The higher the *STRA*, the more repressive is a regime and the more costly is a failed revolt for the opposition. Admittedly, as a proxy for L , *STRA* is highly suspect for two reasons. First, countries that are and have always been dictatorships, are likely to be highly repressive; yet the value of *STRA* is low for them because they have no democratic past. Second, one can think that a higher number of past democratic regimes means that revolts against dictatorships are less costly. In spite of its imperfections, however, we use *STRA* because it is the only proxy we have.

To summarize, we indicate the dictator's need for cooperation, α , by (1) the type of dictator and (2) the availability of mineral exports. We indicate policy polarization, θ , by religious fractionalization. Finally, the probability the opposition would overthrow the dictator, q , is measured by the number of parties he inherited, while the eventual loss to the opposition, L , is proxied by the number of past transitions to authoritarianism. We determine the effects of these factors on the number of legislative parties under dictatorship using an ordered probit model. The results are presented in Table 2.

The predicted number of parties tracks observations very closely. All coefficients have the predicted signs and most are significant far beyond conventional levels. Availability of mineral resources reduces the need for parties. Monarchs (the omitted dummy) are less likely to have parties than the military, who in turn have fewer than civilians. Having inherited parties induces the dictator to tolerate more of them. Having experienced transitions to authoritarianism in the past makes the current dictatorship more repressive.¹⁷ The coefficient on religious fractionalization is slightly less significant, but it has the correct sign.

As an additional test of the model, we also examine its implications with regard to the share of rents. The model implies that a higher need for co-operation should lead dictators to offer a lower share of rents to the opposition. In turn, a greater threat of rebellion should result in a higher share.

¹⁶Note that *INHERIT* is not *LPARTY* lagged one period. It is the number of legislative parties a particular dictator finds when he comes into power.

¹⁷Again we acknowledge how imperfectly *STRA* serves as a proxy for L , yet the negative coefficient does lend some credence to our interpretation. The significance of *STRA*, which summarizes a country's history of regime changes, also suggests the importance of thinking in dynamic terms. Repeated interaction between the dictatorial regime and the potential opposition and the consequences for institutionalization, however, is a subject beyond the scope of this paper.

TABLE 2 NUMBER OF LEGISLATIVE PARTIES, AS A FUNCTION OF THE NEED FOR COOPERATION AND THE STRENGTH OF OPPOSITION

Variable	Coefficient	Standard error	$\text{Pr}[Z \geq z]$
Constant	-0.8142	0.0702	0.0000
<i>RESOURCE</i>	-0.5045	0.0488	0.0000
<i>MILITARY</i>	0.7720	0.0682	0.0000
<i>CIVILIAN</i>	1.1457	0.0666	0.0000
<i>INHERIT</i>	0.8020	0.0291	0.0000
<i>STRA</i>	-0.6047	0.0337	0.0000
<i>RELD</i>	-0.2081	0.0826	0.0117
μ	1.4415	0.0292	0.0000

Frequencies of actual and predicted outcomes		Predicted		
Actual	0	1	2	Total
0	566	476	87	1,129
1	71	1,455	197	1,723
2	73	391	752	1,216
Total	710	2,322	1,036	4,068

TABLE 3 REGRESSION ANALYSIS OF GOVERNMENT WAGES AND SALARIES
(As a percentage of total income; $N = 980$)

Variable	Coefficient	Standard error	$\text{Pr}[Z \geq z]$
Constant	9.5269	0.3679	0.0000
<i>RESOURCE</i>	0.7986	0.3010	0.0080
<i>MILITARY</i>	-3.1853	0.3847	0.0000
<i>CIVILIAN</i>	-2.5661	0.3814	0.0000
<i>INHERIT</i>	0.3640	0.1607	0.0235
<i>STRA</i>	-0.8990	0.1724	0.0000
<i>RELD</i>	-0.4119	0.5000	0.4101

As the measure of rents we take the share of public sector wages as a proportion of GDP, *SPOILS*: public sector jobs are the most frequent form of patronage. The results, in Table 3, support these predictions. Availability of mineral resources increases the public wage fund. Monarchs distribute more rents than civilians and military. In turn, the threat indicators have the same signs as with regard to *LPARTY*: having inherited parties induces the dictator to share more rents; having experienced transitions to authoritarianism makes the current dictatorship share fewer rents. The coefficient on religious fractionalization is insignificant.

We are far from certain that our empirical implementation accurately captures the theoretically relevant variables: the constraint of data availability is very tight. But there is no doubt that dictators establish and

maintain political institutions for systematic reasons and we can predict quite well what they will be.

4. CONCLUSIONS

We have shown that dictatorships maintain institutions for systematic reasons: to mobilize cooperation and, if the opposition is threatening, also to thwart the danger of rebellion. These institutions bear the same names as those we consider democratic: parties, legislatures, elections. Following a popular view, we could think of institutionalized dictatorships as “partial democracies” (Epstein et al., 2003), “electoral authoritarianism” (Schedler, 2002), or any number of types of regime with adjectives. But if these regimes exhibit seemingly democratic institutions, why are they not democracies?

Following Przeworski (1991), we can think of three reasons why they are not.

First, these are regimes which, in spite of celebrating events they call “elections,” do not allow for the possibility that the incumbent rulers could be forced to abandon power as a result of the people’s vote. As Anastasio Somoza is alleged to have said to his electoral opponent who claimed to have defeated Somoza at the polls: “You may have won the voting, but I won the counting.” According to a long line of analyses (for a summary, see Brooker, 2000), the role of elections is to legitimize the regime, by providing it with democratic credentials. Perhaps some authoritarian regimes – Mexico was the best example – want to pass as democracies, so they hold their vote down and claim it to be the free will of the people. Yet many dictators, communist ones prominently but also many in Africa and some in Latin America, every few years proudly report that they won 99.2 percent of the popular vote. These elections are just not credible to anyone: those who had voted, those for whom they voted, or external observers. Thus we think that the reason to hold elections is different, namely, to intimidate any potential opposition. Elections are intended to show that the dictatorship can make the dog perform tricks, that it can intimidate a substantial part of the population, so that any opposition is futile. Under dictatorship, everyone knows that their rulers are not selected through elections.

Second, policy concessions are not the same as open-ended decisions. Under democracy, a bill may fail in the legislature. Even if governments do not want to propose bills that would be defeated, they cannot be certain about the outcome of the legislative process. Hence, as Saiegh (2004) shows, even a small amount of uncertainty about the policy preferences of legislators’ constituents can lead to defeats of government-sponsored bills in democracies. Governments lose their legislative gambits because they miscalculate the degree of support they have and do not have unlimited resources to buy the necessary votes. But in dictatorships, such defeats are extremely rare: they signal that the dictatorship had lost its grip. According to Gandhi et al. (2003), the average proportion of legislative initiatives of the executive that are

approved by the lower house of the national legislature is over 96 percent in dictatorships, but only 76 percent in democracies. Even though under dictatorship changes to legislation may be taking place within committees or party caucuses, on the floor of the legislature there is no uncertainty.

Finally, under dictatorship the outcomes of the legislative process, legally constituted by the dictator, can be reversed by the same dictator. When the Polish Communist Party concluded that some peasants were getting too rich as a consequence of incentives it had previously established, the Party simply ordered the parliament to pass a *domiar*: literally “an additional measure,” an ex-post surtax on already-produced incomes. When a German court found Pastor Niemöller not guilty, Hitler had him rearrested by the Gestapo, announcing that “this is the last time a German court is going to declare someone innocent whom I have declared guilty” (Friedrich and Brzezinski, 1961, p. 35). Indeed, not only policies can be unilaterally reversed but the very institutions can be arbitrarily dissolved. In the extreme, the regime may invalidate results of an election, close the legislature, or ban political parties. King Hussein twice opened and closed legislatures. The Algerian military suspended the second round of elections in 1992 and dissolved the legislature after the Islamic Salvation Front seemed poised to win a majority of seats in the parliament. These are dictatorships, and dictators can always revert to the use of force.¹⁸

What distinguishes democratic legislatures, parties, and elections from their dictatorial counterparts is that dictatorships remain arbitrary even in the presence of these institutions.

5. CODEBOOK

COUNTRY: 199 countries.

YEAR: From 1946 or year of beginning of regime to 1996 or respective end date of country.

CIVILIAN: Civilian effective head. Dummy variable coded 1 if the effective head is a civilian (neither a monarch nor a military ruler). Compiled from Banks’ *Political Handbook* and various historical sources.

INHERIT: Inherited political parties. The number of political parties inherited from the previous ruler regardless of whether that leader was democratic or dictatorial.

¹⁸This is not to say that closing institutions is costless for the dictator: President Benjedid lost his job in Algeria after the 1992 electoral débâcle as did the First Secretary of the Communist Party in Poland, Stanislaw Kania, after the failed liberalization of 1980–1981. Hence, dictators are reluctant to grant political autonomy to the opposition. They do it only when they cannot survive otherwise.

LPARTY: Number of political parties in the legislature. Coded 0 if there are no political parties or if there are multiple political parties but no legislature, 1 if one party exists even if there is no legislature, 2 if two or more political parties exist in the legislature. When multiple parties present themselves to voters as a single list, *LPARTY*= 1. Compiled from Banks' *Political Handbook*, Banks (1996), Beck et al. (2000), Przeworski et al. (2000), and other historical sources.

MILITARY: Military effective head. Dummy variable coded 1 if the effective head is or ever was a member of the military by profession, 0 otherwise. Note that retired members of the military are coded as 1, since the shedding of a uniform is not necessarily enough to indicate the civilian character of a leader. Also note that we do not consider rulers who come to power as head of guerilla movements as military. Compiled from Banks' *Political Handbook* and various historical sources.

RELD: Index of religious fractionalization. This is a time-invariant variable, calculated as $1 - \sum p_i^2$ where p_i indicates the share of the population that is Catholic, Protestant, Muslim, or of "other" religions. The primary source is Przeworski et al. (2000) with updated information provided by Encyclopedia Britannica's online *Statistical Info for Countries*.

RESOURCE: Mineral resource endowment of countries. This is a time-invariant variable coded 1 if the average ratio of mineral exports (including oil) to total exports exceeds 50 percent. Sources include IMF (1999) and World Bank (2000).

SPOILS: Spending on government wages and salaries by the central government as a percentage of GDP. Spending on government wages and salaries as a percentage of total expenditures is multiplied by total expenditures as a percentage of GDP; both series are from World Bank (2000).

STRA: Sum of past transitions to authoritarianism in a country. If a country experienced a transition to authoritarianism before 1946, *STRA* was coded 1 in 1946. Original source is Przeworski et al. (2000), updated by Cheibub and Gandhi (2004).

APPENDIX

To complete the analysis, we need to consider corner solutions. Note first that $\gamma = 1$, $s = 1$ is not feasible, since it would occur only if $z = 1$ or $q = 1$, and no dictator would be in power if the opposition were certain to overthrow him. Hence, when $s_z = 1$, it must be true that $\gamma_z < 1$. This case, however, is also unfeasible. At $s = 1$,

$$\begin{aligned}\frac{\partial \mathcal{L}}{\partial s} \Big|_{s=1} &= -\gamma^\alpha + \lambda\gamma^\alpha - \mu_1 \geq 0 \Rightarrow \lambda - 1 \geq \mu_1\gamma^{-\alpha} > 0 \\ \frac{\partial \mathcal{L}}{\partial \gamma} \Big|_{s=1} &= -2\gamma\theta^2 + \lambda[\alpha\gamma^{\alpha-1} + 2(1-\gamma)\theta^2] = 0,\end{aligned}$$

which implies

$$\lambda = \frac{2\gamma\theta^2}{\alpha\gamma^{\alpha-1} + 2(1-\gamma)\theta^2}.$$

But

$$\lambda - 1 = \frac{2\gamma\theta^2 - \alpha\gamma^{\alpha-1} - 2(1-\gamma)\theta^2}{\alpha\gamma^{\alpha-1} + 2(1-\gamma)\theta^2} = 0,$$

by (18). Hence, μ_1 cannot be positive, implying that $s < 1$.

In turn, when $\alpha \geq 2\theta^2$, $\gamma_z = \gamma_c = 1$, and [from (19)] $s_z = z$.

$$\frac{\partial \mathcal{L}}{\partial s} \Big|_{\gamma=1} = -\gamma^\alpha + \lambda\gamma^\alpha = 0 \Rightarrow \lambda = 1$$

$$\frac{\partial \mathcal{L}}{\partial \gamma} \Big|_{\gamma=1} = \alpha\gamma^{\alpha-1} - 2\gamma\theta^2 + 2(1-\gamma)\theta^2 - \eta_1 \geq 0,$$

which is feasible.

Hence, when their policy position does not diverge much from the median, dictators may be willing to abdicate control over the policy in the quest for cooperation. But they never give away all the rents.

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JENNIFER GANDHI
Emory University

ADAM PRZEWORSKI
New York University

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