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CITIZENS, AUTOCRATS, AND PLOTTERS: AN AGENCY THEORY OF COUPS D'ETAT

December 1995

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Working Paper No. 189

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IRIS Summary

We present an agency model of coup attempts in autocracies. We model autocrats as self-interested individuals who want to stay in office to benefit from holding power. The autocrat's interests conflict with those of the citizenry, who wants the state to be efficiently run according to its preferences. Coup attempts occur when plotters perceive a reasonable chance of succeeding, which happens when there is widespread discontent with the autocrat and the majority of the population is willing to passively follow the rule of a new government.

Under the assumption that policy choices cannot be observed by the citizenry, but are correlated with the short-run performance of the economy we find that: (a) to some extent the threat of a coup disciplines the autocrat; (b) coups are more likely when a recession hits, and less likely when output is normal; (c) increasing the average level of income has an ambiguous effect on the probability of a coup attempt.

In a- sample of 89 LDC's for the period 1950-1982, we find evidence that is consistent with the implications of the model. The probability of a coup attempt is correlated with a recession indicator and a measure of popular unrest; by contrast, the correlation between the probability of a coup attempt and per-capita GDP is weaker. We also find that results are strengthened in autocracies and fade out for democracies where agency problems are probably less severe.

We conclude that, to some extent, both the agency approach and our empirical findings weaken the common contention that underdevelopment is the main determinant of coups d'etat. Our results also suggest that coups are more likely to occur when there is
lack of democratic institutions that effectively norm the transfer of power, moderate the agency problem between the citizenry and the incumbent, and make rulers more accountable. Moreover, democratic institutions such as the separation of power, political opposition, and elections may help decrease the probability of coup attempts occurring.

Citizens, Autocrats, and Plotters:
An Agency Theory of Coups D'Etat*

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Abstract

We present an agency model of coup attempts in autocracies. Under the assumption that policy choices cannot be observed by the citizenry, but are correlated with the short-run performance of the economy we find that: (a) to some extent the threat of a coup disciplines the autocrat; (b) coups are more likely when a recession hits, and less likely when output is normal; (c) increasing the average level of income has an ambiguous effect on the probability of a coup attempt. We find empirical evidence that is consistent with the implications of the model.

Key Words: Autocracies, agency approach, citizenry, coups, recessions.
JEL Classification: D72

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1. Introduction

When we think of political competition, elections, parliaments, and constitutions are the first images that spring to our minds. Perhaps it is because of this that most people react with a mix of disbelief and amazement when they are told that coups d'etat, not elections, are the predominant way of changing governments in many developing countries. Consider, for example, a sample of 99 non-communist LDC's taken from Jodice and Taylor (1993) spanning the period between 1950 and 1982: 88 of these 99 countries lived through at least one coup attempt, and in 66 of them governments were changed at least once by a succesful coup. Many poor economies like Bolivia, Benin, and Togo have frequently lived through them, but so did relatively rich countries like Argentina, Greece, and Venezuela. And while coups are more common under autocratic rule, some of the best known occurred in well-established democracies like Chile and Uruguay in 1973. This diversity may have prompted authors like Zolberg (1968) to argue that coups are some sort of social disease that cannot be analyzed systematically. O'Kane (1981, p. 308) concludes that "perhaps coups are just the drastic response to an unstable and hopeless economic situation against which little can be done."

The purpose of this paper is to present an agency theory of coup attempts in autocracies. We model autocrats as self-interested individuals who want power to benefit from it and want to stay in office. The autocrat's interests conflict with those of his principal, the citizenry, who wants the state to be efficiently run according to her tastes.[1] Policy actions cannot be observed by the citizenry, and they must be inferred from the state of the economy.[2] Because the economy lacks institutions that norm the transfer of power, the autocrat can be ousted only by a coup. Coup attempts occur when plotters perceive a reasonable chance of succeeding, which happens

[1] It has been suggested to us that an autocrat is not the agent of the citizenry because she does not elect him. Nevertheless, the key characteristic of an agency relation is the delegation of functions from principal to agent, regardless of whether the principal chooses his agent or not.

[2] As in most agency models, it is not literally true that the principal inferrs the behavior of the agent, since in equilibrum the principal knows exactly the action that the agent will optimally select.

when there is widespread discontent with the autocrat and the majority of the population is willing to passively follow the rule of a new government.

We find that to some extent the threat of a coup moderates the conflict of interest between the citizenry and the autocrat, but only if by behaving closer to the citizenry's preferences the autocrat can increases the probability of his remaining in office. If this holds the autocrat optimally trades off the benefit of pursuing his self interest today, with the probability of remaining in office. Nevertheless, because policy choices cannot be observed by the citizenry, the autocrat can be rewarded and punished only imperfectly. Under the assumption that bad economic outcomes are more likely when the autocrat behaves opportunistically, we find that it is optimal for the citizenry to ensure the autocrat's survival when the economy's performance is good, and put it at risk when performance is bad. A natural interpretation of this result is that coups are more likely when a recession hits. Moreover, we find that increasing the level of income has an ambigous effect on the probability of a coup attempt. This is consistent with the agency approach, which suggests that, since policy choices are constantly made, the citizenry will condition her support on high frequency variables like the state of the economy around trend, and not on the level of development, which varies only slowly over time.

We find empirical evidence that is consistent with the implications of the model. In a panel of 89 non-communist developing countries spanning the period 1950-1982, the probability of a coup attempt is correlated with a recession indicator and a measure of popular unrest. Moreover, the effects are not only statistically significant, but also economically important. By contrast, while per capita income is also correlated with the probability of a coup attempt, its economic importance is much smaller than that of recessions and popular unrest. We also split the sample between autocratic and democratic country-years. We find that results are strenghtened for autocratic country-years, and the model loses most of its explanatory power for democratic country-years, where, one would think, agency problems are less severe. Additionally, while we find evidence of a "coup trap" (i.e. coup attempts in the recent past increase the probability of a

coup attempt) for the whole sample and for democratic country-years, in autocratic country-years the current probability of a coup attempt *decreases* with coup attempts in the last past five years.

Before proceeding, we call attention to a caveat. There is a vast theoretical and empirical literature on political violence by sociologists and political scientists that we do not discuss here. In Galetovic and Sanhueza (1995) we survey this literaure, and relate it with the agency approach.[3] The rest of the paper is organized as follows. In section 2 briefly summarize of the main issues of interest about coups, and relate our paper with economic literature on political violence. In section 3 we present the model, which we solve in section 4. Section 5 presents the estimation strategy and data. In section 6 we discuss our emprirical results. Section 7 concludes.

2. Coups d'etat: definition, issues, and relation with the literature

O'Kane (1987, pp. 22 and 37) defines coups as attempts to overthrow a government that are: (*i*) illegal; (*ii*) carried out by a small group based within the state apparatus; (*iii*) speedely effected; (*iv*) the threat or actual use of violence (see also Luttwack, 1968, p. 27). This definition stresses the distinctive features of coups. First, the masses do not participate directly in their execution -- coups are the busines of elites. Second, coups are swift events: Most of the time, either plotters succeed in taking control within 24 to 48 hours, or the coup attempt fails. Third, although some coups are bloody, many times the threat of force is enough to overthrow the incumbent. For this reason, the direct participation of the military is often not necessary, and coups staged and carried out by civilians are not uncommon. For example, O'Kane (1987, pp. 9, 10) stresses that only one government in six set up after a successful coup is composed exclusively by military officers. Most are a mixture of military officers and civilians.

The elite nature of coups distinguishes them from other forms of political violence like revolutions, riots, or civil wars. Yet while the masses do not directly participate in the execution of a coup, it would be a mistake to ignore them. Clearly a necessary condition for success is to

[3] See also Sanhueza (1995).

physically displace and isolate the incumbent ruler --cut his communication with the rest of the state apparatus. But the actual seizure of power occurs only after commands issued by the plotter are voluntarily obeyed by most of the bureaucracy and the population, for their generalized disobedience would make it impossible to take over the state. For this reason coups tend to occur when there is widespread discontent with the incumbent, because then the citizenry will remain passive and voluntarily obey the new ruler's commands as soon as he shows a firm grip on the reins of executive power.[4] It could be argued that the citizenry is irrelevant all the same, because most individuals would obey if physically coerced, so that a sufficient condition to stage a succesful coup would be to have the support of the military. But this argument overlooks two constraints that any plotter must consider if she wants to use repression to force the bureaucracy and the population to obey. First, there are many more citizens than soldiers, so that it is difficult for the military to simultaneously repress a large number of individuals. Second, orders to massively repress not only have to be issued by the officers who support the plotter, but also obeyed by the troops they command. It may not be very difficult to find a small group willing to engage in selective brutal repression, but massive brutal repression is a different matter, because it must be carried out openly by most of the military. In that case officers and troops must shoot against their fellow citizens, and many of them will probably not be willing to engage in such actions. Thus, it is more likely that military officers will support a coup if they expect the population to voluntarily obey the commands of the plotter.[5]

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[4]Note that this argument is similar to Luttwak's (1968, ch. 3), who points out that one of the preconditions for a coup attempt to be successful is that the citizenry does not react against the plotter. Nevertheless, while Luttwak suggests that apathy on the part of the population is to be expected mainly from the masses of very poor and backward countries who lack a general understanding of the basis of political life of the sort commonly found in the masses of developed societies (see Luttwak, 1968, p. 37), our argument points out that people will remain passive not only when they are poor and illiterate, but also when they are not happy with the incumbent autocrat.

[5] Both constraints are no longer relevant after the plotter succeeds in being obeyed, for then selective repression is usually enough to scare the large majority of the population, and to handle those bold enough to openly oppose the new autocrat. But this is not so *before* the plotter has secured power during the 24 to 48 hours after the coup attempt starts. Then compliance with the commands of the plotter is still a matter of choice for most individuals, and it matters whether the plotter expects that the majotity of the people will obey him.

Focusing on the determinants of the fate of a coup attempt leads to view them as events that last only a few days. The key question to answer under this perspective is what determines the success or failure of a coup attempt, *given that one has been attempted.* But there is a second perspective from which to look at coups: as a process. In many developing countries coups recurr and are the principal means whereby rulers are changed. The focus of attention under this perspective is different. We are no longer interested in how coups are staged and carried out, but rather in why they recurr. Here one must consider that one of the main characteristics of countries that are prone to coups is that political institutions fail to effectively regulate political competition. Some of the questions that emerge under this perspective are: Why are coups the main means of political competition in some countries? Under which political, economic, and institutional circumstances do coups occur? Do democracies experience fewer coups than autocracies? Are the determinants of coups different in democracies than in autocracies? Why are some autocracies less prone to coups than others?

In this paper we analyze some of the issues that emerge when coups are viewed as a process. We restrict the formal analysis to autocracies where coups are the main means of political competition and power transfer. Our approach shares with the economic literature on political violence the stress that private costs and rewards explain political action. As in the works of Chaffee (1992), Grossman (1991, 1994), Grossman and Noh (1990), and Tullock (1971, 1974, 1987), the main motivation to control the government is to benefit from it. Our model goes beyond of this literature, however, by considering explicitly that coups are carried out by small organized groups, and that in them the role of the citizenry is indirect. Moreover, we model the relation between the citizenry and the incumbent as one of agency. Thus, the citizery's actions is neither motivated by the prospect of appropriating part of the rents that accrue from controlling the government, as is common to most of the literature, nor by the desire to change the distribution of wealth, as in Hirschleifer (1988) or Zablotsky (1992); but rather by the intention of inducing the incumbent to follow policies that are closer to her preferences. In

this sense, our model resembles political models of macroeconomic policy in democracies where elections discipline incumbents.

3. The model

We study a two-period economy with three risk neutral expected utility maximizers: an autocrat, who rules in the first period; a plotter, who may stage a coup to become ruler in the second period; and the citizenry. By "autocrat" we mean an incumbent who governs without being subject to constitutional checks. By "plotter" we have in mind a small group of military officers, civilians, or both, who stage a coup when conditions are favorable. Last, by "citizenry" we mean the country's bureaucracy and common citizens.

To model the conflict of interest between the citizenry and the autocrat we assume that: (a) in the first period per capita output, which we denote by y, can be either normal (y_N) or low ($y_L = \beta y_N$, $0 < \beta < 1$); (b) the autocrat directly chooses the probability that output is low, s; and (c) that the autocrat's utility is increasing in the probability of low output according to the strictly concave function $As^{1-\frac{1}{\sigma}}$, with $A \equiv \frac{\sigma}{\sigma-1}$ and $\sigma \in (1,\infty)$. A large probability of output being low is associated with an opportunistic economic policy that seeks to benefit the autocrat, for example, by stealing tax revenues (hence the notation s). Because autocrats are not accountable and can easily conceal information on their actions, we assume that the citizenry cannot observe s.

The autocrat would like to be in power in period 2, to appropriate a rent worth V in present value. He is aware that the probability of staying in power, p, depends on the realization of output in period 1 (we endogenize p below). Thus, his problem is to choose s to maximize

$$\left[(1-s)p_N + sp_L\right]V + As^{1-\frac{1}{\sigma}}. \tag{3.1}$$

The plotter would like to rule in period 2 to appropriate the rent V, but to seize power she must stage a successful coup at the end of period 1. It costs nothing to stage a coup, but if the attempt fails, the plotter is punished, which has disutility F. The plotter may attempt a coup, and her decision depends on the probability of success. We assume that this probability depends on

the willingness of the citizenry to passively accept the commands of a new autocrat and is equal to w, an index of this willingness. Thus, the expected utility of the plotter is

$$max\{0, wV - (1-w)F\}. \tag{3.2}$$

It remains to describe the citizenry. We assume that she is a monolithic agent who likes output, and for whom it is costly to carry out the actions needed to show her willingness to obey a new ruler. At the beginning of period 1, and before the autocrat chooses s, the citizenry announces a map $\mathbf{w}: \{y_L, y_N\} \to [0,1]$ chosen to maximize

$$(1-s)\left(1-w_N^\gamma\right)y_N + s\left(1-w_L^\gamma\right)y_L. \tag{3.3}$$

The actions summarized in $\mathbf{w}$ are costly for the citizenry because the main way whereby a plotter learns about discontent with the autocrat and the willingness to accept her as a new ruler is through public and private expressions of discontent. Individuals risk harsh punishments when they protest against an autocrat, or engage in actions that might imperil his rule.[6]

We assume that the citizenry can precommit the map $\mathbf{w}$ before the autocrat chooses s, so that she may condition w on the state of the economy and "punish" a bad performance. In multi-period voting models such behavior has not been rationalized as punishment of bad performance, but as a selection mechanism: a bad outcome signals either that the incumbent is incompetent, or that his preferences differ from those of the citizenry, and thus that his *future* performance will be bad. Thus rational voters, who care only about the future, vote incumbents with bad performance out of office.[7] Similarly, in a multiperiod model of coups it would be rational to oppose an autocrat if people believe that ousting the incumbent will improve future performance. Because in this model the citizenry cares only about what happens in period 1, she

[6] By modeling the citizenry as a single and monolithic agent, we ignore the questions of why some people are willing to bear the costs of discontent, and why actions that are individually irrelevant affect, when aggregated, the probability of success of a coup attempt; this is another example of Olson's (1965) classic collective action problem. Our aim in this paper is to study the agency relationship between the citizenry and autocrats, not the collective action issue implicit in the argument that the citizenry plays a role in coups.

[7] For surveys see, for example, Alesina (1992) and Persson and Tabellini (1990).

cannot be forward-looking. By assuming that she can precommit we get results similar to those from multiperiod models, without solving an intertemporal problem.[8]

To close this section, we restate the timing of actions. First, at the beginning of period 1 the citizenry precommits the map **w**. Second, knowing **w** the autocrat chooses s. Third, after observing the realization of output, the citizenry implements w according to the map **w**. Last, after observing w the plotter decides whether to stage a coup.

4. Solution of the model

The key element of the mechanics of coups in this model is that the citizenry recognizes that she can prompt the plotter to attempt a coup by showing her willingness to accept the plotter as a new ruler. Because of this, the citizenry can influence the probability that the autocrat remains in power, and, by making her discontent contingent on economic performance, give him incentives to act more in accordance with her interests. Thus the citizenry uses the plotter to discipline her agent. We solve the model backwards. First we study the problem of the plotter and endogenize p as function of w. Next we solve the autocrat's problem. Last, we solve the citizenry's problem.

Whatever the realization of output, the plotter will attempt a coup only if $w \geq F/(V+F) \equiv w_c$. It follows that the probability that the autocrat stays in power is

$$p = \begin{cases} 1-w & \text{if } w \geq w_c \\ 1 & \text{otherwise.} \end{cases} \qquad (4.1)$$

It can be seen from equation (4.1) that the probability that the autocrat remains in power at the end of period 1, conditional on the realization of output, depends only on w. Because the autocrat's policy choice is not observable, w cannot depend on s; moreover, because the citizenry precommits the map **w**, the autocrat knows w_L and w_N when he chooses s, thus taking p_N and p_L as given. Therefore, the autocrat's problem is to choose s to maximize (3.1) subject to $s \in [0,1]$. We summarize the solution to this problem in:[9]

[8] On this point see also the discussion in O'Flaherty (1990, pp. 150-151).
[9] Proofs are in appendix 1.

Proposition 1: *If* $1 \geq (p_N - p_L)V$, $s = 1$; *otherwise* $1 > s = \left[(p_N - p_L)V\right]^{-\sigma} > 0$.

The autocrat trades-off the benefit of pursuing his self interest today with the likelihood of being around tomorrow to enjoy the rents of power. As can be seen from the first part of proposition 1 no trade off exists if $p_L \geq p_N$: the autocrat can avoid the state in which he is punished with larger probability just by pursuing his self-interest today, thus he selects $s = 1$. By contrast, when the chances of remaining in power are better when output is normal, and the rewards of staying in power are large enough, the autocrat restrains himself today to reduce the probability that a recession occurs. When $s < 1$ is optimal, the probability of low output is decreasing in V: the more valuable the future relative to the present, the more the autocrat restrains himself today.

The result that the fear of losing office disciplines the autocrat is not new; for example, it appears in Grossman's (1991) model of insurrections, and in Grossman and Noh's (1990) theory of kleptocracy. On the other hand, as Olson (1993) argues, a larger probability of losing office may reduce the expected present value of the rents of remaining in power, thereby prompting the incumbent to abscond more, not less. The agency approach to coups suggests that which result applies depends on whether the autocrat's decisions are observable. In models where decisions are observable, the citizenry can discipline the autocrat by making the probability of survival larger when policy choices are closer to her tastes. By contrast, when policy choices cannot be observed, the autocrat is disciplined only if the probability of survival can be conditioned on observable signals whose probability distribution depends on policy choices. As the present model suggests, in those cases it is not quite correct to say that the fear of being ousted by a coup (i.e. that p_L or p_H are less than one) disciplines the autocrat, for, as can be seen from the first part of proposition 1, when $p_L = p_N$ the autocrat choses $s = 1$ regardless of how small p is. Autocrats are disciplined only if $p_L < p_N$. When policy choices cannot be observed and no

signals are available, then Olson's conjecture probably applies, and the threat of a coup no longer disciplines autocrats; on the contrary, it may prompt them to act even more opportunistically.[10]

The citizenry chooses **w** to maximize her objective function (3.3), taking (4.1) and the autocrat's decision rule as given. We first note that the citizenry never supports a coup attempt when output is normal, and sets $w_N = 0$. To see why, note that the optimal decision rule of the autocrat says that s is decreasing in p_N. Thus, it is optimal for the citizenry to reward the autocrat when output is normal, selecting $w_N < w_c$, so that $p_N = 1$. But since the citizenry's payoff is decreasing in w_N, it is optimal for her to choose $w_N = 0$.

Now to discipline the autocrat the citizenry may precommit to show discontent when output is low. However, as can be deduced from proposition 1, a necessary condition for this to happen is that V is not too small; otherwise it would never pay for the citizenry to show any discontent, because the autocrat would choose $s = 1$ anyway. Moreover, the citizenry may always do nothing. Thus, she will precommit discontent only if the probability of normal output increases enough to compensate for the cost of discontent. To ensure this we assume

Assumption 1: *(i)* $1 < w_c V$; *(ii)* $(1 - s(w_c))y_N + s(w_c)(1 - w_c^\gamma)y_L \geq y_L$; *(iii)* $\gamma > \sigma$.

where $s(w_c)$ is the optimal decision of the autocrat if $w_N = 0$ and $w_L = w_c$. Part (*i*) ensures that the threat of a coup when output is low is always effective in disciplining the autocrat. Part (*ii*) ensures that committing discontent just enough to trigger a coup when there is a recession is always worth its cost. Part (iii) is a necessary condition for the the citizenry ever be willing to select $w > 0$. Proposition 2 summarizes the citizenry's optimal decision.

Proposition 2: *Let* $q \equiv \frac{\sigma(1-\beta)}{(\gamma-\sigma)\beta}$ *and let assumption 1 hold. Then (a)* $w_L = 1$ if $q \geq 1$; *(b)* $w_L = q^{1/\gamma}$, if $1 > q > w_c^\gamma$; *(c)* $w_L = w_c$, if $q \leq w_c^\gamma$.

[10]In their model Grossman and Noh (1990) also obtain the result that a smaller probability of remaining in office may increase the incumbent's opportunism when the incumbent cannot precommit future policy choices.

As can be seen from proposition 2 (a), the more severe a recession (the larger $(1-\beta)$), the larger w_L. Thus, when recessions are more severe the citizenry accepts a new ruler more willingly. Moreover, w_L does not vary with per capita income. It can be seen from the citizenry's objective function (3.3) that increasing it has two opposing effects: on the one hand it increases the cost of a recession, because for a given relative output gap $(1-\beta)$, the absolute output loss is larger in richer economies; on that account w_L should be increasing in per capita income. On the other hand, in richer economies the opportunity cost of showing discontent is larger in absolute terms, and thus w_L should be decreasing in per capita income. For the functional form chosen here both effects cancel out exactly, and w_L is independent of per capita income. More generally, while the level of development may affect the costs and benefits of undertaking various activities that parametrically affect the equilibrium level of w_L, the agency approach suggests that it is unlikely that the citizenry will condition her support on it. The main problem of the citizenry is to discipline the autocrat. Because the agent's policy choices cannot be observed, the principal must condition her actions on signals that are observed shortly after policy choices are made. While policy choices are constantly made, big and noticeable changes in the level of development occur only over considerably longer periods of time; therefore, the level of development is not appropriate as a signal of the autocrat's behavior.

The last proposition summarizes the results of the model and shows that in equilibrium the threat of a coup when there is a recession may discipline the autocrat.

Proposition 3: *Consider equilibria with* s and $w_L \in (0,1)$. *Then (a) the unconditional probability that a recession and a coup attempt occur is* $s = (Vw_L)^{-\sigma}$. *(b) The unconditional probability that a successful coup occurs is* $1/V^{\sigma}w_L^{\sigma-1}$. *Thus, the larger* w_L *the smaller s.*

5. Taking the model to data

Our model suggests that there will be a coup attempt whenever $w \geq w_c$. We assumed that the citizenry directly chooses the probability of success of a coup attempt; in practice, it is a function $\zeta(W)$, where W is the actual variable controlled by the citizenry that indexes her willingness to

voluntarily obey a new ruler. Then, assuming that ζ is strictly increasing, $w \geq w_c$ if and only if $W \geq W_c$. For estimation purposes, one must consider that neither W nor W_c are directly observable. It is hard to find proxies for W_c,, and at most one can conjecture that it will vary across countries and time according to a density, say, $g(W_c)$. One would also think that W varies across countries and time; but in this case it is possible to find observable variables that are plausibly correlated with it. For purposes of estimation, we assume that the unobservable variable W linearly depends on a vector $\mathbf{x}$ of observable variables, and on a disturbance term ε that captures whatever cannot be observed, so that $W = \mathbf{b}'\mathbf{x} + \varepsilon$.[11]

In a given country and year a coup attempt will occur only if $W \geq W_c$. Thus, the probability that a coup attempt occurs is equal to $\Pr(W \geq W_c) = \Pr(\mathbf{b}'\mathbf{x} + \varepsilon \geq W_c)$. Define $\mu \equiv W_c - \varepsilon$. Then, the probability that a coup attempt occurs is given by $\Pr(\mathbf{b}'\mathbf{x} \geq \mu)$. Assuming that μ is normally distributed with zero mean and unit variance, then the probability that a coup attempt occurs can be modeled with a standard probit. Then $\Pr(\mathbf{b}'\mathbf{x} \geq \mu) = 1 - \Phi(\mathbf{b}'\mathbf{x})$, where Φ is the cumulative standard normal distribution. $\mathbf{b}'$ can be estimated using maximum likelihood techniques.

We cannot directly test the implications summarized in proposition 3 because no proxies are available for incumbent's unobservable decisions. Nevertheless, two implications of the model can be tested with available data: (*i*) coup attempts occur when the citizenry is willing to obey a new ruler; (*ii*) they are more likely when a reccession hits. Thus, in our regressions we include an indicator of open demonstrations of popular discontent, and a recession indicator. One could argue that according to our model the recession indicator is a perfect proxy for W, as $w \geq w_c$ if and only if a recession occurs. Nevertheless, we think that it is adequate to include both variables because there are other sources of discontent with incumbents tat affect the willingness of the citizenry to obey a new ruler which are unconnected with economic performance (e.g. corruption scandals, human rights violations, ideological disagreements, etc.).

[11] Note that ζ would also fit an extension of our model where w_c is known by the citizenry only probabilistically.

One can test a third implication of the agency approach to coups. The model suggests that coup attempts occur when there is a recession because it is a signal of the autocrat's unobservable decisions. Thus, one would expect a weaker association between these two variables in democracies, because democratic institutions make incumbents more accountable, norm political competition, and set explicit rules to change incumbents. Moreover, in democracies indicators of popular discontent should be worse proxies for the willingness of the citizenry to obey a plotter, for discontent with a democraticaly elected incumbent does not necessarily mean discontent with the system. To test these implications we split our sample between democratic and autocratic regimes.

Our data set includes 89 non-communist developing countries and spans the period 1950-1982[12]. We leave both developed and communist countries out of our sample because in them institutions regulate political competition to a degree of effectiveness which were foreign to most non-communist developing countries during the period considered here. As we mentioned in section 2, we think that one of the main characteristics of countries which are prone to coups is that existing institutions fail to effectively regulate political competition. Our units of observation are country-years, and we have 2243 data points in our panel. Many countries in our sample became independent after 1950; this is the main reason why our panel is unbalanced. We now describe the variables included in $\mathbf{x}$ (descriptive statistics are reported in table 1).

The incidence of coups. The dependent variable is the annual probability of a coup attempt. With information contained in Jodice and Taylor's (1983) *World Handbook of Political and Social Indicators III* we create an index variable for each country-year taking the value of zero if no coup attempt occurred during that year and one otherwise. In the sample 13.7 % of country-years register coup attempts.[13]

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[12] Countries are listed in appendix 2.

[13] Jodice and Taylor (1983) define two variables: (i) an "unsuccessful irregular power transfer" which is a reported attempt by an organized group to remove and replace the incumbent national executive outside the conventional procedures for transfering formal power that failed; (ii) an "irregular power transfer," a transfer of executive power from one leader or ruling group to another accomplished outside the conventional legal or customary procedures for transferring power in effect at the time of the event and accompanied by actual or directly threatened violence.

The measure of economic performance. Our model suggests that the citizenry is willing to obey a new ruler when the short-run performance of the economy is bad. Using Summers and Heston's (1991) *Penn World Tables* (markV) we construct a recession indicator, a dummy variable taking the value of one if the rate of growth of per capita GDP is negative and zero otherwise. To prevent direct reverse causality we lag the recession indicator one period.

The measure of popular unrest. We construct a measure of open demonstrations of popular discontent by adding the total number of political strikes, protest demonstrations, and riots during the current and the preceding year reported in Jodice and Taylor (1983). The average value of this index close to 11 with standard deviation close to 32.

The measure of economic development. By construction in our model the average level of GDP does not affect the likelihood of a coup attempt. Nevertheless most authors cite underdevelopment as one of the main causes of coups. For this reason, we include per capita levels of GDP taken from Summers and Heston (1991). Average per capita GDP in our sample is 1,805 dollars of 1985, with standard deviation of $1,541. It ranges from $212 for Burma in 1951 to $11,675 for Trinidad and Tobago in 1982.

The coup trap. Several studies suggest that countries that have lived through a coup in the recent past are more likely to experience one today, a phenomenon that Londregan and Poole (1990, 1992) called "the coup trap." We control for the coup trap with an index variable measuring the number of coup attempts in the preceding five years.[14]

Regional dummies. Londregan and Poole (1990, 1991) find that South American countries systematically have a larger probability of facing a coup attempt. We control for regional effects for South America, Africa and Asian countries with dummy variables.

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[14] The lag-structure was determined by running distributed lag models of successive order. We consistently found that the current probability of a coup attempt was significantly correlated with the number of coup attempts up to the preceding five years. When our distributed lag model was of order 10, we also found that the number of coup attempts occurred 10 years ago was also significantly correlated with the present probability of a coup attempt. We performed a likelihood ratio test of the null hypothesis that the parameter associated with the number of coups occurred beyond five years past were equal to zero and could not reject it. Therefore, we include in our coup trap variable only the number of coups that occurred during the preceding five years.

Political structure. To test whether political institutions affect the determinants of coup attempts we split the sample between democratic and autocratic country-years. We call a country "democratic" in a given year if Clague et al. (1994) classify it as a "democracy," or an "almost democracy" in the previous year. We call a country "autocratic" in a given year if Clague et al. classify it as "dictatorship" or "almost dictatorship" in the previous year.. According to this split almost 56% of the country-years are autocratic, and 22% democratic.[15]

6. Results

Results are reported in table 2. Consider first the estimation for the whole sample. With the exception of Africa and Asia, all coefficients are statistically significant and have the expected signs. To get a feeling of the economic significance of our results we consider a benchmark country that is in neither of the three regions, has not experienced a recession in the preceding year, and whose other covariates take values equal to their sample means. The probability of a coup attempt in such a country is 0.1038.

One recession in the previous year increases the probability of a coup attempt to 0.1492, i.e. by 44%, and an increase of one standard deviation in the measure of popular unrest increases that probability to 0.1190, i.e. by 15%. When popular discontent follows a recession, the probability rises by 65% to 0.1711. These results are consistent with the agency approach.

Like Londregan and Poole (1990, 1992), we also find a significant effect of past coups on the probability of a coup attempt.[16] Increasing by one the number of coup attempts in the last five years increases the probability of a coup attempt to 0.1469, i.e. by 42%. There definitely seems to be something particular to South America, for being in that continent rises the probability of a coup attempt in a given year by 48.2% to 0.1539.

It is interesting to contrast the economic significance of these results with the effects of economic development. The probability of a coup attempt in a country like our benchmark but

[15]Clague et al. (1994) define an intermediate category of coutry-yeras that are neither democratic nor autocratic.
[16] It should be noted that Londregan and Poole included only successful coups in their regressions.

with half its per capita GDP ($915 instead of $1829) is 0.1251, i.e. 21% higher. This is not a negligible effect, but it pales by comparison with the fact that a single recession or coup attempt in the last five years achieves more than twice this effect, suggesting that, contrary to the conventional wisdom, the level of development is not the main determinant of the likelihood of coups. To get another feel of the relative importance of development consider that doubling per capita GDP of our benchmark economy to $3658 decreases the probability of a coup attempt to 0.0681. The sample average growth rate in per capita GDP is 2.36%, so that such a change would take 29 years. Now while coups would be less frequent in the richer economy, they would continue to happen fairly often nonetheless. For example, the probability that at least one coup attempt occurs in any given five year period in the poorer economy is 0.42; it is 0.30 in the richer one. When one considers a ten year period the probabilities are, respectively, 0.67 and 0.51; and 0.97 and 0.90 in a 32 year period (lentgh of our sample period).

Consider next the results we obtain when the sample is split between democracies and autocracies.[17] In the benchmark autocracy the probability of a coup attempt is 0.1251, much larger than in the benchmark democracy, only 0.0526.[18] More important, while results are strengthened for autocracies,[19] the econometric model loses almost all its explanatory power for democracies, as coefficients for recessions and popular unrest turn statistically insignificant. A second interesting and puzzling result is that the coup trap disappears in autocracies; the corresponding coefficient is not only statistically significant: one additional coup attempt in the past five years *decreases* the probability of a coup attempt by 62% to 0.0475. Last, it is interesting to note that the coefficient for the South American dummy turns marginally statistically insignificant.

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[17] We performed the Likelihood Ratio Test described in Ben-Akiva and Lerman (1989, Ch. 7), rejecting the null hypothesis that parameters are the same in democracies and autocracies at the 1 percent confidence level.

[18] Note that when a democracy experiences a successful coup it will most likely turn into autocracy. Nevertheless the classification of a country-year as a democracy is made during the previous year, thus it enters predetermined as of the current period.

[19] Under autocratic rule a recession increases the probability of a coup attempt by 60% to 0.2005; an increase of our popular unrest indicator in one standard deviation raises it by 33% to 0.1660.

7. Concluding remarks

In this paper we have presented an agency theory of coup attempts in autocracies, and found evidence consistent with this approach. We conclude by relating our findings with the empirical literature on coups and suggesting a few directions for future research.

To some extent both the agency approach and our findings weaken the common contention in the literature that underdevelopment is the main determinant of coups. As we discussed in section 4 the agency approach suggests that it is unlikely that the citizenry will condition her support on the level of income, because it is a low frequency variable. Simply put, waiting 30 years to evaluate the performance of an autocrat makes little sense. Nevertheless, as the work of Londregan and Poole suggests, our empirical findings depends on excluding developed economies from the sample. We think that this exclusion is warranted, because what distinguishes developed economies from LDCs as far as coups are concerned is the quality of political institutions. In developed countries political competion occurs within the bounds set by institutions, but not so in most LDCs. Of course, one may argue that economic development breeds political development, but this would ignore that most of today's developed countries did not experience coups in the nineteenth century when they had per capita GDP levels similar to many countries in our sample.

The reversion of the coup trap in autocracies is a new result. A lot of work is needed to understand the dynamics of coups, but one tentative explanation for this result is that failed coup attempts convey valuable information to the autocrat about opponents, which can be used to better target repression. By contrast, in democracies the use of repression is restricted by the law and political institutions, so that the information provided by failed coup attempts is of limited value for an incumbent, but information about the citizery's reaction and who supports the incumbent is useful to potential plotters.[20] When regressions are run including only successful

[20] A good example of the informational value of failed coups is the so-called "Tancazo" in Chile on June 29th 1973, in which a handful of military officers attempted to overthrow President Allende. The "Tancazo" failed because General Prats, the army commander in chief, remained loyal. But the fact that only four out of fourteen top Generals

coups, the coup trap reappears. This is not surprising, for a successful coup does not convey much useful information to the new incumbent about potential plotters.

The data shows that coup attempts are less frequent in country-years classified as democracies. While the model assumes an autocracy, one may speculate that coups should be less frequent where institutions moderate the agency problem between the citizenry and the incumbent, make incumbents more accountable, and norm the transfer of power. Democratic institutions such as the separation of powers and functions within the government, political opposition, and elections all help to prevent that discontent with the incumbent causes the citizenry's indifference which prompts them to remain passive when a plotter attempts to seize power by force. Understanding which features of democratic institutions make coups less likely, and why coups sometimes occur in democracies may be a promising area for research.

offered full support to Allende, and the passive reaction of the population may have signalled that a future coup would meet only limited resistance. In September 1973 Allende was overthrown. See Angell (1993, p. 177).

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Appendix 1

In this appendix we prove propositions 1-3.

Proposition 1: *If* $1 \geq (p_N - p_L)V$ *then* $s = 1$; *otherwise* $1 > s = \left[(p_N - p_L)V\right]^{-\sigma} > 0$

Proof: The autocrat maximizes $\left[sp_L + (1-s)p_N\right]V + As^{1-\frac{1}{\sigma}}$ subject to $s \in [0,1]$, with first order conditions

$$(p_L - p_N)V + s^{-1/\sigma} + \lambda_1 - \lambda_2 = 0;$$
$$\lambda_1(-s) = \lambda_2(s-1) = 0;$$
$$\lambda_1, \lambda_2 \geq 0,$$

where λ_1 and λ_2 are the respective multipliers. The objective function is concave, and the constraint set convex, so first order conditions are sufficient for a unique global maximum.

Let $1 \geq (p_N - p_L)V$, which implies that $(p_L - p_N)V + 1 \geq 0$. Since both constraints cannot bind simultaneously and both λ_1 and λ_2 are non-negative, $\lambda_1 = 0$. Second, if $s < 1$, then $\lambda_2 = 0$, and the first order condition cannot hold. The first part of the proposition then follows.[1]

Now let $1 < (p_N - p_L)V$. Then $(p_L - p_N)V + 1 < 0$, thus $\lambda_2 = 0$ and $s < 1$. Moreover, λ_1 is finite, and $\lim_{s \to 0}(p_L - p_N)V + s^{-1/\sigma} = -\infty$, so that $s > 0$ and $\lambda_1 = 0$. The second part of the proposition then follows.

Proposition 2: *Let* $q \equiv \frac{\sigma(1-\beta)}{(\gamma-\sigma)\beta}$ *and let assumption 1 hold. Then (a)* $w_L = 1$ if $q \geq 1$; *(b)* $w_L = q^{1/\gamma}$, if $1 > q > w_c^{\gamma}$; *(c)* $w_L = w_c$, if $q \leq w_c^{\gamma}$.

Proof: We first show that when assumption 1 holds $w_L \in [w_c, 1]$. In view of part (*ii*) of assumption 1 it suffices to show that the autocrat will optimally select $s < 1$ if $w_L = w_c$. Recall that $w_N = 0$ and thus $p_N = 1$ in equilibrium, so that $p_N - p_L = w_L$. From part (*i*) of assumption 1, $1 < w_c V$, which implies that $1 < (p_N - p_L)V$. Last, we know from

[1] Since both constraints cannot bind simultaneously, the constraint qualification trivially holds.

proposition 1 that if this inequality holds $s < 1$. It follows that the citizenry maximizes (3.3) subject to the autocrat's decision rule,viz

$$\max_{w_L}\left\{\left(1-\left(w_L V\right)^{-\sigma}\right)y_N+\left(w_L V\right)^{-\sigma}\left(1-w_L^{\gamma}\right)y_L\right\},$$

subject to $w_L \in [w_c, 1]$. The first order conditions of this problem are

$$V^{-\sigma}w_L^{-(\sigma+1)}\left(\sigma(1-\beta)-(\gamma-\sigma)\beta w_L^{\gamma}\right)y_N-\lambda_1+\lambda_2=0;$$

$$\lambda_1\left(w_L-1\right)=\lambda_2\left(w_c-w_L\right)=0;$$

$$\lambda_1,\ \lambda_2 \geq 0,$$

where λ_1 and λ_2 are the respective multipliers and we have used the fact that $y_L \equiv \beta y_N$.

(*a*) Let $q \geq 1$. Since both constraints cannot bind simultaneously and both λ_1 and λ_2 are non-negative, $\lambda_2 = 0$. Second, if $w_L < 1$ then $\lambda_1 = 0$, and the first order condition cannot hold, because $q \geq 1$. Part (*a*) of the proposition then follows from the fact that no other $w_L \in [w_c, 1)$ satisfies the necessary first order condition.

(*b*) Let $1 > q > w_c^{\gamma}$. Then the first order condition can hold iff $w_L \in (w_c, 1)$. Therefore, $\lambda_1 = \lambda_2 = 0$, and $\sigma(1-\beta)-(\gamma-\sigma)\beta w_L^{\gamma}=0$. It follows that $w_L = q^{1/\gamma}$. Some algebra then shows that assumption 1 (*iii*) implies that the second order condition holds.

(*c*) Let $q \leq w_c^{\gamma}$. Then since both constraints cannot bind simultaneously and both λ_1 and λ_2 are non-negative, $\lambda_1 = 0$. Second, if $w_L < w_c$ then $\lambda_1 = 0$, and the first order condition cannot hold because $q \leq w_c^{\gamma}$. Part (*c*) of the proposition then follows from the fact that no other $w_L \in (w_c, 1]$ satisfies the necessary first order condition.

Proposition 3: *Consider equilibria with* s and $w_L \in (0,1)$. *Then (a)The unconditional probability that a recession and a coup attempt occur is* $s = (V / w_L)^{\sigma}$. *(b) The unconditional probability that a successful coup occurs is* $1/(V^{\sigma}w_L^{\sigma-1})$. *Thus, the larger* w_L *the smaller s.*

Proof: By direct substitution.

Appendix 2

In this appendix we list countries included in the sample.

Country	Coup Attempts	Successful Coups	Country	Coups Attempts	Succesful Coups
Algeria	3	1	Iraq	10	3
Angola	2	1	Israel	0	0
Benin	9	6	Jordan	2	0
Botzwana	0	0	South Korea	4	3
Burundi	4	2	Malaysia	0	0
Cameroon	0	0	Nepal	0	0
C.A.R.	5	3	Pakistan	5	3
Chad	5	2	Phillipines	0	0
Congo	8	3	Singapore	0	0
Egypt	6	1	Sri Lanka	1	0
Ethiopia	4	1	Syria	10	5
Gabon	1	1	Taiwan	0	0
Gambia	1	0	Thailand	7	6
Ghana	5	4	Cyprus	2	2
Guinea	0	0	Turkey	5	3
Ivory Coast	0	0	Barbados	0	0
Kenya	1	0	Costa Rica	1	0
Leshoto	1	1	Dom. Rep.	5	3
Liberia	1	1	El Salvador	3	2
Madagascar	2	2	Guatemala	7	4
Malawi	0	0	Haiti	4	1
Mali	2	2	Honduras	8	6
Mauritania	3	2	Jamaica	0	0
Mauritius	0	0	Mexico	2	0
Morocco	5	2	Nicaragua	4	1
Mozambique	0	0	Panama	3	1
Niger	3	1	Trinidad	1	0
Nigeria	3	2	Argentina	13	6
Rwanda	1	1	Bolivia	16	8
Senegal	2	0	Brazil	3	3
Sierra Leone	4	2	Chile	3	1
Somalia	3	1	Colombia	5	3
South Africa	0	0	Ecuador	12	6
Sudan	2	0	Guyana	0	0
Tanzania	1	0	Paraguay	4	1
Togo	4	3	Peru	7	4
Tunisia	0	0	Suriname	3	1
Uganda	8	4	Uruguay	3	2
Zaire	3	2	Venezuela	5	1
Zambia	0	0	Fiji	0	0
Zimbabwe	1	1	Burkina Faso	4	4
Bangladesh	4	3	Yemen	5	1
Burma	3	2	Indonesia	3	1
India	0	0	Bahamas	0	0
Iran	0	0			

Table 1
Descriptive Statistics

For the Whole Sample

Continous Variables	Mean	Standard Deviation	Minimum Value	Maximum Value
GDP	1829	1566	226	11670
Growth	2.36	6.57	-34.89	38.99
Past Coups	0.87	1.59	0	14
Pop. Unrest	10.75	31.59	0	590
Categorical Variables	% of obs. with value=1			
Recession	31.0			
S. America	15.65			
Africa	43.51			
Asia	24.56			

For Autocracies

Continous Variables	Mean	Standard Deviation	Minimum Value	Maximum Value
GDP	1483	1188	236	8211
Growth	2.31	6.9	-34.89	38.99
Past Coups	0.567	0.495	0	1
Pop. Unrest	5.81	13.29	0	194
Categorical Variables	% of obs. with value=1			
Recession	32.0			
S. America	12.07			
Africa	50.91			
Asia	20.81			

For Democracies

Continous Variables	Mean	Standard Deviation	Minimum Value	Maximum Value
GDP	2433	1755	226	8174
Growth	2.84	5.09	-13.41	28.09
Past Coups	0.567	1.43	0	14
Pop. Unrest	22.1	57.1	0	590
Categorical Variables	% of obs. with value=1			
Recession	25.9			
S. America	22.5			
Africa	23.5			
Asia	40.4			

Table 2
Model for Coup Attempts with Recessions

Dependent Variable: Annual probability of a coup attempt

Sample	Whole Sample		Autocracies		Democracies	
Independent Variables	Estimated Coefficients	Marginal Effects	Estimated Coefficients	Marginal Effects	Estimated Coefficients	Marginal Effects
Constant	-1.25		-0.794		-1.263	
	(0.000)		(0.000)		(0.000)	
Recession	0.226	0.041	0.313	-0.066	0.231	0.028
	(0.003)		(0.001)		(0.214)	
Pop. Unrest	0.0028	0.0005	0.0139	0.003	0.00014	-0.00001
	(0.002)		(0.000)		(0.924)	
GDP	-0.0001	-0.00002	-0.0001	-0.00002	-0.0002	-0.00002
	(0.000)		(0.051)		(0.003)	
Past Coups	0.213	0.038	-0.518	-0.109	0.218	0.027
	(0.000)		(0.000)		(0.000)	
S. America	0.241	0.043	0.252	0.053	0.449	0.055
	(0.057)		(0.119)		(0.148)	
Africa	-0.172	-0.031	-0.192	-0.040	-0.111	-0.013
	(0.134)		(0.155)		(0.726)	
Asia	-0.097	-0.017	-0.080	-0.017	-0.049	-0.006
	(0.42)		(0.587)		(0.869)	
N	2243		1259		502	
LR	189.0		89.9		36.9	

p-values in parenthesis