

Soldiers or politicians? Institutions, conflict, and the military's role in politics

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One of the most striking institutional differences across countries is the extent to which their militaries intervene in politics. This article examines the role of war in generating these differences. It presents a model that shows that when governance institutions are weak, increasing military spending makes a country more likely to win in a war and increases the probability that coups succeed. An incumbent can avoid coups by strengthening governance institutions, but this limits the rents he can extract. Both the optimal choice of military spending and the strength of governance institutions depend on the probability of war. The article predicts a non-monotonic relationship between the frequency of wars and coups and presents empirical evidence consistent with this prediction.

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1. Introduction

A large literature in political science and economics has emphasized the importance of institutions in determining political and economic outcomes (e.g., North and Thomas, 1973; North, 1981; Acemoglu *et al.*, 2001) and shown that political institutions may partly account for the large differences in economic performance seen across countries (e.g., Persson and Tabellini, 2003; Besley and Kudamatsu, 2008). Surprisingly, this literature has largely neglected the role of the military. Not only is the military central in bringing about institutional change, but the extent to which it intervenes in politics is one of the key dimensions along which political institutions differ across countries.

In this article we examine one possible reason for these differences: the threat of war.¹ We begin by developing a model of the military based on three assumptions

¹ Social scientists have long emphasized the importance of war in determining social, political, and economic institutions. For example, Howard (1976) explains that feudalism arose out of the need to finance the cost of knights' armor and horses. More recently, Tilly (1990) and Besley and Persson (2008, 2009a) have argued that war created the conditions necessary for the development of state capacity in Western Europe.

supported by the empirical and case study evidence. We then use this model to address three questions: when do civilian governments strengthen governance institutions? What determines the funding and strength of the military? And when do coups, the most obvious form of military intervention in politics, take place? We then derive the strength of governance institutions, military spending, and the frequency of coups as a function of the likelihood of war. The model predicts that the relationship between wars and coups should be non-monotonic across countries and that there should be a positive relationship between wars and coups only when governance institutions are weak. We analyse a dataset of coups and conflict and find correlations consistent with these two predictions.

Our model builds on three assumptions: (i) a country's exposure to coups depends on the strength of its governance institutions, (ii) military spending improves a country's ability to fight wars, and (iii) military spending increases the probability that a coup, if staged, is successful. We consider a dynamic environment where two groups, civilians and soldiers, derive utility from the fraction of the country's income they are allocated. There is an incumbent, who could be a representative civilian or a representative soldier, who chooses this allocation. Funding given to the soldiers improves their combat power and hence their ability to fight wars, but if governance institutions are weak it also increases the likelihood that a coup, if staged, is successful. A civilian incumbent can strengthen governance institutions and thus limit the rents he can extract, which helps avoid coups because it increases the incumbent's legitimacy.² Strengthening governance institutions might involve, for example, developing an independent judiciary that investigates and prosecutes corrupt politicians, which would then act as a constraint on the incumbent's rent extraction.

In equilibrium, when institutions are weak, military spending makes a country more likely to win in a war, but it also increases the likelihood of a coup. Civilian incumbents face a trade-off between preparing for war and exposing themselves to coups. Naturally, the greater the probability of war, the more likely this will be resolved in favor of a strong military at the expense of facing more coups. When governance institutions are strong, military spending increases the likelihood of winning a war but has no impact on coups (which never take place); the incumbents face no trade-off. The model predicts that a civilian incumbent will strengthen governance institutions when the likelihood of war is high, so that the need to fund the military to fight wars without facing the possibility of a coup dominates over the desire to extract rents.³

Combining these results, the model predicts a non-monotonic relationship between the likelihood of wars and coups in civilian regimes, with coups least

² For example, the population might rally in support of the government, causing the coup to fail. As we discuss in the online Appendix, Finer (1962) argues that a regime's legitimacy is instrumental in limiting military intervention. Belkin and Schofer (2003) find evidence consistent with this argument.

³ In the online Appendix we present some evidence consistent with the idea that the expectation of war leads to stronger institutions today.

likely when wars are unlikely (because the civilians provide the military with limited funding) and very likely (because the civilians strengthen institutions). To understand this relationship, suppose that war is unlikely. There is no need to have a well-funded military, so the civilians will provide it with limited funding. This, in turn, makes it less likely that a successful coup can be staged, and so coups are unlikely. On the other hand, when war is very likely the civilians will provide the military with generous funding. This makes it likely that the military will be able to stage a successful coup, and so the civilians find it worthwhile to strengthen governance institutions and sever the connection between military spending and coups. As a result, war is very likely but coups are not. Finally, for intermediate likelihoods of war, the civilians will find it optimal to provide some funding to the military, which results in some coups being staged. However, this likelihood may not be high enough to make the strengthening of governance institutions worthwhile. As a result, when war is somewhat likely, the civilians will not strengthen institutions, they will give the military some funding, and coups will occur with positive probability. This result provides an explanation for why coups are typically staged by weak 'tin-pot' militaries in countries with weak governance institutions.

We cannot directly test the model empirically, so instead we investigate two empirical predictions that follow from it. First, there should be a non-monotonic relationship between the likelihood of war and coups across countries. In particular, coups should be most likely in countries with an intermediate likelihood of war. This non-monotonicity arises from the positive relationship between wars and coups when governance institutions are weak (which will be the case when war is unlikely) and the lack of a relationship when governance institutions are strong (which will be the case when war is likely). This leads to a second empirical prediction: there should be a positive relationship between the likelihood of wars and coups in countries with weak institutions, but no relationship when institutions are strong.

We find patterns in the data that are consistent with these predictions, which suggests that the mechanism we describe in the model is plausible.⁴ We proxy for the likelihood of war in a country with the fraction of years between 1965 and 1999 in which the country was at war and similarly for coups.⁵ To capture the non-monotonicity in a simple way, we use a specification where the probability of a coup is a quadratic function of the likelihood of war. The empirical results provide strong evidence that the relationship between the likelihood of war and coups is indeed non-monotonic across countries, with the probability of a coup being lowest in countries with either a low or a high probability of war. We also find a

⁴ We should be cautious when interpreting the empirical results; in particular, they are not evidence of a causal relationship. Instead, we interpret these correlations as indirect evidence that is highly suggestive of the mechanism described in the model.

⁵ The coup data come from Belkin and Schofer (2003), whereas the conflict data are from the PRIO/Uppsala Armed Conflict dataset, version 4 (Gleditsch *et al.*, 2002; PRIO, 2006).

positive relationship between war and coups when institutions are weak, and no relationship when institutions are strong.⁶

Our results provide an alternative explanation for the differences in democratic institutions observed across countries. When war is infrequent, civilian incumbents do not need strong governance institutions; even if they are unpopular, they can avoid being overthrown by the military by providing it with reduced funding and making it weak. On the other hand, a high likelihood of conflict makes a strong military necessary, so the incumbent needs the support of the population to avoid coups. Strengthening governance institutions, and thus reducing rent extraction, is one way of achieving this.

Our results can also be viewed in the context of two existing views of the relationship between war and military intervention in politics. The first is known as the garrison state view and suggests that war leads to a politically active military; the second, the institutional view, asserts that war reduces the military's involvement in politics and causes it to become focused on defence.⁷ These two views have contradictory empirical predictions, and our framework shows one way they might be reconciled: for low levels of conflict, an increase in the frequency of war results in more coups and the possibility of a transition to a military regime; for a high probability of war, on the other hand, an increase in the likelihood of war might reduce the possibility of a coup as it causes governance institutions to be strengthened.

The argument in this article is in the spirit of that in Desch (1999), who shows that threats to the military are instrumental in determining the strength of civilians' control of the military. Our contribution is to develop a theoretical model and present empirical evidence related to the threat of war. Our model represents an alternative to the formulation in Feaver (2003), who models the US military as an agent of the government and examines when the military shirks and disobeys the executive's orders. Acemoglu *et al.* (2010) follow a similar approach with a model where the military can act as an agent of the elite. They show the circumstances under which the military may rebel against the elite, stage a coup, and establish a military dictatorship. They then consider how their results change when the military plays a role in fighting wars. This article differs in that it captures more directly the link between wars and coups, looks at the role of governance institutions, and shows empirical evidence consistent with the predictions. Besley and Robinson (2010) look at the optimal size of the military; their main finding is that in the absence of commitment, the government will create a tin pot military to avoid coups; when commitment is possible, larger militaries can be created without

⁶We measure the strength of governance institutions using the *polity2* variable from the Polity IV Project.

⁷The garrison state view is associated with Harold Laswell (1937, 1941), who was concerned with the increasing militarization of society in Japan and Germany before World War II; the second view is due to Stanislaw Andreski (1968, 1980) and has been used by Desch (1999) to explain civilian control of the US and Soviet militaries during the Cold War.

triggering coups by paying soldiers an efficiency wage. This article differs in that we explicitly model the military's role in fighting wars, how this determines its ability to stage coups, and present some empirical evidence. Other related studies of the military include Huntington (1957), Finer (1962), and Nordlinger (1977). This article follows the recent work of Besley and Persson (2008, 2009a,b, 2010, 2011) in thinking of institutions as assets in which governments can invest and is also related to the literature on the economic causes of democratic transitions, in particular Acemoglu and Robinson (2001, 2006). In their theory, the threat of revolution leads to preemptive democratization, and our idea that the threat of conflict leads to the strengthening of governance institutions is similar.

This article is related to the seminal empirical work by Londregan and Poole (1990, 1996), who find that income per capita, economic growth, and the incidence of coups in the recent past are important determinants of coups d'état. Collier and Hoeffler (2006, 2007) argue that African militaries run protection rackets in which funding is extracted in exchange for not staging coups and find evidence in support of this argument. We show that in equilibrium instances with high military spending are associated with a low frequency of coups (because governance institutions will be strong). Therefore, our results are consistent with those in Collier and Hoeffler (2006, 2007), although the mechanism behind them is different. Leon (2011) shows evidence consistent with the proposition that coups are staged by the military to increase its funding. Again, the main difference lies in emphasizing the importance of war and testing empirical predictions related to the relationship between institutions, wars, and coups.

The rest of the article proceeds as follows: in Section 2 we present our model of the military, and in Section 3 we derive and discuss the equilibria. In Section 4 we consider the role of war, whereas in Section 5 we present and discuss the empirical evidence in support of our results. In Section 6 we conclude.

2. A model of the military

The model of the military in this section is based on three features of the relationship between institutions, wars, and coups that are supported by the empirical and case study literature: (i) a country's exposure to coups depends on the strength of its governance institutions; (ii) military spending improves a country's 'combat power', that is, its ability to fight in a war; and (iii) military spending increases the probability that a coup, if staged, is successful.⁸ In the online Appendix we provide empirical and case study evidence in support of these assumptions.

⁸ We can think of coups as happening in two stages: first the military decides whether to stage a coup, and then nature determines whether the coup succeeds or fails. This assumption is about how military spending affects the outcome of a coup conditional on it being staged. We later solve for when coups take place in equilibrium.

2.1 The environment

We consider an infinitely repeated game between two groups, civilians and soldiers. There is a civilian leadership and all of its members are assumed to be identical, with a total mass of 1; all soldiers are equal and have a mass of λ . There is an incumbent, who can be a representative civilian (from the leadership) or a representative soldier. There are two political regimes, $r_t \in \{C, S\}$, which differ in the identity of the incumbent: in a civilian regime C a representative civilian is the incumbent, whilst in a military regime S a representative soldier is the incumbent. (A civilian government could be a dictatorship where the head of state is not a military officer.) The economy has income normalized to 1 that must be distributed between groups by the incumbent; the fraction given to the soldiers is denoted by μ_t , and the remaining $1 - \mu_t$ is given to the civilians. If the incumbent is a representative civilian, this is again split into two parts: fraction α is taken as rents by the leadership, whereas fraction $1 - \alpha$ goes to the other civilians. Institutions can be weak (w) or strong (d), which we denote as $\iota_t \in \{w, d\}$.⁹ We also assume that $\alpha \in \{\alpha_w, \alpha_d\}$, where α_w is the fraction extracted as rents when governance institutions are weak, and α_d is the fraction extracted when governance institutions are strong. Naturally, we assume that $\alpha_w > \alpha_d$. The representative civilian receives $1 - \mu_t$, and the representative soldier receives $\frac{\mu_t}{\lambda}$. At the start of each period the incumbent, if civilian, decides whether to strengthen institutions to make it impossible for the military to stage successful coups. Then the incumbent allocates resources between civilians and soldiers, the representative soldier can stage a coup, and the country may face a war.

2.2 Coups and wars

The representative soldier can stage a coup when the incumbent is a civilian; we let $c_t = 1$ if he stages a coup, and $c_t = 0$ otherwise. The probability that a coup succeeds is given by σ and there are two states of the world, one in which coups always succeed ($\sigma = 1$) and one in which they always fail ($\sigma = 0$). For simplicity, we assume that the probability of the first state of the world is given by μ_t , which we interpret as capturing the fact that if half of resources are allocated to the military, then the military and the civilians are evenly matched and each is equally likely to win (*ex ante*).¹⁰ It then follows that if a coup is staged, its probability of success is given by:

$$\sigma(\mu_t) = \begin{cases} 0 & \text{with prob. } 1 - \mu_t \\ 1 & \text{with prob. } \mu_t \end{cases}. \quad (1)$$

⁹ Strong governance institutions are usually associated with democracy, so we denote them with the letter d .

¹⁰ This is a special case of a more general model in which with probability $1 - \rho(\mu_t)$ staged coups succeed with a low probability $\underline{\sigma}$, and with probability $\rho(\mu_t)$ coups succeed with a high probability $\bar{\sigma}$, where $\bar{\sigma} > \underline{\sigma}$.

Increasing military spending μ_t increases the probability that the military is in a position to stage a successful coup.¹¹ If the coup fails, the regime stays civilian; if the coup succeeds, the regime becomes military. In both cases there are no costs involved, except that the identity of the incumbent changes the period after a successful coup. We assume that military dictatorship is an absorbing state.¹²

At the end of each period the nation might face a war. The probability that a war takes place in a given period is ω , and this is treated as exogenous. The probability that a war is won is given by

$$\Pr(\text{win war}) = \begin{cases} 1 & \text{with prob. } 1 - \omega \\ f(\mu_t) & \text{with prob. } \omega \end{cases}, \quad (2)$$

where we think of $f(\cdot)$ as being a country's military combat power. We assume that $f(\cdot)$ is strictly increasing and concave, and that $f(\mu_t = 0) = 0, f(\mu_t = 1) = 1$, $\lim_{\mu_t \rightarrow 0} f'(\mu_t) = \infty$, and $f'(1) = 0$. With probability $1 - \omega$ there is no war, so the probability of 'winning' is trivially equal to 1. Winning a war allows the civilians and soldiers to get their payoffs, whereas losing a war results in a payoff of 0 in that period for all civilians and soldiers. This implies that war is destructive in expectation.¹³

2.3 Institutions and the military

We assume that the model of wars and coups just described applies only when institutions are weak. When institutions are strong the incumbent extracts fewer rents and thus enjoys a high degree of legitimacy, and we assume that in that case coups can never succeed. The setup is identical with the exception that now $\sigma(\mu_t) = 0$ with probability 1 for all μ_t .

Our modelling of institutional choice is in the spirit of Besley and Persson (2008, 2009a,b, 2010, 2011). We assume that a civilian incumbent can choose to strengthen institutions at the start of every period, at a cost that is derived endogenously. These institutions act as a constraint on the incumbent's behavior, and might include the development of an independent judiciary that investigates and

¹¹ Lower military spending increases the gain from staging a successful coup, even if its probability of success goes down. In the presence of a cost to staging coups, they would not happen when military spending is high, as their expected cost would exceed their expected benefit. We achieve the same result, but because military spending is high when institutions are strong and coups cannot succeed. Our qualitative results do not change if we add a cost to failed coups.

¹² This is a special case of the more general model where military regimes survive every period with probability γ , and collapse and transition to a civilian regime with probability $1 - \gamma$.

¹³ For simplicity we assume that military spending increases the likelihood of winning a war, but not the probability of it taking place. It is possible that military spending affects both the probability of being attacked (i.e., it can act as a deterrent) and the country's willingness to engage in war (i.e., it can lead to a more aggressive foreign policy). There is a growing literature that focuses on these issues, including Jackson and Morelli (2009) and Chassang and Padro-i-Miquel (2010), and addressing them here would distract us from the main purpose of this article.

prosecutes corrupt politicians. The choice of institutions remains fixed for the rest of time; that is, institutions do not depreciate (this is consistent with Besley and Persson 2008, 2009a and Acemoglu *et al.* 2001). When institutions are strong, the soldier cannot stage successful coups and the incumbent does not need to take that possibility into account when choosing μ_t . By choosing to have strong institutions, the incumbent breaks the connection between $f(\mu_t)$ and $\sigma(\mu_t)$; that is, the relationship between being able to fight wars and the possibility of facing successful coups.

2.4 Actions and payoffs

In a civilian regime, in period t the incumbent chooses μ_t to maximize the discounted sum of his instantaneous utility

$$\sum_{j=0}^{\infty} \delta^j E_{\omega} u_{t+j}^C(r_{t+j})$$

where $\delta < 1$ is a discount factor and the instantaneous utilities are given by

$$u_t^C(r_t) = \begin{cases} \alpha[1 - \mu_t(r_t)] & \text{with prob. } 1 - \omega \\ f(\mu_t(r_t))\alpha[1 - \mu_t(r_t)] & \text{with prob. } \omega \end{cases}$$

where $\alpha \in \{\alpha_w, \alpha_d\}$. We assume that $\alpha_d < (1 - \delta)\alpha_w$, so that strengthening institutions is sufficiently costly. The regime type affects the identity of the group making the decision, and so possibly the decision itself. These utilities are in expectation because they depend on whether there is a war, which happens with probability ω . Coups only affect the incumbent's future payoffs and do so by impacting on the identity of the future incumbent.

In a civilian regime the soldier must decide whether to stage a coup; in a military regime, he needs to decide the allocation. We define the soldier's payoff as follows:

$$\sum_{j=0}^{\infty} \delta^j E_{\omega} u_{t+j}^S(r_{t+j}).$$

The instantaneous utilities are given by

$$u_t^S(r_t) = \begin{cases} \frac{\mu_t(r_t)}{\lambda} & \text{with prob. } 1 - \omega \\ f(\mu_t(r_t)) \left[\frac{\mu_t(r_t)}{\lambda} \right] & \text{with prob. } \omega \end{cases}.$$

Coups only affect the soldier's future instantaneous payoffs by affecting the identity of the future incumbent.¹⁴

¹⁴ It is possible that soldiers may want to stage coups for other reasons. A natural way to model this would be to assume that when in office, the soldiers receive an exogenous ego-rent of E . Adding this ego-rent would not affect our results.

2.5 Timeline

In every period t : (i) If the incumbent is civilian and institutions are weak, he can make institutions strong. (ii) The incumbent chooses the allocation $\mu_t \in [0, 1]$. (iii) If in a civilian regime, the value of $\sigma(\mu_t)$ is realized and the representative soldier decides whether to stage a coup. If he stages a successful coup, he becomes the incumbent in period $t+1$. If in a military regime, the representative soldier chooses the allocation. (iv) Nature determines whether there is a war; the country wins with probability $f(\mu_t)$.

2.6 Equilibrium concept

We focus on the pure strategy Markov perfect equilibria of this game, which requires that strategies at time t be conditional on the state variables and on any actions taken earlier in that period. We assume stationarity, so that the value functions do not depend on time directly.

In this game the state variables are the regime $r_t \in \{C, S\}$, the institutions $\iota_t \in \{w, d\}$, and whether there is a war, but the latter happens at the end of the period and after both players have moved. The strategies are given by $S^C(r_t, \iota_t)$ for the civilian and $S^S(r_t, \iota_t)$ for the soldier, and they determine the value of the choice variables μ_t and c_t . A pure strategy Markov perfect equilibrium of this game is a pair of strategies $S^C(r_t, \iota_t)$ and $S^S(r_t, \iota_t)$ such that they are best responses to each other for all (r_t, ι_t) .

3. Equilibrium

3.1 Weak institutions

3.1.1 Value functions Let $V_w^C(C)$ and $V_w^C(S)$ denote the representative civilian's value functions under civilian and military rule, respectively, whilst $V_w^S(C)$ and $V_w^S(S)$ are the value functions for the representative soldier. Since we are assuming stationarity, the functions themselves are not indexed by time. In addition, because of the Markov assumption, they will only be functions of the regime type and actions previously taken in that period. In particular, it will follow that if institutions are not strengthened at time t , they will not be strengthened later.

The civilian incumbent's value function in a civilian regime can be written recursively as follows:

$$V_w^C(C) = \max_{\mu \in [0, 1]} \left\{ \delta E_\sigma \left[\frac{(1 - \omega + \omega f(\mu))\alpha_w(1 - \mu) + c[\sigma(\mu)V_w^C(S) + (1 - \sigma(\mu))V_w^C(C)] + (1 - c)V_w^C(C)}{(1 - c)V_w^C(C)} \right] \right\}, \quad (3)$$

where $V_w^C(S)$ and $V_w^C(C)$ indicate the next period's value functions.¹⁵ The first line in eq. (3) equals the current period payoff, which is the probability that there is no

¹⁵ For simplicity, we have dropped the time indices and have not made explicit the dependence of the choice variables on the political regime.

war $1 - \omega$, plus the probability that there is a war and it is won $\omega f(\mu)$, times the rents extracted by the representative civilian. The second and third lines show the expected continuation payoff which depends on the value taken by $\sigma(\mu)$. When there is a coup ($c = 1$), it succeeds with probability $\sigma(\mu)$ and the regime becomes military; with probability $1 - \sigma(\mu)$ it fails and the regime stays civilian. When there is no coup ($c = 0$), the regime continues to be civilian. Notice that although current payoffs depend on the representative civilian's decision and whether there is a war, the future depends on whether the representative soldier stages a successful coup. As we will show, this decision can be affected by the representative civilian's choice. In the case of a military regime,

$$V_w^C(S) = \{(1 - \omega + \omega f(\mu))(1 - \mu) + \delta V_w^C(S)\} \quad (4)$$

so that the representative civilian makes no choices in this case.

Similar reasoning yields the value function for the representative soldier under civilian rule:

$$V_w^S(C) = \max_{c \in \{0, 1\}} \left\{ \delta E_\sigma \left[c \left[\sigma(\mu) V_w^S(S) + (1 - \sigma(\mu)) V_w^S(C) \right] + (1 - c) V_w^S(C) \right] \right\}. \quad (5)$$

In this case the representative soldier's decision is whether to stage a coup. The first term is the expected instantaneous payoff, taking into account the possibility of war, and the second and third terms capture the expected continuation when there is a coup and when there is no coup, respectively. These in turn depend on the value taken by $\sigma(\mu)$. Notice that the decision to stage a coup only affects the expected future payoffs, and it depends on the representative civilian's choice of μ through eq. (1). If in a military regime,

$$V_w^S(S) = \max_{\mu \in [0, 1]} \left\{ (1 - \omega + \omega f(\mu)) \frac{1}{\lambda} \mu + \delta V_w^S(S) \right\}. \quad (6)$$

To solve for the equilibria of this game we use the one-stage-deviation principle, as stated in Theorem 4.2 in Fudenberg and Tirole (1991, p.110). This theorem says that a strategy is subgame perfect if no player can gain from deviating in only one time period and after one specific history. For this theorem to hold it is necessary for the game to be continuous at infinity; this is true in games which, like this one, have overall payoffs that are a discounted sum of uniformly bound period payoffs. The main useful implication of this theorem is that we can take the future values of the choice variable as given. As Fudenberg and Tirole note, this is simply the principle of optimality of dynamic programming. Furthermore, stationarity and the Markov assumption ensure that $V_w^i(j) = V_w^i(j)$, and so we drop the ' in the rest of the article. All proofs are in the online Appendix.

3.1.2 Military regime Suppose that institutions are weak. In a military regime the representative civilian makes no decision and the representative soldier

receives eq. (6). Using the one-stage deviation principle, the representative soldier must choose μ to maximize the first line in expression (6), which clearly leads to the optimal choice $\hat{\mu}^S = 1$. Since by assumption the representative soldier does not face the threat of a coup, his decisions are not affected by strategic considerations. Substituting $\hat{\mu}^S = 1$ into eq. (6) and solving, we find that the representative soldier's value in a military regime is

$$V_w^S(S) = \frac{1}{\lambda(1-\delta)}. \quad (7)$$

Likewise, we can substitute the representative soldier's decision into eq. (4) and obtain the value for the representative civilian of being in a military regime:

$$V_w^C(S) = 0. \quad (8)$$

The following result will prove useful in what follows:

Lemma 1 The value for the representative soldier is greater in a military regime than in a civilian regime; that is, $V_w^S(S) > V_w^S(C)$.

3.1.3 Civilian regime Suppose that a representative civilian is in office. The representative soldier will not stage a coup to try to overthrow him if the expected payoff from doing so is less than the expected payoff from staying in a civilian regime. The expected payoff for a soldier from a coup is

$$[1 - \omega + \omega f(\mu)] \frac{\mu}{\lambda} + \delta [\sigma(\mu) V_w^S(S) + (1 - \sigma(\mu)) V_w^S(C)], \quad (9)$$

where recall that $\sigma(\mu)$ will equal either 0 or 1, and this is known before the coup is staged. In the current period the payoff is $\frac{\mu}{\lambda}$ if there is no war or if there is a war and it is won, and the future value depends on whether the coup succeeds, in which case the regime becomes military, or fails, in which case it remains civilian. If there is no coup, then the soldier receives

$$[1 - \omega + \omega f(\mu)] \frac{\mu}{\lambda} + \delta V_w^S(C), \quad (10)$$

which again incorporates the current period payoff, which depends on whether there is a war and whether it is won, plus the future value.

It follows that coups are avoided if eq. (10) is weakly greater than eq. (9), where we assume that coups are not staged when the representative soldier is indifferent. This simplifies to

$$0 \geq \sigma(\mu) [V_w^S(S) - V_w^S(C)],$$

so that coups are avoided only if $\sigma(\mu) = 0$ (because $V_w^S(S) > V_w^S(C)$ by Lemma 1). Because this happens with probability $1 - \mu$, which is decreasing in μ , increasing the military's allocation increases the likelihood of coups. Notice that the right-hand side captures the benefit from staging a coup, which decreases as the

equilibrium allocation μ increases. However, in this simple framework the benefit of a coup is always positive as long as the probability of success is non-zero. The civilian can reduce the frequency of coups by reducing military spending.¹⁶

The civilian incumbent chooses μ to maximize his utility, and we can rewrite his value function as:

$$V_w^C(C) = \max_{\mu \in [0, 1]} (1 - \omega + \omega f(\mu)) \alpha_w (1 - \mu) + \delta (1 - \mu) V_w^C(C). \quad (11)$$

This incorporates the fact that coups happen with probability μ , in which case the continuation depends on whether the coup succeeds or fails; with probability μ the continuation payoff is $\delta V_w^C(S) = 0$; with probability $1 - \mu$ the continuation payoff is $\delta V_w^C(C)$. Before we establish the equilibrium allocation, we need the following lemma:

Lemma 2 The civilian incumbent does better under a civilian regime, that is, $V_w^C(C) - V_w^C(S) > 0$.

The following proposition establishes the equilibrium allocation:

Proposition 1 There exists a unique optimal $\hat{\mu}_w^C$ given implicitly by

$$\hat{\mu}_w^C : f'(\mu) = \frac{\alpha_w [1 - \omega + \omega f(\mu)] + \delta V_w^C(C)}{\omega \alpha_w (1 - \mu)}, \quad (12)$$

and this choice is interior.

This result illustrates the decision faced by the civilian incumbent: a higher value of μ implies a higher probability of winning wars, but it also increases the probability of a coup, and so has a negative impact on his likelihood of being in office in the next period. We can use this to calculate the value to civilians and soldiers of being in a civilian regime. Using eq. (11) we have the following value:

$$V_w^C(C) = \frac{(1 - \omega + \omega f(\hat{\mu}_w^C)) \alpha_w (1 - \hat{\mu}_w^C)}{1 - \delta + \delta \hat{\mu}_w^C}. \quad (13)$$

Using eq. (5), the fact that coups happen with probability $\hat{\mu}_w^C$, and eq. (7) we have

$$V_w^S(C) = \frac{(1 - \omega + \omega f(\hat{\mu}_w^C))^{\frac{1}{\lambda}} \hat{\mu}_w^C + \hat{\mu}_w^C \frac{\delta}{1 - \delta} \frac{1}{\lambda}}{1 - \delta + \delta \hat{\mu}_w^C}.$$

The following comparative statics result proves to be important:

Proposition 2 The choice $\hat{\mu}_w^C$ is increasing in ω , and so coups become more likely as the probability of war increases.

As we explained already, the civilian incumbent faces a trade-off between making the military stronger so that it can fight wars, and increasing the probability of a

¹⁶ If there were a cost to staging coups, then the probability of success or the potential gain from a coup would have to be sufficiently large for a coup to be staged.

coup. As the likelihood of war increases, the cost of facing a coup becomes smaller relative to the cost of being unprepared for war. As a result, the civilian will increase the military's budget allocation, even if this makes a coup more likely. On the other hand, when war is unlikely the civilian incumbent provides very little military spending and coups are unlikely. In the end, we find that coups become more likely as the probability of war increases.

It is not surprising that civilians are better off in a civilian regime than under military rule, but we can also show that the difference between their payoffs in both regimes decreases as war becomes more likely:

Lemma 3 The difference in the payoffs received by the civilian incumbent in the two regimes, $V_w^C(C) - V_w^C(S)$, is decreasing in ω .

This result follows from the fact that the probability of war does not affect the choice made by the representative soldier, which is $\hat{\mu}^S = 1$ regardless of ω . As war becomes more likely, the allocation given to the soldiers increases (as shown in Lemma 2) and gets closer to the allocation chosen by the representative soldier when in office. It then follows that the payoffs received by the representative civilian under the different regimes get closer.

3.2 Strong institutions

3.2.1 Value functions When institutions are strong, coups succeed with probability $\sigma(\mu) = 0$. It then follows that the value functions are given by

$$V_d^C(C) = \max_{\mu \in [0, 1]} \left\{ (1 - \omega + \omega f(\mu)) \alpha_d (1 - \mu) + \delta V_d^C(C) \right\}$$

$$V_d^C(S) = \left\{ (1 - \omega + \omega f(\mu)) (1 - \mu) + \delta V_d^C(S) \right\}$$

$$V_d^S(C) = \left\{ (1 - \omega + \omega f(\mu)) \frac{1}{\lambda} \mu + \delta V_d^S(C) \right\}.$$

$$V_d^S(S) = \max_{\mu \in [0, 1]} \left\{ (1 - \omega + \omega f(\mu)) \frac{1}{\lambda} \mu + \delta V_d^S(S) \right\}.$$

3.2.2 Military regime Coups are not an issue in a military regime, so the fact that institutions are strong is of no importance. As before, the representative soldier sets $\hat{\mu}_d^S = 1$ and

$$V_d^S(S) = \frac{1}{\lambda(1 - \delta)}. \quad (14)$$

Here the representative soldier's value in a military regime is a function of his value in a civilian regime. Likewise, we again have that

$$V_d^C(S) = 0, \quad (15)$$

which is a function of the civilian incumbent's value in a civilian regime. We can again establish the following:

Lemma 4 The value for the representative soldier is greater in a military regime than in a civilian regime; that is, $V_d^S(S) > V_d^S(C)$.

3.2.3 Civilian regime When institutions are strong, coups succeed with probability $\sigma(\mu) = 0$. Whether the representative soldier stages a coup or not, he receives $[1 - \omega + \omega f(\mu)] \frac{\mu}{\lambda} + \delta V_d^S(C)$, and so is indifferent between the two. Following our assumption that the soldier will not stage a coup if indifferent, there are no coups when institutions are strong.

When a representative civilian is the incumbent, his value function is:

$$V_d^C(C) = \max_{\mu \in [0, 1]} \{ [1 - \omega + \omega f(\mu)] \alpha_d (1 - \mu) + \delta V_d^C(C) \} \quad (16)$$

and we can establish the following:

Proposition 3 There exists a unique optimal choice given implicitly by

$$\hat{\mu}_d^C : f'(\mu) = \frac{[1 - \omega + \omega f(\mu)]}{w(1 - \mu)} \quad (17)$$

and this choice is interior.

Using eq. (16) it follows that $V_d^C(C) = \frac{[1 - \omega + \omega f(\hat{\mu}_d^C)] \alpha_d (1 - \hat{\mu}_d^C)}{1 - \delta}$, and using eq. (5) and the fact that coups do not take place, we have that $V_d^S(C) = \frac{[1 - \omega + \omega f(\hat{\mu}_d^C)] \frac{\hat{\mu}_d^C}{\lambda}}{1 - \delta}$.

Proposition 4 (i) The civilian incumbent chooses higher military spending when institutions are strong; that is, $\hat{\mu}_w^C \leq \hat{\mu}_d^C$. (ii) The representative soldier chooses the same level of military spending $\hat{\mu}_w^S = \hat{\mu}_d^S = 1$ regardless of institutions.

This result tells us that civilian incumbents spend more on the military when institutions are strong. This is hardly surprising, because making the military stronger when institutions are strong does not involve the potential cost of facing a coup.

3.3 Strengthening institutions

We now consider the civilian incumbent's decision to strengthen institutions when he is the incumbent. If he chooses strong institutions, he receives a lifetime income of

$$\frac{(1 - \omega + \omega f(\hat{\mu}_d^C)) \alpha_d (1 - \hat{\mu}_d^C)}{1 - \delta},$$

as in every future period he gets to set the level of spending $\hat{\mu}_d^C$. If he does not, he receives $V_w^C(C)$ as given by eq. (13). So for him to strengthen institutions it must be that

$$\frac{(1 - \omega + \omega f(\hat{\mu}_d^C)) \alpha_d (1 - \hat{\mu}_d^C)}{1 - \delta} - V_w^C(C) > 0. \quad (18)$$

To establish the connection between institutions and the probability of war, we first need to establish the following:

Lemma 5 The left-hand side of expression (18) is increasing in ω .

This lemma shows that as the likelihood of war increases, the benefit of having strong institutions increases: weak institutions do not allow the civilian incumbent to adequately prepare for war, and this disadvantage becomes more acute as war becomes more likely.

To derive our next result, we need to define the function

$$k(\omega) = \frac{(1 - \omega + \omega f(\hat{\mu}_d^C))\alpha_d(1 - \hat{\mu}_d^C)}{1 - \delta} - V_w^C(C),$$

which is just equal to the left-hand side of eq. (18), and let $\kappa^m \equiv k(\omega = 1)$. We can then state the following:

Proposition 5 (i) When the cost $\kappa \in [0, \kappa^m]$, $\exists \omega_\kappa \in [0, 1]$ such that $\kappa = k(\omega_\kappa)$. (ii) If $\kappa \in [0, \kappa^m]$, then when $\omega < \omega_\kappa$ the civilian incumbent chooses not to strengthen governance institutions, and when $\omega \geq \omega_\kappa$ the civilian incumbent chooses to strengthen governance institutions. (iii) If $\kappa > \kappa^m$, the civilian incumbent never strengthens governance institutions (regardless of the value of ω).

This proposition establishes that a civilian incumbent will choose to strengthen governance institutions when war is likely. These are the cases in which weak institutions, by inducing a weaker military, are relatively unappealing. We can also establish the following result:

Proposition 6 (Tin Pot Militaries) Coups are staged by weak militaries in countries with weak governance institutions.

This follows from the fact that coups are only staged when governance institutions are weak, and institutions are weak when war is not very likely (Proposition 5). As Proposition 4 has shown, this is the case when military spending (and hence combat power) are relatively low. This provides a plausible explanation for the somewhat puzzling observation that the militaries in Africa and Latin America, which are weak and often unable to properly engage in war, stage the most coups (see, for example, Leon, 2011).

4. The role of war

The likelihood of war plays a central role in our model. When institutions are weak, an increase in the probability of war μ makes the civilian incumbent increase military spending, which increases the probability of a coup. As a result, there is a positive correlation between the probability of war and coups. However, we have shown that when the likelihood of war is high, the civilian incumbent will

strengthen institutions and coups do not take place. The following proposition summarizes these results:

Proposition 7 (War) Suppose that the incumbent is a civilian. There exists a threshold $\omega_k \in [0, 1]$ such that (i) an increase in the likelihood of war ω for $\omega < \omega_k$ increases the likelihood of a coup, and (ii) an increase in the likelihood of war ω when $\omega \geq \omega_k$ has no effect on the likelihood of a coup, which remains equal to 0.

This proposition establishes how the likelihood of a coup changes with the probability of war. It shows that there is a non-monotonic relationship between the likelihood of war and coups, with coups being least likely for low and high probabilities of war. This result depends on the way war affects the decisions of civilian incumbents. When war is unlikely, the civilian incumbents will give the soldiers limited funding, and coups will be unlikely. When war is likely, the civilian incumbents will strengthen institutions and coups will not happen, even when military funding is high. Coups are most likely at intermediate likelihoods of war, when the civilian incumbents will not strengthen institutions but will provide the military with some funding to fight wars. Figure 1 illustrates this relationship.

This provides an explanation for the large differences in the quality of institutions seen across countries. When war is infrequent, civilian incumbents do not need strong governance institutions; even if they are unpopular, they can avoid being overthrown by the military by providing limited funding and making the military weak. On the other hand, a high likelihood of conflict makes a strong military necessary, and to avoid coups the civilian incumbents need to take action to gain the support of the population. Strengthening governance institutions, and thus reducing rent extraction, is one way of winning the support of the population and avoiding coups.

Our results allow us to classify civilian regimes into two groups, depending on the strength of their institutions. In regimes with weak governance institutions, there is a positive correlation between wars and coups. These regimes face small or moderate probabilities of war, and include countries in Latin America and Africa. In the second group governance institutions are strong, and so the military will not stage a coup regardless of how much funding it is given. This is what we observe in countries in North America and Western Europe, where the military is focussed on defence, plays largely no role in politics, and stages no coups. This is consistent with Tilly's (1990) reading of the historical evidence, where the reason Western Europe developed institutions stronger than those in other parts of the world is that it faced a higher frequency of conflict. However, the mechanism he suggests, namely, that conflict creates the need to invest in fiscal institutions to collect taxes and finance the fighting, is different from the one we focus on.

Proposition 7 predicts empirical patterns that match those of two existing views of the impact of war on the military's role in politics. The first is associated with Harold Laswell (1937, 1941) and is known as the garrison state view. It suggests that

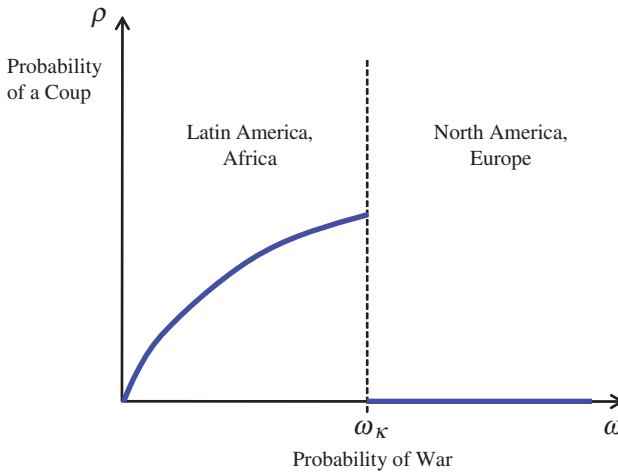


Fig. 1 Wars and coups.

war leads to a politically active military, and is based on the observation that conflict increased the militarization of society in Japan and Germany in the 1930s and 1940s. The institutional view, often credited to Stanislaw Andreski (1968, 1980), asserts that war causes the military to become focussed on defence and reduce its involvement in politics. It is more recent and was developed to explain the success of the United States and the Soviet Union in keeping their militaries under civilian control during the Cold War. Their empirical predictions are contradictory, but Proposition 7 illustrates how our framework is capable of generating both sets of results.

5. Empirical evidence: wars and coups

5.1 Empirical predictions

We cannot test the model directly, but it is possible to derive two empirical predictions from the model and test them using our data. Proposition 7 suggests the following testable prediction about the relationship between wars and coups:

Empirical Prediction 1 The cross-country relationship between the likelihood of wars and coups is non-monotonic.

In other words, if we plot countries in a graph with the likelihood of war on the x-axis and the likelihood of coups on the y-axis, we should get a non-monotonic shape as in Fig. 1. In this section we show empirical evidence that is consistent with this prediction, finding a robust non-monotonic relationship between these variables. We should be cautious, however, when interpreting these results: they are correlations and not statements of causality. We interpret these correlations as indirect evidence for the mechanism described in the model.

In our empirical analysis we proxy for the probability of war using the historical incidence of war, measured as the fraction of years between 1965 and 1999 in which the country was at war. The idea is that the historical incidence provides an approximation to the probability of war in a given year, which assumes that the likelihood of war stayed constant throughout this period. We use wars in the period 1963–99, instead of historical wars, because our model is forward looking, and it is the future probability of war that matters.¹⁷ We proxy for the probability of coups using the historical incidence of coups, measured as the fraction of years between 1965 and 1999 in which the country experienced at least one coup. We only look at years with non-military regimes, which include both democracies and non-democracies where the head of the government is not a military officer.¹⁸

We begin by estimating the following cross-country specification:

$$\text{coups}_i = \alpha + \gamma_1 \times \text{wars}_i + \gamma_2 \times \text{wars}_i^2 + \beta_1 \times \text{controls}_i + \varepsilon_i, \quad (19)$$

where coups_i measures the fraction of years in which coups took place in country i , and likewise for wars_i . The quadratic term is a simple way of capturing the non-monotonicity predicted by the model. The controls_i will account for gross domestic product (GDP) and population in two ways: first, by using the World Bank's country income groups as dummies, and then by using the log of a country's GDP (in millions) and the log of population (in millions) in the year before it enters the sample (1964 or the year of independence).¹⁹ Finally, ε_i is the error term.

Recall that the non-monotonicity arises because the civilian incumbent strengthens institutions when war is likely, and this severs the connection between wars and coups.²⁰ This suggests that we also test for the following:

Empirical Prediction 2 The relationship between the likelihood of wars and coups is either positive (when institutions are weak) or zero (when institutions are strong).

We test for this prediction using the following specification:

$$\text{coups}_i = \alpha + \gamma_1 \times \text{wars}_i + \gamma_2 \times \text{wars}_i \times I + \beta_1 \times \text{controls}_i + \varepsilon_i, \quad (20)$$

where $I = 1$ if $\text{polity2}_i > 0$ and 0 otherwise, so that we allow the impact of war to differ based on the quality of institutions. The polity2 variable is a measure of institutional quality and takes values between -10 (weak institutions) and 10

¹⁷ We include both major and minor wars, where major wars are defined as those with at least 1,000 casualties in a year, whereas minor wars are those with anywhere between 25 and 999 casualties in a year.

¹⁸ We drop years with military incumbents because the model does not make predictions about them.

¹⁹ We do not control for the size of the military or military spending because these are clearly endogenous, as suggested by the model. More generally, the number of controls we can use is limited by the need to evaluate them in the year before the sample starts. The number of observations decreases as we add controls because they are not available for all countries.

²⁰ Table A3 in the online Appendix presents some evidence consistent with the idea that the expectation of war leads to stronger institutions.

(strong institutions), and is a version of the polity IV index intended for use in time series analysis. In our view this index captures information about the government's accountability to its citizens, so it should be a good measure of the strength of governance institutions.

5.2 The data

We use the PRIO/Uppsala Armed Conflict dataset, version 4 (Gleditsch *et al.*, 2002; PRIO, 2006) to determine the years in which a country was at war. We include all years in which the country is listed as fighting in a conflict, with the exception of those in which the enemy is listed as a military faction and the country experienced a coup. Our sample period is 1965–99, which are the years for which the coup data is available. The data on coups comes primarily from the dataset compiled by Belkin and Schofer (2003), with some additional data from Banks's (2001) cross-national time-series data archive. The Belkin-Schofer (2003) coup database is one of the most accurate available and has the advantage of including both successful and failed coups, thus avoiding the sample selection issues of some other datasets that only report successful coups. More details can be found in the online Appendix.

Table 1 shows that coups took place in 209 country-years, and wars took place in 850. Furthermore, since our model's predictions apply only to non-military regimes, we only consider country-years in which the head of state is not a military officer. To find these cases we use the variable S21F3 from Banks (2001), which codes the identity of the head of state; dropping all 257 observations where the head of state is coded as military has no qualitative effect on our results.²¹

5.3 Results

Table 2 reports the results for the specification given by eq. (19). The first column shows a quadratic relationship between wars and coups, as predicted by the model. The maximum occurs at a frequency of 0.48, so countries that experienced war in about half the years between 1965 and 1999 faced the highest likelihood of a coup (although a majority of countries experienced war less frequently). The second column in Table 2 shows that this relationship remains after we introduce the World Bank income group dummies, a rough measure of wealth. The third column shows the results when we control for GDP and population measured in the year before the country enters the sample. In all cases the signs on the war variables are as predicted by the theoretical model, and the coefficients are

²¹ We should clarify that our data includes many dictatorships in which the head of state is a civilian (i.e., not an active military officer). Table A1 in the online Appendix shows the summary statistics for the frequency of wars and coups. The frequency of war is measured as the fraction of years between 1965 and 1999 in which the country was at war, and the frequency of coups refers to the fraction of years between 1965 and 1999 in which at least one coup took place.

Table 1 Coups, wars, and heads of state (1965–99)

	Number of country-years
Coups	
Coups	209
No coups	4,337
Wars	
Wars	850
No wars	3,603
Head of state	
Military officer	257
Other (e.g., president, monarch)	4,289

Notes: The values refer to the number of country-years in which there was at least one coup or one war. The identity of the head of state is from the Banks (2001) dataset variable S21F3, where a military head of state is coded as a ‘3’.

Table 2 Wars and coups

	(1) Coups	(2) Coups	(3) Coups
Wars	0.197*** (0.053)	0.158*** (0.055)	0.182** (0.069)
Wars ²	−0.205*** (0.058)	−0.166*** (0.061)	−0.193** (0.074)
Income			−0.010*** (0.003)
Population			0.005 (0.004)
WB income group	No	Yes	No
Observations	150	148	115
R-squared	0.123	0.188	0.213

Notes: *significant at the 10% level, **at the 5% level, ***at the 1% level. Standard errors are robust to heteroscedasticity and are reported in parentheses. Coups and wars measure the incidence of coups and wars in the period 1965–99 (or from the year following independence–1999). They are calculated by counting the number of years the country was at war and dividing by the number of years it is in the sample; the same is done to calculate coups. WB income groups are as assigned by the World Bank in the World Development Indicators (2007). Income is the log of real GDP (in millions) in 1964, or in the year of independence. Population is the log of population (in millions) in 1964, or in the year of independence.

significant. We subject these results to a number of robustness checks; these can be found in the online Appendix.

In Table 3 we consider specification (20), where we allow the effect of wars to differ depending on the strength of governance institutions, as captured by the *polity2* variable. We find that for those countries where institutions are weak (the first row, where the *polity2* variable is negative) the coefficient on wars is always

Table 3 Wars and Coups

	(1) Coups	(2) Coups	(3) Coups
Wars	0.115*** (0.037)	0.101*** (0.035)	0.097** (0.039)
Wars x I (Polity2 > 0)	-0.102*** (0.038)	-0.095*** (0.036)	-0.099** (0.039)
Income			-0.010*** (0.003)
Population			0.005 (0.004)
WB income group	No	Yes	No
Wars (when Polity2 > 0)	0.013	0.006	-0.002
	$p = 0.368$	$p = 0.674$	$p = 0.891$
Observations	150	148	115
R-squared	0.122	0.206	0.227

Notes: *significant at the 10% level, **at the 5% level, ***at the 1% level. Standard errors are robust to heteroscedasticity and are reported in parentheses. Coups and wars measure the incidence of coups and wars in the period 1965–99 (or from the year following independence–1999). They are calculated by counting the number of years the country was at war and dividing by the number of years it is in the sample; the same is done to calculate coups. WB income groups are as assigned by the World Bank in the World Development Indicators (2007). Income is the log of real GDP (in millions) in 1964, or in the year of independence. Population is the log of population (in millions) in 1964, or in the year of independence. Polity2 is the value of the polity2 variable from the Polity IV project.

positive and significant. For countries with strong institutions (i.e., the *polity2* variable is positive), the coefficients are given at the bottom of the table: none of them are different from zero. This is consistent with a key prediction of the model: the connection between wars and coups is positive in countries with weak institutions, but the relationship disappears in countries with strong institutions.

6. Conclusion

In this article we present a model of the military where its involvement in politics, through coups d'état, can be affected by both the strength of governance institutions and military spending. Central to our model is the military's role in fighting wars. The model predicts a non-monotonic relationship between the likelihood of war and coups in non-military regimes, and we find evidence of this relationship in the data. This provides an alternative explanation for how the threat of conflict might lead to an improvement in democratic institutions.

At the beginning of this article we argued that it was important to understand when the military intervenes in politics, and that it is likely that this has an effect on political and economic outcomes. We addressed the first point, but said nothing about the second. There is a growing literature that looks at how democracies and non-democracies differ in their economic policies and outcomes; it includes

Gil *et al.* (2004), who compare the policies chosen by democracies and non-democracies, and Besley and Kudamatsu (2008), who consider which types of non-democracies choose better policies. Future work should look in more detail at how policy choices differ depending on the degree of military involvement in politics.

Supplementary Material

Supplementary material is available online at the OUP website.

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