

Loyalty, Efficiency, and the Guardianship Dilemma

Jack Paine*

December 2, 2018

Abstract

Although some dictators construct coup-proofed and personally loyal militaries, others favor professional militaries that more efficiently repress outsider threats. Existing research analyzes the purportedly ubiquitous “loyalty-efficiency” tradeoff that dictators face and the “guardianship dilemma” that strong outsider threats create. This paper shows these two tradeoffs are intimately related by studying the *orientation* and *strength* of outsider threats. In the formal model, a dictator chooses between a personalist and professional military. The military can repress to save the dictator, stage a coup, or transition to outsider rule. Domestic-oriented threats do not generate a loyalty-efficiency tradeoff. Compared to a professional military, a personalist military faces considerably stronger incentives to repress domestic-based threats because of a lower reservation value under outsider rule. This generates higher equilibrium repressive efficiency despite lower endowed coercive ability. The dictator’s strict preference for the personalist military also eliminates the guardianship dilemma. However, foreign-oriented threats trigger both tradeoffs. A large foreign threat encourages choosing a professional military, which increases coup likelihood.

*Assistant Professor, Department of Political Science, University of Rochester, jackpaine@rochester.edu. I thank Emiel Awad, Scott Tyson, and Stephane Wolton for valuable comments on previous drafts, and Jacque Gao for excellent research assistance.

Among the tools that enable dictators to survive in power—such as patronage concessions, legislatures, and parties—perhaps the most fundamental is that dictators require a coercive apparatus to defeat threats posed by outsider opposition groups such as pro-democracy protesters, rebel groups, and foreign invaders. Considerable research analyzes two core tradeoffs that dictators face when constructing their militaries. First, there exists a tradeoff between coup loyalty (propensity of the military to not attempt a coup) and repressive efficiency (the probability that the military defeats an outsider threat). On the one hand, militaries in which family members and unqualified co-ethnics stack the officer corps should be highly loyal. On the other hand, professional militaries distinguished by wide recruitment, meritocratic promotion, and disciplined hierarchical command chains should exhibit higher repressive efficiency. For example, [Finer \(1975, 93-5; 1997, 17-9\)](#) discusses the *loyalty-efficiency* tradeoff in early modern Europe, and [Quinlivan \(1999\)](#) and [Roessler \(2016\)](#) discuss contemporary Middle Eastern and African cases, respectively.

Second, the strength of outsider threats affects the type of military a dictator chooses—with consequences for the likelihood of a coup attempt. The more immediate threat of insider overthrow via a coup causes many dictators to “coup-proof” their military despite adverse consequences for repressive efficiency and prospects for outsider overthrow. However, this calculus changes when a dictator faces a strong outsider threat because it becomes more willing to sacrifice coup loyalty for increased repressive efficiency ([Acemoglu, Vindigni and Ticchi, 2010](#); [Besley and Robinson, 2010](#); [Svolik, 2013](#)). This is known as the *guardianship dilemma* because the stronger guards needed to defeat a severe threat are better able to overthrow the dictator via a coup. However, others challenge the guardianship logic. Although strong outsider threats cause dictators to construct more coercively efficient militaries, coup probability does not necessarily increase. [McMahon and Slantchev \(2015\)](#) show formally why, in the face of a strong outsider threat, even a large and well-equipped military will remain loyal: the strong outsider threat lowers the value of holding office.

This paper provides a unified theory of military agency problems. It shows that these distinct debates—loyalty-efficiency tradeoff and guardianship dilemma—are intimately related by examining the *orientation* and *strength* of the outsider threat. I analyze a formal model in which a dictator faces an exogenous outsider threat that can overthrow the regime. The dictator first chooses how to organize its coercive apparatus by delegating authority to either a personalist or a professional military. The dictator faces a dual agency problem. To survive, it needs the military to exercise repression. However, the military can alternatively decide to either negotiate a transition with the outsider, or attempt a coup. Compared to a personalist military, a

professional military is more likely to be *able* to successfully repress the opposition. However, because professional militaries recruit from broad segments of society, and merit rather than personal fealty to the incumbent dictator determines promotion decisions, professional militaries fare better than personalist militaries if the outsider takes power. Furthermore, professional militaries are more likely to have an opportunity to successfully stage a coup.

The main findings from the model challenge the two core arguments about (1) the existence of a loyalty-efficiency tradeoff and (2) whether or not strong outsider threats create a guardianship dilemma. First, existing loyalty-efficiency arguments overlook a central aspect of the repression calculus: the military's strategic decision to exercise repression when given orders.¹ For example, largely professional militaries in Tunisia and Egypt were ultimately unwilling to repress protesters in early 2011 amid Arab Spring protests, whereas personalist militaries in Bahrain, Syria, and (at least in part) Libya reacted with harsh crackdowns (Bellin, 2012). The Pahlavi dynasty in Iran recruited its military from broad segments of society (McLaughlin, 2010, 344), which ultimately mutinied despite considerable repressive strength when facing domestic protesters demanding religious reform in the late 1970s. Many democratic transitions in Latin America in the 1980s occurred when professionally oriented militaries negotiated deals with broad societal groups (e.g., Uruguay) or with moderate rebel groups (e.g., El Salvador). In all these cases, the key observation is that the military expected a relatively favorable fate following a transition to outsider rule—which affected its decision to not continue fighting.

More generally, I conceptualize the orientation of the outsider threat along a domestic-foreign continuum to open up a key implicit assumption undergirding the loyalty-efficiency tradeoff. Formalizing the intuition from these cases, I show that *domestic*-oriented threats do not generate a loyalty-efficiency tradeoff for the dictator. Facing a domestic threat—e.g., pro-democracy protests in Cairo in 2011 or moderate nationalist rebel groups in El Salvador in the 1980s—stacking the military with sycophants can reduce the probability of outsider overthrow (i.e., higher repression efficiency) relative to a more professional military. Whereas professional militaries have a relatively high-valued outside option to rule by a domestic actor, personalist militaries do not because of their patrimonial ties to the incumbent. This induces personalist militaries to exercise repression with greater likelihood, which implies a lower probability of outsider takeover despite their

¹The next section discusses recent contribution that also address strategic repression choices (Dragu and Przeworski, [Forthcoming](#); Slantchev and Matush, 2017; Tyson, 2018).

lower endowed coercive ability. In these circumstances, the dictator not only optimally chooses a personalist military, it *does not* face a tradeoff between military types. When encountering domestic threats, the dictator prefers the personalist military for both higher repressive efficiency and lower coup propensity.

Instead, dictators only face a loyalty-efficiency tradeoff when encountering strong *foreign*-oriented threats—such as communist guerrillas in Malaysia in the 1960s or the U.S. invasion of Iraq in 2003. These threats pose an existential crisis for both personalist and professional militaries because each fare poorly under foreign rule. The low-valued outside option increases the professional military’s likelihood of exercising repression, which yields higher repressive efficiency because severe threats create a large discrepancy between professional and personalist militaries’ likelihood of being able to successfully defeating the threat. Therefore, when facing a foreign threat, the dictator may prefer the professional military because of its higher repressive efficiency.

The second result applies the revised loyalty-efficiency logic to untangle the guardianship dilemma debate. Foreign-oriented threats—which create a loyalty-efficiency tradeoff—are necessary and sufficient for a guardianship dilemma. The dictator’s willingness to sacrifice coup loyalty for higher repressive efficiency as a foreign outsider threat grows in strength creates a non-monotonic relationship between threat size and equilibrium coup probability. The coup probability exhibits a discrete increase at an intermediate threat level in which the dictator switches from a personalist to a professional military—recovering the traditional guardianship dilemma logic. However, at all other threat levels, the equilibrium probability of a coup decreases in outsider threat strength because (1) optimal military choice is unchanged and (2) stronger outsider threats raise the military’s expected cost to retaining power following a successful coup, similar to McMahon and Slantchev’s (2015) finding. The overall logic for this non-monotonic relationship contrasts with existing arguments for or against the guardianship dilemma.²

By contrast, domestic-oriented threats eliminate the guardianship dilemma for the same reason that domestic threats do not generate a loyalty-efficiency tradeoff. Because the personalist military is more repressively efficient regardless of threat strength, increasing the severity of a domestic threat does not cause the dictator to switch to the less loyal professional military. Therefore, equilibrium coup likelihood strictly decreases in the size of the threat.

²Acemoglu, Vindigni and Ticchi’s (2010) and Svobik’s (2013) models also generate a non-monotonic relationship, but rest on an opposing underlying logic (see the next section).

Despite adopting a core assumption from McMahon and Slantchev (2015), my critique of the traditional guardianship logic differs and is perhaps more fundamental. Imposing their assumption that stronger outsider threats diminish the value of a coup attempt is not sufficient to undermine the guardianship logic because it does not eliminate the dictator’s incentive to possibly switch from a personalist to a professional military when facing a strong outsider threat. The dictator’s decision regarding military type instead drives the guardianship dilemma. This decision depends on the domestic/foreign orientation of the threat, which in turn determines whether or not the dictator faces a loyalty-efficiency tradeoff. This insight rests on modeling the military’s endogenous repression choice and the orientation of the outsider threat, which McMahon and Slantchev (2015) do not analyze. Figure 1 summarizes the main findings.

Table 1: Summary of Main Findings

Domestic threat	Foreign threat
↓	↓
Personalist military more efficient regardless of threat size	Personalist more efficient if weak threat Professional more efficient if strong threat
↓	↓
No loyalty-efficiency tradeoff	Loyalty-efficiency tradeoff
↓	↓
No guardianship dilemma	Guardianship dilemma

1 Related Theories of Coups and Repression

1.1 Loyalty-Efficiency Tradeoff

The present contribution departs from existing studies of the loyalty-efficiency tradeoff by establishing the *conditions* under which a loyalty-efficiency tradeoff exists, rather than assuming dictators necessarily trade off between loyalty and efficiency. Finer’s (1975, 93-5; 1997, 17-9) wide-ranging survey of historical forms of military organization discusses the loyalty-efficiency tradeoff in early modern Europe by contrasting efficient foreign mercenary troops with more loyal paid domestic volunteers. Focusing on contemporary polities, Powell (2014, 2) argues that leaders “find themselves mired in a paradox in which a weak military can leave them vulnerable to invasion or civil war, while a strong military could expedite their exit through a coup d’etat.” This tradeoff provides incentives to “coup-proof” the military despite considerable evidence that protecting against disloyalty diminishes military efficiency (Quinlivan, 1999; Pilster and Böhmelt, 2011; Talmadge, 2015). Roessler (2016) characterizes a similar tradeoff whereby fear of a coup may cause a ruler

to exclude rival ethnic groups from power. This hinders the state's counterinsurgency capacity by disrupting the government's intelligence network in the excluded group's regional base.

Several contributions from the formal theoretic literature examine how dictators choose between competent and incompetent agents. Zakharov (2016) characterizes a dynamic loyalty-efficiency tradeoff between high-quality advisers that generate a high fixed payoff for the dictator, and low-quality advisers that endogenously demonstrate higher loyalty to the incumbent dictator because they have a lower outside option to betraying the incumbent than high-quality advisers. This resembles the present idea that professional militaries have a higher reservation value to negotiating a transition with society. However, in the present model, the dictator's utility from its military depends on whether the military exerts repressive effort, contrary to Zakharov's (2016) assumption that dictators accrue a fixed rent from particular military types. Therefore, whereas rulers always face a loyalty-efficiency tradeoff in his model, here, a personalist military may exhibit greater repressive efficiency than a professional despite a less favorable coercive endowment. This discrepancy is crucial for explaining the conditions under which a dictator faces a loyalty-efficiency tradeoff and, consequently, a guardianship dilemma. My model also departs from Egorov and Sonin's (2011) analysis in which rulers always face a loyalty-efficiency tradeoff because of different informational endowments. In their model, the types of agents do not differ in their coercive ability to defend the regime.

1.2 Guardianship Dilemma

The present contribution departs from existing debates about the guardianship dilemma by tying this dilemma directly to the loyalty-efficiency tradeoff, generating new insights into the theoretical relationship between outsider threat strength and coup propensity. In Acemoglu, Vindigni and Ticchi's (2010) formal model of persistent civil wars, a strong outsider threat that can cause long-lasting civil war may encourage the government to build a larger and stronger military to end the civil war, but at the risk of a coup attempt. Svoboda (2013) studies a moral hazard model with a similar tradeoff, and also shows that larger outsider threats can induce the dictator to build a bigger military despite heightening coup risk. Acemoglu, Ticchi and Vindigni (2010) and Besley and Robinson (2010) present related formal analyses of this tradeoff, and Huntington (1957) and Feaver (1999) provide non-formal discussions.

The present model is not the first to generate a non-monotonic relationship between outsider threat strength and equilibrium coup probability, but the logic differs by evaluating the standard guardianship logic in

combination with allowing the external threat to endogenously affect the value of holding office. Acemoglu, Vindigni and Ticchi (2010) show that large threats induce rulers to choose large militaries, and assume that governments can commit to continually pay large militaries but not small or intermediate-sized militaries. Svulik (2013) shows that the contracting problem between a government and its military dissipates as the military becomes large—which also arise in equilibrium in reaction to large threats—because the military can control policy without actually intervening (what he calls a “military tutelage” regime). Both these models assume that more severe outsider threats increase the military’s bargaining leverage relative to the government, and that the size of the external threat does not affect the military’s consumption. By contrast, here, greater external threats in expectation *lower* the value of a coup attempt, as in McMahon and Slantchev (2015). However, despite this feature, the overall relationship is non-monotonic in the present model because large threats may induce the dictator to switch to the professional military—recovering the guardianship dilemma mechanism that they critique.

1.3 Endogenous Repression Compliance

Other research examines the agency problem involved with inducing security agents to repress on behalf of the regime. Qualitative research on specific instances of military decisions regarding whether to repress social protesters provides informative discussions (e.g., McLaughlin, 2010; Bellin, 2012), but does not carefully evaluate militaries’ strategic choices. Modeling repressive effort as a *strategic* choice by the military improves upon the implicit assumption in much research that militaries with greater coercive ability *conditional* on choosing to fight are necessarily more efficient in *equilibrium*. Recent formal theory research also addresses this oversight by examining militaries’ choices over exercising repression (Slantchev and Matush, 2017; Tyson, 2018) and whether security agents use resources they receive from the regime to help the dictator survive (Dragu and Przeworski, [Forthcoming](#)).

The present contribution departs from existing formal theoretic analyses of endogenous repression compliance by studying this consideration alongside how dictators choose among different types of militaries, and how militaries’ coup choice additionally affects their repression likelihood. This enables generating new insights for the two central tradeoffs examined in existing research regarding how dictators construct their militaries: the loyalty-efficiency tradeoff and the guardianship dilemma.

2 Formal Model

After presenting the formal setup, this section substantively grounds assumptions about the differences between personalist and professional militaries, and the composition of the outsider threat.

2.1 Setup

Appendix Table A.1 summarizes all the formal notation.

2.1.1 Players and Moves

Two strategic players make sequential choices. First, a dictator facing an exogenous outsider threat decides whether to create a personalist or a professional military. Second, the military decides whether to repress the outsider threat to preserve the status quo authoritarian regime, to stage a coup and repress the outsider to install a military dictatorship, or to negotiate a regime transition that hands power to the outsider. In between these moves, Nature determines the military's cost of repression and whether or not it has a coup opportunity. The coercive endowments for the outsider threat, military, and dictator are respectively denoted as $\theta_T \in (0, \bar{\theta}_T)$, for $\bar{\theta}_T > 0$; $\theta_M \in \{\underline{\theta}_M, \bar{\theta}_M\}$; and $\theta_D \in (0, \bar{\theta}_D)$, for $\bar{\theta}_D > 0$. The key difference between military types is that a personalist military has a lower coercive endowment, $\underline{\theta}_M$, than a professional military, $\bar{\theta}_M > \underline{\theta}_M$. Section 2.2 provides additional substantive motivation for distinguishing personalist and professional militaries.

2.1.2 Dictator's Payoff

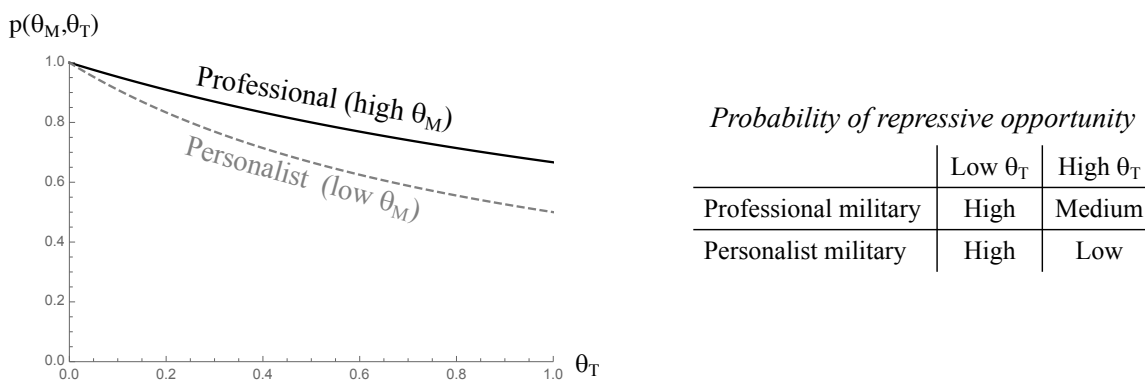
The dictator's only goal is political survival: it consumes 1 if it survives in power, and 0 otherwise—i.e., if either insider overthrow (coup) or outsider takeover occurs. To avoid parameters not needed to generate the core tradeoffs, the dictator does not pay costs of repression or military-building.

2.1.3 Military's Payoff to Repressing

The military's utility to exercising repression to uphold the incumbent dictator equals $\omega_D - \mu$. This term depends on the military's consumption under the status quo regime, which equals $\omega_D \in (0, 1)$ for either type

of military, and the cost of exercising repression, μ . Roughly, this cost can be either low, medium, or high. More specifically, there is a $p(\theta_M, \theta_T)$ percent chance that repression costs are not prohibitively high, and therefore the military *may* optimally choose to repress. In this case, the military has a **repressive opportunity** and repression costs equal $\mu \in [0, \bar{\mu}]$. Values closer to 0 intuitively correspond with low repression costs, and values closer to $\bar{\mu} \in (0, 1)$ correspond with medium repression costs. With complementary probability $1 - p(\theta_M, \theta_T)$, the repression cost is $\mu = 1$ —high enough that, in essence, the military cannot repress. Lacking a repressive opportunity corresponds to circumstances in which successfully killing enough people to end a rebellion would be prohibitively costly (as occurred in Indonesia in 1999 prior to democratizing) or in which the military disintegrates in the face of the outsider (as with Iraq during the U.S. invasion of 2003).³

Figure 1: Assumptions about Repressive Opportunity



Notes: Figure 1 uses the parameter values $\underline{\theta}_M = 1$ and $\bar{\theta}_M = 2$, and assumes $p(\theta_M, \theta_T) = \frac{\theta_M}{\theta_M + \theta_T}$.

Figure 1 depicts key assumptions about the probability of a repressive opportunity, and also summarizes the main takeaways in tabular form. Either type of military pays minimal costs to defeat a weak threat, consistent with a high probability of a repressive opportunity. Although the probability of a repressive

³Formally, there is common knowledge about the repression costs, but only the military observes the realized value of μ when making its choice. In between the government's move and the military's move, Nature first determines whether or not the military has a repressive opportunity, where $\mathbf{1}_T = 1$ indicates such an opportunity and $\mathbf{1}_T = 0$ indicates not. If $\mathbf{1}_T = 0$, then $\mu = 1$. If $\mathbf{1}_T = 1$, then Nature draws μ from a smooth density function $F(\cdot)$ with full support over $[0, \bar{\mu}]$. The associated probability density function is $f(\cdot)$. Several proofs require the additional assumption $f'(\cdot) \leq 0$ which, for example, the uniform distribution satisfies.

opportunity decreases in the strength of the outsider threat for both military types, this decline is sharper for a personalist military because the costs of defeating a strong threat should be considerable lower for a more capable military.⁴ Regardless of repression costs, for simplicity, either type of military succeeds at repression with probability 1 conditional on choosing to repress. This assumption avoids introducing an extraneous probability of winning parameter, as the higher expected repression costs for a personalist military capture the core distinction that the military types differ in their endowed repressive ability.⁵

2.1.4 Military's Payoff to Staging a Coup

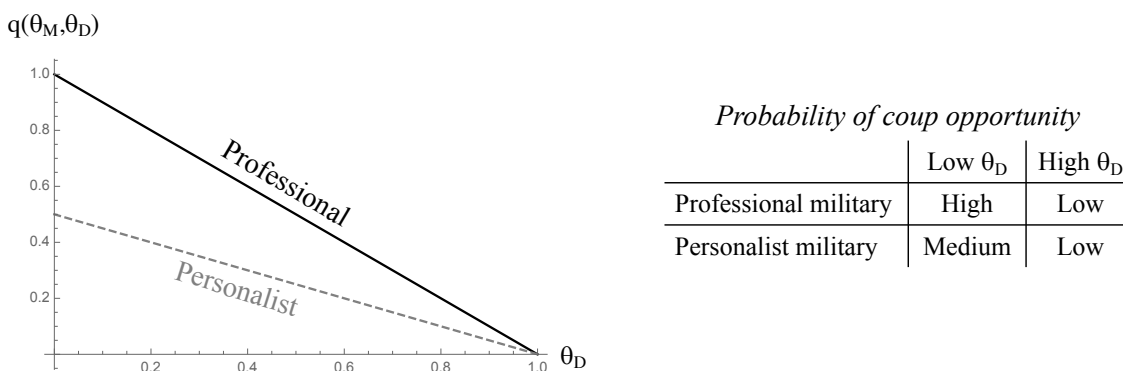
The military's utility to attempting a coup to install a military dictatorship requires defeating the dictator *and* defeating the outsider threat, in which case the military consumes 1—which exceeds its consumption under the status quo regime. Implicitly, $\omega_D < 1$ implies that the dictator faces some limitations under the status quo regime to committing to make the military as well off as under military rule. Under military dictatorship, generals can invest in preferred military technology and also use the military as it feels appropriate. As with exercising repression, the military dictatorship cannot survive unless the military has a repressive opportunity because maintaining power requires defeating the outsider threat. Therefore, the utility of a coup attempt depends in part on the same Nature move that governs the repression cost, μ . This assumption follows from a key innovation in McMahon and Slantchev's (2015) setup: the outsider threat does not magically disappear after the military takes over. This affects the value of holding office, which many prior analyses of the guardianship dilemma did not incorporate.

⁴Formally, $p(\cdot)$ satisfies $p(\theta_M, 0) = 1$ for all $\theta_M > 0$, $p(\theta_M, \theta_T) \in (0, 1)$ for all $\theta_T > 0$, $\frac{\partial p}{\partial \theta_M} > 0$, $\frac{\partial p}{\partial \theta_T} < 0$, and $\frac{\partial^2 p}{\partial \theta_T \partial \theta_M} > 0$. The ratio-form contest function $p(\theta_M, \theta_T) = \frac{\theta_M}{\theta_M + \theta_T}$ satisfies this complementarity assumption for any $\theta_M > \theta_T$, which rests on the reasonable presumption that the government's military has a greater coercive endowment than the outsider threat. The linear contest function $p(\theta_M, \theta_T) = 1 - \theta_T \cdot (1 - \theta_M)$ satisfies the cross-partial assumption for all $\theta_M \in (0, 1)$ and $\theta_T \in (0, 1)$.

⁵ Assuming no residual uncertainty about whether or not repression will succeed when the military moves also eliminates an extra probability term, $p(\theta_M, \theta_T)$, in the military's utility to exercising repression. Alternatively, including this term creates additional indirect effects that complicate characterizing the sign of key effects. Instead, the present setup ensures that $p(\theta_M, \theta_T)$ affects the dictator's optimal military choice through a single, direct effect (see Lemma 1 and Equation 1).

But the military also needs a *coup opportunity* to displace the dictator, yielding an overall utility to a coup attempt of $\mathbf{1}_D - \mu$, where $\mathbf{1}_D = 1$ indicates a coup opportunity and $\mathbf{1}_D = 0$ indicates not. Coup opportunities arise with probability $q(\theta_M, \theta_D)$, in which case a coup attempt topples the dictator with probability 1. With complementary probability, the military lacks a coup opportunity and wins a coup attempt with probability 0.⁶ The inherent secrecy and stealth involved with executing a coup imply that such opportunity may not always be available, even for an aggrieved military.

Figure 2: Assumptions about Coup Opportunity



Notes: Figure 2 uses the parameter values $\underline{\theta}_M = 1$ and $\bar{\theta}_M = 2$, and assumes $q(\theta_M, \theta_D) = (\theta_M / \bar{\theta}_M) \cdot (1 - \theta_D)$.

Figure 2 depicts key assumptions about the probability of a coup opportunity. Either type of military faces severe impediments to launching a coup if θ_D is high, which reflects an effectively coup-proofed military. Although the probability of a coup opportunity increases as the dictator's coup-proofing ability decreases for both military types, this increase is sharper for a professional military—which generally have more frequent opportunities to stage a coup. This reflects a standard assumption in the guardianship dilemma literature (Acemoglu, Vindigni and Ticchi, 2010; Besley and Robinson, 2010; Svobik, 2013; McMahon and Slantchev, 2015), and is sensible when considering that the lower θ_M inherent in personalist militaries often results from structuring such militaries to prevent communication among different branches and to counterbalancing the conventional military with a presidential guard (Quinlivan, 1999). Therefore, whereas the absence of effective coup-proofing measures should completely incapacitate the dictator's ability to prevent a coup by a professional military, it should still have some ability to prevent a coup by a personalist military.⁷

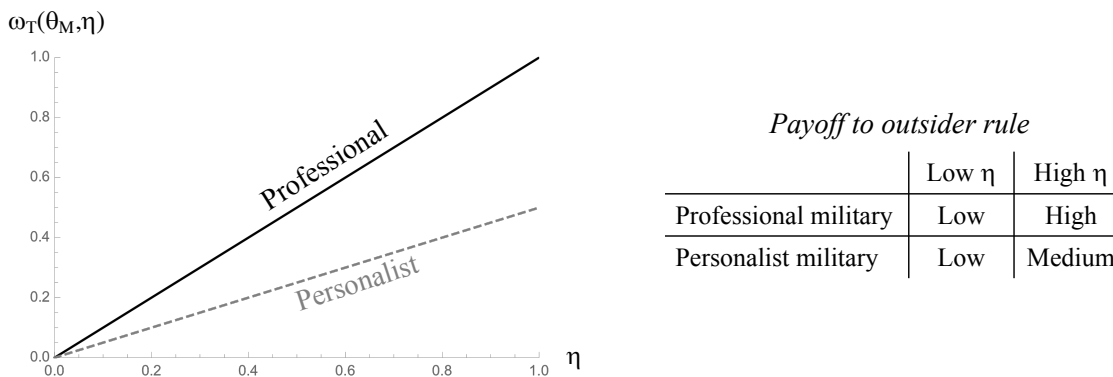
⁶See footnote 5.

⁷Formally, $q(\cdot)$ satisfies $q(\theta_M, \theta_D) \in (0, 1)$, $\frac{\partial q}{\partial \theta_M} > 0$, $\frac{\partial q}{\partial \theta_D} < 0$, and $\frac{\partial^2 q}{\partial \theta_D \partial \theta_M} < 0$. This cross-partial

2.1.5 Military’s Payoff to Negotiated Transition

The military’s utility to negotiating a transition to outsider rule equals $\omega_T(\theta_M, \eta) \in (0, \omega_D)$. Assuming $\omega_T < \omega_D$ focuses the analysis on the non-trivial case in which any military receives certain perks under the incumbent regime that it would lose following a transition. The parameter $\eta \in (\underline{\eta}, \bar{\eta})$, for $\underline{\eta} < \bar{\eta}$, expresses the orientation of the outsider threat. Higher η corresponds to a more domestic-oriented threat.

Figure 3: Assumptions about Military’s Payoff Under Outsider Rule



Notes: Figure 3 uses the parameter values $\underline{\theta}_M = 1$, $\bar{\theta}_M = 2$, and $\omega_{sq} = 0.5$, and assumes $\omega_T(\theta_M, \eta) = (\theta_M / \bar{\theta}_M) \cdot \eta \cdot \omega_D$.

Figure 3 depicts key assumptions about the military’s payoff following a negotiated transition. Both military types expect dire fates under a highly foreign-oriented threat (low η) because both expect executions, disbandment, and other punishments. Although the payoff under outsider rule increases in η for both military types, this increase is sharper for a professional military—which generally fares better under outsider rule than a personalist military because it is recruited from broader strata of society. Facing domestic protesters, the discrepancy in outside options for a professional and personalist military are stark. A professional military expects minimal restructuring because its organization continues to serve a clear purpose in the new regime, whereas a personalist military composed largely of soldiers tied to the previous regime expects greater purging and restructuring. Section 2.3 provides additional substantive motivation and examples of is also assumed to be large in magnitude, which Appendix Assumption A.1 formalizes. Finally, I impose boundary conditions such that if the dictator has the lowest coup-proofing ability, then it cannot prevent a coup attempt by the professional military. Furthermore, at the highest coup-proofing ability for the dictator, neither a personalist nor professional military can stage a coup. Formally, $q(\underline{\theta}_M, 0) < q(\bar{\theta}_M, 0) = 1$ and $q(\bar{\theta}_M, \bar{\theta}_D) = q(\bar{\theta}_M, \bar{\theta}_D) = 0$.

domestic and foreign threats, and why professional militaries fare better than personalist militaries under domestic outsider rule.⁸

2.2 Distinguishing Personalist from Professional Militaries

Rulers throughout history have organized their militaries in various manners (Huntington, 1957; Finer, 1975, 1997, 2002). The present distinction between personalist and professional militaries captures in a parsimonious manner some important differences among empirical military types, while also abstracting away from many nuances that could be intriguing to analyze in future work. The dichotomy captures the breadth of individuals and groups from which the ruler recruits for the military. For simplicity, we can imagine that multiple identity groups populate society, and the dictator can decide whether to recruit either (1) only from its group (personalist military) or (2) broadly across groups (professional military). Consequently, generals in personalist militaries likely fear worse fates if a member of a different identity group seizes power,⁹ and personalist militaries tend to be less effective at fighting. The government needs people to fight, and recruiting solely from one group can create manpower deficits (Quinlivan, 1999). Furthermore, ethnically biased recruiting can undermine intelligence networks in areas populated by excluded ethnic groups, which hinders counterinsurgency (Roessler, 2016).

This motivation for the difference between personalist and professional militaries relates loosely to core ideas from Bueno de Mesquita et al.'s (2003) selectorate theory. They assume that regimes are composed

⁸Formally, $\omega_T(\cdot)$ satisfies $\frac{\partial \omega_T}{\partial \theta_M} > 0$, $\frac{\partial \omega_T}{\partial \eta} > 0$, $\frac{\partial^2 \omega_T}{\partial \theta_M \partial \eta} > 0$. I also assume the cross-partial—i.e., the magnitude of complementarities—is large in magnitude, which Appendix Assumption A.1 formalizes. Finally, I impose boundary conditions. At $\underline{\eta}$ —the most foreign threat—both types of militaries consume 0. By contrast, at $\bar{\eta}$ —the most domestic threat—the professional military consumes the same as under the status quo authoritarian regime. Formally, $\omega_T(\theta_M, \underline{\eta}) = 0$ for $\theta_M \in \{\underline{\theta}_M, \bar{\theta}_M\}$, and $\omega_T(\bar{\theta}_M, \bar{\eta}) = \omega_D$.

⁹It is also possible that co-ethnics have an inherent affinity for members of their ethnic group, perhaps because of shared preferences over the optimal type and amount of public goods. However, assuming that ω_D is higher for a personalist than a professional military would not qualitatively alter the present theoretical results. This assumption would increase a personalist military's probability of exercising repression to save the regime conditional on having a repressive opportunity, but the model already generates that result by assuming the personalist military has a lower reservation value under outsider rule.

of winning coalition members, and that incumbent rulers face a challenger that can offer anyone in the “selectorate” (the group of people that can participate in politics) a place in the winning coalition if the challenger takes power. The smaller the ratio of winning coalition size to selectorate size is, the more cheaply the incumbent ruler can buy off members of the current winning coalition. A large selectorate lowers the probability of any current winning coalition member gaining inclusion in the challenger’s winning coalition. Therefore, holding fixed the size of the selectorate, the choice in the present model over military type relates to choosing the size of the winning coalition, which can be either small (personalist military) or large (professional military)—while additionally assuming that winning coalition size carries implications for the ability to defeat outsider threats.¹⁰

2.3 Outsider Threat Orientation

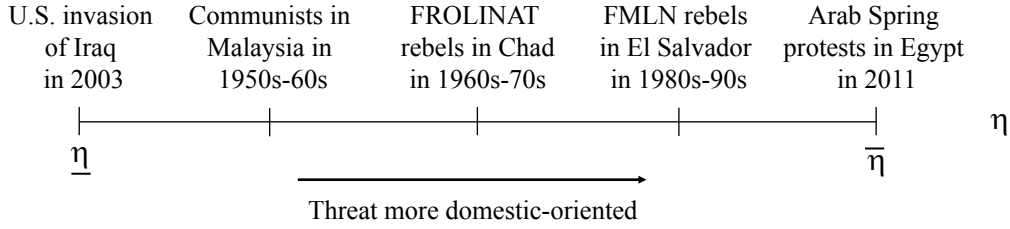
Existing formal analyses of the guardianship dilemma do not analyze how the orientation of the outsider threat affects the military’s payoff, conditional on the outsider threat taking over. Most existing models assume that the military’s coup calculus is independent of the outsider threat. McMahon and Slantchev (2015) advance beyond this simplifying premise, but instead assume that the military consumes 0 if the outsider rules. However, in the broader political regimes literature, many consider how authoritarian actors’ payoffs differ under alternative future regimes. This includes Geddes’s (1999) argument for why military regimes often acquiesce to democratization, Albertus and Menaldo’s (2018) argument that dictators more willingly democratize after enacting a constitution that affords protection for elite under broader participation, and Debs’s (2016) argument that military dictators are more willing than other types of dictators to democratize: they are less likely to face punishment for their comparative advantage in coercion under a democratic than an authoritarian regime.

The present analysis focuses on how the military’s payoff differs depending on its reservation value to regime change ω_T , which the orientation of the outsider threat η is assumed to affect. The analysis conceptualizes η in terms of whether the threat is domestic-oriented (high η) or foreign-oriented (low η), and Figure 4 provides different empirical examples along a continuum.

Domestic threats include pro-democracy protests in the capital (e.g., Egypt in 2011) and moderate nation-

¹⁰Zakharov (2016) provides an alternative setup with endogenous reservation values to study the loyalty-efficiency tradeoff.

Figure 4: Orientation of the Outsider Threat



alist rebel groups (e.g., FMLN in El Salvador). In both cases, the military might expect alteration following regime change, but likely not disbandment or thorough purges and punishment. However, personalist generals would expect more reshuffling than professional generals, which corresponds to assuming $\omega_T(\underline{\theta}_M, \eta) < \omega_T(\bar{\theta}_M, \eta)$. By contrast, foreign-oriented threats refer to an invading foreign army (e.g., U.S. invasion of Iraq in 2003) or a rebel movement inspired by foreign ideas highly antithetical to the incumbent regime. In these cases, any type of military expects a harsh fate if the outsiders succeed. Although the label is “foreign,” it does not matter if the actors involved in the movement are primarily foreign-born or not. Foreign-inspired ideologies such as communist movements in Southeast Asia following World War II and anti-monarchical pan-Arabist movements in the Middle East in the 1950s provide examples of domestic actors that posed an existential threat to the incumbent regime and its military. Intermediate cases on the foreign-domestic spectrum include FROLINAT in Chad: the different ethnicity of the rebel group created different preferences (and therefore was in some respect “foreign” in terms of ethno-nationalism), but was not guided by a foreign ideology.

3 Analysis of Military’s Decision

3.1 Repression, Coup, or Transition?

Table 2 summarizes the military’s optimal choices. If the military lacks a repressive opportunity, then negotiating a transition to hand power to society is optimal because it is too costly to exercise repression to save the incumbent regime or to preserve a military dictatorship. In this case, I refer to repression costs as “high.”

If the military has both a coup opportunity and a repressive opportunity, then the military strictly prefers

Table 2: Military's Optimal Choice

	Coup opportunity Pr= $q(\theta_M, \theta_D)$	Not Pr= $1 - q(\theta_M, \theta_D)$
Repressive opportunity Pr= $p(\theta_M, \theta_T)$	Coup	Repress if μ is low Transition if μ is medium
Not Pr= $1 - p(\theta_M, \theta_T)$	Transition	Transition

a coup to install a military dictatorship over exercising repression to save the incumbent because $\omega_D < 1$. Furthermore, assuming the maximum repression cost conditional on having a repressive opportunity is sufficiently low, the military also always prefers coups to transitions in this case.¹¹

Finally, if the military has a repressive opportunity but not a coup opportunity, then its optimal choice depends on whether the repression cost is “low” or “medium.” If the cost satisfies $\mu < \hat{\mu}(\theta_M) \equiv \omega_D - \omega_T(\theta_M, \eta)$, then the military will exercise repression on behalf of the dictator, and I refer to costs as low. However, if the cost is higher—medium repression costs—then the military optimally negotiates a transition. Importantly, the low/medium cost threshold $\hat{\mu}(\theta_M)$ depends on θ_M because the threshold depends on the military's payoff under outsider rule.¹²

The assumed distributions for the Nature variables enables writing the probability of each outcome conditional on the dictator's military choice.

Lemma 1 (Outcome probabilities conditional on military type). *Given the military choice θ_M , the equilibrium probability of each outcome is:*

$$\begin{aligned}
 Pr(\text{repress}) &= \underbrace{\left[1 - q(\theta_M, \theta_D)\right]}_{\text{No coup opportunity}} \cdot \underbrace{p(\theta_M, \theta_T)}_{\text{Repressive opportunity}} \cdot \underbrace{F(\hat{\mu}(\theta_M))}_{\text{Low repression costs}} \\
 Pr(\text{coup}) &= \underbrace{q(\theta_M, \theta_D) \cdot p(\theta_M, \theta_T)}_{\text{Repressive and coup opportunity}} \\
 Pr(\text{transition}) &= \underbrace{1 - p(\theta_M, \theta_T)}_{\text{No repressive opportunity}} + \underbrace{\left[1 - q(\theta_M, \theta_D)\right] \cdot p(\theta_M, \theta_T) \cdot \left[1 - F(\hat{\mu}(\theta_M))\right]}_{\text{Medium repression costs}}
 \end{aligned}$$

Lemma 1 yields two immediate implications. First, a professional military attempts a coup with higher probability than a personalist military. Second, conditional on having a repressive but not a coup opportunity,

¹¹Throughout, the analysis assumes the upper bound $\bar{\mu} = 1 - \omega_D$.

¹²This also implies that there are two distinct paths that cause the military to negotiate a transition.

the personalist military exercises repression with higher probability.

Lemma 2 (Professional military and probability of a coup).

$$\underbrace{p(\bar{\theta}_M, \theta_T) \cdot q(\bar{\theta}_M, \eta)}_{\text{Professional}} > \underbrace{p(\underline{\theta}_M, \theta_T) \cdot q(\underline{\theta}_M, \eta)}_{\text{Personalist}}$$

Lemma 3 (Personalist military and conditional probability of exercising repression).

$$\underbrace{F(\hat{\mu}(\bar{\theta}_M))}_{\text{Professional}} < \underbrace{F(\hat{\mu}(\underline{\theta}_M))}_{\text{Personalist}}$$

3.2 Equilibrium Loyalty and Efficiency of Professional and Personalist Militaries

These results enable characterizing the relative advantages of each military type for the dictator, which Table 3 summarizes. Recovering conventional wisdom about the loyalty-efficiency tradeoff, personalist militaries exhibit higher coup *loyalty* (Lemma 2). The two individually necessary and jointly sufficient conditions for the military to stage a coup are to have a coup opportunity and a repressive opportunity, both of which advantage professional militaries. With regard to repressive *efficiency*, professional and personalist militaries exhibit mixed considerations. On the one hand, a professional military's higher probability of a repressive opportunity—i.e., the probability that repression costs are low-to-medium—creates a repressive efficiency advantage.¹³ However, the professional military's higher reservation value to outsider rule creates a countervailing implication for repressive efficiency. Conditional on having a repressive opportunity, a professional military is less likely to exercise repression to uphold the incumbent dictator (Lemma 3). Phrased in terms of repression costs, conditional on Nature drawing low-to-medium repression costs, professional militaries exhibit a lower likelihood that repression costs are low, rather than medium. This countervailing efficiency mechanism—largely overlooked in existing studies positing a loyalty-efficiency tradeoff—creates the possibility that a personalist military can exhibit higher repressive efficiency despite its weaker coercive endowment.

¹³This effect arises from assuming $p(\theta_M, \theta_T)$ strictly increases in θ_M .

Table 3: Relative Advantages of Each Military Type for Dictator

<i>Mechanism</i>	<i>Probability term</i>	<i>Professional</i>	<i>Personalist</i>
Loyalty	Pr(coup)		✓
Efficiency #1	Pr(repression costs low-to-medium)	✓	
Efficiency #2	Pr(rep. costs low low-to-medium)		✓

3.3 Domestic Threats and Repressive Advantages of Personalist Militaries

Does the dictator trade off between coup loyalty and repressive efficiency? Repressive efficiency equals the probability of no outsider overthrow conditional on no coup. Phrased in terms of repression costs, repressive efficiency equals the probability of “low” repression costs:

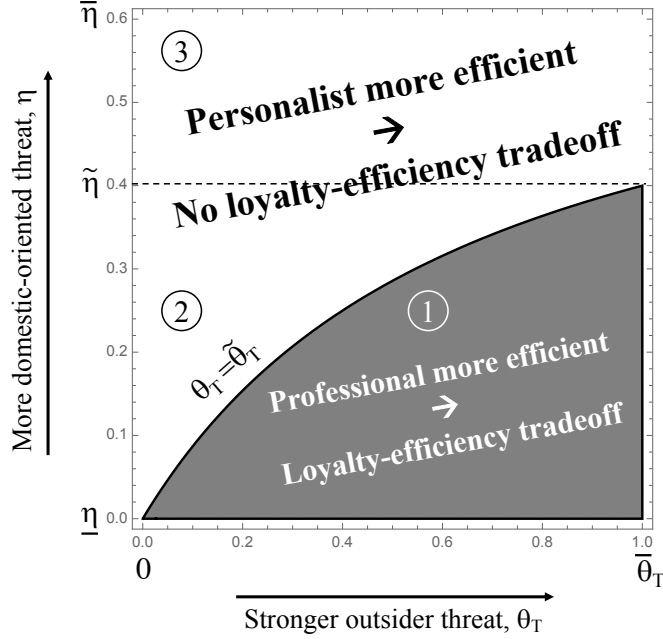
$$E^*(\theta_M, \theta_T, \eta) \equiv \underbrace{\Pr(\text{low rep. costs})}_{p(\theta_M, \theta_T)} \cdot \underbrace{F(\hat{\mu}(\theta_M))}_{\Pr(\text{rep. costs low} \mid \text{low-to-medium})} \quad (1)$$

Figure 5 presents a region plot as a function of outsider threat strength, θ_T (horizontal axis); and the orientation of the outsider threat, η (vertical axis). The professional military is more efficient than the personalist military, $E^*(\theta_M) < E^*(\bar{\theta}_M)$, in the gray region ①, whereas the opposite holds in the white regions ② and ③.

Region ① recovers the conventional wisdom that professional militaries exhibit greater repressive efficiency than personalist militaries, which follows from two factors. First, the *large*-magnitude threat implies that the professional military is considerably more likely to have a repressive opportunity. Its higher coercive endowment θ_M more effectively counteracts the negative effect of θ_T on the probability $p(\theta_M, \theta_T)$ that repression costs are low-to-medium (see Figure 1). This implies that the magnitude of the first efficiency mechanism in Table 3 is large. Second, regarding the endogenous choice to exercise repression, the *foreign* orientation of the threat implies that a professional military fares only slightly better under outsider rule than a personalist military—since both suffer low $\omega_T(\theta_M, \eta)$ under foreign rule (see Figure 3)—which implies that the magnitude of the second efficiency effect in Table 3 is small.

However, region ② shows that even if the threat is foreign-oriented, at low values of θ_T , the *personalist* military is more repressively efficient. Facing a weak threat, the gap between $p(\bar{\theta}_M, \theta_T)$ and $p(\underline{\theta}_M, \theta_T)$ is small because either type of military is likely to have a repressive opportunity against a weak threat. Region ③ shows there also is no loyalty-efficiency tradeoff if the threat is domestic-oriented—regardless

Figure 5: Repressive Efficiency



Notes: Figure 5 uses the same parameter values and functional form assumptions as Figures 1 through 3, and $\omega_D = 0.8$ and $\mu|_{1_T=1} \sim U(0, 1 - \omega_D)$.

of its severity. When facing a domestic threat, the professional military fares considerably better under outsider rule than the personalist military—i.e., $\omega_T(\bar{\theta}_M, \eta)$ is considerably larger than $\omega_T(\underline{\theta}_M, \eta)$ —which creates a large gap in the two militaries’ probability of exercising repression conditional on a repressive opportunity.

In both these cases, the second efficiency mechanism highlighted in Table 3 that favors a personalist military dominates the first efficiency mechanism that favors a professional military, causing the personalist military to exhibit greater repressive efficiency. Coupled with the personalist military’s higher coup loyalty (also see Table 3), this implies that the personalist military is both more loyal and more efficient—and therefore the dictator does not face a loyalty-efficiency tradeoff—unless the threat is strong and foreign.

Lemma 4 (Repressive efficiency). *There exist unique thresholds $\tilde{\eta} \in (\underline{\eta}, \bar{\eta})$ and $\tilde{\theta}_T \in (0, \bar{\theta}_T)$ with the following properties:*

Part a. Foreign threat. *If $\eta < \tilde{\eta}$,¹⁴ then:*

- *If $\theta_T < \tilde{\theta}_T$, then the personalist military exhibits higher repressive efficiency: $E^*(\underline{\theta}_M, \theta_T, \eta) > E^*(\bar{\theta}_M, \theta_T, \eta)$. This is region (2) of Figure 5.*
- *If $\theta_T > \tilde{\theta}_T$, then the professional military exhibits higher repressive efficiency: $E^*(\underline{\theta}_M, \theta_T, \eta) < E^*(\bar{\theta}_M, \theta_T, \eta)$. This is region (1) of Figure 5.*

Part b. Domestic threat. *If $\eta > \tilde{\eta}$, then the personalist military exhibits higher repressive efficiency for all $\theta_T \in (0, \bar{\theta}_T)$: $E^*(\underline{\theta}_M, \theta_T, \eta) > E^*(\bar{\theta}_M, \theta_T, \eta)$. This is region (3) of Figure 5.*

4 Analysis of Dictator's Decision

4.1 Optimal Military Choice

When choosing its military, the dictator takes into account both coup propensity and repressive efficiency. It maximizes its probability of survival, which equals the probability that the military exercises repression to uphold the regime:

$$S^*(\theta_M) \equiv \underbrace{\left[1 - q(\theta_M, \theta_D)\right]}_{\text{No coup opportunity}} \cdot \underbrace{p(\theta_M, \theta_T) \cdot F(\hat{\mu}(\theta_M))}_{\text{Repressive efficiency}} \quad (2)$$

There are two cases to consider. First, if the professional military's coup likelihood is sufficiently high, then the dictator will choose the personalist military regardless of repressive efficiency considerations. This occurs when the dictator is ineffective at coup-proofing, which implies that it cannot harness the (possible) repressive advantages of a professional military.

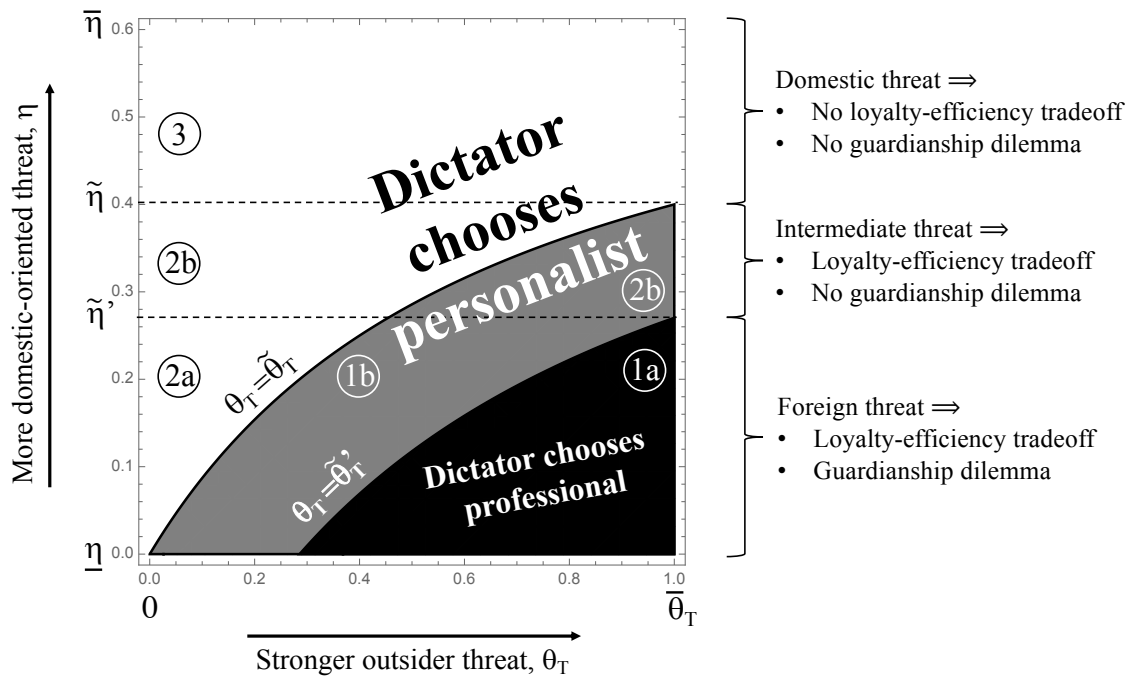
Proposition 1 (Optimal military choice under ineffective coup-proofing). *There exists a unique threshold $\tilde{\theta}_D \in (0, \bar{\theta}_D)$ such that if $\theta_D < \tilde{\theta}_D$, then D chooses the personalist military: $S^*(\underline{\theta}_M, \theta_T, \eta, \theta_D) > S^*(\bar{\theta}_M, \theta_T, \eta, \theta_D)$.*

The second and more strategically interesting case concerns dictators that more effectively coup-proof. Then, the military choice depends on the above considerations about repressive efficiency. Because the

¹⁴This threshold encompasses both the foreign and intermediate threat range depicted in Figure 6.

professional military is more likely to attempt a coup, the dictator clearly will choose the personalist military under all parameter values in Lemma 4 in which the personalist military exhibits higher repressive efficiency—if the outsider threat is domestic-based and/or weak in magnitude. These are regions (2) and (3) in Figures 5 and 6. However, even for parameter values in which the professional military is more repressively efficient, the loyalty-efficiency tradeoff implies that the dictator does not necessarily choose the professional military. Although the dictator follows a similar threshold strategy as characterized in Lemma 4, it optimally chooses the professional military for a smaller range of parameter values than those for which the professional military exhibits higher repressive efficiency. Figure 6 shows this by distinguishing region (1a) in black, in which the dictator chooses a professional military, from the gray region (1b). Collectively, these two areas compose region (1) in Figure 5.

Figure 6: Optimal Military Choice and Consequences



Notes: Figure 6 uses the parameter values and functional form assumptions as the previous figures.

Proposition 2 (Optimal military choice under effective coup-proofing). *Assume $\theta_D > \tilde{\theta}_D$, for $\tilde{\theta}_D$ defined in Proposition 1. Given the thresholds defined in Lemma 4, there exist unique thresholds $\tilde{\eta}' \in (\underline{\eta}, \tilde{\eta})$ and $\tilde{\theta}'_T \in (\tilde{\theta}_T, \bar{\theta}_T)$ with the following properties:*

Part a. Foreign threat. *If $\eta < \tilde{\eta}'$, then:*

- *If $\theta_T < \tilde{\theta}'_T$, then D chooses a personalist military: $S^*(\underline{\theta}_M, \theta_T, \eta, \theta_D) > S^*(\bar{\theta}_M, \theta_T, \eta, \theta_D)$, for $S^*(\cdot)$ defined in Equation 2.*
- *If $\theta_T > \tilde{\theta}'_T$, then D chooses a professional military: $S^*(\underline{\theta}_M, \theta_T, \eta, \theta_D) < S^*(\bar{\theta}_M, \theta_T, \eta, \theta_D)$.*

Part b. Domestic threat. *If $\eta > \tilde{\eta}'$, then G chooses a personalist military: $S^*(\underline{\theta}_M, \theta_T, \eta, \theta_D) > S^*(\bar{\theta}_M, \theta_T, \eta, \theta_D)$.*

Propositions 1 and 2, combined with the actions stated in Table 2, characterize the unique subgame perfect Nash equilibrium.

4.2 Consequences of the Loyalty-Efficiency Tradeoff for the Guardianship Dilemma

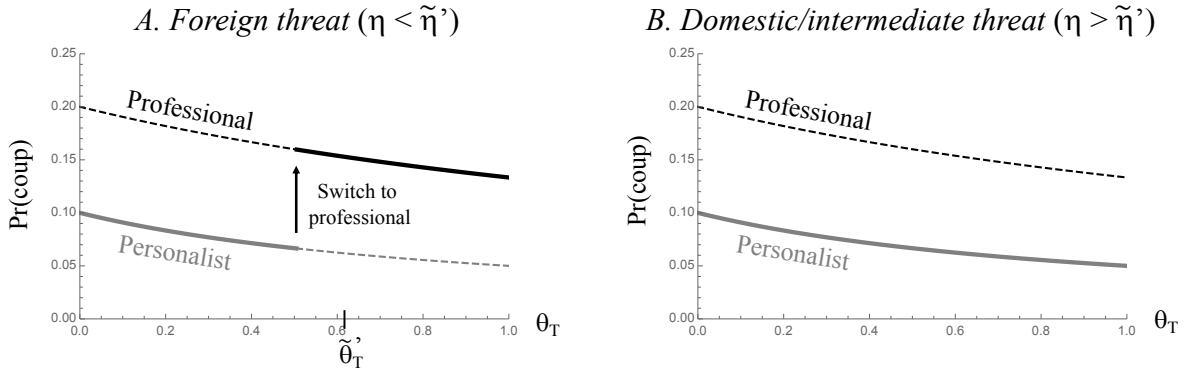
How does the strength of an outsider threat affect the equilibrium probability of a coup attempt? This is the central question for understanding the widely debated “guardianship dilemma” logic. This section demonstrates the close relationship among foreign threats, the loyalty-efficiency tradeoff, and the guardianship dilemma. One important implication is that existing arguments only characterize select parts of the overall guardianship logic.

Figure 7 depicts the relationship between θ_T and equilibrium coup probability, distinguishing between foreign (Panel A) and domestic (Panel B) threats. An increase in θ_T generates both a direct and an indirect effect. The direct effect is that higher θ_T decreases the probability with which the military will retain office conditional on displacing the dictator (i.e., lower probability of repressive opportunity). Contrary to the guardianship logic, this mechanism yields a *negative* relationship between outsider threat strength and equilibrium coup probability. This logic is independent of military type or the orientation of the outsider threat, as shown by the downward slope of all four lines in Figure 7. This resembles the main finding from McMahon and Slantchev (2015): stronger outsider threats diminish equilibrium coup likelihood by decreasing the value of holding office.

However, the indirect effect of increasing θ_T recovers the traditional guardianship dilemma argument, contrary to McMahon and Slantchev’s (2015) critique. If the outsider threat is foreign ($\eta < \tilde{\eta}$), then the dictator

faces a loyalty-efficiency tradeoff if the threat is strong, as region (1) in Figure 5 shows. Part a of Proposition 2 shows that if the threat satisfies $\eta < \tilde{\eta}'$, then the dictator switches from a personalist to a professional military at $\theta_T = \tilde{\theta}'_T < \bar{\theta}_T$.¹⁵ This yields a discrete increase in the equilibrium coup probability, as Panel A of Figure 7 shows, because professional militaries exhibit higher coup propensity than personalist militaries (see Table 3). Therefore, a foreign-oriented threat generates both a loyalty-efficiency tradeoff and a guardianship dilemma.

Figure 7: Equilibrium Probability of a Coup Attempt



Notes: Solid lines correspond with parameter values in which the dictator optimally chooses the specified type of military, and dashed lines correspond with off-the-equilibrium path outcomes. Therefore, the equilibrium coup probability equals the piecewise function created by the solid lines. Both panels use the same parameter values and functional form assumptions as previous figures. In Panel A, $\eta = 0.3$. In Panel B, $\eta = 0.9$.

By contrast, the relationship between threat strength and equilibrium coup probability differs if the threat is domestic or intermediate ($\eta > \tilde{\eta}'$). Lemma 4 shows that the dictator does not face a loyalty-efficiency tradeoff. Consequently, the dictator never switches to the professional military, and therefore there are no θ_T values at which the equilibrium coup probability exhibits a discrete increase—hence eliminating the guardianship dilemma. Panel B of Figure 7 depicts this result.

Although a loyalty-efficiency tradeoff is necessary for a guardianship dilemma, Region (2b) of Figure 6 shows that it is not sufficient. This is because the higher coup propensity of a professional military creates an intermediate range of η values such that the professional military is more efficient than the personalist military for high enough θ_T , but the dictator prefers the personalist military for all θ_T because the difference in efficiency is not large enough to compensate for the difference in coup likelihood. Because the dictator never switches to the professional military, there are no θ_T values at which the equilibrium coup probability

¹⁵Figure 6 shows this visually by moving rightward from region (2a) or (1b) to region (1a).

exhibits a discrete increase—as in the domestic threat case discussed in the previous paragraph.

Proposition 3 (Threat strength and equilibrium coup probability). *Given the thresholds stated in Propositions 1 and 2:*

Part a. Foreign threat. *If $\theta_D > \tilde{\theta}_D$ and $\eta < \tilde{\eta}'$, then equilibrium coup probability strictly decreases in θ_T for $\theta_T \in (0, \tilde{\theta}'_T) \cup (\tilde{\theta}'_T, \bar{\theta}_T)$, and exhibits a discrete increase at $\theta_T = \tilde{\theta}'_T$.*

Part b. Domestic/intermediate threat. *If $\theta_D < \tilde{\theta}_D$ or $\eta > \tilde{\eta}'$, then equilibrium coup probability strictly decreases in θ_T for all $\theta_T \in (0, \bar{\theta}_T)$.*

Proposition 4 (Threat orientation, loyalty-efficiency tradeoff, and guardianship dilemma). *Given the thresholds stated in Lemma 4 and Propositions 1 and 2, if $\theta_D > \tilde{\theta}_D$, then:*

Part a. Foreign threat. *If $\eta < \tilde{\eta}'$, then the dictator faces both a loyalty-efficiency tradeoff and a guardianship dilemma.*

Part b. Domestic threat. *If $\eta > \tilde{\eta}$, then the dictator faces neither a loyalty-efficiency tradeoff nor a guardianship dilemma.*

Part c. Intermediate range. *If $\eta \in (\tilde{\eta}', \tilde{\eta})$, then the dictator faces a loyalty-efficiency tradeoff but not a guardianship dilemma.*

5 Discussion and Empirical Implications

This paper presents a model in which a dictator facing an outsider threat chooses between a personalist and a professional military, and the military can choose to exercise repression to preserve the status quo regime, stage a coup, or negotiate a regime transition with society. The main results challenge two important premises in the literature. First, the dictator only faces a loyalty-efficiency tradeoff if the outsider threat is foreign because personalist militaries are considerably more likely than professional militaries to repress a domestic threat. This logic helps to explain why, for example, largely professional militaries in Tunisia and Egypt were ultimately unwilling to repress protesters in early 2011 amid Arab Spring protests, whereas personalist militaries in Bahrain, Syria, and (at least in part) Libya reacted with harsh crackdowns (Bellin, 2012). The Pahlavi dynasty in Iran also recruited its military from broad segments of society (McLaughlin, 2010, 344), which ultimately mutinied when facing domestic protesters demanding religious reform in the late 1970s despite considerable repressive strength. Many democratic transitions in Latin America, where militaries are not recruited along ethnic lines, occurred when professionally oriented militaries negotiated deals with broad societal groups (e.g., Uruguay) or with moderate rebel groups (e.g., El Salvador).

Second, the existence of a loyalty-efficiency tradeoff is necessary for the dictator to face a guardianship dilemma, although the overall relationship between outsider threat strength and equilibrium coup probability is non-monotonic. This finding offers a different type of implication for empirical research: statistically establishing the relationship between outsider threats and coups poses hard inferential problems. Consider, for example, a regression specification from Powell's (2012) widely cited article on coup determinants. He finds that instability (guerrilla activity, riots, etc.) positively correlates with coup attempts and success (1030)—consistent with the guardianship logic that stronger outsider threats breed coups. However, his regression models include covariates for intervening channels that the present model posits as strategic reactions to outsider threats, including military expenditures, military personnel, and military regime. Although this reasonably guards against one problem—since excluding these control variables would likely induce omitted variable bias—future empirical work could attempt to explicitly model some of the strategic channels posited here to avoid post-treatment and other forms of bias.

References

- Acemoglu, Daron, Andrea Vindigni, and Davide Ticchi. 2010. "Persistence of Civil Wars." *Journal of the European Economic Association* 8(2-3):664–676.
- Acemoglu, Daron, Davide Ticchi, and Andrea Vindigni. 2010. "A Theory of Military Dictatorships." *American Economic Journal: Macroeconomics* 2(1):1–42.
- Albertus, Michael and Victor Menaldo. 2018. *Authoritarianism and the Elite Origins of Democracy*. Cambridge University Press.
- Bellin, Eva. 2012. "Reconsidering the Robustness of Authoritarianism in the Middle East: Lessons from the Arab Spring." *Comparative Politics* 44(2):127–149.
- Besley, Timothy and James A. Robinson. 2010. "Quis Custodiet Ipsos Custodes? Civilian Control Over the Military." *Journal of the European Economic Association* 8(2-3):655–663.
- Bueno de Mesquita, Bruce, Alastair Smith, Randolph M. Siverson, and James D. Morrow. 2003. *The Logic of Political Survival*. MIT Press.

- Debs, Alexandre. 2016. "Living by the Sword and Dying by the Sword? Leadership Transitions in and out of Dictatorships." *International Studies Quarterly* 60(1):73–84.
- Dragu, Tiberiu and Adam Przeworski. Forthcoming. "Preventive Repression: Two Types of Moral Hazard." *American Political Science Review* .
- Egorov, Georgy and Konstantin Sonin. 2011. "Dictators and their Viziers: Endogenizing the Loyalty-Competence Trade-Off." *Journal of the European Economic Association* 9(5):903–930.
- Feaver, Peter D. 1999. "Civil-Military Relations." *Annual Review of Political Science* 2(1):211–241.
- Finer, Samuel E. 1975. "State- and Nation-Building in Europe: The Role of the Military." In *The Formation of National States in Western Europe*, ed. Charles Tilly. Princeton University Press pp. 84–163.
- Finer, Samuel E. 2002. *The Man on Horseback*. Transaction Publishers.
- Finer, Samuel Edward. 1997. *The History of Government from the Earliest Times: Ancient Monarchies and Empires*. Vol. 1 Oxford University Press, USA.
- Geddes, Barbara. 1999. "What Do We Know About Democratization After Twenty Years?" *Annual Review of Political Science* 2(1):115–144.
- Geddes, Barbara, Erica Frantz, and Joseph G. Wright. 2014. "Military Rule." *Annual Review of Political Science* 17:147–162.
- Huntington, Samuel P. 1957. *The Soldier and the State: The Theory and Politics of Civil-Military Relations*. Harvard University Press.
- McLauchlin, Theodore. 2010. "Loyalty Strategies and Military Defection in Rebellion." *Comparative Politics* 42(3):333–350.
- McMahon, R. Blake and Branislav L. Slantchev. 2015. "The Guardianship Dilemma: Regime Security Through and from the Armed Forces." *American Political Science Review* 109(2):297–313.
- Pilster, Ulrich and Tobias Böhmelt. 2011. "Coups-Proofing and Military Effectiveness in Interstate Wars, 1967–99." *Conflict Management and Peace Science* 28(4):331–350.
- Powell, Jonathan. 2012. "Determinants of the Attempting and Outcome of Coups d'état." *Journal of Conflict Resolution* 56(6):1017–1040.

- Powell, Jonathan M. 2014. "Trading Coups for Civil War." *African Security Review* 23(4):329–338.
- Quinlivan, James T. 1999. "Coup-Proofing: Its Practice and Consequences in the Middle East." *International Security* 24(2):131–165.
- Roessler, Philip. 2016. *Ethnic Politics and State Power in Africa: The Logic of the Coup-Civil War Trap*. Cambridge University Press.
- Slantchev, Branislav L. and Kelly S. Matush. 2017. "The Authoritarian Wager: Political Action and the Sudan Collapse of Repression.". Working paper, Department of Political Science, University of California San Diego. Available at <http://slantchev.ucsd.edu/wp/index.html>. Accessed 12/15/17.
- Svolik, Milan W. 2013. "Contracting on Violence: The Moral Hazard in Authoritarian Repression and Military Intervention in Politics." *Journal of Conflict Resolution* 57(5):765–794.
- Talmadge, Caitlin. 2015. *The Dictator's Army*. Cornell University Press.
- Tyson, Scott A. 2018. "The Agency Problem Underlying Repression." *Journal of Politics* 80(4):1297–1310.
- Zakharov, Alexei V. 2016. "The Loyalty-Competence Trade-Off in Dictatorships and Outside Options for Subordinates." *Journal of Politics* 78(2):457–466.

Online Appendix

A Supplementary Information for Formal Model

Table A.1: Summary of Parameters and Choice Variables

Aspect of game	Variables/description
Coercive endowments	<ul style="list-style-type: none"> • Dictator: θ_D, with maximum value $\bar{\theta}_D$ • Outsider threat: θ_T, with maximum value $\bar{\theta}_T$ • Military: $\underline{\theta}_M$ for personalist and $\bar{\theta}_M$ for professional
Repression	<ul style="list-style-type: none"> • ω_D: Military's consumption under incumbent dictator • $p(\theta_M, \theta_T)$: Probability the military has a repressive opportunity • μ: Military's cost of repression with maximum value $\bar{\mu}$ • $F(\cdot)$: Distribution function for repression cost conditional on repressive opportunity, with pdf $f(\cdot)$
Coup	<ul style="list-style-type: none"> • $q(\theta_M, \theta_D)$: Probability the military has a coup opportunity
Negotiated transition	<ul style="list-style-type: none"> • η: Orientation of outsider threat (higher is more domestic) • $\omega_T(\theta_M, \eta)$: Military's consumption under outsider rule

Lemmas 1 through 3 each follow trivially from imposed assumptions. I use the following technical lemma to prove Lemma 4.

Lemma A.1. For E^* defined in Equation 1:

Part a.
$$\frac{d^2 E^*}{d\theta_M d\eta} < 0$$

Part b.
$$\frac{d^2 E^*}{d\theta_M d\theta_T} > 0$$

Proof. The first derivative is:

$$\frac{dE^*}{d\theta_M} = \underbrace{\frac{\partial p}{\partial \theta_M} \cdot F(\omega_D - \omega_T(\theta_M, \eta))}_{(+)\uparrow \text{Pr(repressive opportunity)}} \underbrace{- p(\theta_M, \theta_T) \cdot f(\omega_D - \omega_T(\theta_M, \eta)) \cdot \frac{\partial \omega_T}{\partial \theta_M}}_{(-)\downarrow \text{Pr(exercise repression | opportunity)}} >< 0$$

Part a.

$$\begin{aligned} \frac{d^2 E^*}{d\theta_M d\eta} &= \underbrace{-\frac{\partial p}{\partial \theta_M} \cdot f(\omega_D - \omega_T(\theta_M, \eta)) \cdot \frac{\partial \omega_T}{\partial \eta}}_{(-)\downarrow \text{magnitude of (1) by } \downarrow \text{Pr(exercise repression | opportunity)}} \\ &\quad - \underbrace{p(\theta_M, \theta_T) \cdot f(\omega_D - \omega_T(\theta_M, \eta)) \cdot \frac{\partial^2 \omega_T}{\partial \theta_M \partial \eta}}_{(-)\uparrow \text{magnitude of (2) by } \uparrow \text{effect of } \theta_M \text{ on } \omega_T} \end{aligned}$$

$$+p(\theta_M, \theta_T) \cdot f'(\omega_D - \omega_T(\theta_M, \eta)) \cdot \frac{\partial \omega_T}{\partial \eta} \cdot \frac{\partial \omega_T}{\partial \theta_M} < 0$$

(-) \uparrow magnitude of (2) by affecting density function

Part b.

$$\frac{d^2 E^*}{d\theta_M d\theta_T} = \underbrace{\frac{\partial^2 p}{\partial \theta_M \partial \theta_T} \cdot F(\omega_D - \omega_T(\theta_M, \eta))}_{(+)} > 0$$

(+) \uparrow magnitude of (1) by \uparrow effect of θ_M on Pr(repressive opportunity)

$$-\underbrace{\frac{\partial p}{\partial \theta_T} \cdot f(\omega_D - \omega_T(\theta_M, \eta)) \cdot \frac{\partial \omega_T}{\partial \theta_M}}_{(+)} > 0$$

(+) \downarrow magnitude of (2) by \downarrow Pr(repressive opportunity)

■

Proof of Lemma 4, part b. Part b of Lemma A.1 implies that if $E^*(\underline{\theta}_M, \bar{\theta}_T, \eta) > E^*(\bar{\theta}_M, \bar{\theta}_T, \eta)$, then this inequality holds for all $\theta_T \in (0, \bar{\theta}_T)$. Showing that the conditions for the intermediate value theorem hold establishes the existence of at least one $\tilde{\eta} \in (\underline{\eta}, \bar{\eta})$ such that $E^*(\underline{\theta}_M, \bar{\theta}_T, \tilde{\eta}) = E^*(\bar{\theta}_M, \bar{\theta}_T, \tilde{\eta})$:

- $E^*(\underline{\theta}_M, \bar{\theta}_T, \underline{\eta}) = p(\underline{\theta}_M, \bar{\theta}_T) \cdot F(\omega_D) < p(\bar{\theta}_M, \bar{\theta}_T) \cdot F(\omega_D) = E^*(\bar{\theta}_M, \bar{\theta}_T, \underline{\eta})$, which follows from assuming (1) $\underline{\theta}_M < \bar{\theta}_M$, (2) $\frac{\partial p}{\partial \theta_M} > 0$, and (3) $\omega_T(\theta_M, \underline{\eta}) = 0$ for $\theta_M \in \{\underline{\theta}_M, \bar{\theta}_M\}$.
- $E^*(\underline{\theta}_M, \bar{\theta}_T, \bar{\eta}) = p(\underline{\theta}_M, \bar{\theta}_T) \cdot \underbrace{F(\omega_D - \omega_T(\underline{\theta}_M, \bar{\eta}))}_{>0} < p(\bar{\theta}_M, \bar{\theta}_T) \cdot \underbrace{F(0)}_{=0} = E^*(\bar{\theta}_M, \bar{\theta}_T, \bar{\eta})$,

which follows from the first two assumptions in the previous step, $\omega_T(\bar{\theta}_M, \bar{\eta}) = \omega_D$, and $\frac{\partial^2 p}{\partial \eta \partial \theta_M} > 0$.

- Continuity trivially holds.

Part a of Lemma A.1 establishes the unique threshold claim for $\tilde{\eta}$.

Proof of part a. Showing that the conditions for the intermediate value theorem hold establishes the existence of at least one $\tilde{\theta}_T \in (0, \bar{\theta}_T)$ such that if $\eta < \tilde{\eta}$, then $E^*(\underline{\theta}_M, \tilde{\theta}_T, \eta) = E^*(\bar{\theta}_M, \tilde{\theta}_T, \eta)$:

- $E^*(\underline{\theta}_M, 0, \eta) = F(\omega_D - \omega_T(\underline{\theta}_M, \eta)) > F(\omega_D - \omega_T(\bar{\theta}_M, \eta)) = E^*(\bar{\theta}_M, 0, \eta)$, which follows from assuming (1) $p(\theta_M, 0) = 1$ for $\theta_M \in \{\underline{\theta}_M, \bar{\theta}_M\}$, (2) $\bar{\theta}_M > \underline{\theta}_M > 0$, and (3) $\frac{\partial^2 \omega_T}{\partial \eta \partial \theta_M} > 0$.
- $E^*(\underline{\theta}_M, \bar{\theta}_T, \eta) < E^*(\bar{\theta}_M, \bar{\theta}_T, \eta)$ follows from assuming $\eta < \tilde{\eta}$.
- Continuity trivially holds.

Part b of Lemma A.1 establishes the unique threshold claim for $\tilde{\theta}_T$.

■

The following assumption characterizes the lower bounds for the magnitude of two second derivatives men-

tioned in the text.

Assumption A.1. *The proof for Lemma A.2 defines the following thresholds.*

$$\text{Part a.} \quad \frac{\partial^2 \omega_T}{\partial \eta \partial \theta_M} > \underline{\partial^2 \omega_T}$$

$$\text{Part b.} \quad -\frac{\partial^2 q}{\partial \theta_D \partial \theta_M} > \underline{\partial^2 q}$$

I use the following technical lemma to prove the propositions.

Lemma A.2. *For S^* defined in Lemma 1:*

$$\text{Part a.} \quad \frac{d^2 S^*}{d\theta_M d\eta} < 0$$

$$\text{Part b.} \quad \frac{d^2 S^*}{d\theta_M d\theta_D} > 0$$

$$\text{Part c.} \quad \frac{d^2 S^*}{d\theta_M d\theta_T} > 0$$

Proof. The first derivative is:

$$\frac{dS^*}{d\theta_M} = [1 - q(\theta_M, \theta_D)] \cdot \underbrace{\frac{dE^*}{d\theta_M}}_{(+/-) \text{ Lemma A.1}} \cdot \overbrace{\left(-\frac{\partial q}{\partial \theta_M} \cdot p(\theta_M, \theta_T) \cdot F(\omega_D - \omega_T(\theta_M, \eta)) \right)}^{(3)} > < 0$$

(-) \uparrow Pr(coup opportunity)

Part a.

$$\frac{d^2 S^*}{d\theta_M d\eta} = [1 - q(\theta_M, \theta_D)] \cdot \underbrace{\frac{d^2 E^*}{d\theta_M d\eta}}_{(-) \text{ Lemma A.1}} + \underbrace{\frac{\partial q}{\partial \theta_M} \cdot p(\theta_M, \theta_T) \cdot f(\omega_D - \omega_T(\theta_M, \eta)) \cdot \frac{\partial \omega_T}{\partial \eta}}_{(+)\downarrow \text{ magnitude of (3) by } \downarrow \text{ Pr(exercise repression | opportunity)}} > < 0$$

Substituting in terms for $\frac{d^2 E^*}{d\theta_M d\eta}$ from the Lemma A.1 proof shows that this term is strictly negative if and only if:

$$\frac{\partial^2 \omega_T}{\partial \eta \partial \theta_M} > \underline{\partial^2 \omega_T} \equiv \left[\frac{\partial q}{\partial \theta_M} \cdot \frac{1}{1-q} - \frac{\partial p}{\partial \theta_M} \cdot \frac{1}{p} + \frac{f'(\omega_D - \omega_T(\theta_M, \eta))}{f(\omega_D - \omega_T(\theta_M, \eta))} \cdot \frac{\partial \omega_T}{\partial \theta_M} \right] \cdot \frac{\partial \omega_T}{\partial \eta} \quad (\text{A.1})$$

Part b.

$$\frac{d^2 S^*}{d\theta_M d\theta_D} = \underbrace{-\frac{\partial q}{\partial \theta_D} \cdot \frac{dE^*}{d\theta_M}}_{(+/-) \uparrow \text{ magnitude of effect of } \theta_M \text{ on efficiency by } \downarrow \text{ Pr(coup opportunity)}}$$

$$\underbrace{-\frac{\partial^2 q}{\partial \theta_M \partial \theta_D} \cdot p(\theta_M, \theta_T) \cdot F(\cdot)}_{(+)\downarrow \text{ magnitude of (3) by } \downarrow \text{ effect of } \theta_M \text{ on Pr(coup opportunity)}} >< 0$$

(+) \downarrow magnitude of (3) by \downarrow effect of θ_M on Pr(coup opportunity)

This term is strictly positive if and only if:

$$-\frac{\partial^2 q}{\partial \theta_D \partial \theta_M} > \underline{\partial^2 q} \equiv \left[-\frac{\partial p}{\partial \theta_M} \cdot \frac{1}{p} + \frac{f(\omega_D - \omega_T(\theta_M, \eta))}{F(\omega_D - \omega_T(\theta_M, \eta))} \cdot \frac{\partial \omega_T}{\partial \theta_M} \right] \cdot \left(-\frac{\partial q}{\partial \theta_D} \right) \quad (\text{A.2})$$

Part c.

$$\frac{d^2 S^*}{d\theta_M d\theta_T} = [1 - q(\theta_M, \theta_D)] \cdot \underbrace{\frac{d^2 E^*}{d\theta_M d\theta_T}}_{(+)\text{ Lemma A.1}} + \underbrace{-\frac{\partial q}{\partial \theta_M} \cdot \frac{\partial p}{\partial \theta_T} \cdot F(\omega_D - \omega_T(\theta_M, \eta))}_{(+)\downarrow \text{ magnitude of (3) by } \downarrow \text{ Pr(repressive opportunity)}} > 0$$

■

Remark A.1 simplifies the complementarity thresholds from Assumption A.1 using the functional form assumptions from Figures 5 and 7.

Remark A.1 (Illustration of complementarity thresholds). *Assume the following functional forms:*

- $p(\theta_M, \theta_T) = 1 - \theta_T \cdot (1 - \theta_M)$
- $\omega_T(\theta_M, \eta) = (\theta_M / \bar{\theta}_M) \cdot \eta \cdot \omega_D$
- $\mu \sim U(0, 1 - \omega_D)$
- $q(\theta_M, \theta_D) = (\theta_M / \bar{\theta}_M) \cdot (1 - \theta_D)$

Part a. If $\theta_D > \frac{1}{2}$, then Part a of Assumption A.1 holds for all $\theta_T \in (0, \bar{\theta}_T)$ and $\theta_M \in \{\underline{\theta}_M, \bar{\theta}_M\}$.

Part b. If $\eta < \frac{1}{2}$, then Part b of Assumption A.1 holds for all $\theta_T \in (0, \bar{\theta}_T)$ and $\theta_M \in \{\underline{\theta}_M, \bar{\theta}_M\}$.

Proof. The following preliminary result shows that the right-hand side of Equations A.1 and A.2 reach their upper bound at $\theta_T = 0$:

$$\frac{d}{d\theta_T} \left[-\frac{\partial p}{\partial \theta_M} \cdot \frac{1}{p(\theta_M, \theta_T)} \right] = - \left[\frac{\partial^2 p}{\partial \theta_M \partial \theta_T} \cdot \frac{1}{p} + \frac{\partial p}{\partial \theta_M} \cdot \frac{-\frac{\partial p}{\partial \theta_T}}{p^2} \right] < 0$$

Therefore, if the inequalities hold at $\theta_T = 0$, then they hold for all $\theta_T \in (0, \bar{\theta}_T)$.

Part a. Substituting the functional form assumptions and $\theta_T = 0$ into Equation A.1 yields:

$$\frac{\omega_D}{\bar{\theta}_M} > \frac{1 - \theta_D}{\bar{\theta}_M} \cdot \frac{1}{1 - \frac{\theta_M}{\bar{\theta}_M} \cdot (1 - \theta_D)} \cdot \frac{\theta_M}{\bar{\theta}_M} \cdot \omega_D,$$

which simplifies to:

$$\theta_D > 1 - \frac{1}{2} \cdot \frac{\bar{\theta}_M}{\theta_M}$$

Because the right-hand side achieves its upper bound at $\theta_M = \bar{\theta}_M$, substituting in $\theta_M = \bar{\theta}_M$ yields the claim.

Part b. Substituting the functional form assumptions and $\theta_T = 0$ into Equation A.2 yields:

$$\frac{1}{\bar{\theta}_M} > \frac{1}{\omega_D - \frac{\theta_M}{\bar{\theta}_M} \cdot \eta \cdot \omega_D} \cdot \frac{1}{\bar{\theta}_M} \cdot \eta \cdot \omega_D \cdot \frac{\theta_M}{\bar{\theta}_M},$$

which simplifies to:

$$\eta < \frac{1}{2} \cdot \frac{\bar{\theta}_M}{\theta_M}$$

Because the right-hand side achieves its upper bound at $\theta_M = \bar{\theta}_M$, substituting in $\theta_M = \bar{\theta}_M$ yields the claim. ■

Proof of Proposition 1. Parts a and c of Lemma A.2 imply that if $S^*(\underline{\theta}_M, \bar{\theta}_T, \underline{\eta}, \theta_D) > S^*(\bar{\theta}_M, \bar{\theta}_T, \underline{\eta}, \theta_D)$, then this inequality holds for all $\theta_T \in (0, \bar{\theta}_T)$ and $\eta \in (\underline{\eta}, \bar{\eta})$. Showing that the conditions for the intermediate value theorem hold establishes the existence of at least one $\tilde{\theta}_D \in (0, \bar{\theta}_D)$ such that $S^*(\underline{\theta}_M, \bar{\theta}_T, \underline{\eta}, \tilde{\theta}_D) = S^*(\bar{\theta}_M, \bar{\theta}_T, \underline{\eta}, \tilde{\theta}_D)$:

- If $\theta_D = 0$, then $q(\underline{\theta}_M, 0) < q(\bar{\theta}_M, 0) = 1$ and $S^*(\underline{\theta}_M, \bar{\theta}_T, \underline{\eta}, 0) > S^*(\bar{\theta}_M, \bar{\theta}_T, \underline{\eta}, 0) = 0$.
- If $\theta_D = \bar{\theta}_D$, then $q(\underline{\theta}_M, \bar{\theta}_D) = q(\bar{\theta}_M, \bar{\theta}_D) = 0$. This implies that $S^*(\underline{\theta}_M, \bar{\theta}_T, \underline{\eta}, \bar{\theta}_D) = E^*(\underline{\theta}_M, \bar{\theta}_T, \underline{\eta})$ and $S^*(\bar{\theta}_M, \bar{\theta}_T, \underline{\eta}, \bar{\theta}_D) = E^*(\bar{\theta}_M, \bar{\theta}_T, \underline{\eta})$. The proof for part b of Lemma 4 shows that $E^*(\underline{\theta}_M, \bar{\theta}_T, \underline{\eta}) < E^*(\bar{\theta}_M, \bar{\theta}_T, \underline{\eta})$.
- Continuity is trivially satisfied.

Part b of Lemma A.2 establishes the unique threshold claim for $\tilde{\theta}_D$. ■

Proof of Proposition 2, part b. Part c of Lemma A.2 implies that if $S^*(\underline{\theta}_M, \bar{\theta}_T, \underline{\eta}, \theta_D) > S^*(\bar{\theta}_M, \bar{\theta}_T, \underline{\eta}, \theta_D)$, then this inequality holds for all $\theta_T \in (0, \bar{\theta}_T)$. Showing that the conditions for the intermediate value theorem hold establishes that if $\theta_D > \tilde{\theta}_D$, then there exists at least one $\tilde{\eta}' \in (\underline{\eta}, \bar{\eta})$ such that $S^*(\underline{\theta}_M, \bar{\theta}_T, \tilde{\eta}', \theta_D) = S^*(\bar{\theta}_M, \bar{\theta}_T, \tilde{\eta}', \theta_D)$:

- $S^*(\underline{\theta}_M, \bar{\theta}_T, \underline{\eta}, \theta_D) < S^*(\bar{\theta}_M, \bar{\theta}_T, \underline{\eta}, \theta_D)$ follows from assuming $\theta_D > \tilde{\theta}_D$.
- $S^*(\underline{\theta}_M, \bar{\theta}_T, \tilde{\eta}', \theta_D) > S^*(\bar{\theta}_M, \bar{\theta}_T, \tilde{\eta}', \theta_D)$ follows because the two types of military exhibit the

same repressive efficiency at these parameter values (see the definition of $\tilde{\eta}$ in the proof for part b of Lemma 4) and the personalist military attempts coups with lower probability (see Lemma 2).

- Continuity trivially holds.

Part a of Lemma A.2 establishes the unique threshold claim for $\tilde{\eta}'$.

Proof of part a. Showing that the conditions for the intermediate value theorem hold establishes the existence of at least one $\theta'_T \in (\tilde{\theta}_T, \bar{\theta}_T)$ such that if $\theta_D > \tilde{\theta}_D$ and $\eta < \tilde{\eta}'$, then $S^*(\underline{\theta}_M, \tilde{\theta}'_T, \eta, \theta_D) = S^*(\bar{\theta}_M, \tilde{\theta}'_T, \eta, \theta_D)$:

- $S^*(\underline{\theta}_M, \tilde{\theta}'_T, \eta, \theta_D) > S^*(\bar{\theta}_M, \tilde{\theta}'_T, \eta, \theta_D)$ follows because the two types of military exhibit the same repressive efficiency at these parameter values (see the definition of $\tilde{\theta}_T$ in the proof for part b of Lemma 4) and the personalist military attempts coups with lower probability (see Lemma 2).
- $S^*(\underline{\theta}_M, \bar{\theta}_T, \eta, \theta_D) < S^*(\bar{\theta}_M, \bar{\theta}_T, \eta, \theta_D)$ follows from assuming $\theta_D > \tilde{\theta}_D$ and $\eta < \tilde{\eta}'$.
- Continuity trivially holds.

Part c of Lemma A.2 establishes the unique threshold claim for $\tilde{\theta}'_T$. ■

Proof of Proposition 4. The equilibrium probability of a coup is:

$$Pr(coup) = \begin{cases} q(\underline{\theta}_M, \theta_D) \cdot p(\underline{\theta}_M, \theta_T) & \text{if } \theta_T < \tilde{\theta}'_T \\ q(\bar{\theta}_M, \theta_D) \cdot p(\bar{\theta}_M, \theta_T) & \text{if } \theta_T > \tilde{\theta}'_T \end{cases}$$

Assuming $\frac{\partial p}{\partial \theta_T} < 0$ implies that this function strictly decreases at all $\theta_T \in (0, \tilde{\theta}'_T) \cup (\tilde{\theta}'_T, \bar{\theta}_T)$. Lemma 2 implies that the function strictly increases at $\theta_T = \tilde{\theta}'_T$. ■