Endogenous Windows of Opportunity: Commitment Problems, Conflict, and Power Sharing

Jack Paine*

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Abstract

In existing theories, an autocratic ruler faces a commitment problem. The opposition can extract concessions only during periodic windows of opportunity to revolt, which arise exogenously. I develop a model based on the more natural premise that windows of opportunity arise endogenously. The opposition chooses when to mobilize an anti-regime threat by paying a time-varying sunk cost, yielding three new findings. First, strategic decisions that reduce the frequency of mobilization do not affect the opposition's bargaining leverage, which smooths out a key friction in existing models. Instead, lower average costs of mobilizing perfectly offset less frequent consumption. Second, fully endogenous mobilization eliminates the ruler's commitment problem, even without power sharing. Conflict can occur only if peace is costlier than conflict. Third, costly mobilization can prompt the ruler either to share more power than needed to buy off a revolt or refuse to share any power.

*Associate Professor, Department of Political Science, Emory University, jackpaine@emory.edu.

1 INTRODUCTION

Commitment problems are a pervasive explanation for outcomes such as international and civil conflict, democratization, and authoritarian power sharing.[1] In the domestic setting, the commitment problem arises when an authoritarian ruler tries to buy off an opposition actor by offering temporary spoils and policy concessions (e.g., subsidies, higher wages, government jobs). At any time, the authoritarian leader cannot commit to concessions that exceed what the opposition would expect to gain from revolting. If the opposition's threat of revolt is constant over time, then the ruler's *low commitment ability* is not *problematic*, per se, from his perspective. The ruler can always redistribute a share of state spoils commensurate to the threat, which the opposition would accept.

However, if instead the opposition poses an ominous threat against the ruler only during occasional windows of opportunity, perpetual autocracy may be unsustainable. In this scenario, the opposition's position is tenuous during its fleeting windows of opportunity—it can extract lucrative concessions today, but not necessarily tomorrow. The opposition is subject to the whims of the autocrat, who can temper or reverse temporary policy concessions after the window of opportunity ends. Consequently, if another window of opportunity is highly unlikely to arise soon, the autocrat's commitment problem prompts the opposition to reject deals that entail temporary concessions only.

Absent other strategic option, conflict occurs. However, if instead institutional reform is possible, the opposition leverages its fleeting moment in the sun to make even greater demands—permanent power-sharing concessions such as positions in the cabinet, holding legislative elections, integrat-

[1]Fearon (1995), Powell (2004, 2006), Spaniel (2023), and Little and Paine (2024) provide general theoretical statements about commitment problems and costly conflict. Acemoglu and Robinson (2000, 2001, 2006) develop this mechanism in a window-of-opportunity model with an option of institutional reform to explain the relationship between inequality and democratic transitions. Many scholars have applied variants of these models to distinct outcomes. For democratization, see Ansell and Samuels (2014); Leventoğlu (2014); Castañeda Dower et al. (2018). For authoritarian power sharing and democratic separation of powers, see Helmke (2017); Meng (2019); Paine (2022, 2024*b*); Christensen and Gibilisco (2024); Powell (2024). For civil conflict, see Fearon (2004); Chassang and Padro-i Miquel (2009); Walter (2009); Powell (2012); Gibilisco (2021). For international war, see Powell (1999); Chadefaux (2011); Debs and Monteiro (2014); Krainin (2017); Spaniel (2019). For power consolidation, see Fearon (1996); Powell (2013); Luo and Przeworski (2023); Luo (2023).

ing militaries after civil war, creating autonomous regions, or expanding the franchise. The ruling elite is loathe to make power-sharing concessions because of the adverse consequences of loosening political control, but prefers reform over revolt.

Therefore, fluctuations over time in the opposition's revolt threat are central in the canonical story about commitment problems, conflict, and political power sharing. But what creates these fluctuations in the first place? Most existing models sidestep this question: windows of opportunities to revolt are assumed to arise exogenously and are uncorrelated with other parameters. That is, in some periods, the opposition costlessly mobilizes a high threat against the government, whereas in other periods, it is infeasible (or restrictively costly) for the opposition to threaten the government.[2]

What if, instead, the opposition could strategically decide when to mobilize? In the real world, circumstances for opposition mobilization range between unambiguously "good" (no costs) or "bad" (prohibitive costs). For example, in December 2010, protests began to break out across the Middle East in response to a street vendor in Tunisia who lit himself on fire. This action may have helped opposition actors coordinate in a manner that lowered the costs of mobilizing. Nonetheless, the costs were not negligible. In other circumstances, we may not observe any serious mobilization by the opposition, but this is a strategic choice in response to what are presumably higher (but not infinite) costs of mobilization.[3]

The sources of opposition mobilization and the causes of fluctuations over time in the distribution of power matter greatly for substantively important outcomes, as I demonstrate in the present model. In each period of an infinite-horizon interaction, Nature draws a cost from a continuous distribution. After observing this draw, the opposition makes an endogenous choice regarding whether to mobilize an anti-regime threat in that period. Upon mobilizing and generating a window of opportunity, the ruler and opposition bargain over government spoils, as in existing models.

[2]Several IR conflict models yield important new insights by treating the distribution of power as endogenous, which I discuss in depth below.

[3]For a general analysis of recent pro-democracy protests, see Brancati (2016).

Finally, to address considerations about strategic institutional reform, the ruler makes a one-time choice at the outset of the game regarding how much power to share. Following Meng et al.'s (2023) discussion of the two core elements of authoritarian power-sharing deals, sharing more power (1) facilitates *institutional commitment* by raising the opposition's basement level of per-period spoils, and (2) reallocates power via a *threat-enhancing effect* that increases the opposition's probability of succeeding in a revolt.

Modeling endogenous windows of opportunity yields three new insights. First, strategic decisions that reduce the frequency of mobilization *do not affect the opposition's bargaining leverage*. This smooths out a key friction in existing models, in which exogenously restricted windows of opportunity bolster the opposition's bargaining leverage: less frequent mobilization lowers the opposition's consumption along a peaceful path, which raises its demand during fleeting windows of opportunity.[4] By contrast, here, the central object is the endogenous mobilization threshold, the maximum cost the opposition will pay to mobilize. Lowering this threshold, and thereby reducing the frequency of mobilization, raises the opposition's demand—as in standard models. However, because mobilization is costly, lowering the endogenous mobilization threshold also reduces the average cost of mobilizing. These countervailing mechanisms perfectly offset each other. The opposition mobilizes only in periods in which the cost does not exceed the temporary transfer it will receive in return, and the opposition is indifferent at the endogenous mobilization threshold. Reducing the marginal frequency of mobilization eliminates mobilization in periods in which the opposition's net gain in consumption was zero, anyway.

Second, fully endogenous mobilization *eliminates the ruler's commitment problem*, even without power sharing. Instead, the primary friction in the model switches to a costly peace mechanism. Mobilization is fully endogenous when the opposition faces a non-trivial decision in every period regarding whether to mobilize, which requires that the cost of mobilizing never exceeds total so-

[4] Some analyses focus squarely on the frequency of windows of opportunity (e.g., Powell 2004; Paine 2022; Little and Paine 2024). In others, the main comparative statics focus on other parameters, such as the level of societal inequality (Acemoglu and Robinson 2000, 2001, 2006). However, in all these models, restrictions on windows of opportunity are fundamental. If the opposition is never exogenously blocked from mobilizing a high threat, there is no conflict-inducing friction in the model.

cietal output. The opposition can always choose to mobilize, and the ruler can always respond by offering a temporary transfer that yields net positive consumption for the opposition. If mobilization is fully endogenous, then a necessary condition for conflict to occur in equilibrium is costly peace, that is, total surplus under peaceful bargaining is lower than under conflict. This reverses the standard assumption of costly conflict, which is possible in the present model because the opposition pays periodic costs of mobilizing along a peaceful path.

Conversely, under the standard assumption of no costly peace, conflict cannot happen in equilibrium with fully endogenous mobilization—even if the ruler does not share power. If no costly peace holds, then exogenous frictions to mobilization are necessary for conflict. Such frictions reintroduce the ruler's commitment problem present in existing models.

Third, costly mobilization alters the ruler's power-sharing calculus. The standard intuition is that a credible threat of revolt is necessary and sufficient for the ruler to share power, if the alternative is to face a revolt.[5] In the present model, a credible threat of revolt is unnecessary for power sharing because costly mobilization creates a novel incentive to voluntarily share power. Raising the opposition's permanent basement level of spoils reduces the equilibrium frequency of mobilization, and hence the total costs of mobilizing. Although the ruler does not directly pay these costs, he does so indirectly because he must compensate the opposition to prevent a revolt. Thus, sharing power can make a peaceful path more lucrative.

Nor is a credible threat of revolt sufficient for power sharing. The threat-enhancing effect bolsters the opposition's bargaining leverage. This creates a disincentive to share power and secure peace, as opposed to refusing to share power and incurring a revolt. Costly mobilization makes the alternative more tempting by diminishing the surplus under peace relative to conflict (assuming conflict is net costly).

[5]See, for example, Castañeda Dower et al. (2018, 2020). The same logic is present in Acemoglu and Robinson (2000, 2001, 2006). Although the ruling elite prefer sharing power over incurring a revolt, for some parameter values the elites respond to a credible threat of revolt with repression, an asymmetric conflict technology that defeats the masses with probability 1. By contrast, in the present model, the ruler lacks access to an asymmetric conflict technology.

In sum, the present model incorporates and builds off foundational ideas about commitment problems, conflict, and authoritarian power sharing. A seemingly technical model assumption about how the opposition mobilizes in fact matters greatly for substantively important outcomes. Endogenous and costly mobilization overturns conventional intuitions about the frequency of mobilization and the key friction that links commitment problems to conflict. And, paradoxically, the ruler is simultaneously more willing to share high levels of power and less willing to share any power, relative to a baseline with costless mobilization. Collectively, these findings suggest new theoretical and empirical directions for understanding costly conflict and institutional reforms, as the conclusion discusses.

2 Contributions to Related Research

Endogenous shifts in the distribution of power. Strategic mobilization yields endogenous shifts in power, which scholars have studied in other substantive contexts and modeling frameworks. One possible way to avoid conflict, commonly considered in the IR setting, is for a *rising power* to forgo investments (e.g., building nuclear capabilities) that would facilitate a large and rapid rise. This could entail agreeing to demilitarized zones or dismantling reactors that could produce plutonium for nuclear weapons. The rising power instead amasses power more incrementally or not at all (Fearon 1996; Chadefaux 2011; Powell 2013; Debs and Monteiro 2014; Spaniel 2019). The rising power slows its shift in power because it knows the *declining power* can initiate a game-ending war before the shift in power occurs.[6]

Peaceful bargaining with fully endogenous mobilization in the present model entails a distinct mechanism. Using the IR terminology, in any period the opposition has mobilized, the ruler is the rising power and the opposition is the declining power. The opposition, in expectation, loses strength in the next period because it might not mobilize. However, the standard solution in IR

[6]Nonetheless, conflict can occur in equilibrium because of alternative frictions such as discontinuities in the bargaining space (Powell 2006), contingent spoils from monopolizing power (Powell 2013), or hidden actions (Debs and Monteiro 2014).

endogenous shifting models is unavailable: the ruler *cannot* strategically choose to limit its rise (e.g., take an action to lower the opposition's cost of mobilizing in the next period). Nonetheless, the opposition's mobilization decisions and the stream of temporary transfers offered by the ruler are strategic responses to each other that, collectively, smooth out the key friction that yields conflict in standard window-of-opportunity models.[7] Consequently, the standard solution in existing models of domestic institutional reform is unnecessary. If mobilization is fully endogenous and peace is not costly, the ruler *does not* need to share power and permanently give away a basement level of spoils to the opposition.

Bottom-up versus top-down incentives for political reform. A standard idea in related models is that permanent institutional reforms are costly whereas temporary concessions are not (Paine 2024*a*). Consequently, the ruling elite will not share power or allow political transitions unless pressed by a credible threat of revolt, which constitutes *bottom-up* pressure for reform. In the present model, the drawback of permanent power-sharing concessions, from the ruler's perspective, is that the threat-enhancing effect raises the opposition's probability of winning a revolt.[8] However, the present model also captures the natural idea that non-institutionalized bargaining mechanisms are inefficient, as the opposition must pay costs to mobilize to compel the ruler to make temporary concessions. This creates pressure to share power even absent a credible threat of revolt, and constitutes a *top-down* mechanism of reform.

Other contributions assess alternative ways in which the inherent inefficiency of authoritarian institutions creates top-down pressure for institutional reform. Ansell and Samuels (2014) highlight how insecure property rights discourage producers from making investments that would expand the tax base, which legislative representation (Gailmard 2017) or institutionalized parties

[7] I am unaware of other window-of-opportunity models in which the windows arise endogenously. For models in which the frequency of mobilization is exogenous but correlated with other parameters, see Paine (2022); Luo (2023); Little and Paine (2024).

[8] Sharing power is also assumed to increase the opposition's basement level of spoils. However, as shown later, this effect cancels out in the ruler's calculus because lower temporary transfers perfectly offset the higher permanent concessions.

(Gehlbach and Keefer 2011) could protect. Similarly, Bates and Donald Lien (1985) and Kenkel and Paine (2023) examine the rise of parliaments in response to credible options for elites with mobile wealth to exit the polity, creating a source of inefficiency under autocratic rule. Alternatively, a broader franchise could alleviate corruption that distorts the political system (Lizzeri and Persico 2004).

Costly peace. The model also contributes to a smaller literature on costly peace motives for war, usually studied in the IR context. Powell (1993) studies the guns-butter tradeoff and explains how the costs of constantly arming against an adversary can prompt a state to initiate war, which would eliminate these costs (see also Coe and Vaynman 2020 and Monteiro and Debs 2020). No existing scholarship, to my knowledge, examines the costly peace mechanism in a domestic context. However, it is inherently inefficient for autocrats to compensate the opposition for the costly hurdles faced to gaining concessions. This makes conflict relatively less costly, while also creating a rationale to share power—even if the opposition lacks a credible threat to revolt.

3 Model Setup

A ruler and opposition actor bargain over spoils throughout an infinite-horizon interaction. Periods are denoted by $t = 0, 1, 2, \ldots$ and the players share a common discount factor $\delta \in (0, 1)$. Total societal output is 1 in each period.

The first move in every period is by Nature, who determines a contemporaneous cost c_t that the opposition would pay to mobilize an anti-regime threat. In period 0, $c_0 = 0$ for sure.[9] In every subsequent period, with probability $r \in (0, 1]$, the cost is drawn from an iid distribution $F(c)$ with support over $[0, c^{\text{max}}]$, for $c^{\text{max}} \in [0, 1]$. For any $z \leq c^{\text{max}}$, we write the average cost over $c_t \in [0, z]$ as

$$c^{\text{avg}}(z) \equiv \frac{\int_0^z c_t dF(c)}{F(z)}.$$

[9] The end of this section discusses the rationale for this assumption.

Thus, $c^{\text{avg}}(c^{\max}) = \int_0^{c^{\max}} c_t dF(c)$ corresponds with the average cost over the full distribution, and with slight abuse of notation we shorten this to c^{avg}. With complementary probability $1-r$, the cost is degenerate: $c_t = \infty$.[10]

The standard model is a special case of this setup in which $r < 1$ and $c^{\max} = 0$. That is, in a fraction r of periods, mobilization is costless; and in the remaining $1-r$ periods, mobilization is not possible. A setup with purely endogenous mobilization is one in which $r = 1$ and $c^{\max} > 0$. That is, the opposition always has agency to mobilize. This requires paying a cost that is positive but less than total societal output. Because the upper bound of the support for $F(c_t)$ is $c^{\max} \leq 1$, the cost of mobilization cannot exceed total societal output in periods that c_t is drawn from $F(c)$.[11]

Period 0 differs from the remaining periods because there is an additional move by the ruler, which occurs immediately after the Nature draw of c_t. The ruler starts the game in full control of total output in society. In period 0, the ruler makes a one-time choice that sets the power-sharing variable $\pi \in [0, \overline{\pi}]$ for the remainder of the game. The upper bound $\overline{\pi} < 1$ simplifies the exposition in the text by ruling out corner solutions to the opposition's optimal transfer, which Appendix B discusses.

The power-sharing level determines for the opposition (1) a permanent basement level of spoils, and (2) its probability of winning a revolt. These correspond with what Meng et al. (2023) identify as the two key elements of power-sharing deals: an *institutional commitment* mechanism to deliver spoils; and a coercive mechanism that reallocates power, referred to as the *threat-enhancing effect*.

In every period, after observing the draw of c_t and the level of π, the opposition decides whether to mobilize.[12] If not, then the ruler and opposition respectively consume $1-\pi$ and π, and then

[10] Most results require only the aforementioned assumptions about F. However, to enable a clean characterization of the ruler's endogenous power-sharing choice, I impose the additional assumption $F \sim U(0, c^{\max})$ in that section.

[11] I model the exogenous friction using the parameter r to enable a direct comparison with existing models and to reduce notation. As an alternative way to generate periods in which it is infeasible for the opposition to mobilize, assume the opposition pays a fixed cost of mobilizing $\underline{c} \in [0, 1]$ in addition to the variable cost c_t. Then, for any draw such that $c_t > 1 - \underline{c}$, the total cost of mobilization exceeds societal wealth, and the fraction of such periods equals $1 - F(1 - \underline{c})$, which is clunkier to track than a separate parameter r.

[12] The findings are qualitatively identical if mobilizing requires the opposition to invest some or all its endowment

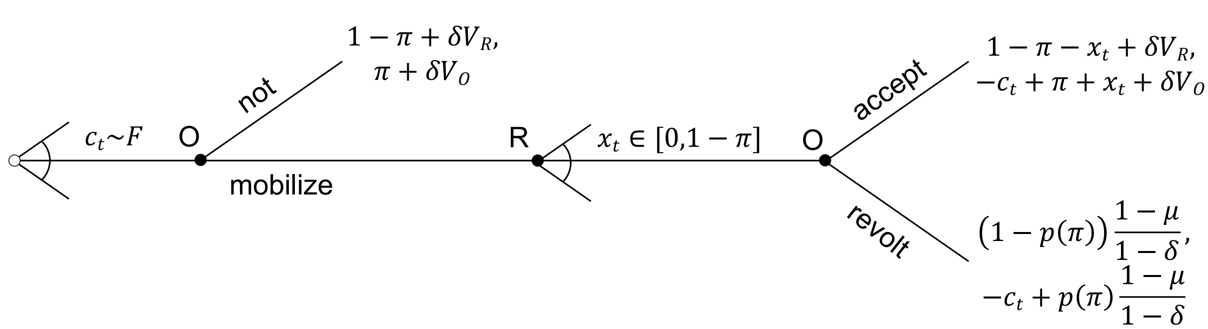
engage in an identical interaction in period $t+1$ with respective continuation values V_R and V_O. The distribution of consumption in non-mobilization periods highlights how sharing power creates a basement level of spoils for the opposition.

If instead the opposition mobilizes, then it pays the sunk cost c_t and engages in a bargaining interaction. The ruler proposes a one-period transfer $x_t \in [0, 1-\pi]$ to the opposition. The bounds on the temporary transfer capture (a) no transfer of resources from the opposition to ruler and (b) the offer cannot exceed the total amount controlled by the ruler. If the opposition accepts the transfer, then the ruler and opposition respectively consume $1-\pi-x_t$ and $-c_t+\pi+x_t$, and they begin an identical interaction in period $t+1$ with the continuation values stated above.

Alternatively, the opposition can revolt. The winner consumes $1-\mu$ in the period of the revolt and in perpetuity. Assuming $\mu \in (0,1)$ implies that conflict permanently reduces total societal output. A revolt succeeds with probability $p(\pi) = (1-\pi)p^{\text{min}} + \pi p^{\text{max}}$, whereas the ruler survives with complementary probability. Reflecting the threat-enhancing effect, raising the power-sharing level increases the opposition's probability of winning a revolt, with $p^{\text{min}} \geq 0$ corresponding with the minimum probability at no power sharing and $p^{\text{max}} \in [p^{\text{min}}, 1]$ corresponding with the maximum probability at full power sharing.

Figure 1 presents the tree of the stage game for all periods after the power-sharing level is set.

Figure 1: Tree of Stage Game



One way to interpret the one-time power-sharing choice is that critical junctures occur in which

π; see footnote 17 for details. Later I present an extension in which the opposition chooses a continuous level of mobilization.

a ruler has sufficient agency to permanently alter the distribution of spoils and power vis-à-vis the opposition, perhaps because the ruler has recently ascended to power and has open cabinet positions or has newly confiscated land to redistribute. A single such critical juncture occurs in the present model, and we examine the consequences of this choice for the subsequent interaction. Furthermore, assuming $c_0 = 0$ ensures that the ruler chooses the power-sharing level when the opposition poses an immediate threat. This enables the present model to mimic existing models, in which the ruler only ever chooses to share power in a high-threat period.[13]

4 Analysis: Baseline Model of Conflict

The initial analysis holds fixed the power-sharing level π. The focus throughout this section is mainly on the effects of endogenous mobilization and the conditions under which peaceful bargaining is possible. Throughout, the equilibrium concept is Markov Perfect Equilibrium (MPE). A Markov strategy allows a player to condition its actions only on the current-period state of the world and prior actions in the current period. An MPE is a profile of Markov strategies that is subgame perfect. In the present setup, a Markov strategy requires the opposition to specify a mobilization decision $\beta : [0, c^{\text{max}}] \to \{0, 1\}$, where $\beta = 1$ indicates mobilization and $\beta = 0$ indicates not. Following a decision to mobilize, the ruler's strategy specifies an offer $x \to [0, 1 - \pi]$ and the opposition's strategy specifies a response $\alpha : [0, 1 - \pi] \to \{0, 1\}$, where $\alpha = 1$ indicates acceptance and $\alpha = 0$ indicates revolt.[14]

[13] Relaxing the assumption that the power-sharing choice occurs once creates technical problems because the level of power sharing affects the endogenous mobilization choice. By contrast, in models such as Acemoglu and Robinson (2000, 2001, 2006), Castañeda Dower et al. (2018, 2020), Paine (2024*b*), and Powell (2024) in which the ruling faction makes a power-sharing choice in every period, the frequency of mobilization is fixed across time. Typically, window-of-opportunity models become intractable when the ruler can alter the distribution of power multiple times. For a recent exception (which holds fixed other moving pieces in the present model), see Luo (2023).

[14] The continuous distribution of c_t implies that the state space is continuous. However, c_t is payoff irrelevant starting at the ruler's information set, which below I show yields a unique optimal transfer offer. Given the Markov assumption, this must be the transfer in every period.

4.1 Payoffs Along a Peaceful Path

Along a peaceful path, the ruler consumes total societal surplus minus the opposition's reservation value to revolting, and the opposition consumes its reservation value. To see this, we first hold fixed the mobilization threshold. That is, the opposition is assumed to mobilize whenever $c_t \leq \hat{c}$, for an exogenously determined $\hat{c}$; and not mobilize if c_t is higher. Consequently, the opposition mobilizes in a fraction $rF(\hat{c})$ of periods and pays an average cost in such periods equaling $c^{\text{avg}}(\hat{c})$.

The opposition's lifetime consumption along a peaceful path, from the perspective of any period in which it has mobilized, is $-c_t + \pi + x + \delta V_O$, for $V_O = \pi + rF(\hat{c})(x - c^{\text{avg}}(\hat{c})) + \delta V_O$.[15] Solving the continuation value and substituting it into the consumption term yields per-period average consumption $\pi + (1-\delta)(x - c_t) + \delta rF(\hat{c})(x - c^{\text{avg}}(\hat{c}))$. The opposition consumes at least π in every period and gains an additional transfer x today, worth $1-\delta$, and in the fraction $rF(\hat{c})$ of future periods in which the opposition will mobilize, worth $\delta rF(\hat{c})$. But the mobilization effort needed to gain these transfers is costly, and entails paying c_t today and an average of $c^{\text{avg}}(\hat{c})$ in future mobilization periods.

The opposition's payoff along a peaceful path is bounded from below by its reservation value to revolting. Thus, the consumption stream must satisfy

$$\pi + (1-\delta)(x - c_t) + \delta rF(\hat{c})(x - c^{\text{avg}}(\hat{c})) \geq -(1-\delta)c_t + p(\pi)(1-\mu). \tag{1}$$

The ruler's lifetime consumption along a peaceful path, from the perspective of any period in which the opposition has mobilized, is $1 - \pi - x + \delta V_R$, for $V_R = 1 - \pi - rF(\hat{c})x + \delta V_R$. Solving the continuation value and substituting it into the consumption term yields per-period average consumption $1 - \pi - (1 - \delta(1 - rF(\hat{c})))x$. The ruler's consumption strictly decreases in x, but the transfer must satisfy Equation 1 to yield a peaceful path of play. Consequently, the ruler satisfies this constraint with equality to make the opposition indifferent between accepting

[15] The continuation value incorporates the Markov assumption by requiring the opposition to receive the same transfer x in every high-threat period.

and revolting.[16]

$$\textbf{Optimal transfer.} \quad \pi + (1-\delta)x^* + \delta r F(\hat{c})(x^* - c^{\text{avg}}(\hat{c})) - p(\pi)(1-\mu) = 0, \tag{2}$$

which can be solved explicitly for[17]

$$x^* = \frac{-\pi + p(\pi)(1-\mu) + \delta r F(\hat{c}) c^{\text{avg}}(\hat{c})}{1 - \delta(1 - rF(\hat{c}))}. \tag{3}$$

Substituting x^* into the ruler's consumption stream yields

$$\begin{aligned} R(\pi) &= 1 \overbrace{-\pi}^{\text{Direct cost}} - \big(1 - \delta(1 - rF(\hat{c}))\big) \underbrace{\frac{\overbrace{-\pi}^{\text{Indirect benefit}} + p(\pi)(1-\mu) + \delta r F(\hat{c}) c^{\text{avg}}(\hat{c})}{1 - \delta(1 - rF(\hat{c}))}}_{x^*} \\ &= \underbrace{1 - \delta r F(\hat{c}) c^{\text{avg}}(\hat{c})}_{\text{Total surplus}} - \underbrace{p(\pi)(1-\mu)}_{\text{Opposition's reservation value}}. \end{aligned} \tag{4}$$

Therefore, the ruler consumes total surplus, $1 - \delta r F(\hat{c}) c^{\text{avg}}(\hat{c})$, minus the opposition's reservation value to revolting, $p(\pi)(1-\mu)$; and, conversely, the opposition consumes its reservation value. Notably, the only element of the power-sharing level π that affects the ruler's consumption is the opposition's probability of winning; basement spoils cancel out. The ruler loses π in every period, the direct cost of higher basement spoils. However, higher π indirectly benefits the ruler by increasing the opposition's consumption along a peaceful path. By raising the opportunity cost of revolting, the ruler can buy off the opposition with a lower transfer in mobilization periods.

[16] As is standard in these models, any equilibrium strategy profile requires that the opposition accept such an offer with probability 1. Otherwise, the constraint set for the ruler's optimization problem would not be closed.

[17] The last term in the numerator is multiplied by δ. The cost of mobilization has already been sunk at the bargaining stage and, therefore, is not subtracted out in the present period (this is straightforward to see in Equation 1). This explains why the following alternative assumption would not qualitatively change the findings. If mobilizing required the opposition to invest some or all of its endowment π, it would have already sunk this cost by the bargaining stage. The additional cost to mobilizing would, nonetheless, alter the opposition's calculus by affecting consumption in *future* periods. However, this would simply reduce in magnitude the effect of π on the opportunity cost of revolting, which arises because the opposition permanently relinquishes π upon losing. Thus, I prefer the simpler setup without an additional and redundant moving piece.

Thus, the ruler is compensated for higher permanent concessions by giving away fewer temporary transfers. The direct cost and indirect benefit perfectly offset each other because the ruler and opposition weight the stream of transfers identically: a transfer occurs in the current high-threat period, weight $1-\delta$; and a fraction $rF(\hat{c})$ of future periods, weight $\delta rF(\hat{c})$.[18]

Sufficiently high values of π make x^* negative. This yields a unique threshold value such that $x^*(\overline{\pi}) = 0$. This constitutes the upper bound of π assumed in setup, which ensures that x^* has an interior solution. In Appendix B, I analyze equilibrium outcomes for all values of π.

4.2 Endogenous Mobilization

When endogenizing the mobilization threshold $\hat{c}$, the opposition mobilizes only in periods such that the cost does not exceed the transfer it will receive in return. At the threshold, the opposition is indifferent between mobilizing or not. Consequently, lowering $\hat{c}$ and hence the endogenous frequency of mobilization *does not affect* the opposition's bargaining leverage, contrary to existing models. Reducing the marginal frequency of mobilization eliminates mobilization in periods in which the opposition's net gain in consumption was zero, anyway.

The endogenous choice of $\hat{c}$ reflects the following considerations. The value of mobilizing for the opposition is the same regardless of whether the path of play is peaceful or conflictual.[19] If conflictual, the opposition revolts, which yields lifetime expected consumption of $p(\pi)\frac{1-\mu}{1-\delta}$. If peaceful, the opposition consumes $\pi + x + \delta V_O$. However, because the ruler holds him to indifference, this consumption stream is identical in expectation to $p(\pi)\frac{1-\mu}{1-\delta}$. The opposition mobilizes only if gaining this consumption stream, minus the cost c_t, exceeds the value of consuming π today and remaining as the opposition tomorrow

$$\underbrace{-c_t + p(\pi)\frac{1-\mu}{1-\delta}}_{\text{Mobilize}} \geq \underbrace{\pi + \delta V_O}_{\text{Not}}. \tag{5}$$

[18] See also Paine (2024*a*).

[19] If π is high enough that the optimal transfer is 0, then mobilization never occurs; see Appendix B.

The cutpoint $\hat{c}$, referred to as the endogenous threshold, satisfies this with equality

$$-\hat{c} + p(\pi)\frac{1-\mu}{1-\delta} = \pi + \delta V_O. \tag{6}$$

Substituting in for V_O (presented earlier) and simplifying yields an intuitive threshold. The opposition mobilizes only when the contemporaneous cost it pays is lower than the contemporaneous transfer it gains in return

$$\hat{c} = x^*. \tag{7}$$

This observation anticipates a new finding. Altering the endogenous mobilization threshold, and hence the frequency of mobilization, does not affect the optimal transfer, which we can equivalently conceive as the opposition's bargaining leverage (because the ruler uses the transfer to hold the opposition down to indifference).

Lemma 1 (Endogenous mobilization threshold and equilibrium transfer)**.**

$$-\frac{dx^*}{d\hat{c}} = 0.$$

To see why, we can derive the left-hand side of Equation 2 with respect to $\hat{c}$ to yield[20]

$$\frac{\partial}{\partial \hat{c}}\left(\pi + (1-\delta)x^* + \delta r F(\hat{c})\left(x^* - \underbrace{\frac{\int_0^{\hat{c}} c_t dF(c)}{F(\hat{c})}}_{c^{\text{avg}}(\hat{c})}\right) - p(\pi)(1-\mu)\right)$$

$$= \delta r f(\hat{c})\Big(\underbrace{x^* - c^{\text{avg}}(\hat{c})}_{\text{Consumes less often}} - \underbrace{(\hat{c} - c^{\text{avg}}(\hat{c}))}_{\text{Lower average cost}}\Big) = \delta r f(\hat{c})\underbrace{(x^* - \hat{c})}_{=0} = 0. \tag{8}$$

Lowering the endogenous threshold $\hat{c}$ causes the opposition to mobilize less often. This reduces

[20] If we denote this expression as Ω, then by the implicit function theorem,

$$-\frac{dx^*}{d\hat{c}} = \frac{\partial\Omega}{\partial\hat{c}}\bigg/\frac{\partial\Omega}{\partial x^*}, \quad \text{with} \quad \frac{\partial\Omega}{\partial x^*} = 1 - \delta(1 - rF(\hat{c})) > 0.$$

Consequently, the sign of $\frac{\partial\Omega}{\partial\hat{c}}$ determines the sign of the derivative.

the frequency of consuming transfers. All else equal, this force prompts the opposition to demand more during windows of opportunity. However, all else is not equal because of a countervailing effect. Lowering $\hat{c}$ also reduces the average cost $c^{\text{avg}}(\hat{c})$ the opposition pays upon mobilizing. This force raises the opposition's consumption along an equilibrium path, which reduces its transfer demand when mobilizing.

The two countervailing forces of lowering $\hat{c}$—less frequent mobilization and lower average costs of mobilizing—perfectly cancel out. A marginal reduction in $\hat{c}$ yields a marginal reduction in consumption of $x^* - \hat{c}$, because the opposition no longer mobilizes when $c_t = \hat{c}$. But, in equilibrium, the opposition mobilizes for any c_t up to the point at which the cost perfectly offsets the gain in consumption from receiving the transfer, and thus $x^* = \hat{c}$ (Equation 7). Consequently, in the marginal period in which the opposition no longer mobilizes, its net consumption was $x^* - \hat{c} = 0$. Lowering the endogenous threshold thus does not affect the opposition's bargaining leverage (i.e., the equilibrium transfer).

4.3 Equilibrium Bargaining Outcomes

Peaceful bargaining requires two conditions. First, the ruler must prefer to buy off the opposition with the transfer x^* rather than incur a revolt. Second, x^* must not exceed the budget constraint.

No costly peace and ruler's preference for peaceful bargaining. The ruler's preference for peaceful bargaining over conflict is standard in conflict bargaining models; the cost of conflict induces the ruler to buy off the opposition (Fearon 1995). Here, however, a peaceful path requires the opposition to pay periodic costs of mobilization, which in turn prompts the opposition to make greater demands from the ruler. If a revolt occurs, the ruler's expected per-period average payoff is $(1 - p(\pi))(1 - \mu)$. The ruler makes the interior-optimal offer if and only if total surplus along a peaceful path, $1 - \delta r F(\hat{c}) c^{\text{avg}}(\hat{c})$, exceeds that to a conflictual path, $1 - \mu$

$$\underbrace{R(\pi)}_{\text{Peace}} > \underbrace{(1-p(\pi))(1-\mu)}_{\text{Conflict}} \implies \frac{1-\delta r F(\hat{c}) c^{\text{avg}}(\hat{c})}{1-\mu} > 1.^{21} \tag{9}$$

The left-hand side of the latter inequality in Equation 9 reaches its lower bound when the total costs of mobilization are maximized. This occurs when the opposition mobilizes in every period, which corresponds with $r = 1$ and $F(\hat{c})c^{\text{avg}}(\hat{c}) = c^{\text{avg}}$, the latter of which is the average draw from the full distribution $F(c)$. We assume the no costly peace assumption holds throughout the remainder of the analysis.

Assumption 1 (No costly peace)**.**

$$\frac{1-\delta c^{avg}}{1-\mu} > 1.$$

Lemma 2 (Ruler's preference for peaceful bargaining)**.** *Assumption 1 ensures that the ruler prefers peaceful bargaining over conflict.*

Fully endogenous mobilization enables buying off the opposition. If the no costly peace assumption holds, then conflict *does not occur* in equilibrium if mobilization is fully endogenous, even absent power sharing. To see why, the ruler can buy off the opposition if and only if the transfer does not exceed the budget constraint, $1 - \pi - x^* \geq 0$, which requires

$$\Theta(\pi, r) \equiv 1 - \delta(1 - rF(\hat{c}))(1-\pi) - p(\pi)(1-\mu) - \delta r F(\hat{c}) c^{\text{avg}}(\hat{c}) \geq 0. \tag{10}$$

Fully endogenous mobilization requires that the opposition faces a non-trivial decision regarding whether to mobilize in every period, which means the cost of mobilizing is less than total societal output. Given the assumption $c^{\max} \leq 1$, this is tantamount to setting $r = 1$. To create a hard case for a peaceful equilibrium, we set $\pi = 0$, hence eliminating the standard mechanism that rulers

[21] Equation 4 introduces $R(\pi)$. The term $1-\delta F(\hat{c})c^{\text{avg}}(\hat{c})$ discounts the costs of mobilization by one period because, in the stage game, the opposition sinks the cost of mobilizing prior to the bargaining interaction. Therefore, the ruler does not offer compensation for the present-period cost of mobilizing.

must share power to prevent conflict. The necessary inequality for peaceful bargaining is

$$\Theta(0,1) > 0 \implies \frac{1-\delta c^{\text{avg}}}{1-\mu} > p^{\text{min}}.$$

This inequality is guaranteed by the no costly peace assumption (Assumption 1), which ensures that conflict does not occur in equilibrium. This result contrasts with existing models with exogenous frictions to mobilizing. Infrequent mobilization triggers conflict because the ruler cannot commit to deliver sufficient concessions along a peaceful path. By contrast, here, in the case of fully endogenous mobilization, the opposition can always choose to mobilize. The ruler does not face a commitment problem, at least as conceptualized in existing models, because he can always offer a transfer at least as large as the opposition's contemporaneous cost of mobilizing. Conversely, any force that causes mobilization to occur less frequently also reduces the average costs of mobilizing by an equivalent amount.

Instead, costly mobilization creates the only friction in the present model. If conflict occurs when $r = 1$, it is because Assumption 1 is violated and the costs of perpetually sustaining mobilization along a peaceful path exceed the costs of conflict. But, assuming that conflict is costlier than peace, an exogenous friction is needed to trigger equilibrium conflict, as in existing models.

Frictions to mobilization cause conflict. Altering the endogenous mobilization threshold $\hat{c}$, and hence the endogenous frequency of mobilization, does not affect the transfer x^* (Lemma 1). However, lowering the exogenous mobilization parameter r does indeed make it harder to buy off the opposition.

Lemma 3 (Exogenous mobilization friction and equilibrium transfer)**.**

$$-\frac{dx^*}{dr} = \frac{\delta F(\hat{c})}{1-\delta(1-rF(\hat{c}))}(x^* - c^{avg}(\hat{c})) > 0.$$

The key difference between altering $\hat{c}$ and altering r is that the former alters both the frequency with which the opposition gains an additional consumption amount $x^* - c^{\text{avg}}(\hat{c})$ and the consumption amount in such periods. By contrast, a marginal change in r does not affect the consumption amount in mobilization periods. Lacking an effect to counteract the negative consequences of less frequent transfers, lowering r raises the demand x^*. As in existing models, low enough r triggers equilibrium conflict.

Proposition 1 (Equilibrium without basement spoils)**.** *Suppose $\pi = 0$. A unique threshold $\overline{r} < 1$ exists, implicitly characterized as*

$$\Theta(0, \overline{r}) = 1 - \delta(1 - \overline{r}(1 - c^{avg})) - p^{min}(1 - \mu) = 0,$$

which has the following properties.

Case 1. $\boldsymbol{r \geq \overline{r}}$. *In every period, the opposition mobilizes if and only if $c_t \leq x^*$. If the opposition mobilizes, the ruler offers $x_t = x^*$ and the opposition accepts if $x_t \geq x^*$ (and revolts otherwise). Along the equilibrium path of play, revolts never occur.*

Case 2. $\boldsymbol{r < \overline{r}}$. *In every period, the opposition mobilizes if and only if $c_t \leq x^*$. If the opposition mobilizes, the ruler offers any $x_t \in [0, 1]$ and the opposition revolts in response to any offer. Along the equilibrium path of play, a revolt occurs in the first mobilization period.*

5 ANALYSIS: POWER SHARING

5.1 EXOGENOUS POWER SHARING

Extending Proposition 1, we now consider the effects of raising π. This subsection treats π as exogenous before endogenizing this choice in the subsequent subsections.

Sharing more power improves prospects for peaceful bargaining among the parameter values $r < \overline{r}$ such that equilibrium conflict occurs if $\pi = 0$. Although related models yield the same headline result, this is usually because sharing power is assumed to exert a unidirectional effect that makes it easier to buy off the opposition. Here, however, sharing power exhibits three distinct effects. The first two are direct: raising the opposition's level of basement spoils π and raising the opposition's probability of winning $p(\pi)$, the threat-enhancing effect. The former makes it easier to buy off the opposition whereas the latter makes it harder; it is not obvious which effect would dominate.

A third effect arises because each of the direct effects also affect the opposition's mobilization calculus. Higher basement spoils would, conceivably, raise the opportunity cost to mobilizing whereas a higher probability of winning would induce the opposition to mobilize more often. These indirect effects further cloud the overall sign of the effect of sharing power.

The indirect effects cancel out and the basement spoils effect dominates the threat-enhancing effect. This follows from the derivative

$$\frac{d}{d\pi}\Big(1-\pi-x^*\big(\pi,\hat{c}(\pi)\big)\Big) = -1-\frac{\partial x^*}{\partial \pi}-\underbrace{\frac{\partial x^*}{\partial \hat{c}}}_{=0}\frac{d\hat{c}}{d\pi} = \frac{\overbrace{\delta(1-rF(\hat{c}))}^{\text{Basement spoils}}-\overbrace{p'(\pi)(1-\mu)}^{\text{Threat-enhancing}}}{1-\delta(1-rF(\hat{c}))}. \tag{11}$$

The indirect effects cancel out because of Lemma 1. Because the endogenous mobilization threshold $\hat{c}$ does not affect the optimal transfer x^*, no indirect effects through $\hat{c}$ can affect x^*.

The two direct effects indeed exhibit cross-cutting consequences. However, for the parameter values at which conflict occurs without power sharing, r must be sufficiently low—which enhances the magnitude of the basement spoils effect. The upper bound $\overline{r}$ combined with the no costly peace assumption ensures that sharing more power makes it easier to buy off the opposition (Lemma 4). This, in turn, yields a threshold level of π that under which bargaining is peaceful (Proposition 2).

Lemma 4 (Higher π relaxes the no-revolt constraint)**.** *If $r < \overline{r}$, then the derivative in Equation 11 is strictly positive.*

Proposition 2 (Equilibrium with basement spoils)**.** *Suppose $r < \overline{r}$. A unique threshold*

$\underline{\pi} \in (0, \overline{\pi})$ *exists, implicitly characterized as*

$$\Theta(\underline{\pi}, r) = \underline{\pi} + \big(1 - \delta(1 - rF(1 - \underline{\pi}))\big)(1 - \underline{\pi}) - \delta r \int_0^{1-\underline{\pi}} c_t dF(c) - p(\underline{\pi})(1 - \mu) = 0,$$

with the following properties.

> ***Case 1.*** $\boldsymbol{\pi} \geq \underline{\boldsymbol{\pi}}$. *In every period, the opposition mobilizes if and only if* $c_t \leq x^*$. *If the opposition mobilizes, the ruler offers* $x_t = x^*$ *and the opposition accepts if* $x_t \geq x^*$ *(and revolts otherwise). Along the equilibrium path of play, revolts never occur.*
>
> ***Case 2.*** $\boldsymbol{\pi} < \underline{\boldsymbol{\pi}}$. *In every period, the opposition mobilizes if and only if* $c_t \leq x^*$. *If the opposition mobilizes, the ruler offers any* $x_t \in [0, 1]$ *and the opposition revolts in response to any offer. Along the equilibrium path of play, a revolt occurs in the first mobilization period.*

5.2 Endogenous Power Sharing

We now analyze the full model, which endogenizes the power-sharing level. The ruler chooses π at the outset of the game in a period with $c_0 = 0$. This ensures that the opposition will mobilize in the period the ruler sets the power-sharing level, and this is common knowledge. Other than the additional one-time choice of π, the specification of strategies do not need alteration.[22]

In many existing models, a credible threat of revolt by the opposition is necessary for the ruler to choose a positive level of power sharing (Acemoglu and Robinson 2006; Castañeda Dower et al. 2018; Powell 2024; Paine 2024*a*,*b*). Here, however, the costs of mobilizing alter the ruler's calculus. Along a peaceful path, the ruler has incentives to reduce the frequency of mobilization—and, concomitantly, the total costs of mobilizing—by granting basement spoils to the opposition. This creates a novel incentive to share power, which can potentially lead to a higher level of power sharing than in a model without mobilization costs. However, another factor is also at play. Mobilization costs lower the ruler's consumption along a peaceful path. Relative to a model without mobilization costs, this force creates a stronger preference for the ruler to refuse to share any power

[22]The specific assumption $c_0 = 0$ ensures that $R(\pi)$ from Equation 4 characterizes the ruler's expected payoff, as $R(\pi)$ is calculated for a period in which the opposition has mobilized. The one-time power-sharing choice obviates an additional technical discussion by eliminating the possibility of mixed-strategy equilibria (see Acemoglu and Robinson 2017, Castañeda Dower et al. 2020, Gibilisco 2023, and Paine 2024*b* for recent discussions).

(and instead incur a revolt).

Voluntary power sharing along a peaceful path. Unlike in a standard setup, the ruler's consumption along a peaceful path does not strictly decrease in the level of power sharing. Instead, the effect may be non-monotonic because of the costs of mobilization. Deriving the ruler's consumption function along a peaceful path of play (Equation 4) yields

$$\frac{dR(\pi)}{d\pi} = \frac{d}{d\pi}\Big(1 - \delta r F(\hat{c}) c^{\text{avg}}(\hat{c}) - p(\pi)(1-\mu)\Big) =$$

$$\underbrace{\delta r \hat{c} f(\hat{c})\Big(-\frac{d\hat{c}}{d\pi}\Big)}_{\text{Lower mobilization costs}} - \underbrace{p'(\pi)(1-\mu)}_{\text{Threat-enhancing effect}}, \quad \text{with} \quad \frac{d\hat{c}}{d\pi} = \frac{-1 + p'(\pi)(1-\mu)}{1 - \delta(1 - rF(\hat{c}))} < 0. \tag{12}$$

The level of basement spoils does not directly affect the ruler's consumption because higher π enables the ruler to lower the transfer by an equivalent amount, as discussed earlier (Equation 4). Nonetheless, the present model yields two distinct effects that are uncommon in existing models. First, the threat-enhancing effect. Sharing power raises the opposition's probability of winning, which necessitates compensating the opposition with a higher transfer. Second, the cost-of-mobilization effect. By creating a basement level of spoils for the opposition, higher π induces the opposition to mobilize less often.[23] Lowering the total costs of mobilization raises total surplus, which the ruler pockets by virtue of making all the bargaining offers and holding the opposition down to indifference.

When the threat-enhancing effect is sufficiently small in magnitude, the cost-of-mobilization effect implies that the ruler gains greater consumption from setting an interior level $\pi^* > 0$ than $\pi^* = 0$ when fixing the path of play as peaceful. Therefore, contrary to most existing results, the purpose of sharing power is not to buy off a revolt, which we refer to as *voluntary* element of power sharing.

[23] This follows from Lemma 4 and Equation 7; any factor that relaxes the no-revolt constraint implies less frequent mobilization.

Lemma 5 (Voluntary power sharing)**.** *Assume $F \sim U(0, c^{max})$. A unique threshold $\hat{p}^{max} > p^{min}$ exists such that*

Case 1. *For $p^{max} < \hat{p}^{max}$, the ruler's consumption along a peaceful equilibrium path is maximized by a unique interior value $\pi^* \in (0, \overline{\pi})$.*

Case 2. *For $p^{max} \geq \hat{p}^{max}$, the ruler's consumption along a peaceful equilibrium path is maximized by $\pi = 0$.*

Costly mobilization and ruler willingness. The optimal power-sharing level is premised not only on the ruler's consumption along a peaceful path, but also his reservation value to incurring a revolt. The ruler can always choose a power-sharing level $\pi < \overline{\pi}$ high enough to yield a peaceful equilibrium path (Proposition 2). The incentive-compatibility constraint for the ruler to share power a positive level of power is

$$\underbrace{1 - \delta r F(\hat{c}(\tilde{\pi}))c^{\text{avg}}(\hat{c}(\tilde{\pi})) - p(\tilde{\pi})(1-\mu)}_{\text{Share power}} \geq \underbrace{(1 - p^{\text{min}})(1-\mu)}_{\text{Incur revolt}} , \tag{13}$$

where $\tilde{\pi}$ is the power-sharing level that maximizes the ruler's consumption along a peaceful path among all $\pi \in [\underline{\pi}, \overline{\pi}]$. This inequality simplifies to

$$\textbf{Ruler willingness.} \quad \underbrace{\tilde{\pi}(p^{\text{max}} - p^{\text{min}})}_{\text{Threat-enhancing effect}} (1-\mu) \leq \underbrace{\mu - \delta r F(\hat{c}(\tilde{\pi}))c^{\text{avg}}(\hat{c}(\tilde{\pi}))}_{\text{Net surplus destroyed by revolt}} . \tag{14}$$

The main force that pushes toward ruler willingness holding is the (net) cost of conflict. As suggested by canonical results on conflict bargaining, more destructive conflict harms the ruler. By virtue of making all the bargaining offers and holding the opposition down to indifference, the ruler consumes the entire surplus saved by preventing a revolt. The costliness of peace, induced by costly mobilization, tempers this benefit, but does not drive it to 0 because of Assumption 1.

However, despite this benefit of sharing power, the threat-enhancing effect can cause the ruler willingness condition to fail.[24] Upon sharing power, the ruler holds the opposition down to indifference *after power has shifted in the opposition's favor*. Consequently, the ruler might prefer costly conflict over buying off a stronger opposition. Similar to a first-strike advantage, the ruler moves first and can induce a revolt that the opposition wins with probability p^{min}, as opposed to sharing power and having to buy off an opposition who wins with probability $p(\pi^*)$.[25] Finally, as before, the level of basement spoils cancels out in equilibrium (Equation 4), and therefore does not affect ruler willingness.

The shift in the distribution of power implies that ruler willingness can fail even if the costs of mobilizing are 0. Nonetheless, costly mobilization diminishes the relative benefits of a peaceful path, and thereby undermines incentives for ruler willingness relative to a model without costs of mobilization.

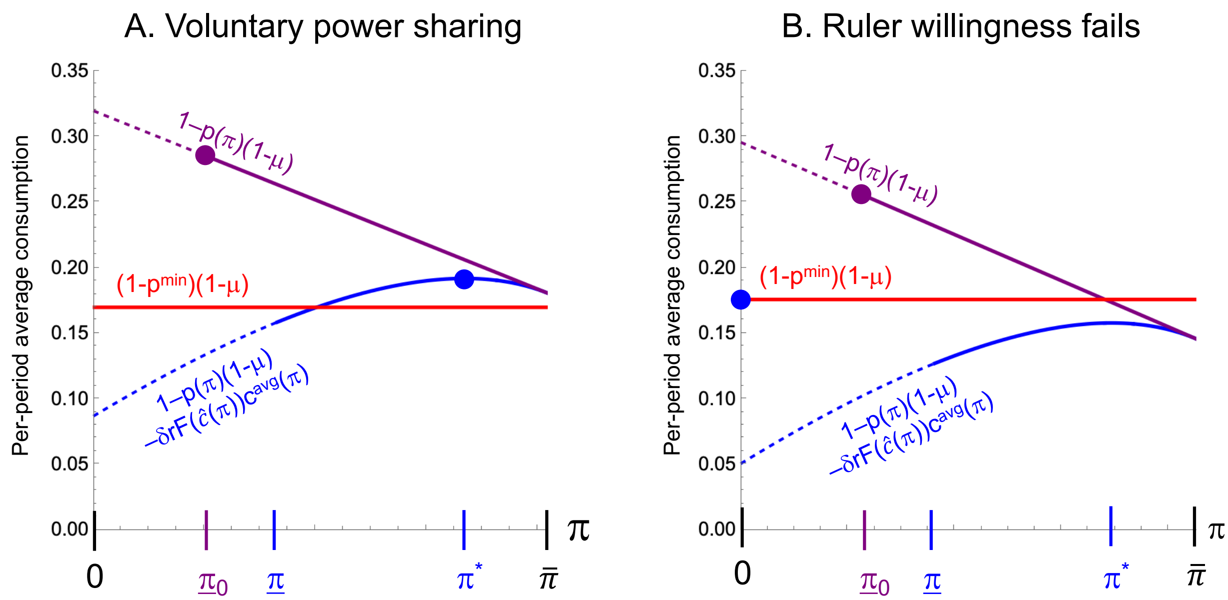
> **Lemma 6** (Costly mobilization and ruler willingness)**.** *Assume $F \sim U(0, c^{max})$. The set of parameter values in which ruler willingness holds is smaller if mobilization is costly than if not.*

Equilibrium power sharing. Figure 2 illustrates how costly mobilization affects equilibrium power sharing. The blue line represents the ruler's per-period average consumption along a peaceful path, presuming the core model with costly mobilization. The solid line indicates parameter values in which $\pi > \underline{\pi}$, and thus the equilibrium path of play is peaceful for those values of π. The purple curve conveys the same information for the ruler's consumption while setting the costs of mobilization to 0; this is the conventional model in which the opposition costlessly mobilizes in every period that Nature permits. The red line is the ruler's consumption if $\pi = 0$ and a revolt occurs. The dots indicate the equilibrium power-sharing level, depending on whether mobilization is costly (blue) or not (purple).

[24] The threat-enhancing term is multiplied by post-conflict surplus because this amount affects both players' reservation values to fighting.

[25] Powell (2006) conceptualizes first-strike advantages as a subset of conflicts triggered by commitment problems.

Figure 2: Costly mobilization and endogenous power sharing



Notes: $\delta = 0.7$, $p^{\min} = 0.8$, $p^{\max} = 1$, $r = 0.3$, $F \sim U[0, 1]$. In Panel A, $\mu = 0.12$. In Panel B, $\mu = 0.15$. Assumption 1 is met for all parameter values at which the blue curves coincide with a peaceful path of play. Proposition 2 characterizes $\underline{\pi}$, Lemma 5 characterizes π^*, and the proof for Lemma 6 characterizes $\underline{\pi}_0$.

In both panels, the slopes of the blue and purple curves diverge. The purple curve slopes downward because of the threat-enhancing effect. Although this force is also present in the blue curve, the effect of raising π on lowering the costs of mobilization dominates this effect for most of the parameter values depicted (see Equation 12), resulting in a positive slope.

In Panel A, ruler willingness holds regardless of whether mobilization is costly. Consequently, the divergent slopes between the blue and purple curves yield a higher level of power sharing if mobilization is costly than if not. By contrast, in Panel B, ruler willingness holds only if mobilization is costless. Despite the upward slope of the blue curve, the low absolute level of consumption along a peaceful path implies the ruler would prefer to incur a revolt. Thus, the ruler shares no power, whereas he would have were mobilization not costly. Proposition 3 summarizes the equilibrium strategy profile and outcomes.

Proposition 3 (Equilibrium with endogenous power sharing)**.** *Suppose $r < \overline{r}$.*

- *If ruler willingness holds (Equation 14), then the ruler sets $\pi = \tilde{\pi}$. In every* *period, the opposition mobilizes if and only if $c_t \leq x^*(\tilde{\pi})$. If the opposition mobilizes, the ruler offers $x_t = x^*(\tilde{\pi})$ and the opposition accepts if $x_t \geq x^*(\tilde{\pi})$ (and revolts otherwise). Along the equilibrium path of play, revolts never occur.*

- *If ruler willingness fails, then the ruler sets $\pi = 0$. In every period, the opposition mobilizes if and only if $c_t \leq x^*(0)$. If the opposition mobilizes, the ruler offers any $x_t \in [0, 1]$ and the opposition revolts in response to any offer. Along the equilibrium path of play, a revolt occurs in the first mobilization period.*

6 EXTENSION: CONTINUOUS DISTRIBUTION OF THREATS

The standard window-of-opportunity model of commitment problems and conflict assumes a binary distribution of threats. I adopt this in the baseline model by assuming the opposition either mobilizes and wins a revolt with probability $p(\pi)$, or refrains from mobilizing and wins (implicitly) with probability 0. This setup is less restrictive than it may seem; the binary structure can be recovered endogenously when allowing the opposition to choose from a continuum of mobilization levels. Assume that in any period the opposition's mobilization decision entails choosing a probability of winning $p_t \in [0, p(\pi)]$. The opposition pays a higher cost for a higher probability of winning, but the distribution of costs can be higher or lower across periods depending on a Nature draw. Formally, the cost is $c_t \frac{p_t}{p(\pi)}$, with c_t drawn from the same distribution F as in the baseline model.

In equilibrium, in each period, the opposition chooses either $p_t = 0$ or $p_t = p(\pi)$, as in the baseline model. The characterization of the optimal transfer (Equation 3) is unchanged, except replacing $p(\pi)$ with p_t and explicitly writing the transfer as a function of the contemporaneous probability of winning, $x^*(p_t)$. Given this, the opposition's optimal mobilization choice solves

$$\max_{p_t \in [0, p(\pi)]} \quad - c_t \frac{p_t}{p(\pi)} + \underbrace{p_t \frac{1-\mu}{1-\delta}}_{\pi + x^*(p_t) + \delta V_O} \quad .$$

This objective function is linear, and therefore is maximized either at the lower bound (no mobilization) or upper bound (full mobilization). Moreover, the threshold at which the opposition chooses full mobilization is identical to Equation 7 in the baseline game. Thus, allowing for endogenous mobilization choices is the key alteration, whereas a continuous distribution of threats does not qualitatively change the insights.

7 Conclusion

This paper embeds endogenous, costly mobilization into a model that otherwise resembles the canonical framework for analyzing commitment problems, conflict, and power sharing. I conclude by offering interpretations of each of the three main insights and highlight relevant considerations for empirical research.

First, strategic decisions that reduce the frequency of mobilization do not affect the opposition's bargaining leverage, which smooths out a key friction in existing models. This finding carries an important implication for questions such as (a) How does the level of power sharing affect the frequency of windows of opportunity? (b) How does this consequence of power sharing affect prospects for peaceful bargaining? Existing models overlook these questions by treating windows of opportunity as exogenous.[26] However, naturally, we would think that the institutional structure would affect incentives to exert costly pressure against the government. In the present model, sharing power creates two countervailing effects on the opposition's incentives to mobilize. Higher basement spoils raise the opposition's consumption along an equilibrium path, which increases the opportunity cost of revolting. By contrast, a higher probability of winning increases the opportunity cost of the status quo, which bolsters its bargaining leverage. The first effect dampens the opposition's incentive to mobilize whereas the second effect raises it.[27]

However, the indirect effects of the power-sharing level on the opposition's bargaining leverage—through the channel of mobilization frequency—*cancel out* because of Lemma 1. Thus, what in principle could be quite complicated net effects of power sharing on outcomes of interest are

[26] Some partial exceptions model the distribution of threats as exogenous but correlated with variables such as the power-sharing level or the opposition's coercive strength (Paine 2022; Luo 2023; Little and Paine 2024).

[27] The assumptions presented above ensure that the first effect dominates.

instead quite simple to derive; only the direct effects matter. This finding also underscores that the direct commitment and threat-enhancing effects are more fundamental in the bargaining interaction than are indirect effects that affect the frequency of mobilization.

This observation also simplifies tasks in empirical research. Parameters such as the frequency of mobilization are notoriously difficult to measure.[28] However, endogenous drivers of windows opportunity should affect outcomes only through their direct effects, and thus the researcher needs only to measure more tangible indicators such as the amount and importance of cabinet positions that are distributed (e.g., Arriola 2009; Francois et al. 2015), not the opposition's ability to leverage such positions to create windows of opportunity.

Second, fully endogenous mobilization eliminates the ruler's commitment problem, even without power sharing. This result demonstrates that the standard mechanism connecting commitment problems to conflict *requires* exogenous frictions that prevent the opposition from mobilizing in some periods. That is, exogenous restrictions on windows of opportunity are a consequential assumption, as opposed to a simple reduced form for the present model with costly, endogenous mobilization. Absent exogenous frictions, if conflict occurs in equilibrium, it is because peace is costlier than conflict, *not* a commitment problem. This forces us to rethink the logic of the commitment problem while also highlighting previously unrecognized overlap with costly peace mechanisms for war.

Showcasing the centrality of exogenous frictions for the canonical commitment problem story also prompts important questions about the empirical sources of exogenous frictions. One natural source is canonical coordination and collective action problems. Free-riding incentives and the difficulty of identifying focal points for coordination create a natural friction against anti-government mobilization. Authoritarian governments exacerbate this natural tension by engaging in varied forms of preventive repression to make it restrictively difficult for the opposition to organize (Ritter 2014; Dragu and Przeworski 2019). What may seem like a contented population might occa-

[28] For an exception that takes measurement of this parameter seriously, see Castañeda Dower et al.'s (2018) analysis Imperial Russia's Great Reforms in the 1860s.

sionally rise in unexpected bursts of revolutionary dissent (Kuran 1991). Such microfoundations are crucial because of the finding that an exogenous block against the opposition mobilizing is a necessary friction for the commitment problem to trigger conflict.[29]

Third, costly mobilization alters the ruler's power-sharing calculus. Existing explanations for institutional concessions typically divide into either bottom-up or top-down approaches. The present model highlights an important way in which these two intersect. The ruler faces bottom-up pressure from the opposition, who can mobilize threats of revolt. However, if mobilization is fully endogenous and peace is not costly, anti-regime threats will never manifest into actual revolts. Nonetheless, the ruler faces a previously unrecognized incentive. Sharing power reduces the frequency of mobilization, and thereby increases total societal surplus, which the ruler pockets. For parameter values in which the ruler voluntarily shares power, anti-regime mobilization drives the ruler's choice—who shares power precisely to prevent costly windows of opportunity from arising, even if such windows of opportunity would not topple the regime. Thus, what may appear to be purely voluntarily transitions (top-down) may in fact have a strong bottom-up motive. The fundamental drivers of institutional reforms may in fact work through off-the-equilibrium-path channels, which carries important implications for future model development and for interpreting empirical cases.

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[29]See also Chadefaux's (2011) analysis of endogenous shifts in power in the IR context.

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Appendix for "Authoritarian Power Sharing with Endogenous Windows of Opportunity"

Contents

A Proofs

Proof of Proposition 1. At the upper bound, $\Theta(0,1) = 1 - \delta c^{\text{avg}} - p^{\text{min}}(1-\mu) > 0$ follows from Assumption 1. The unique threshold follows from strict monotonicity: $\frac{d\Theta(0,\overline{r})}{dr} = \delta(1 - c^{\text{avg}}) > 0$. The explicit characterization is

$$\overline{r} = \frac{p^{\text{min}}(1-\mu) - (1-\delta)}{\delta(1 - c^{\text{avg}})}$$

■

Proof of Lemma 4. Using Equation 11, the basement spoils term $\delta(1 - rF(\hat{c}))$ reaches its lower bound at $F(\hat{c}) = 1$ and $r = \overline{r}$. Consequently, it suffices to establish

$$\delta\left(1 - \underbrace{\frac{p^{\text{min}}(1-\mu) - (1-\delta)}{\delta(1 - c^{\text{avg}})}}_{\overline{r}}\right) > (p^{\text{max}} - p^{\text{min}})(1-\mu).$$

Algebraic rearranging yields

$$\frac{1 - \delta c^{\text{avg}}}{1-\mu} > c^{\text{avg}} p^{\text{min}} + (1 - c^{\text{avg}})p^{\text{max}}.$$

The LHS is identical to the LHS of the inequality in Assumption 1. The maximum value of the RHS is $p^{\text{max}} \leq 1$. Therefore, Assumption 1 suffices to establish the inequality. ■

Proof of Proposition 2. Applying the intermediate value theorem establishes existence

- Lower bound: $\Theta(0, r) < 0$. Follows from the present assumption $r < \overline{r}$.
- Upper bound: $\Theta(1, r) = 1 - \delta r \underbrace{F(0) c^{\text{avg}}(0)}_{=0} - p^{\text{max}}(1-\mu) > 0$.
- $\Theta(\pi, r)$ is continuous in π.

Uniqueness follows from strict monotonicity: $\frac{d\Theta(\pi,r)}{d\pi} > 0$ (see Lemma 4). ■

Proof of Lemma 5, Step 1. Demonstrating $\frac{d^2R(\pi)}{d\pi^2} < 0$ proves (generically) that the maximizer is unique and limits the set of possible maximizers over the domain $[0, \overline{\pi}]$ to the set $\{0, \pi^*, \overline{\pi}\}$, where π^* is an interior maximizer characterized below in Equation A.1.

$$\frac{d^2R(\pi)}{d\pi^2} = -\delta r f(\hat{c})\Big(\frac{d\hat{c}}{d\pi}\Big)^2 - \delta r\hat{c}\underbrace{f'(\hat{c})}_{=0}\Big(\frac{d\hat{c}}{d\pi}\Big)^2 - \delta r\hat{c}f(\hat{c})\frac{d^2\hat{c}}{d\pi^2} - \underbrace{p''(\pi)}_{=0}(1-\mu),$$

$$\text{with} \quad \frac{d^2\hat{c}}{d\pi^2} = \frac{1}{1-\delta(1-rF(\hat{c}))}\left(\underbrace{p''(\pi)}_{=0}(1-\mu) - \delta r f(\hat{c})\Big(\frac{d\hat{c}}{d\pi}\Big)^2\right),$$

where $f'(\hat{c}) = 0$ follows from assuming F is uniform and $p''(\pi) = 0$ follows from the linear functional form. The entire expression simplifies to

$$-\delta r f(\hat{c})\Big(\frac{d\hat{c}}{d\pi}\Big)^2\left(1 - \frac{\delta r\hat{c}f(\hat{c})}{1-\delta(1-rF(\hat{c}))}\right).$$

It suffices to demonstrate

$$1 > \frac{\delta r\hat{c}f(\hat{c})}{1-\delta(1-rF(\hat{c}))} \implies 1-\delta+\delta r\big(F(\hat{c}) - \hat{c}f(\hat{c})\big) > 0.$$

A property of the uniform distribution is $F(z) = zf(z)$ for any z, which reduces the inequality to the true statement $1-\delta > 0$.

Step 2. The upper bound $\pi = \overline{\pi}$ is not a maximizer because

$$\frac{dR(\pi)}{d\pi}\bigg|_{\pi=\overline{\pi}} = -(p^{\text{max}} - p^{\text{min}})(1-\mu) < 0.$$

Step 3. The lower bound $\pi = 0$ is not a maximizer if p^{max} is high enough because then $\frac{dR(\pi)}{d\pi}\big|_{\pi=0} > 0$. The following two results establish the threshold $\hat{p}^{\text{max}}$.

$$\frac{dR(\pi)}{d\pi}\bigg|_{\pi=0,p^{\text{max}}=p^{\text{min}}} = \frac{\delta r\hat{c}f(\hat{c})}{1-\delta(1-rF(\hat{c}))} > 0$$

$$\frac{d^2R(\pi)}{d\pi dp^{\text{max}}}\bigg|_{\pi=0} = -(1-\mu)\left(1 + \frac{\delta r\hat{c}f(\hat{c})}{1-\delta(1-rF(\hat{c}))}\right) < 0$$

Step 4. The unique maximizer is the interior value π^* that satisfies

$$Z(\pi^*) = \big(Z(\pi^*)+1\big)(p^{\text{max}} - p^{\text{min}})(1-\mu), \quad \text{for} \quad Z(\pi^*) \equiv \frac{\delta r\int_0^{\hat{c}(\pi^*)} c_t dF(c)}{1-\delta(1-rF(\hat{c}(\pi^*)))}. \tag{A.1}$$

■

Proof of Lemma 6. The proof requires demonstrating that the ruler's maximum consumption along a peaceful path is lower if mobilization is costly than if it is not.

$$\underbrace{1-\delta r F(\hat{c}(\tilde{\pi}))c^{\text{avg}}(\hat{c}(\tilde{\pi}))-p(\tilde{\pi})(1-\mu)}_{\text{Costly mobilization}} < \underbrace{1-p(\tilde{\pi}_0)(1-\mu)}_{\text{Costless mobilization}} \tag{A.2}$$

$$\text{for} \quad \tilde{\pi} = \underset{\pi\in[\underline{\pi},\overline{\pi}]}{\arg\max}\ 1-\delta r F(\hat{c}(\pi))c^{\text{avg}}(\hat{c}(\pi))-p(\pi)(1-\mu) \tag{A.3}$$

$$\text{and} \quad \tilde{\pi}_0 = \underset{\pi\in[\underline{\pi}_0,\overline{\pi}_0]}{\arg\max}\ 1-p(\pi)(1-\mu), \tag{A.4}$$

and with $\underline{\pi}$ defined in Proposition 2, $\overline{\pi}$ defined in Lemma B.1, $\underline{\pi}_0$ implicitly defined as

$$\underline{\pi}_0+\big(1-\delta(1-rF(1-\underline{\pi}_0))\big)(1-\underline{\pi}_0)-p(\underline{\pi}_0)(1-\mu)=0,$$

and $\overline{\pi}_0$ implicitly defined as

$$\overline{\pi}_0-p(\overline{\pi}_0)(1-\mu)=0.$$

Note that the same proofs as used in Proposition 2 and Lemma B.1 imply the existence and uniqueness of $\underline{\pi}_0$ and $\overline{\pi}_0$, respectively.

Lemma 5 proved $\tilde{\pi}\in\{\underline{\pi},\pi^*\}$. The objective function in Equation A.4 strictly decreases in π, which implies $\tilde{\pi}_0=\underline{\pi}_0$. Because $\pi^*>\underline{\pi}$ and $p'(\pi)>0$, to prove the lemma it suffices to demonstrate $\underline{\pi}>\underline{\pi}_0$. The implicit definitions are

$$\underline{\pi}+\big(1-\delta(1-rF(1-\underline{\pi}))\big)(1-\underline{\pi})-\delta r\int_0^{1-\underline{\pi}}c_t dF(c)-p(\underline{\pi})(1-\mu)=0$$

Setting the left-hand side of each equal to each other and rearranging yields

$$\underline{\pi}+\big(1-\delta(1-rF(1-\underline{\pi}))\big)(1-\underline{\pi})-p(\underline{\pi})(1-\mu)$$

$$-\Big(\underline{\pi}_0+\big(1-\delta(1-rF(1-\underline{\pi}_0))\big)(1-\underline{\pi}_0)-p(\underline{\pi}_0)(1-\mu)\Big)=\delta r\int_0^{1-\underline{\pi}}c_t dF(c).$$

The claim follows from $\frac{d}{d\pi}\Big(\underline{\pi}+\big(1-\delta(1-rF(1-\underline{\pi}))\big)(1-\underline{\pi})-p(\underline{\pi})(1-\mu)\Big)>0$ and $\delta r\int_0^{1-\underline{\pi}}c_t dF(c)$. ■

B Corner Solution for Equilibrium Transfer

The analysis in the paper assumes π is low enough that the equilibrium transfer is positive. However, if π is large enough, then $x^* < 0$; therefore, because of the non-negativity constraint, the equilibrium transfer is 0. The threshold is $\overline{\pi}$, characterized below in Lemma B.1. For $\pi \geq \overline{\pi}$, the equilibrium frequency of mobilization is 0 because mobilizing would require the opposition to pay a cost c_t without a corresponding benefit.

The analysis of endogenous power sharing is unchanged when allowing $\pi \in [0, 1]$. The ruler would never choose $\pi \geq \overline{\pi}$, as $\pi = \overline{\pi}$ is not a maximizer over $\pi \in [0, \overline{\pi}]$ (see Step 2 of the proof of Lemma 5), and for any $\pi > \overline{\pi}$ the ruler's per-period average consumption equals $1 - \pi$, which strictly decreases in π.

The analysis with exogenous power sharing differs when allowing $\pi \in [0, 1]$. For high-enough π, the ruler's consumption drops below its reservation value from a revolt, $(1 - p(\pi))(1 - \mu)$. Thus, if the ruler was granted an additional option in the stage game to provoke a revolt (e.g., commit an atrocity or attempt to directly govern the opposition's territory in a manner that would necessarily provoke armed resistance), he would exercise that option for high-enough π.

Lemma B.1 (Corner solution for optimal transfer)**.** *A unique threshold $\overline{\pi} \in (\underline{\pi}, 1)$ exists such that*

$$x^* \begin{cases} > 0 & \text{if } \pi < \overline{\pi} \\ = 0 & \text{if } \pi = \overline{\pi} \\ < 0 & \text{if } \pi > \overline{\pi}, \end{cases}$$

for x^* defined in Equation 3.

Proof. Rearranging Equation 3 facilitates an implicit expression $\overline{\Theta}(\overline{\pi}) = 0$, for

$$\overline{\Theta}(\pi) = \pi - p(\pi)(1 - \mu) - \delta r \int_0^{\hat{c}(\pi)} c_t dF(c).$$

Applying the intermediate value theorem establishes existence

- Lower bound $\pi = \underline{\pi}$. Combining the implicit characterizations for $\underline{\pi}$ and $\overline{\pi}$ yields

$$\overline{\Theta}(\overline{\pi}) - \overline{\Theta}(\underline{\pi}) = \big(1 - \delta(1 - rF(1 - \underline{\pi}))\big)(1 - \underline{\pi}).$$

  The RHS is strictly positive, which implies the LHS must be as well. Consequently, it suffices to prove $\frac{d\overline{\Theta}(\pi)}{d\pi} > 0$.

$$\frac{d\overline{\Theta}(\pi)}{d\pi} = 1 - (p^{\text{max}} - p^{\text{min}})(1 - \mu) - \delta r \hat{c} f(\hat{c}) \frac{d\hat{c}}{d\pi},$$

$$\text{for} \quad \frac{d\hat{c}}{d\pi} = \frac{-1 + (p^{\max} - p^{\min})(1-\mu)}{1 - \delta(1 - rF(\hat{c}))}.$$

This yields

$$\frac{d\overline{\Theta}(\pi)}{d\pi} = \left(1 + \frac{\delta r \hat{c} f(\hat{c})}{1 - \delta(1 - rF(\hat{c}))}\right)\Big(1 - (p^{\max} - p^{\min})(1-\mu)\Big) > 0. \tag{B.1}$$

- Upper bound $\pi = 1$.

$$\overline{\Theta}(1) = 1 - \delta r \underbrace{\int_0^{\hat{c}(1)} c_t dF(c)}_{=0} - p^{\max}(1-\mu) > 0$$

  To establish that the frequency of mobilization is 0, suppose not and there are draws of c_t at which the opposition mobilizes. With $\pi = 1$, the mobilization threshold from Equation 5 becomes

$$-c_t + p^{\max}\frac{1-\mu}{1-\delta} \geq \frac{1}{1-\delta} + \frac{rF(\hat{c})(x^*(1) - c^{\text{avg}}(\hat{c}))}{1-\delta},$$

  which is false for any $c_t \geq 0$.

- $\overline{\Theta}(\pi)$ is continuous. ■

Uniqueness follows from the strict monotonicity established in Equation B.1.