The Threat-Enhancing Effect of Authoritarian Power Sharing

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Abstract

When and why do autocrats share political power? In existing theories, rulers respond to threats of revolt by conceding institutional reforms, which permanently bolsters their commitment to redistribute to the opposition. However, sharing power also yields another, commonly overlooked, effect: reallocating power toward the opposition. I analyze a formal model to illuminate three distinct frictions created by the consequent threat-enhancing effect. First, bolstering the opposition's coercive capabilities creates a commitment problem for the opposition. The ruler might become unwilling to share power, despite triggering a revolt. Second, anticipation of a favorable shift in power tomorrow can induce the opposition to wait for a power-sharing deal, which risks conflict today. Third, reallocating power toward the opposition can enforce power-sharing deals by better enabling the opposition to defend its spoils. However, the opposition's greater ability to overthrow the ruler or the ruler's possible unwillingness to share power can override this peace-inducing effect.

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1 INTRODUCTION

When and why rulers share political power is a central question in the study of political institutions. Democratic regimes, by definition, divide power among different actors, but authoritarian regimes vary widely in their institutional arrangements. In some regimes, a single ruler is absolute and serves for life. No powerful groups or institutions can check his decisions and ambitions. But many authoritarian regimes feature different types of power-sharing arrangements, such as co-opting members of rival parties or ethnic groups with appointed cabinet positions or elected legislative seats, settling civil wars with provisions for military integration or regional autonomy, and expanding the franchise.

This paper examines theoretically when and why autocrats share power as well as how these decisions affect authoritarian regime survival. A core premise in canonical models of political transitions and power sharing is that the autocrat faces a commitment problem (Acemoglu and Robinson 2000, 2001, 2006; Castañeda Dower et al. 2018, 2020; Powell 2024). The opposition can periodically mobilize a violent threat, which the ruler would prefer to buy off with temporary concessions such as raising public-sector wages or subsidies—but without reforming political institutions.[1] However, the ruler cannot commit to offer concessions at any future times in which the opposition lacks a coercive threat. When societal threats arise rarely, the opposition rejects bargains involving *temporary* concessions only because its shadow of the future is unfavorable. Co-opting the opposition requires institutional power-sharing concessions that *permanently* enable the ruler to commit to a more favorable distribution of benefits.

However, most power-sharing deals do not solely enhance the ruler's commitment ability, which creates the departure point for the present paper. Meng et al. (2023) distinguish power-sharing arrangements from other modes of co-optation by specifying two core elements: (1) an *institutional* mechanism to share spoils between the ruler and opposition, and (2) a reallocation of *coercive* power that favors the opposition. Existing theories of authoritarian power sharing typically incor-

[1] See, for example, the response of the Saudi state to Arab Spring protesters in 2011; https://www.irishtimes.com/news/saudi-king-announces-huge-spending-to-stem-dissent-1.576600.

porate an institutional mechanism but overlook the coercive aspect.

The coercive dimension of power sharing *enhances the opposition's threat* to overthrow the ruler. This idea applies to varied real-world circumstances. When broadening the representation of ethnic and other societal groups in the cabinet, rulers seek to prevent rebellions from emerging (Arriola 2009; Cederman et al. 2013; Francois et al. 2015; Meng 2020; Arriola et al. 2021; Woldense and Kroeger 2024). However, rivals can leverage powerful cabinet positions to usurp the ruler in a coup, which Roessler (2016) conceptualizes as an internal security dilemma. Empirically, in Africa, members of ethnic groups with positions in the central government more frequently launch and succeed at coups than members of groups lacking a foothold at the center. For this reason, leaders often personally retain the Minister of Defense portfolio or confine it to co-partisans (Meng and Paine 2022). In extreme cases of ethnocratic regimes (e.g., Syria under the al-Asads) or kleptocratic regimes (e.g., Zaire under Mobutu), rulers fear that any individuals beyond their narrow circle of co-ethnics, family members, and hand-picked sycophants could leverage a central position to seize power.

Similarly, civil wars commonly end with provisions for integrating the rebel army into the state military (Hartzell and Hoddie 2003; Glassmyer and Sambanis 2008; Samii 2013; Licklider 2014). The rebels do not completely disarm, and can therefore protect themselves against transgressions by the government. Nonetheless, these deals create the risk that members of the former rebel military will use their coercive strength to attack the government. For example, a power-sharing agreement in Chad in 1979 split the presidency, vice presidency, and defense portfolio among the three main warring parties, and called for military integration. However, before military reform occurred, the Minister of Defense used his troops to attack the government and emerged victorious in 1982. Alternatively, some civil wars end with regional autonomy deals, but these create similar risks because local interests can leverage their regional stronghold to secede (Cederman et al. 2015).

Medieval European monarchs faced a related impediment to co-opting regional elites. States such as the Carolingian Empire and its successors conquered much larger areas than they could govern directly. And hard currency was scarce in the late first millennium because of limited long-distance trade and unfavorable climatic shifts (Lopez 1976). Consequently, land grants were the most viable means that kings had to reward their supporters. However, permanently giving away control over land enabled the rise of a hereditary nobility that amassed wealth and military power beyond the control of the state (Bloch 1961). In France, for example, the Capetian monarchy founded in the tenth century was weaker than the most powerful duchies (e.g., Burgundy) for centuries afterwards (Spruyt 1996). This contrasted with contemporaneous empires in China and the Middle East, where monarchs more successfully prevented hereditary control over land beyond the control of the state (Blaydes 2017; Stasavage 2020; Wang 2022).

Under what conditions do power-sharing deals arise and how long does the regime survive, given the threat-enhancing effect? To assess these questions, the present model incorporates the coercive aspect of authoritarian power sharing in addition to the standard institutional dimension. In doing so, the present model directly captures what Svolik (2012) labels as the two fundamental elements of authoritarian politics: limited ability to commit to promises and the recourse to violence as a last resort. Unlike the most closely related models, sharing power does not unambiguously solve the problem of limited commitment nor pre-empt violence. The threat-enhancing effect ensures both problems remain present.

The model features an infinite-horizon interaction in which a ruler bargains over spoils with an opposition actor who periodically poses a threat of revolt ("high threat"). The ruler has two strategic levers, both of which are continuous choices. First, how much power to share. Institutional concessions create a *permanent* basement level of spoils for the opposition's per-period consumption (commitment effect), and raise the opposition's probability of succeeding in a revolt (threat-enhancing effect). Second, how much to redistribute (beyond the basement spoils) via *temporary* concessions that confer consumption only in the present period and do not shift power.

Loosely, an equilibrium in which the ruler and opposition secure a peaceful power-sharing deal requires the conjunction of three conditions. (a) *Opposition credibility*: the opposition must have a credible threat to revolt if the ruler does not share power. (b) *Opposition willingness*: the opposition must be willing to accept the most lucrative power-sharing deal. (c) *Ruler willingness*: the ruler must be willing to peacefully share power rather than incur a revolt.

Throughout the analysis, I mimic the key condition in existing models that compels the ruler to share power. I assume the opposition is *weakly credible*—it can credibly revolt if the ruler never offers power-sharing deals. Moreover, in the baseline model, I assume that the opposition willingness condition holds as well. This ensures that sharing enough power solves the ruler's commitment problem. Assuming both opposition willingness and weak opposition credibility should, seemingly, ensure peaceful power sharing. Nonetheless, the threat-enhancing effect creates two distinct frictions that can prevent this outcome.

First, the threat-enhancing effect can induce the ruler to deliberately provoke a revolt rather than peacefully share power. Sharing power reallocates coercive power toward the opposition. This creates a *commitment problem for the opposition*, contrary to the standard focus on the *autocrat's* commitment problem. If the opposition could credibly promise to not leverage all the additional coercive strength conferred by a power-sharing deal, then a deal exists that both sides would prefer to conflict. However, absent such commitment ability, a severe-enough threat-enhancing effect makes the *ruler unwilling* to share power; he prefers fighting from a stronger position than peacefully bargaining from a weaker position.

Second, even if the ruler is willing to share power, the threat-enhancing effect yields a probabilistic risk of conflict. If the opposition's threat of revolt lacks *strong credibility*, the opposition (sometimes) accepts temporary concessions at present while waiting for the ruler to share power in the future. In any high-threat period, the opposition surely revolts if the ruler does not share power in the current period and will not in any future period.[2] However, even if the ruler does not share power today, sometime in the future, the opposition will again be poised to revolt. If the

[2]This is guaranteed by weak opposition credibility.

ruler shares power at that juncture, the opposition's reservation value discretely increases because the threat-enhancing effect reallocates power in its favor. Consequently, the threat-enhancing effect creates a wedge between the thresholds at which the opposition revolts if (a) never offered a power-sharing deal (weak opposition credibility) and (b) not always offered a power-sharing deal (strong opposition credibility). Given the continuous choice over power-sharing levels, this wedge does not exist without the threat-enhancing effect. For parameter values within this wedge, the unique equilibrium entails the ruler mixing between sharing power and not, and the opposition mixing between accepting temporary concessions and revolting.

An extension incorporates another key idea: power-sharing deals, even once enacted, are often difficult to enforce. In the typical authoritarian setting of weak institutions and non-credible third-party constraints, rulers can renege on power-sharing deals by shuffling ministers, shutting down parliament, ignoring court rulings, or canceling elections.[3] To capture this idea, I extend the model to allow the ruler periodic opportunities to renege on power-sharing deals. This relaxes the assumption that sharing power creates a permanent basement level of spoils for the opposition. Consequently, sharing power may be insufficient to pacify the opposition, that is, opposition willingness can fail.

In this setting, the reallocation of power inherent in power-sharing deals can, potentially, work in the opposite direction as the baseline model by helping to *secure* peace. A power-sharing deal can tie the ruler's hands and become self-enforcing by reallocating power to enable the opposition to *defend* its newfound spoils against autocratic reversals. I capture this idea in the extension by assuming that reallocating power toward the opposition reduces the frequency of subversion opportunities. Under certain conditions, this effect is necessary and sufficient for opposition willingness to hold. Nonetheless, peaceful power sharing is still fraught for two reasons stemming from the threat-enhancing effect. First, the threat-enhancing effect creates an *offensive* advantage if the op-

[3]For discussions of weak institutions, see Svolik (2012) and Powell (2024). Although I (implicitly) focus on overt transgressions, recent research highlights smaller, legally ambiguous tactics that erode the value of these institutions, which threaten democratic stability as well (Chiopris et al. 2021; Helmke et al. 2022; Luo and Przeworski 2023; Grillo et al. 2024).

position strikes against the ruler, which can overwhelm the defensive consequences of reallocating power. Second, even if the defensive consequences predominate, power cannot shift so much that the ruler becomes unwilling to share power.

In sum, we cannot understand the prospects for power-sharing deals or their consequences without evaluating the threat-enhancing effect, which exists because power-sharing deals generally bolster the opposition's coercive capabilities. Adding a threat-enhancing effect to canonical models of political transitions and power sharing yields substantially different findings for the conditions under which a ruler chooses to share power and when sharing power prevents conflict. In some ways, successfully sharing power is harder than implied by theories that include a commitment effect only. The threat-enhancing effect can dissuade the ruler from sharing power or induce the opposition to wait for future power-sharing deals; either can yield conflict. Nonetheless, reallocating power can sometimes undergird peaceful power-sharing arrangements in circumstances in which constitutional safeguards are not well established, as the coercive consequences of sharing power can tie the ruler's hands against reneging. This can make the opposition willing to accept a deal—although possibly at the expense of the ruler's willingness to share power. Sharing political power is inherently fraught because either the ruler or opposition may lack the ability to commit to a division that both sides prefer to conflict.

2 Contributions to Related Research

2.1 Key Concepts

A vast substantive literature examines varieties of power-sharing arrangements in authoritarian regimes. As noted earlier, many of these contributions highlight ways in which sharing power reallocates power in favor of the opposition. The present model incorporates and extends these substantive ideas to provide new insights into the strategic choices that determine when power-sharing arrangements take hold and the consequences for regime survival.

Permanent institutional concessions. The idea that power-sharing institutions enable rulers to credibly commit to promises is ubiquitous in the literature, ranging from England after the Glorious Revolution (North and Weingast 1989; Cox 2016) and the colonial United States (Gailmard 2024), to China and Mexico in the late twentieth century (Gehlbach and Keefer 2011; Magaloni 2008). I build upon a class of formal models with an infinite-horizon setup featuring an opposition actor who poses a periodic threat and a ruling actor has a strategic option to reform institutions, which enhances commitment to future spoils and redistribution. Acemoglu and Robinson (2000, 2001, 2006) conceptualize institutional reform as a binary choice regarding whether to fully expand the franchise, which allows the masses to set policy in all periods. Subsequently, Castañeda Dower et al. (2018, 2020) and Powell (2024) have shown that adjusting the same core framework to allow for a continuous choice over institutional reform yields a natural model for studying more graded forms of authoritarian power sharing.[4] Beyond the most closely related models that examine endogenous institutional reforms, these models share similar foundations as a large IR literature on bargaining models of commitment problems and conflict (Fearon 1995; Powell 2004, 2006).

In my model, higher levels of power sharing enable institutional commitment by conferring a basement level of per-period spoils for the opposition. This idea aligns with empirically common modes of authoritarian power sharing. The opposition benefits from controlling an asset or from favorable rules in an institutional forum, and it is difficult for the ruler to reverse the concession (Meng et al. 2023). Conceptualizing power sharing in terms of a basement level of spoils (Powell 2024), as opposed to elections that confer policy-making powers to the victor (Acemoglu and Robinson 2006; Castañeda Dower et al. 2018), situates the model unambiguously within the realm of authoritarian politics. This setup sidesteps distinct questions about when incumbents acquiesce to relinquishing power upon losing elections, as studied in models of self-enforcing democracy (Przeworski et al. 2015).

[4]These later models also examine bargaining over a simple object valued at 1, as opposed to the more involved political economy setup in Acemoglu and Robinson that draws from the inequality-and-redistribution model of Meltzer and Richard (1981). I adopt the simpler setup as well.

Reallocating power. Sharing power entails reallocating *power* in addition to *sharing* spoils. This is inherent to empirically prevalent modes of power sharing such as distributing cabinet seats, military integration, regional autonomy, and land grants.[5] The most closely related formal models do not incorporate a threat-enhancing effect, which drives the new results here. Generally, theories of authoritarian survival (formal and non) focus mainly on the institutional elements of power sharing and their role in distributing patronage, and much less on the power element (Meng et al. 2023, 156–57).

The threat-enhancing effect has analogs in some existing models. IR models of conflict study endogenous shifts in the distribution of power (Fearon 1996; Chadefaux 2011; Powell 2013; Debs and Monteiro 2014; Spaniel 2019). A theme of these models is that an actor who gains power over time strategically can slow its increase to prevent the declining power from initiating a war. By contrast, here, the threat-enhancing effect makes it *more* difficult to buy off the opposition by raising its opportunity cost to accepting. Using the terminology from Little and Paine (2024), the threat-enhancing effect directly alters the opposition's maximum threat more than its average threat.

This is not the first model of domestic politics with a mechanism resembling the threat-enhancing effect, which can result from either sharing power, concentrating power, or repressing (Francois et al. 2015; Meng 2020; Gibilisco 2021; Paine 2021, 2022; Kenkel and Paine 2023; Luo 2023). However, each of these models lacks at least one of the two key elements of the present model and the aforementioned canonical models of political transitions and power sharing: (a) threats fluctuate over time, which creates a commitment problem because the ruler cannot commit to concessions in future low-threat periods, beyond what power-sharing institutions guarantee; and (b) sharing power enables the ruler to commit to a permanent basement level of concessions for

[5] Not all institutional reforms reallocate power to the opposition, though. For example, even after allowing the opposition to control seats in the legislature, opposition legislators are still farther from the center of power than high-ranking cabinet officials (Gandhi 2008; Guriev and Treisman 2019; Meng 2021). Earlier in European history, kings often required nobles to attend court in the capital, which enabled the king to monitor his subordinates and prevent regional rebellions. Thus, incorporating regional actors into the center did not entail a reallocation of power away from the ruler.

the opposition. The novel results here arise from analyzing the interaction of the institutional commitment and threat-enhancing effects.

Temporary policy concessions. Not all concessions reallocate power. In the model, concessions are divided into (a) permanent reforms to political institutions that reallocate power, and (b) temporary policy concessions that do not reallocate power. Many scholars examine non-political concessions such as land reform, housing, education, and public employment that can co-opt without empowering the opposition—and, in fact, can increase society's dependence on the state (Albertus et al. 2018; Hassan et al. 2022).

2.2 Ruler Willingness

A common assertion is that leaders prioritize political survival above all other goals (e.g., Bueno de Mesquita and Smith 2010, 936; Magaloni 2008, 717; Roessler 2016, 60). Thus, if sharing power is both necessary and sufficient to prevent an imminent revolt, the expectation is that leaders would make this concession. By contrast, because of the threat-enhancing effect in the present model, the ruler may prefer to incur a revolt and risk his political survival rather than share power and buy off an empowered challenger. This reflects the ruler's goal of maximizing lifetime expected consumption; surviving in office is a means to this goal rather than an end in its own right.

The most closely related models formalize the conventional intuition that rulers necessarily prioritize political survival. Sharing power yields a higher payoff for the ruler than incurring a revolt, given the standard assumption is that the opposition wins a revolt with probability 1 in high-threat periods.[6] Thus, the ruler necessarily prefers any alternative outcome. In Castañeda Dower et al. (2018), this logic prompts the ruling elite to always pre-empt a revolt by sharing power. The core logic is similar in Acemoglu and Robinson (2006), although they model an additional policy lever.

[6]More precisely, Acemoglu and Robinson (2006) and Castañeda Dower et al. (2018) assume that revolutions always succeed with probability 1, and the cost of revolutions fluctuates between relatively low (high-threat periods) and very high (low-threat periods). But the mechanics of the model are identical when formulated in terms of fluctuating probabilities of winning (Little and Paine 2024).

The ruling elite may choose to repress rather than share power (i.e., franchise expansion in their model). Repression is costly for the ruling elite but defeats the masses with probability 1. Thus, elites may forgo co-optation only because they can leverage an asymmetric conflict technology that enables them to remain in power. By contrast, here I model the opposition's threat as a non-degenerate probability of winning that varies as a function of the level of power sharing. This yields the possibility of ruler willingness failing even without introducing additional policy levers or asymmetric conflict technologies.[7]

The ruler's (possible) unwillingness to share power in the present model arises not solely because sharing power raises the opposition's probability of winning, but also because the opposition cannot commit to forgo leveraging the additional bargaining leverage conferred by a higher probability of winning. Other models contain a variant of the opposition's commitment problem, but this arises for distinct reasons such as exogenous drifts in power over time (Acemoglu et al. 2015) or the possibility of the opposition reneging on an elite-biased constitution (Fearon and Francois 2020). A mechanism presented in an extension in Dal Bó and Powell (2009) is more similar to the present conceptualization of the opposition's commitment problem. However, the core friction in their model is incomplete information and signaling rather than the autocrat's commitment problem.

2.3 Strong Opposition Credibility

Even if ruler willingness holds, the ruler *still* might forgo sharing power and risk the occurrence of conflict. This result further breaks down the conventional wisdom that dictators prioritize political survival above all other goals. If the opposition's threat to revolt lacks strong credibility, then it (probabilistically) is willing to wait for a future power-sharing deal. The ruler could share power with probability 1 to ensure the opposition will not revolt, but instead the ruler risks that the opposition can be pacified at present with temporary concessions. This finding pertains to existing

[7] Below I show that in the present framework, which lacks an additional option of repression, the threat-enhancing effect is a necessary condition for ruler willingness to fail.

discussions of mixed-strategy equilibria in this class of models (Acemoglu and Robinson 2017; Castañeda Dower et al. 2020; Gibilisco 2023), while demonstrating a novel mechanism to generate a wedge between the range of parameter values in which (a) the opposition revolts if the ruler *never* offers to share power (weak opposition credibility), and (b) the opposition revolts if the ruler does not *always* offer to share power (strong opposition credibility).[8]

2.4 Opposition Willingness

In the extension, the opposition is unwilling to accept *any* power-sharing deal if the ruler's opportunities to renege arise too frequently. Amid imperfect enforcement, the reallocation of power inherent in power-sharing deals may be necessary to secure peaceful bargaining. A variant of this idea appears in models that analyze institutional means for dictators to commit to promises, including legislatures (Gailmard 2024), parties (Gehlbach and Keefer 2011), palace courts (Myerson 2008), and elections (Weingast 1997; Fearon 2011). In these and related theories, formal rules create expectations about prohibited behavior and enable agents to coordinate to punish transgressions by the ruler. Communication and coordination yield similar consequences as the present result that reallocating power can stabilize power-sharing deals by enabling the opposition to defend its control over spoils.

Opposition willingness can fail for a distinct reason in Powell (2024). Ruling elites can exert costly effort to block a power-sharing deal prior to its implementation. Weak institutions make this effort more likely to succeed, which can make the opposition unwilling to accept any deal. However, this model does not incorporate the coercive consequences of power sharing. Therefore, it cannot explain how reallocating power to enable the opposition to defend its spoils can substitute for weak institutions to enforce power-sharing deals.

The technical apparatus behind the present extension with imperfect enforcement and reneging is closer to Acemoglu and Robinson's (2006, Ch. 7) extension with coups: after expanding the franchise, elites have periodic opportunities to regain power (see also Acemoglu and Robinson

[8] Appendix B.4 provides details.

2001). However, they explicitly do not analyze parameter values in which conflict occurs along the equilibrium path,[9] a key outcome to explain in the present model; nor do they allow the frequency of opportunities to renege to vary as a function of the level of power sharing.

3 MODEL SETUP

A ruler and opposition actor bargain over spoils across an infinite-horizon interaction. Periods are denoted by $t = 1, 2, 3\ldots$ and each player discounts future payoffs by a common factor $\delta \in (0, 1)$. Total societal output equals 1 in each period. The ruler begins each period t with control over a fraction $1 - \pi_{t-1}$ of state spoils, with π_{t-1} comprising the basement level of spoils for the opposition. At the outset of the game, $\pi_0 = 0$. I refer to this dynamic state variable as the level of power sharing.

In every period, Nature draws an iid threat posed by the opposition, which is high with probability $r \in (0, 1)$ and low with complementary probability. In a low-threat period, no strategic moves occur. The ruler consumes $1 - \pi_t$ and the opposition consumes π_t, and they move to the next period with respective continuation values V_R and V_O.

In a high-threat period that begins with an autocratic regime ($\pi_{t-1} = 0$), the ruler chooses $\pi_t \in [0, \overline{\pi}]$. By contrast, if a power-sharing regime is already in place ($\pi_{t-1} > 0$), then the ruler does not make a strategic power-sharing choice, $\pi_t = \pi_{t-1}$. The key assumption here is that the ruler cannot lower π_t below the basement π_{t-1}; assuming that the ruler can raise the power-sharing level exactly once simply eases the exposition.[10]

The ruler also proposes a one-period transfer $x_t \in [0, 1 - \pi_t]$ to the opposition. The bounds on the temporary transfer capture (a) no transfer of resources from the opposition to ruler and (b) the offer

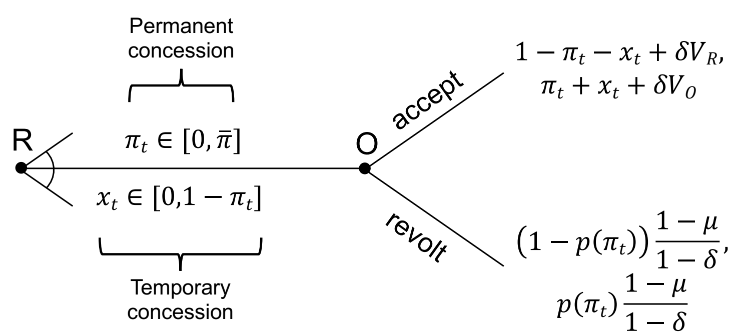
[9] See Assumption 3 in Acemoglu and Robinson (2001, 947).

[10] A richer choice space in which the ruler could choose $\pi_t \geq \pi_{t-1}$ in every high-threat period would yield qualitatively similar findings, but create multiple equilibria for the range of parameter values (characterized below) in which a unique mixing equilibrium exists. The one-time-reform option resembles the setup in existing models such as Acemoglu and Robinson (2000) and Castañeda Dower et al. (2018). In an extension presented later, I allow the ruler to subsequently revert to $\pi_t = 0$.

cannot exceed the total amount controlled by the ruler. The upper bound on the power-sharing level $\overline{\pi} < 1$ simplifies the exposition in the text by ruling out corner solutions to the optimal temporary transfer, as characterized below.

The opposition responds to a proposal $\{\pi_t, x_t\}$ by accepting or revolting. Accepting yields a split of $1-\pi_t-x_t$ for the ruler and π_t+x_t for the opposition, and they move to the next period with the same respective continuation values as following a low-threat period. A revolt succeeds with probability $p(\pi_t) \in (0, 1]$, and the ruler survives with complementary probability. A revolt immediately moves the game to a strategically trivial absorbing state. The winner consumes $1 - \mu$ in the period of the conflict and every subsequent period, where $\mu \in (0, 1)$ captures the costliness of fighting. The loser consumes 0 in the period of the conflict and every subsequent period. Figure 1 presents the stage game for a high-threat period under an autocratic regime, and Appendix Table A.1 summarizes every variable and threshold presented in the analysis.

Figure 1: Stage Game: High-Threat Period Under an Autocratic Regime



Sharing more power generates two main consequences. First, raising π_t enhances the ruler's *institutional commitment* to redistribute more spoils by creating a basement level of per-period consumption π_t for the opposition. Second, raising π_t reallocates coercive power. Sharing more power creates a *threat-enhancing effect* by raising the opposition's probability of succeeding in a revolt, captured by assuming $p(\pi_t) = (1 - \alpha(\pi_t))p^{\min} + \alpha(\pi_t)p^{\max}$. The bounds $0 < p^{\min} < p^{\max} \leq 1$ correspond with the opposition's minimum and maximum probabilities of winning, which are respectively achieved at the bounds $\alpha(0) = 0$ and $\alpha(1) = 1$. Sharing more power bolsters the opposition's probability of winning at a decreasing rate, $\alpha'(\pi_t) > 0$ and $\alpha''(\pi_t) \leq 0$.[11] The magnitude of the threat-enhancing effect is $p(\pi_t) - p^{\text{min}}$. Given the assumptions on $p(\pi_t)$, this yields

Magnitude of threat-enhancing effect.[12] $$\Delta p(\pi_t) \equiv \alpha(\pi_t)(p^{\text{max}} - p^{\text{min}}). \tag{1}$$

4 Analysis: Exogenous Power Sharing

This section characterizes optimal actions while fixing the level of power sharing as an exogenous constant, $\pi_t = \pi$ for all t. Thus, temporary transfers are the ruler's only strategic lever. A peaceful equilibrium requires that π is high enough to enable buying off the opposition in every high-threat period. 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. Weak-threat periods are strategically trivial, and therefore we need to specify strategies for high-threat periods only. The ruler's strategy specifies an offer $x \to [0, 1]$ and the opposition's strategy specifies a response $\beta : [0, 1] \to \{0, 1\}$, where $\beta = 1$ indicates acceptance and $\beta = 0$ indicates revolt.[13]

[11]The function $\alpha(\pi_t)$ is class $\mathcal{C}^2$ (continuous and first two derivatives exist and are continuous). This function is effectively a weight on each of the two probability-of-winning terms, and therefore $\alpha(\pi_t) \in (0, 1)$ for all $\pi_t \in (0, 1)$. Assuming (weakly) diminishing marginal returns to the power endowment is natural: granting any degree of access to power at the center greatly improves the opposition's prospects for overthrowing the ruler, but further increasing the endowment enhances these prospects less.

[12]One specific functional form of interest is the indicator function $\alpha(\pi_t) = \pi_t$, which makes $p(\pi_t)$ linear in π_t and implies $\Delta p(\pi_t) = \pi_t(p^{\text{max}} - p^{\text{min}})$. Another simple functional form, used in the illustrative figures below and used to derive comparative statics, is $\alpha(\pi_t) = 1$ for any $\pi_t > 0$. This corresponds with a discrete jump in the opposition's probability of winning from p^{min} to p^{max} if the ruler shares any amount of power, and thus the threat-enhancing effect is $\Delta p(\pi_t) = p^{\text{max}} - p^{\text{min}}$ for any $\pi_t > 0$. In this case, to preserve the assumption that $\alpha(\pi_t)$ is a strictly increasing function, we can assume for $\pi_t > 0$ that $p(\pi_t) = p^{\text{max}} - \epsilon(\pi_t)$, for an infinitesimally small $\epsilon(\cdot)$ that satisfies $\epsilon'(\pi_t) < 0$ and $\epsilon(1) = 0$. Furthermore, although $\alpha(\pi_t)$ is discontinuous at $\pi_t = 0$ with this functional form, all the following formal statements are unchanged.

[13]With exogenous power sharing, all equilibria are in pure strategies. Later I explicitly extend the notation to allow for mixed strategies, which are possible in equilibrium in the full game.

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, the opposition's lifetime consumption along a peaceful path, from the perspective of any high-threat period, is $\pi + x + \delta V_O$, for $V_O = \pi + rx + \delta V_O$.[14] Solving the continuation value and substituting it into the consumption term yields per-period average consumption $\pi + (1 - \delta(1 - r))x$. The opposition consumes at least π in every period and gains an additional transfer x in high-threat periods. The latter term is weighted by $1 - \delta(1 - r)$ because the current period is high threat, $1 - \delta$; as are a fraction r of future periods, δr.

The opposition's reservation value to revolting creates a lower bound to its consumption along a peaceful path. Thus, the consumption stream must satisfy

$$\pi + (1 - \delta(1 - r))x \geq p(\pi)(1 - \mu). \tag{2}$$

The ruler's lifetime consumption along a peaceful path, from the perspective of any high-threat period, is $1 - \pi - x + \delta V_R$, for $V_R = 1 - \pi - rx + \delta V_R$. Solving the continuation value and substituting it into the consumption term yields per-period average consumption $1 - \pi - (1 - \delta(1 - r))x$. The ruler's consumption strictly decreases in x, but the transfer must satisfy Equation 2 to yield a peaceful path of play. Consequently, the ruler satisfies this constraint with equality to make the opposition indifferent between accepting and revolting.[15]

$$\pi + (1 - \delta(1 - r))x^*(\pi) = p(\pi)(1 - \mu) \implies \underbrace{x^*(\pi) = \frac{-\pi + p(\pi)(1 - \mu)}{1 - \delta(1 - r)}}_{\text{Interior-optimal transfer}}. \tag{3}$$

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

[15] 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.

Substituting $x^*(\pi)$ into the ruler's consumption stream yields

$$R(\pi) = 1 \overbrace{-\pi}^{\text{Direct cost}} -(1-\delta(1-r)) \underbrace{\frac{\overbrace{-\pi}^{\text{Indirect benefit}} \quad +p(\pi)(1-\mu)}{1-\delta(1-r)}}_{x^*(\pi)} = 1 - p(\pi)(1-\mu). \tag{4}$$

The ruler consumes total surplus, 1, minus the opposition's reservation value to revolting, $p(\pi)(1-\mu)$; and, conversely, the opposition consumes its reservation value. Consequently, 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 high-threat periods. Thus, the opposition compensates the ruler for higher permanent concessions by demanding fewer temporary concessions. 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 r of future periods (weight δr).[16]

Sufficiently high values of π make $x^*(\pi)$ negative. The threshold is the unique value $\overline{\pi} \in (0,1)$ such that[17]

$$x^*(\overline{\pi}) = \frac{-\overline{\pi} + p(\overline{\pi})(1-\mu)}{1-\delta(1-r)} = 0 \implies \overline{\pi} - p(\overline{\pi})(1-\mu) = 0. \tag{5}$$

This constitutes the upper bound of π assumed in setup. The intuition for the threshold is that the opposition lacks any incentive to revolt if basement spoils exceed its reservation value to revolting, $\pi > p(\pi)(1-\mu)$. In Appendix A.3, I analyze equilibrium outcomes for all values of π.

[16]See also Paine (2024).

[17]Appendix Lemma A.1 provides a formal characterization.

4.2 Equilibrium Bargaining Outcomes

Peaceful bargaining requires (1) the ruler can offer a large-enough transfer that the opposition will accept and (2) the ruler prefers to make this transfer rather than incur a revolt. The interior solution for $x^*(\pi)$ guarantees the latter condition, which is a standard result (Fearon 1995). The ruler, by virtue of making all the bargaining offers, holds the opposition down to indifference in the interior-optimal case. This enables the ruler to consume the entire surplus saved by preventing costly conflict.[18]

The opposition's maximal consumption stream along a peaceful equilibrium path entails consuming 1 in every high-threat period, the most the ruler can give away in a single period; and π in every low-threat period, because the ruler cannot commit to deliver any transfers beyond the basement spoils. Rewriting Equation 2 yields

$$\textbf{No-revolt constraint.}\quad \Theta(\pi) \equiv \underbrace{\pi}_{\text{Basement spoils}} + \underbrace{(1-\delta(1-r))(1-\pi)}_{\text{Transfers in H periods}} - \underbrace{p(\pi)(1-\mu)}_{\text{Revolt}} \geq 0. \tag{6}$$

The following two conditions ensure that a high-enough level of power sharing is necessary and sufficient for peaceful bargaining. At one extreme, temporary transfers only cannot secure peaceful bargaining. The opposition is *weakly credible* if the no-revolt constraint fails at $\pi = 0$, which means the opposition prefers to revolt rather than to consume 1 in every high-threat period and 0 in every low-threat period. I assume this is true throughout the analysis.

Assumption 1 (Weak opposition credibility holds)**.**

$$\Theta(0) = \underbrace{1-\delta(1-r)}_{\textit{Consume 1 in H periods}} - \underbrace{p^{min}(1-\mu)}_{\textit{Reservation value to revolting}} < 0.$$

[18] Formally, $1-p(\pi)(1-\mu) > (1-p(\pi))(1-\mu)$ reduces to $\mu > 0$. Thus, the assumed costliness of conflict suffices to induce the ruler to buy off the opposition, if possible. Appendix A.3 discusses the case with corner solutions. It shows that for high-enough π, the ruler prefers conflict over peaceful bargaining. However, with an endogenous choice of π, the ruler would never choose π that high (see Lemma 2).

At the other extreme, permanently transferring the entire prize must make the *opposition willing* to engage in peaceful bargaining. This condition is true without an additional assumption because consuming 1 in every period is surely better than a costly lottery, even after power has shifted in favor of the opposition.

$$\textbf{Opposition willingness holds.} \quad \Theta(1) = \underbrace{1}_{\text{Consume 1 in every period}} - \underbrace{p^{\max}(1-\mu)}_{\text{Reservation value to revolting}} > 0. \tag{7}$$

These two conditions yield a unique threshold $\underline{\pi}$ such that if $\pi \geq \underline{\pi}$, then the ruler is able to buy off the opposition. There are two cases depending on whether marginal increases in π relax the no-revolt constraint for all values of π (Case 1), or whether the threat-enhancing effect dominates at low values of π and therefore a high-enough value of π is needed.[19]

Lemma 1 (Peaceful power-sharing threshold)**.**

Case 1. *If $p'(0) < \frac{\delta(1-r)}{1-\mu}$, then a unique threshold $\underline{\pi} \in (0, \overline{\pi})$ exists such that*

$$\Theta(\pi) \begin{cases} < 0 & \text{if } \pi < \underline{\pi} \\ = 0 & \text{if } \pi = \underline{\pi} \\ > 0 & \text{if } \pi > \underline{\pi}, \end{cases}$$

for $\underline{\pi}$ implicitly defined as

$$\Theta(\underline{\pi}) = \underline{\pi} + (1 - \delta(1-r))(1 - \underline{\pi}) - p(\underline{\pi})(1-\mu) = 0.$$

Case 2. *If $p'(0) > \frac{\delta(1-r)}{1-\mu}$, then a unique threshold $\underline{\pi} \in (\pi_0, \overline{\pi})$ exists, for $\underline{\pi}$ characterized in Case 1 and a unique threshold $\pi_0 \in (0, \overline{\pi})$ implicitly defined as $p'(\pi_0) = \frac{\delta(1-r)}{1-\mu}$.*

Proposition 1 formally characterizes the equilibrium bargaining outcomes. Appendix A.3 analyzes equilibria outcomes when π can obtain high-enough values to drive the temporary transfer to 0. Appendix A.4 plots each players' equilibrium consumption amounts as a function of π.

[19] Appendix A.2 presents the proof.

Proposition 1 (Equilibrium outcomes with exogenous power sharing)**.** *Suppose $\pi_t = \pi$ for all t. The following constitute the equilibria strategy profiles, which are unique with respect to payoff equivalence.*[20]

- *If $\pi < \underline{\pi}$, then in every high-threat period, the ruler offers any $x_t = [0, 1-\pi]$ and the opposition revolts in response to any proposal. Along the equilibrium path, a revolt occurs in the first high-threat period; and in this period, the ruler's average per-period expected consumption is $(1-p(\pi))(1-\mu)$ and the opposition's is $p(\pi)(1-\mu)$.*
- *If $\pi \in [\underline{\pi}, \overline{\pi}]$, then in every high-threat period, the ruler offers $x_t = x^*(\pi)$ (defined in Equation 3). The opposition accepts any $x_t \geq x^*(\pi)$ and revolts otherwise. Along the equilibrium path, revolts never occur; and from the perspective of any high-threat period, the ruler's average per-period expected consumption is $1 - p(\pi)(1-\mu)$ and the opposition's is $p(\pi)(1-\mu)$.*

5 Analysis: Endogenous Power Sharing

The baseline model assumes favorable conditions for peaceful power sharing. The weak opposition credibility condition (Assumption 1) creates incentives for the ruler to avoid a revolt by sharing power, and the opposition willingness condition (Equation 7) ensures that sharing enough power prevents a revolt. Thus, given existing models, we might expect that the ruler necessarily offers the minimum power-sharing level that secures peace, $\pi_t = \underline{\pi}$, in the first high-threat period. The ruler wants to prevent a revolt because, by virtue of making all the bargaining offers and holding the opposition down to indifference, he consumes the entire surplus saved by preventing conflict. Furthermore, unlike in Acemoglu and Robinson (2006), the ruler lacks access to an asymmetric conflict technology such as repression; and, following the logic of Castañeda Dower et al. (2020), we would expect all payoff-distinct equilibria to be in pure strategies because the power-sharing choice is continuous.

The threat-enhancing effect overturns these premises. Beyond weak opposition credibility and

[20] The equilibrium is unique if $\pi \in [\underline{\pi}, \overline{\pi}]$. It is not unique if $\pi < \underline{\pi}$ because of the ruler's indifference among any $x_t = [0, 1-\pi]$. However, all equilibria are payoff equivalent because, along the equilibrium path, the opposition rejects any offer.

opposition willingness,[21] two additional conditions are needed for a pure-strategy power-sharing equilibrium—ruler willingness and strong opposition credibility.

5.1 Preliminary Results

A profile of Markovian pure strategies entails the following mappings in high-threat periods. If $\pi_t = 0$, then the ruler chooses $\pi \to [0, \overline{\pi}]$. The ruler also proposes a temporary transfer $x : [0, \overline{\pi}] \to [0, 1 - \pi]$. The opposition responds via a function $\alpha : [0, \overline{\pi}] \times [0, 1 - \pi] \to \{0, 1\}$. After eliminating actions that cannot occur in any equilibrium, I define mixed strategies.

After the ruler has shared a positive amount of power $\pi_t > 0$, Proposition 1 characterizes equilibrium actions, with π_t set to whatever level the ruler chose in the period t when he set $\pi_t > \pi_{t-1}$.[22] Thus, the following analysis characterizes optimal actions in any period such that $\pi_{t-1} = 0$. Along the equilibrium path, the ruler either does not share power (autocratic regime) or shares exactly $\pi_t = \underline{\pi}$, the minimum level that satisfies the opposition's no-revolt constraint (see Equation 6 and Lemma 1). Meanwhile, the opposition surely accepts a proposal with a power-sharing level of at least $\pi_t = \underline{\pi}$ (conditional on also receiving a large-enough transfer), whereas it surely rejects a positive power-sharing amount below this threshold.[23]

Lemma 2 (Preliminary results)**.**

Opposition's actions.

- ***Part a.*** *Accepts with probability 1 any proposal such that $\pi_t \geq \underline{\pi}$ and $x_t \geq x^*(\underline{\pi})$.*
- ***Part b.*** *Accepts with probability 0 in response to any proposal with $\pi_t \in (0, \underline{\pi})$.*

[21] It is obvious that the ruler will not share power if weak opposition credibility fails (Assumption 1). The opposition can be bought off with temporary transfers only; and, because of the threat-enhancing effect, the ruler's consumption along a peaceful path strictly decreases in π (Equation 4). For the necessity of opposition willingness for an equilibrium with power sharing, see Proposition 5.

[22] This observation highlights the simplifying benefit of assuming $\pi_t = \pi_{t-1}$ if $\pi_{t-1} > 0$. Otherwise, we would have to consider additional opportunities to raise π_t; this would complicate the exposition without qualitatively changing the insights.

[23] Appendix B.1 presents the proof.

Ruler's actions. *No equilibria exist in which the ruler puts positive probability on proposals other than* $(\pi_t, x_t) \in \big\{(0,1), (\underline{\pi}, 1-\underline{\pi})\big\}$.[24]

The binary set of possible optimal proposals enables a simple definition of mixed Markovian strategies. The ruler's strategy in a high-threat period is a Bernoulli draw, with probability σ_R of proposing $(\pi_t, x_t) = (\underline{\pi}, 1-\underline{\pi})$ and probability $1-\sigma_R$ of proposing $(\pi_t, x_t) = (0,1)$. Thus, $\sigma_R = 1$ corresponds to a pure strategy of offering to share power in every high-threat period, $\sigma_R = 0$ corresponds to a pure strategy of only ever offering temporary transfers, and any $\sigma_R \in (0,1)$ entails a nondegenerate mixed strategy. Similarly, the opposition's probability of accepting $(\pi_t, x_t) = (0,1)$ is σ_O, with $\sigma_O = 1$ corresponding with a pure strategy of always accepting a transfer equal to 1, $\sigma_O = 0$ corresponding to a pure strategy of always revolting if not offered a power-sharing deal, and any $\sigma_O \in (0,1)$ entails a nondegenerate mixed strategy. Lemma 2 shows that the opposition necessarily accepts with probability 1 if offered $(\pi_t, x_t) = (\underline{\pi}, 1-\underline{\pi})$, and thus this component of the opposition's best-response function is presumed in all subsequent propositions; as are the best responses specified in Proposition 1.

5.2 Ruler Willingness

The ruler is willing to share enough power to secure a peaceful bargaining interaction if and only if his consumption stream along a peaceful path exceeds his utility to incurring a revolt. The threat-enhancing effect can undermine this incentive. Given Lemma 2, the relevant comparison in a high-threat period is between (a) sharing the minimum amount of power to induce peace ($\pi_t = \underline{\pi}$) while buying off an opposition who wins with probability $p(\underline{\pi})$, and (b) perpetuating an autocratic regime ($\pi_t = 0$) while facing a revolt that succeeds with probability $p^{\min}$. The incentive-compatibility constraint for the ruler to share power is

[24] For some parameter values, if the ruler offers $\pi_t = 0$, he is indifferent over the precise transfer offer because a revolt occurs with probability 1 regardless of the precise offer. However, for such parameter values, all equilibria are payoff equivalent. By contrast, for parameter values in which the unique equilibrium is in mixed strategies, the ruler has a strict preference to transfer $x_t = 1$ if he also proposes $\pi_t = 0$ (see the ensuing analysis).

$$\underbrace{1 - p(\underline{\pi})(1-\mu)}_{\text{Share power}} \geq \underbrace{(1 - p^{\min})(1-\mu)}_{\text{Incur revolt}},$$

which simplifies to[25]

$$\textbf{Ruler willingness.} \qquad \underbrace{\Delta p(\underline{\pi})}_{\text{Threat-enhancing effect (Eq. 1)}} (1-\mu) \leq \underbrace{\mu}_{\text{Cost of revolt}}. \tag{8}$$

The main force that pushes toward ruler willingness holding is the cost of a revolt. 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.

However, despite this benefit of sharing power, the threat-enhancing effect can cause the ruler willingness condition to fail.[26] 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 $p(\underline{\pi})$.[27] And, as before, the level of basement spoils cancels out (Equation 4), and therefore does not affect ruler willingness.

An alternative interpretation of this result is that ruler willingness can fail because the threat-enhancing effect creates a commitment problem for the opposition. A standard result in conflict bargaining models is that conflict occurs because the player making offers (here, the ruler) cannot commit to give enough away. However, in this case, conflict occurs because the player who responds to the offers, the opposition, cannot commit to forgo leveraging its higher probability of winning a revolt. Whenever ruler willingness fails, a Pareto-improving deal exists. Suppose

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

[26] Appendix A.4 provides visual intuition.

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

that, following a power-sharing deal, the opposition could commit to bargain as if its probability of winning was some $p' \in (p^{\min},\, p^{\min} + \frac{\mu}{1-\mu})$. On the one hand, the opposition would consume $p'(1-\mu)$, which exceeds its reservation value to revolting against an autocratic regime, $p^{\min}(1-\mu)$. On the other hand, the ruler's bargaining position would weaken by a small-enough amount that he would prefer peaceful power sharing, which preserves the surplus that conflict would have destroyed. Formally, as $p^{\max} \to p^{\min}$, Equation 8 is sure to hold. Thus, both sides would consume a fraction of the surplus saved by preventing conflict. However, the opposition's inability commit to this deal after the shift in power has occurred can cause ruler willingness to fail.

Consequently, although the ruler *can* alleviate his commitment problem, the opposition's commitment problem—stemming from the threat-enhancing effect—may dissuade the ruler from doing so. This creates a commonly overlooked source of intractability in the autocrat's commitment problem.

> **Proposition 2** (Conflict if ruler willingness fails)**.** *If ruler willingness fails (Equation 8), then the equilibria strategy profiles are unique with respect to payoff equivalence, and all entail $\sigma_R = 0$. Along the equilibrium path, the ruler never shares power and a revolt occurs in the first high-threat period.*

5.3 Strong Opposition Credibility

Sharing power bolsters the opposition's probability of winning a revolt (threat-enhancing effect), which raises its consumption above its reservation value under an autocratic regime. Consequently, unless the opposition is strongly credible, it probabilistically accepts temporary concessions at *present* if the ruler will probabilistically share power in the *future*.

Formally, assume ruler willingness holds. Consider a strategy profile in which the ruler shares power in every high-threat period ($\sigma_R = 1$) and the opposition always rejects an offer with temporary concessions only ($\sigma_O = 0$). The relevant deviation to assess is whether the opposition can profit by accepting $(\pi_t, x_t) = (0, 1)$. Because $\sigma_R = 1$, the opposition knows the ruler will offer $(\pi_z, x_z) = (\underline{\pi}, 1 - \underline{\pi})$ in the next high-threat period z. A pure-strategy equilibrium requires the opposition to revolt today, as opposed to accepting temporary concessions today and waiting for a power-sharing deal tomorrow

$$\underbrace{\frac{p^{\min}(1-\mu)}{1-\delta}}_{\text{Revolt now}} \geq \underbrace{1+\delta V_O}_{\text{Wait}}, \tag{9}$$

$$\text{for} \quad V_O = \underbrace{r\frac{p(\underline{\pi})(1-\mu)}{1-\delta}}_{\text{Move to power sharing}} + \underbrace{(1-r)\delta V_O}_{\text{Autocracy persists}}. \tag{10}$$

If the opposition waits, its consumption depends on subsequent Nature draws. In any period, the opposition poses a high threat with probability r. Given $\sigma_R = 1$, this yields a transition to a power-sharing regime. At this point, the opposition's consumption depends on its reservation value to revolting at the higher probability of winning $p(\underline{\pi})$, because the ruler holds the opposition to indifference. Alternatively, the opposition poses a low threat with probability $1-r$. The opposition consumes 0 in that period and the continuation value resets for the next period. Combining the previous two equations yields the necessary inequality for pure-strategy power sharing:[28]

Strong opposition credibility. $\underbrace{1-\delta(1-r)-p^{\min}(1-\mu)}_{\text{Weak opposition credibility (Asst 1)}} + \underbrace{\gamma}_{\text{Wedge}} < 0,$

$$\text{for} \quad \gamma \equiv \delta r \underbrace{\Delta p(\underline{\pi})}_{\text{Threat-enhancing effect (Eq. 1)}} \frac{1-\mu}{1-\delta}. \tag{11}$$

This inequality encompasses the terms from the weak opposition credibility condition (Assumption 1), plus an additional term γ for the consumption conferred by a future power-sharing deal. Thus, γ creates a wedge between the thresholds at which the opposition revolts (a) if *never* offered a power-sharing deal (weak opposition credibility) and (b) if not *always* offered a power-sharing deal (strong opposition credibility). This wedge would not exist without a threat-enhancing effect, as $\Delta p(\underline{\pi}) = 0$ makes Equation 11 identical to Assumption 1.

[28]Appendix B.4 analyzes how the strong opposition credibility condition differs if π is exogenously set to a high-enough level that the equilibrium transfer equals 0. This enables highlighting a key difference between the present analysis of mixed strategies and that in Acemoglu and Robinson (2017) and Castañeda Dower et al. (2020).

Proposition 3 (Pure-strategy power sharing)**.** *Suppose ruler willingness (Equation 8) and strong opposition credibility (Equation 11) both hold. The unique equilibrium strategy profile entails $\sigma_R = 1$ and $\sigma_O = 0$. Along the equilibrium path, the ruler shares power in the first high-threat period and revolts never occur.*

If ruler willingness holds but strong opposition credibility fails, then the opposition can profitably deviate from either always accepting or always rejecting proposals that lack a power-sharing provision. This yields a unique equilibrium in mixed strategies, with the mixing probabilities formally characterized in Appendix B.2.

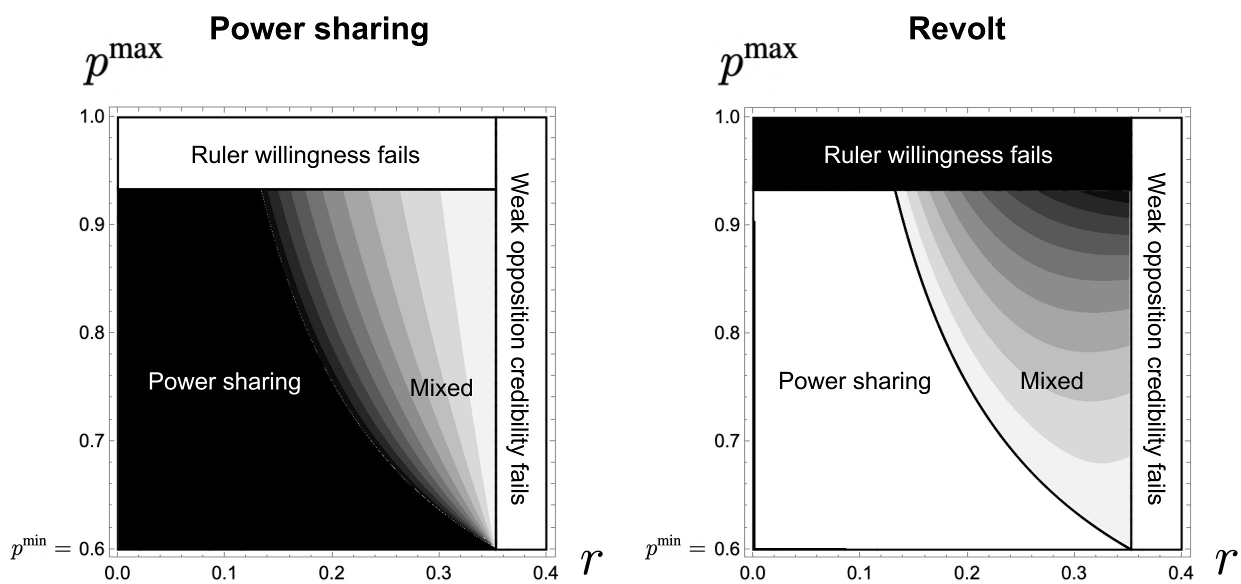
Proposition 4 (Mixed-strategy power sharing)**.** *Suppose ruler willingness holds (Equation 8) and strong opposition credibility fails (Equation 11). The unique equilibrium strategy profile entails $\sigma_R = \sigma_R^*$ and $\sigma_O = \sigma_O^*$, for the unique $\sigma_R^* \in (0,1)$ and $\sigma_O^* \in (0,1)$ defined in Equations B.1 through B.6. Along the equilibrium path, in high-threat periods, the probability that the ruler shares power is σ_R^* and the probability of a revolt is $(1-\sigma_R^*)(1-\sigma_O^*)$.*

Another variant of a commitment problem arises for the opposition when strong opposition fails. The opposition would benefit from committing to revolt with probability 1 in any high-threat period if not offered $\pi_t \geq \underline{\pi}$. That threat, if credible, would compel the ruler to share power with probability 1 (assuming ruler willingness holds), and yield consumption of $\frac{p(\underline{\pi})(1-\mu)}{1-\delta}$ for the opposition. However, precisely because sharing power discretely raises the opposition's utility, it prefers to (probabilistically) wait rather than revolt for sure. Consequently, its lifetime expected consumption is $\sigma_R^* \frac{p(\underline{\pi})(1-\mu)}{1-\delta} + (1-\sigma_R^*)\frac{p^{\min}(1-\mu)}{1-\delta} < \frac{p(\underline{\pi})(1-\mu)}{1-\delta}$.

5.4 Comparative Statics

Figure 2 illustrates how two key parameters affect the equilibrium path of play. The region plot presents the frequency of high-threat periods, r, on the x-axis and the opposition's maximum probability of winning under power sharing, $p^{\max}$, on the y-axis. The panels depict for a generic high-threat period under an autocratic regime the probabilities of a power-sharing arrangement taking hold (left panel) and a revolt (right panel). White indicates probability 0; black indicates probability 1; and gray indicates interior probabilities, with darker colors indicating higher probabilities.[29]

Figure 2: Comparative Statics



Notes: $\delta = 0.85$, $\mu = 0.25$, $p^{\min} = 0.6$, and $\alpha(\pi_t) = 1$ for all $\pi_t > 0$.

Weak opposition credibility (Assumption 1) fails in the far-right region. This is the only region in which the absence of power sharing coincides with peace. High r causes weak opposition credibility to fail by enabling the ruler to frequently offer temporary transfers in an autocratic regime. By contrast, $p^{\max}$ has no effect because weak opposition credibility concerns the opposition's threat to revolt when its probability of winning equals $p^{\min}$.

Ruler willingness (Equation 8) fails in the upper region. The ruler does not share power, and a revolt occurs. High $p^{\max}$ violates ruler willingness by exacerbating the threat-enhancing effect. By contrast, r has no effect. The ruler uses temporary transfers to compensate the opposition for lower r; or, conversely, to force the opposition to offer compensation for higher r (see Equation 4).[30]

[29]The comparative statics analyses use the functional form $\alpha(\pi_t) = 1$ for all $\pi_t > 0$, which means the threat-enhancing effect is $\Delta p(\pi_t) = p^{\max} - p^{\min}$ for all π_t. This implies that I examine only the direct effect of each parameter, as opposed to its indirect effect through $p(\underline{\pi})$. Absent this simplifying assumption, it is not possible to sign the comparative statics for r without imposing additional, difficult-to-interpret assumptions.

[30]Under a more general functional form for $\alpha(\pi_t)$, r would indirectly affect the ruler willingness condition by

In the pure-strategy power-sharing region, the ruler shares power with probability 1 and a revolt occurs with probability 0. This range requires $p^{\max}$ low enough that ruler willingness holds. It also requires r low enough that not only weak opposition credibility holds, but strong opposition credibility as well.

Intermediate r violates strong opposition credibility but satisfies weak opposition credibility. As shown in Equation 11, the wedge between these two conditions requires high-enough r (another chance at a high-threat period, and hence the ruler sharing power in the future) and $p^{\max} > p^{\min}$ (hence sharing power discretely raises the opposition's consumption). Within the consequent mixed-strategy range, the probability of power sharing σ_R^* strictly decreases in both r and $p^{\max}$. Lower probabilities of the ruler sharing power satisfy the opposition's indifference condition as r increases because the opposition's shadow of the future under autocratic rule improves. And if $p^{\max}$ is higher, the opposition gains more from waiting for a future power-sharing deal, and hence is indifferent for a lower probability of sharing power. Finally, a lower probability of sharing power σ_R^* coincides with a higher probability of conflict $(1-\sigma_R^*)(1-\sigma_O^*)$. Appendix Proposition B.1 presents an accompanying formal statement.

6 Extension: Enforcing Power Sharing Deals

In the baseline model, the ruler cannot renege on a power-sharing deal, once in place. However, in reality, power-sharing arrangements are fraught not only when implemented, but also amid their subsequent enforcement. To capture this idea, I extend the model to allow the ruler an opportunity in some low-threat periods to renege on a power-sharing deal. This entails resetting to an autocratic regime with $\pi_t = 0$. Consequently, the opposition may be unwilling to accept even the most lucrative possible power-sharing deal, $\pi_t = 1$.

In the baseline model, reallocating power toward the opposition affects the opposition's *offensive* capabilities only. Higher $p(\pi_t)$ better positions the opposition to overthrow the ruler—the threat-

altering $p(\underline{\pi})$.

enhancing effect. Now, however, there is an additional effect whereby reallocating power enables the opposition to better *defend* its spoils. The balance between these two forces determines whether the opposition willingness condition holds, and hence whether peaceful power sharing is incentive compatible.

6.1 Setup

The new move, relative to the baseline game, is that for any period in which $\pi_{t-1} > 0$ and the opposition poses a low threat, Nature makes an additional move governed by a Bernoulli distribution. With probability $q(\pi_{t-1})$, this is a "normal" low-threat period, as in the baseline game. But with complementary probability $1 - q(\pi_{t-1})$, Nature allows the ruler to costlessly renege on the power-sharing deal by resetting $\pi_t = 0$. Thus, we can interpret q as the opposition's ability to block the ruler from reneging and thereby defend the concessions promised in a power-sharing deal.

Two natural functional form assumptions make the analysis tractable. First, $\alpha(\pi_t) = \pi_t$, which yields a linear functional form for the opposition's probability of winning, $p(\pi_t) = (1 - \pi_t)p^{\text{min}} + \pi_t p^{\text{max}}$. This assumption also implies $\Delta p(\pi_t) = \pi_t(p^{\text{max}} - p^{\text{min}})$ (see Equation 1). Second, the opposition's ability to defend a power-sharing deal has a linear functional form

$$q(\pi_t, p^{\text{max}}) = \big(1 - W(\pi_t, p^{\text{max}})\big)q^{\text{min}} + W(\pi_t, p^{\text{max}})q^{\text{max}}, \tag{12}$$

$$\text{for} \quad W(\pi_t, p^{\text{max}}) \equiv \frac{\Delta p(\pi_t)}{1 - p^{\text{min}}}.$$

The opposition's ability to block autocratic reversions ranges between a low level $q^{\text{min}} \geq 0$ and a higher level $q^{\text{max}} \equiv (1 - d)q^{\text{min}} + d$, for $d \geq 0$. The weight placed on each term, $W(\pi_t, p^{\text{max}})$, depends on the amount of power shared and the opposition's maximum probability of winning. If the ruler shares no power, $\pi_t = 0$, or there is no threat-enhancing effect, $\Delta p(\pi_t) = 0$, then $q(\pi_t, p^{\text{max}}) = q^{\text{min}}$. By contrast, if the ruler permanently gives all spoils to the opposition, $\pi_t =$

1, and the opposition wins with probability 1 in this circumstance, $p^{\max} = 1$, then $q(1, 1) = q^{\max}$.

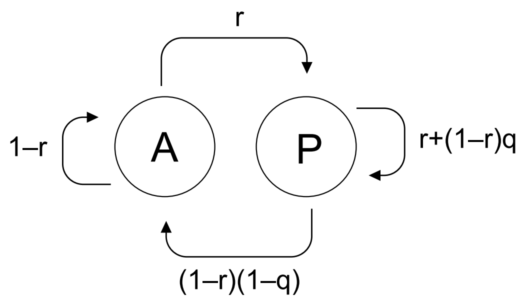
The lower bound $q^{\min} \geq 0$, corresponds with the inherent strength of institutions: the opposition's ability to defend its spoils when its coercive strength is at its baseline level $p^{\min}$. The parameter d encompasses the degree to which raising either π_t or $p^{\max}$ improves the opposition's ability to defend its spoils. If $q^{\min}$ is very low, then high values of the other variables and parameters enables the reallocation of power inherent in sharing power to substitute for weak institutions. By contrast, at the limit $q^{\min} = 1$, then $q(\pi_t, p^{\max}) = 1$ regardless of other parameter values—as in the baseline model. Appendix Figure C.1 presents a heat map depicting how $q(\pi_t, p^{\max})$ varies in each argument.

6.2 Equilibrium Bargaining Outcomes

Along a peaceful path of play, the main difference from the baseline model is that cycling occurs between political regimes. If the regime in period $t-1$ is autocratic, then the analysis is unchanged from the baseline model. With probability r, the opposition poses a high threat, to which the ruler responds by sharing power; and with probability $1 - r$, the regime remains autocratic. But the interaction differs under a power-sharing regime. If the opposition either poses a high threat, probability r, or a low threat but the ruler lacks an opportunity to renege, probability $(1-r)q$, then the power-sharing regime persists into the next period. However, with probability $(1 - r)(1 - q)$, the ruler has an opportunity to renege. The ruler reneges whenever possible because the restriction to Markov strategies disallows the opposition from directly punishing the ruler for a prior act of subversion.[31] Figure 3 summarizes the per-period transition probabilities between autocratic regimes (A) and power-sharing regimes (P).

[31] Always reneging can also be supported in a history-dependent subgame perfect Nash equilibrium (e.g., if the ruler ever reneges, the ruler never shares power again and the opposition revolts in every high-threat period) if the expected time until the next high-threat period (low r) is sufficiently long and the ruler is sufficiently impatient (low δ).

Figure 3: Regime Transitions along a Peaceful Path of Play



The no-revolt constraint is now[32]

$$\textbf{No-revolt constraint.} \quad \Theta_q(\pi, p^{\max}) \equiv$$

$$\underbrace{\frac{1-\delta(1-r)}{1-\delta(1-r)q(\pi,p^{\max})}\pi}_{\text{“Basement” spoils}} + \underbrace{(1-\delta(1-r))(1-\pi)}_{\text{Transfers in H periods}} - \underbrace{p(\pi)(1-\mu)}_{\text{Revolt}} \geq 0. \tag{13}$$

The only difference from the no-revolt constraint in the baseline model (Equation 6) is a multiplier on π, which equals $\frac{1-\delta(1-r)}{1-\delta(1-r)q} \in (0,1]$. Sharing π no longer creates a true *basement* level of spoils for the opposition, who consumes 0 during autocratic reversal spells. This reduces the institutional commitment inherent in a power-sharing deal.

As before, two conditions ensure that a high-enough level of power sharing is necessary and sufficient for peaceful bargaining, assuming for now the power-sharing level π is an exogenous constant. The weak opposition credibility condition (Assumption 1), which ensures necessity, is unchanged from before; and I continue to assume that it holds. But the opposition willingness condition (Equation 7), which ensures sufficiency, differs and is no longer guaranteed to hold. The required inequality is

$$\Theta_q(1, p^{\max}) = \frac{1-\delta(1-r)}{1-\delta(1-r)q(1,p^{\max})} - p^{\max}(1-\mu) \geq 0. \tag{14}$$

[32] Appendix C.1 provides details.

If the ruler lacks opportunities to renege, $q = 1$, then the present version of the opposition willingness condition is identical to that in the baseline model, which necessarily holds (Equation 7): $\Theta_q\big|_{q=1} = 1 - p^{\max}(1-\mu) > 0$. However, lower values of q can cause this condition to fail because $-\frac{\partial \Theta_q}{\partial q} < 0$. Power-sharing deals are meaningless if $q = 0$. The ruler reneges in every low-threat period, and thus the opposition consumes positive amounts only in high-threat periods—as would occur along an equilibrium path in which $\pi_t = 0$ for all t. Thus, the opposition willingness at $q = 0$ is the inverse of the weak opposition credibility condition (Assumption 1), and thus necessarily fails.

If the opposition willingness condition holds, then—for the same reasons as in the baseline model—a unique value $\underline{\pi}_q \in (0, \overline{\pi})$ exists such that sharing at least this level of power secures peaceful bargaining. This threshold is implicitly characterized as[33]

$$\Theta_q(\underline{\pi}_q, p^{\max}) = 0. \tag{15}$$

One notable difference is that $\underline{\pi}_q > \underline{\pi}$, as the ruler must share more power today to compensate the opposition for autocratic reversals tomorrow. By contrast, the ruler does not have to offer such compensation in the baseline model.[34]

By contrast, if opposition willingness fails, then a revolt occurs along the equilibrium path, even if the factors that could trigger conflict in the baseline model are not present.

Proposition 5 (Equilibrium with imperfect enforcement)**.** *Suppose ruler willingness (Appendix Equation C.10) and strong opposition credibility (Appendix Equation C.11) both hold.*[35]

> ***Case 1. Opposition willingness holds.*** *If Equation 14 holds, then the unique equilibrium strategy profile includes $\sigma_R = 1$ and $\sigma_O = 0$; and the ruler reneges in every period in which he has an opportunity. Along the equilibrium path, regimes cycle between autocratic ($\pi_t = 0$) and power*

[33] Appendix C.1 provides details.

[34] Formally, $\frac{\partial \Theta_q}{\partial q} > 0$ and $\underline{\pi} = \underline{\pi}_q\big|_{q=1}$.

[35] For Lemma 2, which was used to define the strategies σ_R and σ_O, replace $\underline{\pi}$ with $\underline{\pi}_q$ to apply to the extension.

sharing ($\pi_t = \underline{\pi}_q$). The ex-ante probability of a power sharing regime in any period over the long run is $r + (1-r)q$, and revolts never occur.

Case 2. Opposition willingness fails. *If Equation 14 fails, then the unique equilibrium strategy profile includes $\sigma_R = 0$ and $\sigma_O = 0$. Along the equilibrium path, the ruler never shares power and a revolt occurs in the first high-threat period.*

6.3 Comparative Statics

How do increases in the opposition's maximum probability of winning under power sharing, $p^{\max}$, affect opposition willingness? The key derivative is

$$\frac{d\Theta_q(1, p^{\max})}{dp^{\max}} = -\underbrace{(1-\mu)}_{\text{Offensive}} + \underbrace{\frac{1-\delta(1-r)}{(1-\delta(1-r)q)^2}\delta(1-r)\frac{\partial q}{\partial p^{\max}}}_{\text{Defensive}} \quad . \tag{16}$$

The first term expresses the familiar threat-enhancing effect, which bolsters the opposition's bargaining leverage by making a revolt more profitable. In the baseline model, where opposition willingness holds for all parameter values, the threat-enhancing effect makes the opposition more expensive—but not impossible—to buy off. Here, however, opposition willingness does not hold for all parameter values. Holding q as a fixed constant, increasing $p^{\max}$ necessarily makes opposition willingness harder to hold. However, because q increases in $p^{\max}$, the same forces that increase the opposition's *offensive* capabilities to overthrow the ruler also enhance its *defensive* capabilities to guard the spoils promised in a power-sharing deal. The second term in Equation 16 captures the defensive effect.

Figure 4 illustrates the two most interesting cases. Each part replicates the power-sharing panel from Figure 2 while adding a region in which opposition willingness fails.[36] In both panels, low r facilitates parameter values in which opposition willingness fails by increasing the expected length of autocratic spells, which worsens the opposition's payoff. The panels differ because the offensive

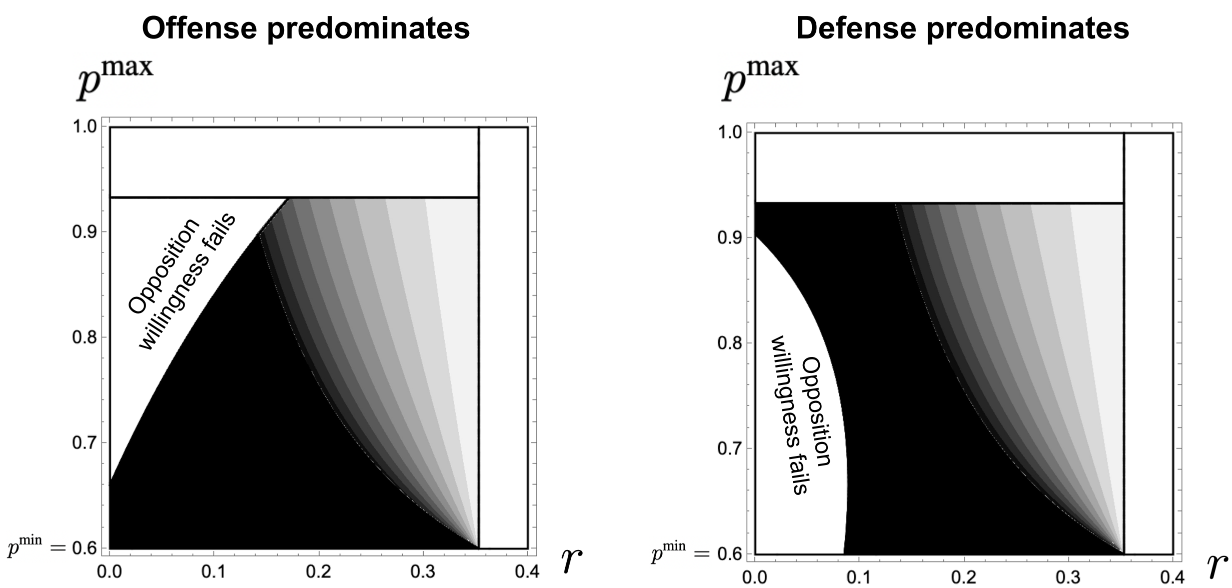
[36]The colors correspond with the per-period probability of moving to a power-sharing regime in a high-threat period, assuming the period begins with an autocratic regime. Along a peaceful equilibrium path, however, cycling will occur; see Appendix Figure C.2.

consequences of reallocating power dominate in the left panel (Equation 16 is negative) whereas the defensive consequences dominate in the right panel (Equation 16 is positive).[37]

The left panel recapitulates the logic from the baseline model that the threat-enhancing effect can doom prospects for peaceful power sharing. Because q is a constant, increases in $p^{\max}$ unleash the offensive consequences only and do not affect defensive capabilities. Consequently, raising $p^{\max}$ can switch opposition willingness from holding to failing.

By contrast, the right panel illustrates how coercive enforcement can substitute for weak institutions to promote peaceful power sharing. Raising $p^{\max}$ greatly increases q, and therefore a higher level of $p^{\max}$ can switch opposition willingness from failing to holding.

Figure 4: Comparative Statics for Opposition Willingness



Notes: $\delta = 0.85$, $\mu = 0.25$, $p^{\min} = 0.6$, and $\alpha(\pi_t) = 1$ for all $\pi_t > 0$. In the left panel, $q^{\min} = q^{\max} = 0.82$. In the right panel, $q^{\min} = 0.65$ and $q^{\max} = 1$. The functional form for $\alpha(\pi_t)$ implies that the thresholds for ruler willingness and strong opposition credibility are unchanged from Figure 2.

The case in which defensive capabilities dominate yields two additional observations that provide insight into the stability of power-sharing deals. First, needing high $p^{\max}$ to facilitate opposition willingness creates a tension with ruler willingness, which requires low-enough $p^{\max}$ (Equation 8). Thus, moderate increases in $p^{\max}$ can breed stable power sharing whereas large increases under-

[37] Appendix Proposition C.1 formalizes these comparative statics results.

mine it. The right panel of Figure 4 shows this when, for example, allowing p^{max} to range between p^{min} and 1 while fixing $r = 0.05$.[38] Second, the ruler's utility strictly increases in p^{max} for some parameter values, unlike in the baseline model where increases in p^{max} necessarily lower the ruler's utility.[39] Here, under the conditions in which an increase in p^{max} is needed for opposition willingness to hold, the ruler benefits from a coercively stronger opposition, assuming p^{max} is not so large that ruler willingness fails.[40]

7 Conclusion

Confronting a commitment problem, autocrats frequently share power with opposition actors. This paper presents a formal model that incorporates the two core elements of power-sharing arrangements: committing to deliver more spoils to the opposition, and reallocating coercive power toward the opposition. Existing formal models and other theories of authoritarian survival routinely incorporate the first effect, but not the second. However, introducing a threat-enhancing effect reveals three overlooked frictions to power-sharing deals. First, the ruler may refuse to share power—despite triggering a revolt—because the opposition faces a commitment problem. Second, the opposition may prefer to wait for a future power-sharing deal, which risks conflict in the present. Third, when enforcement is imperfect and the ruler has periodic opportunities to renege, reallocating power may be necessary to enable the opposition to defend its spoils. However, this effect can come into tension with the offensive consequences of reallocating power or the ruler's unwillingness to shift too much power toward the opposition.

An important step in future empirical research is to identify scope conditions under which power sharing is viable. Rulers should be more willing to share power when the threat-enhancing effect is low in magnitude. A consolidated regime with tight control over its coercive apparatus should

[38] For some parameter values (not pictured), the threshold value of p^{max} needed to satisfy opposition willingness exceeds the threshold that violates ruler willingness. This obviates satisfying both constraints simultaneously.

[39] See Equation 4, which shows that the ruler's utility strictly decreases in $p(\pi)$.

[40] For any parameter values in which ruler willingness holds, the ruler gains strictly higher utility from buying off the opposition at its reservation value than if a revolt occurs.

correspond with a relatively low value of the opposition's maximum probability of winning under power sharing, p^{max}, which creates a permissive condition for sharing power. However, if the state coercive apparatus is too strong, the opposition's threat to revolt would lack credibility because its probability of winning absent power sharing, p^{min}, would be too low. This would undercut the ruler's motive to share power in the first place.

Another key to stable power sharing is that the opposition can enforce a power-sharing deal, either through coercive capabilities or institutional channels. These were key considerations in a famous historical episode of constitution-making, the 1787 Constitutional Convention in the United States. The delegates debated variations in institutional design that would protect certain interests (e.g., representation by population or by state, extent of powers for federal government), but coercive considerations comprised an important scope condition. Congress would control a (restricted) national military, and state militias would continue to enjoy high autonomy. The proposed document gained broad approval from delegates at the Convention only after each felt that the institutional (and, in the background, coercive) safeguards protected their particular interests.

How to divide political power is among the most consequential choices any regime faces. Sharing power affects not only the institutional allocation of spoils, but also the distribution of coercive power. Understanding these consequences is crucial for understanding the institutional design of political regimes and their survival prospects.

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Appendix for “The Threat-Enhancing Effect of Authoritarian Power Sharing”

Contents

Table A.1: Summary of Variables and Thresholds

Primitives

- R: Ruler
- O: Opposition
- V_R: Ruler's continuation value
- V_O: Opposition's continuation value
- σ_R: Probability with which ruler offers to share power in a high-threat period, $(\pi_t, x_t) = (\underline{\pi}, 1 - \underline{\pi})$; with complementary probability, offers $(\pi_t, x_t) = (0, 1)$.
- σ_O: Probability with which opposition accepts an offer lacking a power-sharing provision, $(\pi_t, x_t) = (0, 1)$; with complementary probability, revolts in response to this offer.

Parameters and choice variables

- t: Time indicator
- δ: Discount factor
- r: Frequency of high-threat periods
- π_t: Permanent power-sharing concession
- x_t: Temporary transfer
- $p(\pi_t)$: Opposition's probability of winning a revolt; equals $p(\pi_t) = (1 - \alpha(\pi_t))p^{\text{min}} + \alpha(\pi_t)p^{\text{max}}$
- p^{max}: Opposition's maximum probability of winning a revolt
- p^{min}: Opposition's minimum probability of winning a revolt
- $\Delta p(\pi_t)$: Magnitude of the threat-enhancing effect (Equation 1)
- $\alpha(\pi_t)$: In the function $p(\pi_t)$, weight put on p^{max}; remaining weight is on p^{min}
- μ: Destructiveness of a revolt
- $q(\pi_t, p^{\text{max}})$: In the extension, probability the ruler lacks an opportunity to renege on a power-sharing deal in a low-threat period

Threshold values for baseline model

- $\underline{\pi}$: Minimum value of π_t at which peaceful bargaining is possible (Lemma 1)
- $\overline{\pi}$: Minimum value of π_t at which interior-optimal transfer is non-positive (Equation 5)
- $\Theta(\cdot)$: Function used to denote no-revolt constraint (Equation 6)

A Appendix: Exogenous Power Sharing

A.1 Statement and Proof of Lemma A.1

Lemma A.1 (Threshold for corner solution to temporary transfer)**.**

Case 1. *If $p'(0) < \frac{1}{1-\mu}$, then a unique threshold $\overline{\pi} \in (0,1)$ exists such that*

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

for $\overline{\pi}$ implicitly defined as $\overline{\Theta}(\overline{\pi}) = 0$, with $\overline{\Theta} \equiv \pi - p(\pi)(1-\mu)$.

Case 2. *If $p'(0) > \frac{1}{1-\mu}$, then a unique threshold $\overline{\pi} \in (\overline{\pi}_0, 1)$ exists, for $\overline{\pi}$ characterized in Case 1 and a unique threshold $\overline{\pi}_0 \in (0,1)$ implicitly defined as $p'(\overline{\pi}_0) = \frac{1}{1-\mu}$.*

Proof. I prove the strictly concave case, $p''(\pi) < 0$, while noting which part of the proof applies to the linear case $p''(\pi) = 0$. The two derivatives used throughout the proof are

$$\frac{d\overline{\Theta}(\pi)}{d\pi} = 1 - p'(\pi)(1-\mu), \tag{A.1}$$

which is ambiguous in sign, and

$$\frac{d^2\overline{\Theta}(\pi)}{d\pi^2} = -p''(\pi)(1-\mu) > 0. \tag{A.2}$$

Case 1. Applying the intermediate value theorem establishes existence for $\overline{\pi}$

- *Lower bound:* $\overline{\Theta}(0) = -p^{\text{min}}(1-\mu) < 0$.
- *Upper bound:* $\overline{\Theta}(1) = 1 - p^{\text{max}}(1-\mu) > 0$.
- *Continuity:* The continuity of $\overline{\Theta}(\pi)$ follows from the assumed continuity of $p(\pi)$.

Strict monotonicity establishes the unique threshold claim. For this case, Equation A.1 is strictly positive at $\pi = 0$, $p'(0) < \frac{1}{1-\mu}$. Therefore, Equation A.2 implies $p'(\pi) < \frac{1}{1-\mu}$ for all $\pi > 0$.

The same strict monotonicity logic applies to the linear case, for which Equation A.1 reduces to $1 - (p^{\text{max}} - p^{\text{min}})(1-\mu) > 0$.

Case 2. Applying the intermediate value theorem establishes existence for $\overline{\pi}_0$

- *Lower bound:* $\left.\frac{d\overline{\Theta}(\pi)}{d\pi}\right|_{\pi=0} < 0$ is equivalent to the assumed scope condition of this case, $p'(0) > \frac{1}{1-\mu}$.

- *Upper bound:* To show $p'(1) < \frac{1}{1-\mu}$, suppose not and $p'(1) \geq \frac{1}{1-\mu}$. Because $p''(\pi) < 0$, this implies $p'(\pi) > \frac{1}{1-\mu} > 1$ for all $\pi \in [0,1]$; and thus $\int_0^1 p'(\pi)d\pi > 1$. By the fundamental theorem of calculus, $p(1) = \underbrace{p(0)}_{>0} + \underbrace{\int_0^1 p'(\pi)d\pi}_{>1} > 1$. This contradicts the bound $p(1) \leq 1$.
- *Continuity:* The continuity of $\frac{d\overline{\Theta}(\pi)}{d\pi}$ follows from the assumed continuity of $p'(\pi)$.

The uniqueness of $\overline{\pi}_0$ follows from Equation A.2. Given this, we can apply the intermediate value theorem to establish existence for $\overline{\pi}$

- *Lower bound:* $\overline{\Theta}(\overline{\pi}_0) < 0$ follows from $\overline{\Theta}(0) < 0$ and $p'(\pi) > \frac{1}{1-\mu}$ for all $\pi < \overline{\pi}_0$.
- *Upper bound:* Same as Case 1.
- *Continuity:* Same as Case 1.

To establish the unique threshold, $p'(\overline{\pi}_0) = \frac{1}{1-\mu}$ combined with Equation A.2 implies $p'(\pi) < \frac{1}{1-\mu}$ for all $\pi > \overline{\pi}_0$. ■

A.2 Proof of Lemma 1

I prove the strictly concave case, $p''(\pi) < 0$, while noting which part of the proof applies to the linear case $p''(\pi) = 0$. The two derivatives used throughout the proof are

$$\frac{d\Theta(\pi)}{d\pi} = \delta(1-r) - p'(\pi)(1-\mu), \tag{A.3}$$

which is ambiguous in sign, and

$$\frac{d^2\Theta(\pi)}{d\pi^2} = -p''(\pi)(1-\mu) > 0. \tag{A.4}$$

Case 1. Applying the intermediate value theorem demonstrates existence for $\underline{\pi}$

- *Lower bound:* $\Theta(0) < 0$ by Assumption 1.
- *Upper bound:* $\Theta(\overline{\pi}) = (1-\delta(1-r))(1-\overline{\pi}) > 0$ because $\overline{\pi} = p(\overline{\pi})(1-\mu)$; see Equation 5.
- *Continuity:* The continuity of $\Theta(\pi)$ follows from the assumed continuity of $p(\pi)$.

Strict monotonicity establishes the unique threshold claim. For this case, Equation A.3 is strictly positive at $\pi = 0$, $p'(0) < \frac{\delta(1-r)}{1-\mu}$. Therefore, Equation A.4 implies $p'(\pi) < \frac{\delta(1-r)}{1-\mu}$ for all $\pi > 0$.

The same strict monotonicity logic applies to the linear case, for which Equation A.3 reduces to $\delta(1-r) - (p^{\max} - p^{\min})(1-\mu)$. Rearranging the inequality in Assumption 1 yields $p^{\min} > \frac{1-\delta(1-r)}{1-\mu}$. Therefore, $\delta(1-r) - (p^{\max} - p^{\min})(1-\mu) > \delta(1-r) - \left(p^{\max} - \frac{1-\delta(1-r)}{1-\mu}\right)(1-\mu)$. This simplifies to $1 - p^{\max}(1-\mu) > 0$.

Case 2. Applying the intermediate value theorem establishes existence for π_0

- *Lower bound:* $\left.\frac{d\Theta(\pi)}{d\pi}\right|_{\pi=0} < 0$ is equivalent to the assumed scope condition of this case, $p'(0) > \frac{\delta(1-r)}{1-\mu}$.
- *Upper bound:* The following string of inequalities establishes $p'(\overline{\pi}) < \frac{\delta(1-r)}{1-\mu}$
  - o $p'(\overline{\pi}) < \int_0^{\overline{\pi}} p'(\pi) d\pi$ because $p'' < 0$.
  - o $\int_0^{\overline{\pi}} p'(\pi) d\pi = p(\overline{\pi}) - p^{\text{min}}$ by the fundamental theorem of calculus; recall $p(0) = p^{\text{min}}$.
  - o $p(\overline{\pi}) - p^{\text{min}} = \frac{\overline{\pi}}{1-\mu} - p^{\text{min}}$ by the definition of $\overline{\pi}$.
  - o $\frac{\overline{\pi}}{1-\mu} - p^{\text{min}} < \frac{\overline{\pi}}{1-\mu} - \frac{1-\delta(1-r)}{1-\mu}$ by Assumption 1.
  - o $\frac{\delta(1-r)}{1-\mu} - \frac{1-\overline{\pi}}{1-\mu} < \frac{\delta(1-r)}{1-\mu}$ because $\overline{\pi} < 1$.
- *Continuity:* The continuity of $\frac{d\Theta(\pi)}{d\pi}$ follows from the assumed continuity of $p'(\pi)$.

The uniqueness of π_0 follows from Equation A.4. Given this, we can apply the intermediate value theorem to establish existence for $\underline{\pi}$

- *Lower bound:* $\Theta(\pi_0) < 0$ follows from Assumption 1 and $p'(\pi) > \frac{\delta(1-r)}{1-\mu}$ for all $\pi < \pi_0$.
- *Upper bound:* Same as Case 1.
- *Continuity:* Same as Case 1.

To establish the unique threshold, $p'(\pi_0) = \frac{\delta(1-r)}{1-\mu}$ combined with Equation A.4 implies $p'(\pi) < \frac{\delta(1-r)}{1-\mu}$ for all $\pi > \pi_0$. ■

A.3 Equilibrium Outcomes with Corner Solution for Equilibrium Transfer

The text analyzes equilibrium outcomes for all levels of power sharing low enough that the interior-optimal transfer is positive, $\pi \leq \overline{\pi}$. For any $\pi > \overline{\pi}$, along a peaceful path, the ruler consumes $1-\pi$ in every period and the opposition consumes π. The basement spoils constitute the only form of wealth redistribution, as the transfer is 0 in every period.

The main aspect of the analysis of exogenous power sharing that changes when allowing $\pi > \overline{\pi}$ is that the *ruler* prefers to trigger a revolt is π is sufficiently high. (NB: The analysis of endogenous power sharing is unchanged because, along an equilibrium path, the ruler would never choose any $\pi_t > \overline{\pi}$; see Lemma 2.) To ensure the ruler can provoke a revolt if desired, assume that before making its transfer offer in the stage game, the ruler has a direct option to provoke a revolt. Exercising this option yields the same expected payoffs that each player would obtain if the opposition revolts at its information set. Substantively, this option could entail the ruler committing an atrocity or attempting to directly occupy the opposition's territory, which is assumed to provoke an armed response from the opposition. An analogous option is commonly included in models of preventive war, where the offerer can initiate a war rather than buy off the opponent; see, for example, Spaniel (2023, Ch. 4).

For $\pi > \overline{\pi}$, the ruler trades off between buying off a revolt, which raises total surplus, and pocketing a larger share of total consumption. Unlike with $\pi \leq \overline{\pi}$, the ruler cannot use the temporary transfer to hold the opposition down to indifference. For $\pi > \overline{\pi}$, π by itself exceeds the opposition's reservation value to revolting (minmax payoff) and the transfer is constrained to be non-negative. The ruler prefers peaceful bargaining over conflict if and only if $1 - \pi \geq (1 - p(\pi))(1 - \mu)$. This yields a threshold value $\tilde{\pi}$ implicitly defined as

$$1 - \tilde{\pi} = (1 - p(\tilde{\pi}))(1 - \mu) \implies \tilde{\pi} - \mu - p(\tilde{\pi})(1 - \mu) = 0. \tag{A.5}$$

This term equates the ruler's consumption along a peaceful path to its expected value to conflict. The left-hand side is similar in form to the implicit characterization of $\overline{\pi}$, but subtracts out μ because the ruler pockets the surplus saved by preventing fighting. The opposition, by contrast, is held down to its reservation value, and hence there is no additional μ term in Equation 5.

Consequently, for $\pi > \overline{\pi}$ but relatively small, the cost of a revolt induces the ruler to buy off the opposition. By contrast, for higher π, the ruler would forced to give so much away along a peaceful path that its payoff would be below its minmax value to fighting. The ruler is willing to destroy surplus to counteract this effect.

Lemma A.2 (Threshold values for bargaining)**.** *A unique value $\tilde{\pi} \in (\overline{\pi}, 1]$ exists such that $\tilde{\pi} - \mu - p(\tilde{\pi})(1 - \mu) = 0$.*

Proof. Applying the intermediate value theorem establishes existence

- *Lower bound:* $\overline{\pi} - \mu - p(\overline{\pi})(1 - \mu) < 0$ because $\overline{\pi} = p(\overline{\pi})(1 - \mu)$.
- *Upper bound:* $1 - \mu - p^{\max}(1 - \mu) \geq 0$ because $\mu \in (0, 1)$ and $p^{\max} \leq 1$.
- *Continuity:* $p(\pi)$ is continuous.

Strict monotonicity establishes uniqueness. $\frac{d}{d\pi}\big(\pi - \mu - p(\pi)(1 - \mu)\big) = 1 - p'(\pi)(1 - \mu)$. The proof for Lemma A.1 proves this is strictly positive for all $\pi > \overline{\pi}$. ■

The following modifies Proposition 1 to characterize equilibrium outcomes for $\pi > \overline{\pi}$.

Proposition A.1 (Proposition 1 for all values of π)**.** *Suppose $\pi_t = \pi$ for all t. The following constitute the equilibria strategy profiles, which are unique for any $\pi > \overline{\pi}$.*

- *If $\pi \leq \underline{\pi}$, see Proposition 1.*
- *If $\pi \in (\overline{\pi}, \tilde{\pi}]$, then in every high-threat period, the ruler offers $x_t = 0$ and the opposition accepts any proposal. Along the equilibrium path, revolts never occur; and from the perspective of any high-threat period, the ruler's average per-period expected consumption is $1 - \pi$ and the opposition's is π.*

- *If $\pi > \tilde{\pi}$, then in every high-threat period, the ruler triggers a revolt. Along the equilibrium path, a revolt occurs in the first high-threat period; and in this period, the ruler's average per-period expected consumption is $(1 - p(\pi))(1 - \mu)$ and the opposition's is $p(\pi)(1 - \mu)$.*

A.4 Plotting Equilibrium Consumption Terms

Setup for the figure. Figure A.1 provides visual intuition for the equilibrium consumption terms, plotting average per-period consumption amounts for each player (from the perspective of a high-threat period) as a function of π. All parameter values in the two panels are identical except $p^{\text{min}} = p^{\text{max}} = 0.5$ in Panel A and $p^{\text{max}} = 0.9$ in Panel B. Thus, higher π raises the opposition's basement spoils in both panels, whereas a threat-enhancing effect exists only in Panel B. Black lines indicate peaceful consumption amounts, whereas red lines indicate consumption amounts when a revolt occurs in equilibrium. The dashed gray lines express the minmax payoffs created by each player's reservation value to a revolt. Specifically, the lower gray line is a player's minmax (lower bound to their payoff) and the higher gray line is total societal output (which equals 1) minus the other player's minmax (upper bound). The magnitude of the gap between these lines is μ because this is the surplus saved from preventing a revolt (which creates a bargaining range). The dashed blue lines express, for all values of π, consumptions amounts at $\pi = 0$.

Explaining each region of the figure. The no-revolt constraint fails if basement spoils are too low, $\pi < \underline{\pi}$ (see Equation 6 and Lemma 1). Consequently, a revolt occurs and total surplus equals $1 - \mu$. Each player's utility is determined by its respective reservation value to a revolt, $(1 - p(\pi))(1 - \mu)$ for the ruler and $p(\pi)(1 - \mu)$ for the opposition. In Panel A, constant $p(\pi)$ eliminates the threat-enhancing effect. Therefore, the minmax payoffs are flat, which obviates the need for a separate blue line. In Panel B, by contrast, $p(\pi)$ strictly increases in π. Thus, the opposition's minmax payoff slopes upward whereas the ruler's slopes downward.

Raising π to $\underline{\pi}$ satisfies the no-revolt constraint, which increases joint consumption to 1. The ruler, by virtue of making the bargaining offers, holds the opposition down to its reservation value $p(\pi)(1 - \mu)$, and therefore the opposition's consumption is unchanged across the $\underline{\pi}$ threshold. However, the ruler's consumption discretely jumps above his minmax because he consumes all the surplus saved from preventing a revolt, $1 - p(\pi)(1 - \mu)$. Throughout this region, the temporary transfer in every high-threat period is the interior-optimal amount $x^*(\pi)$ (Equation 3). In the region extending to $\overline{\pi}$, in Panel A, each players' utilities are flat in π. By contrast, in Panel B, the opposition's increases and the ruler's declines. This discrepancy arises because only the opposition's probability of winning affects consumption in this range; raising basement spoils has no net effect (Equation 4). Another comparison between the panels highlights that $\underline{\pi}$ is farther to the right in Panel B. The opposition wins with higher probability, which raises the basement level of spoils needed to prevent revolt. Using the implicit definition of $\underline{\pi}$ from Lemma 1, it is straightforward to show $\frac{dx^*}{dp} > 0$.

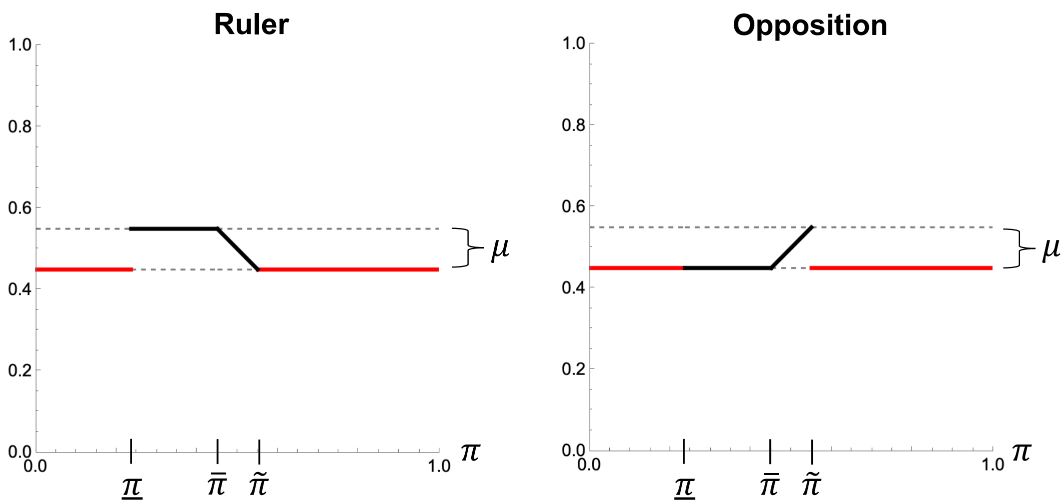
Above $\overline{\pi}$ (see Equation 5), the temporary transfer is 0. The players' respective payoffs are $1 - \pi$ and π, and the opposition's probability of succeeding in a revolt has no effect on payoffs. This is the only set of parameter values in which the opposition consumes strictly more than its reservation value to fighting.

Finally, very high basement spoils $\pi > \tilde{\pi}$ (see Equation A.5 and Lemma A.2) induce the ruler to trigger a revolt. Consequently, the ruler's and opposition's respective consumption terms are the same as in the $\pi < \underline{\pi}$ region. In Panel A, the absence of a threat-enhancing effect implies that each player's payoff is identical to the $\pi < \underline{\pi}$ region. By contrast, in Panel B, the opposition's higher probability of winning in the high π range yields different respective payoffs to the costly lottery.

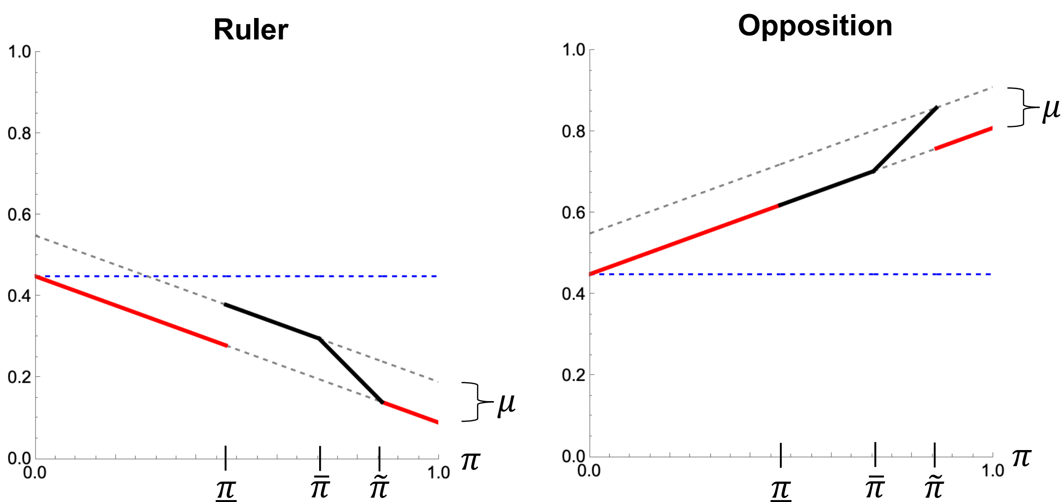
Ruler willingness constraint. The analysis of endogenous power sharing introduces the ruler willingness constraint (see Equation 8). That comparison does not entail a fixed value of π, but instead a comparison of the ruler's consumption along a peaceful path with $\pi = \underline{\pi}$ as opposed to a conflictual path with $\pi = 0$. Figure A.1 provides visual intuition for the finding that the threat-enhancing effect must be large enough in magnitude for ruler willingness to fail. In Panel A, $p(\pi)$ is constant in π. Hence, there is no threat-enhancing effect, and ruler willingness must hold. This is evidenced by the ruler's consumption along the black line exceeding its consumption along the lower gray line at $\pi = \underline{\pi}$, the latter of which equals the ruler's consumption at $\pi = 0$. By contrast, in Panel B, the threat-enhancing effect is large in magnitude, and ruler willingness fails. This is evidenced by the ruler's consumption along the black line falling below its consumption along the blue line at $\pi = \underline{\pi}$, the latter of which equals the ruler's consumption at $\pi = 0$.

Figure A.1: Equilibrium Consumption Terms with Exogenous Power Sharing

Panel A. Basement spoils only



Panel B. Basement spoils and threat-enhancing effect



Notes: $\delta = 0.9$, $\mu = 0.1$, $r = 0.2$, $p^{\min} = 0.5$, $\alpha(\pi) = \pi$. In Panel A, $p^{\max} = 0.5$; in Panel B, $p^{\max} = 0.9$. The y-axis is a player's average per-period consumption from the perspective of a high-threat period.

B Appendix: Endogenous Power Sharing

B.1 Proof of Lemma 2

- *Opposition's actions, Part a.* Follows directly from construction of $\underline{\pi}$ (Lemma 1).
- *Opposition's actions, Part b.* By construction of $\underline{\pi}$, the opposition accepts with probability 0 any proposal that includes $\pi_t \in (0, \underline{\pi})$. Because the ruler can raise π_t above 0 only once, any $\pi_t \in (0, \underline{\pi})$ yields $x^*(\pi_t) > 1 - \pi_t$, which violates the budget constraint.
- *Ruler's actions*
  - The ruler's strict preference for temporary transfers over permanent power-sharing concessions implies that any π_t must be accompanied by $x_t = 1 - \pi_t$.
  - Proposing any $\pi_t \in (0, \underline{\pi})$ would raise the opposition's probability of winning without inducing acceptance, which cannot be optimal because $\frac{d}{d\pi}\big((1 - p(\pi))(1 - \mu)\big) < 0$.
  - The ruler will not propose any $\pi_t > \underline{\pi}$ because its consumption strictly decreases in π_t regardless of whether π_t permits an interior solution (see Equation 4) or a corner solution (see Appendix A.3). ■

B.2 Mixing Probabilities and Proof of Proposition 4

The following characterizes the equilibrium mixing probabilities when strong opposition credibility fails, and also proves Proposition 4.

Ruler's probability of sharing power. The ruler calibrates its probability of sharing power in a high-threat period to make the opposition indifferent between accepting and revolting. This pins down a unique mixing probability, denoted $\sigma_R^* \in (0, 1)$:

$$\underbrace{\frac{p^{\text{min}}(1-\mu)}{1-\delta}}_{\text{Revolt}} = \underbrace{1 + \delta V_O}_{\text{Wait}}, \tag{B.1}$$

$$\text{for} \quad V_O = r\left(\underbrace{\sigma_R^* \frac{p(\underline{\pi})(1-\mu)}{1-\delta}}_{\text{Move to power sharing}} + \underbrace{(1-\sigma_R^*)\frac{p^{\text{min}}(1-\mu)}{1-\delta}}_{\text{Revolt or wait}}\right) + \underbrace{(1-r)\delta V_O}_{\text{Autocracy persists}}. \tag{B.2}$$

These resemble the system of equations used to derive the strong opposition credibility constraint (Equation 11), with two exceptions. First, Equation B.1 is an equality, unlike the inequality in Equation 9. Second, V_O is a function of a non-degenerate probability σ_R^* (Equation B.2), as opposed to the ruler sharing power with probability 1 in the next high-threat period (Equation 10). Thus, in each high-threat period, the opposition has a $1 - \sigma_R^*$ chance of again choosing between revolting and waiting. Given the opposition's indifference condition, either decision yields an identical payoff.

To prove the claims about σ_R^* from Proposition 4, solving Equation B.2 for V_O, substituting into Equation B.1, and rearranging yields an implicit characterization $\Omega_R(\sigma_R^*) = 0$, for

$$\Omega_R(\sigma_R) = \underbrace{1 - \delta(1-r) - p^{\min}(1-\mu)}_{\Theta(0)\text{ (see Assumption 1)}} + \underbrace{\delta r \Delta p(\underline{\pi}) \frac{1-\mu}{1-\delta}}_{\gamma\text{ from Eq. 11}} \sigma_R. \tag{B.3}$$

Applying the intermediate value theorem establishes existence. The lower bound $\Omega_R(0) < 0$ is equivalent to the weak opposition credibility condition (Assumption 1) holding, the upper bound $\Omega_R(1) > 0$ is equivalent to strong opposition credibility failing (Equation 11), and $\Omega_R(\cdot)$ is continuous. Uniqueness follows from

$$\frac{d\Omega_R}{d\sigma_R} = \delta r \Delta p(\underline{\pi}) \frac{1-\mu}{1-\delta} > 0,$$

the intuition for which is that the opposition benefits from a higher probability of the ruler sharing power; or, equivalently, that the wedge between the weak opposition credibility and strong opposition credibility conditions is positive.

Opposition's probability of accepting temporary concessions. The ruler strictly prefers to share power than to incur a revolt for sure, given the present assumption that ruler willingness holds. But the ruler gambles if the opposition might accept a contemporaneous offer that lacks a power-sharing provision. The opposition calibrates its probability of accepting a pure-transfers proposal to make the ruler indifferent between sharing power and not. This pins down a unique mixing probability, denoted $\sigma_O^* \in (0,1)$:

$$\underbrace{\frac{1 - p(\underline{\pi})(1-\mu)}{1-\delta}}_{\text{Share power}} = \underbrace{\overbrace{\sigma_O^* \delta V_R}^{\text{Autocracy persists}} + \overbrace{(1-\sigma_O^*)\frac{(1-p^{\min})(1-\mu)}{1-\delta}}^{\text{Opposition revolts}}}_{\text{Wait}}, \tag{B.4}$$

$$\text{for} \quad V_R = \underbrace{(1-r)(1+\delta V_R)}_{\text{Autocracy persists}} + r \underbrace{\frac{1-p(\underline{\pi})(1-\mu)}{1-\delta}}_{\text{Share power or wait}}. \tag{B.5}$$

The indifference condition equates the ruler's expected utility to sharing power with that to waiting, which requires the opposition to put the correct weight on each of accepting and revolting. The continuation value expresses that autocracy persists if the next period is low threat, whereas another high-threat period yields the same decision between sharing power and waiting. Given the ruler's indifference condition, his payoffs are identical regardless of which decision he makes.

To prove the claim about σ_O^* from Proposition 4, solving Equation B.5 for V_O, substituting into

Equation B.4, and rearranging yields an implicit characterization $\Omega_O(\sigma_O^*) = 0$, for

$$\Omega_O(\sigma_O) = -\big(\mu - \Delta p(\underline{\pi})(1-\mu)\big)(1-\sigma_O) - \frac{1-\delta}{1-\delta(1-r)}\Big(1-\delta(1-r) - p(\underline{\pi})(1-\mu)\Big)\sigma_O. \quad \text{(B.6)}$$

Applying the intermediate value theorem establishes existence. The lower bound $\Omega_O(0) < 0$ is equivalent to the ruler willingness condition (Equation 8) holding; the upper bound $\Omega_O(1) > 0$ is equivalent to an analog of the weak opposition credibility condition holding but with $p(\pi_t) = p(\underline{\pi})$, which makes weak opposition credibility strictly easier to hold; and $\Omega_O(\cdot)$ is continuous. Uniqueness follows from

$$\frac{d\Omega_O}{d\sigma_O} = \underbrace{\mu - \Delta p(\underline{\pi})(1-\mu)}_{>0 \text{ b/c ruler willingness}} - \frac{1-\delta}{1-\delta(1-r)} \underbrace{\Big(1-\delta(1-r) - p(\underline{\pi})(1-\mu)\Big)}_{<0 \text{ b/c weak opposition credibility}} > 0.$$

The intuition for the sign is that the ruler benefits from a higher probability of the opposition accepting. ■

B.3 Comparative Statics

The following statement formalizes the main intuitions shown visually in Figure 2.

Proposition B.1 (Comparative statics)**.** *Assume $\alpha(\pi_t) = 1$ for all $\pi_t > 0$.*

- ***Part a.*** *A unique threshold $\overline{r} \in (0, 1)$ exists such that for $r > \overline{r}$, weak opposition credibility fails (such parameter values are ruled out by Assumption 1). The threshold $\overline{r}$ is unaffected by p^{max}.*
- ***Part b.*** *A unique threshold $\tilde{p}^{max} > p^{min}$ exists such that for $p^{max} > \tilde{p}^{max}$, ruler willingness fails (Equation 8). Supposing that weak opposition credibility holds ($r < \overline{r}$), Proposition 2 characterizes equilibrium strategies and outcomes. The threshold $\tilde{p}^{max}$ is unaffected by r.*
- ***Part c.*** *Suppose weak opposition credibility ($r < \overline{r}$) and ruler willingness ($p^{max} < \tilde{p}^{max}$) both hold.*
  - ***Case 1.*** *A unique threshold $\underline{r} \in (0, \overline{r})$ exists such that for $r < \underline{r}$, strong opposition credibility holds (Equation 11). Proposition 3 characterizes equilibrium strategies and outcomes. An increase in p^{max} decreases $\underline{r}$.*
  - ***Case 2.*** *Suppose strong opposition credibility fails ($r > \underline{r}$). Proposition 4 characterizes equilibrium strategies and outcomes. The following formalizes key characteristics of the equilibrium mixing probabilities asserted in the text (Figure B.1 provides a visual summary for the probability of power sharing).*
    - $\sigma_R^*(\overline{r}) = 0$
    - $\sigma_R^*(\underline{r}) = 1$
    - $\frac{d\sigma_R^*}{dr} < 0$
    - $\sigma_R^*(r) \in (0, 1)$ *for* $r \in (\overline{r}, \underline{r})$
    - $\frac{d\sigma_R^*}{dp^{max}} < 0$

Proof of Part a. The implicit characterization is $\Theta_{\overline{r}}(\overline{r}) = 0$, for

$$\Theta_{\overline{r}}(r) \equiv 1 - \delta(1-r) - p^{\min}(1-\mu).$$

Applying the intermediate value theorem establishes existence. The lower bound is $\Theta_{\overline{r}}(0) = 1 - \delta - p^{\min}(1-\mu) < 0$, where the sign is implied by Assumption 1; the upper bound is $\Theta_{\overline{r}}(1) = 1 - p^{\min}(1-\mu) > 0$; and $\Theta_{\overline{r}}(\overline{r})$ is continuous. Uniqueness follows from $\frac{d\Theta_{\overline{r}}}{dr} = \delta > 0$. Finally, $\Theta_{\overline{r}}$ is not a function of $p^{\max}$.

Part b. The implicit characterization is $\Theta_{\tilde{p}^{\max}}(\tilde{p}^{\max}) = 0$, for

$$\Theta_{\tilde{p}^{\max}}(p^{\max}) = \mu - (p^{\max} - p^{\min})(1-\mu).$$

The claim follows from $\Theta_{\tilde{p}^{\max}}(p^{\min}) = \mu > 0$ and $\frac{d\Theta_{\tilde{p}^{\max}}}{dp^{\max}} = -(1-\mu) < 0$. The upper bound satisfies $\Theta_{\tilde{p}^{\max}}(1) < 0$ if and only if $p^{\min} < 1 - \frac{\mu}{1-\mu}$. Finally, $\Theta_{\tilde{p}^{\max}}$ is not a function of r.

Part c, Case 1. The implicit characterization is $\Theta_{\underline{r}}(\underline{r}) = 0$, for

$$\Theta_{\underline{r}}(r) \equiv 1 - \delta(1-r) - p^{\min}(1-\mu) + \delta r(p^{\max} - p^{\min})\frac{1-\mu}{1-\delta}.$$

Applying the intermediate value theorem establishes existence. The lower bound is $\Theta_{\underline{r}}(0) = 1 - \delta - p^{\min}(1-\mu) < 0$, where the sign is implied by Assumption 1; the upper bound is $\Theta_{\underline{r}}(\overline{r}) = \delta\overline{r}(p^{\max} - p^{\min})\frac{1-\mu}{1-\delta} > 0$; and $\Theta_{\underline{r}}$ is continuous. Uniqueness follows from $\frac{d\Theta_{\underline{r}}}{dr} = \delta + \delta(p^{\max} - p^{\min})\frac{1-\mu}{1-\delta} > 0$. Finally, applying the implicit function theorem yields

$$\frac{d\underline{r}}{dp^{\max}} = -\frac{\delta\underline{r}\frac{1-\mu}{1-\delta}}{\delta + \delta(p^{\max} - p^{\min})\frac{1-\mu}{1-\delta}} < 0.$$

Part c, Case 2. Recall that Equation B.3 characterizes σ_R^*. For the following, set $\Delta p(\underline{\pi}) = p^{\max} - p^{\min}$.

- At $r = \overline{r}$, weak opposition credibility holds with equality, and therefore

$$\sigma_R^*(\overline{r}) = \underbrace{1 - \delta(1-\overline{r}) - p^{\min}(1-\mu)}_{=0} + \delta(p^{\max} - p^{\min})\frac{1-\mu}{1-\delta}\sigma_R^*.$$

  This implies $\sigma_R^*(\overline{r}) = 0$ if and only if $\sigma_R^* = 0$.

- At $r = \underline{r}$, strong opposition credibility holds with equality, and therefore

$$\sigma_R^*(\underline{r}) = \underbrace{1 - \delta(1-\underline{r}) - p^{\min}(1-\mu) + \delta\underline{r}(p^{\max} - p^{\min})\frac{1-\mu}{1-\delta}}_{=0} - \delta(p^{\max} - p^{\min})\frac{1-\mu}{1-\delta}(1-\sigma_R^*).$$

This implies $\sigma_R^*(\underline{r}) = 0$ if and only if $\sigma_R^* = 1$.

- ■ Applying the implicit function theorem yields

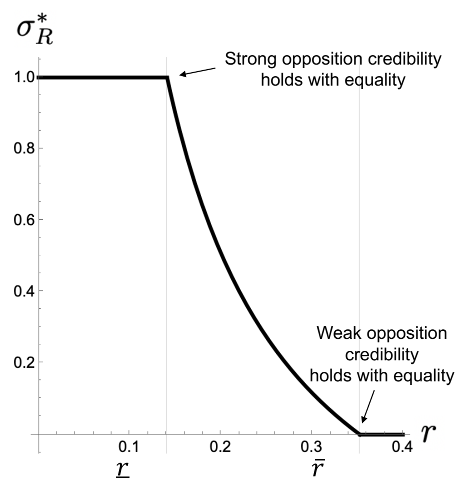
$$\frac{d\sigma_R^*}{dr} = -\frac{\frac{\partial \Omega_R}{\partial r}}{\frac{\partial \Omega_R}{\partial \sigma_R}} = -\frac{\delta + \delta(p^{\max} - p^{\min})\frac{1-\mu}{1-\delta}\sigma_R^*}{\delta r(p^{\max} - p^{\min})\frac{1-\mu}{1-\delta}} < 0.$$

- ■ Follows directly from the first three results because σ_R^* is continuous.
- ■ Applying the implicit function theorem yields

$$\frac{d\sigma_R^*}{dp^{\max}} = -\frac{\frac{\partial \Omega_R}{\partial p^{\max}}}{\frac{\partial \Omega_R}{\partial \sigma_R}} = -\frac{\alpha(\underline{\pi})}{\Delta p(\underline{\pi})} < 0.$$

■

Figure B.1: Mixed Probability of Power Sharing



Notes: The figure uses the same parameter values and functional form as Figure 2, plus $p^{\max} = 0.9$. Ruler willingness holds for these parameter values.

B.4 DISTINCT MECHANISMS FOR A MIXED-STRATEGY RANGE

Existing models do not account for why a mixed-strategy range exists in the present model. To explain why, I extend the model by relaxing the assumption from the baseline model that the ruler can choose any power-sharing level $\pi_t \in [0, 1]$. Now, a positive power-sharing choice is constrained by an exogenous lower bound, $\pi_t \in \{0\} \cup [\pi^{\text{min}}, 1]$ for $\pi^{\text{min}} \geq 0$. The original model coincides with $\pi^{\text{min}} = 0$. However, for higher values π^{min}, the ruler chooses between sharing no power and sharing at least as much power as π^{min}. [NB: the following uses the extended setup in Appendix A.3 that allows for any value of π, as opposed to the setup in the paper in which π must be low enough to induce an interior-optimal transfer.]

The following re-evaluates each of the three main conditions for power sharing. The weak opposition credibility condition (Assumption 1) is unchanged because it pertains to the opposition's calculus if the ruler does not share power. However, ruler willingness and strong opposition credibility each differ. The latter enables contrasting the rationale for a mixed-strategy range across models.

Ruler willingness. The general version of the condition is

$$(1 - p^{\text{min}})(1 - \mu) \leq \begin{cases} 1 - p(\underline{\pi})(1 - \mu) & \text{if } \pi^{\text{min}} \leq \underline{\pi} \\ 1 - p(\pi^{\text{min}})(1 - \mu) & \text{if } \pi^{\text{min}} \in (\underline{\pi}, \overline{\pi}] \\ 1 - \pi^{\text{min}} & \text{if } \pi^{\text{min}} > \overline{\pi}. \end{cases}$$

For $\pi^{\text{min}} \leq \underline{\pi}$, the analysis is unchanged from the original model, as the ruler can still set $\pi_t = \underline{\pi}$. For $\pi^{\text{min}} \in (\underline{\pi}, \overline{\pi}]$, the ruler chooses a power-sharing level $\pi^{\text{min}} > \underline{\pi}$, but basement spoils are low enough that the opposition requires an additional transfer in high-threat periods. This enables the ruler to hold the opposition down to indifference. Consequently, the form of the ruler's consumption term along a peaceful path is identical to that the baseline model, in which the opposition's reservation value to a revolt determines how spoils are divided.

For $\pi^{\text{min}} > \overline{\pi}$, the transfer hits a corner solution of 0 and the ruler cannot hold the opposition down to indifference (see Appendix A.3). Consequently, the opposition's reservation value to revolting—and, hence, the threat-enhancing effect—becomes irrelevant for the ruler's payoff. Instead, in every period along a peaceful path, the ruler consumes the share of total spoils that is not permanently given away to the opposition, $1 - \pi^{\text{min}}$.

The inequality for the $\pi^{\text{min}} > \overline{\pi}$ case is identical to the corresponding condition in the analysis of exogenous power sharing, setting $p(\pi) = p^{\text{min}}$. As shown in the last part of Proposition A.1, when π^{min} is too high, the ruler prefers to incur a revolt rather than permanently give away a large amount of spoils. This is distinct from the mechanism in Equation 8 that can cause ruler willingness to fail, which is driven by the threat-enhancing effect.

Strong opposition credibility. The general version of the condition is

$$1 - \delta(1-r) - p^{\min}(1-\mu) + \gamma \leq 0,$$

$$\text{for} \quad \gamma \equiv \begin{cases} \delta r \Delta p(\underline{\pi}) \frac{1-\mu}{1-\delta} & \text{if } \pi^{\min} \leq \underline{\pi} \\ \delta r \Delta p(\pi^{\min}) \frac{1-\mu}{1-\delta} & \text{if } \pi^{\min} \in (\underline{\pi}, \overline{\pi}] \\ \frac{\delta r}{1-\delta}\big(\pi^{\min} - p^{\min}(1-\mu)\big) & \text{if } \pi^{\min} > \overline{\pi}. \end{cases}$$

The inequality is the same as in the original model, but the wedge term γ varies based on $\pi^{\min}$ in the same ways as just discussed for ruler willingness. Once again, the form of the expression depends on whether $\pi^{\min}$ is less than or greater than $\overline{\pi}$. For $\pi^{\min} \leq \overline{\pi}$, the opposition's reservation value to revolting determines each player's consumption. Consequently, $\gamma > 0$ is a function of the threat-enhancing effect $\Delta p(\underline{\pi})$, as shown in Equation 11; or $\Delta p(\pi^{\min})$, if the constraint $\pi^{\min}$ binds. However, for $\pi^{\min} > \overline{\pi}$, the opposition's reservation value to revolting does not affect consumption, which instead depends directly on the magnitude of $\pi^{\min}$. Thus, in this parameter range, $\gamma > 0$ is unrelated to the threat-enhancing effect. Instead, a direct distributional effect creates the wedge.

Regardless of whether $\gamma > 0$ because of the threat-enhancing effect or direct distributional effects, the positivity of the wedge between the weak and strong opposition credibility conditions yields a mixed-strategy range. This explains why mixed-strategy ranges exist in both the present model and Acemoglu and Robinson (2017), but for different reasons. Here, the threat-enhancing effect creates the wedge. By contrast, their setup with a binary space of institutional reform options generates the mixed-strategy range. The ruling elite either offer no franchise expansion or full franchise expansion, which enables the masses to set policy in every period. Because sharing power yields strictly more consumption for the masses than their reservation value to a revolution, a wedge emerges because of a direct distributional effect (analogous to a high value of the lower bound $\pi^{\min}$ in the present extension).

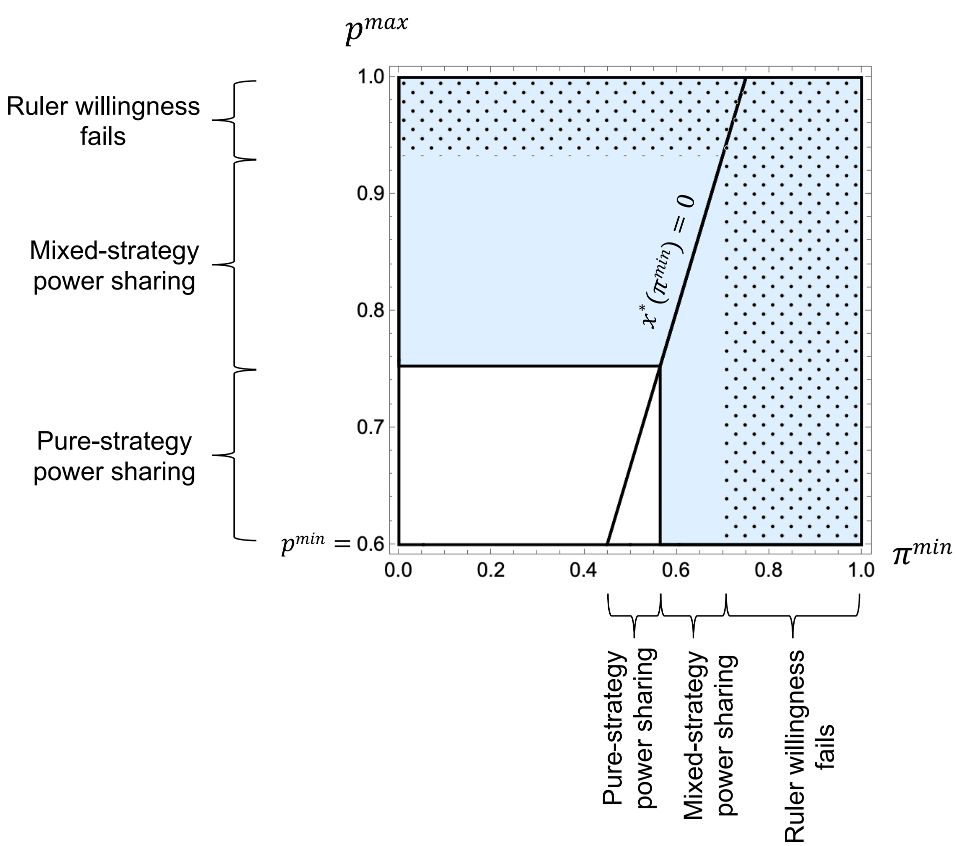
Castañeda Dower et al. (2020) extend the Acemoglu and Robinson model to allow for continuous levels of institutional reform. This alteration eliminates the mixed-strategy range because the ruling elites can perfectly tailor the amount of power shared to make the majority indifferent between accepting or revolting. We might expect the Castañeda Dower et al. (2020) result to apply to the present model, as the space of power-sharing options is continuous here as well. The key difference, once again, is the threat-enhancing effect. In equilibrium, the ruler sets the power-sharing level to make the opposition indifferent between accepting or revolting. However, this indifference holds for the opposition's probability of winning *after power has shifted in its favor*. But compared to the opposition's baseline under autocratic rule, sharing power strictly increases its reservation value. Thus, despite the continuous space of power-sharing options, the threat-enhancing effect creates a discrete wedge that yields a mixed-strategy range.

Visual intuition. Figure B.2 provides visual intuition for the two distinct mixed-strategy ranges. The region plot has $\pi^{\min}$ on the x-axis and $p^{\max}$ on the y-axis. To the left of the diagonal line is the range with interior bargaining offers, whereas the transfer is 0 to the right of the line. A wedge that yields mixed strategies arises *either* from a threat-enhancing effect or from a direct distributional effect—but not both simultaneously—depending on whether the interior-optimal transfer is strictly positive.

The area to the left of the line is similar to Figure 2. The threat-enhancing effect is the only component of power sharing that affects the thresholds. Thus, given the functional form assumption $\alpha(\pi_t) = 1$ for all $\pi_t > 0$, changes in π^{min} do not affect the thresholds in this range. Instead, only p^{max} matters. At low p^{max}, strong opposition credibility holds and the ruler shares power with probability 1 in a high-threat period. At intermediate p^{max}, strong opposition credibility fails and the ruler shares power with an interior probability in a high-threat period. And at high p^{max}, ruler willingness fails and conflict ensues.

By contrast, right of the diagonal line, consumption is dictated solely by the value of π^{min}, and p^{max} ceases to matter. At low π^{min}, the consumption wedge is sufficiently small that the opposition will not wait for a power-sharing deal (given the discount δr on the timing of the power-sharing deal). At intermediate π^{min}, strong opposition credibility fails and the ruler shares power with an interior probability in a high-threat period. And at high π^{min}, ruler willingness fails and conflict ensues.

Figure B.2: Two Mechanisms for Mixed-Strategy Power Sharing



Notes: The figure uses the same parameter values and functional form as Figure 2.

C Appendix: Extension with Imperfect Enforcement

C.1 Analysis

Core recursive equations. The following presents the same series of equations as in the baseline game to characterize the no-revolt constraint. In a high-threat period, the opposition accepts any transfer proposal x satisfying

$$\pi + x + \delta V_O^P \geq p(\pi)\frac{1-\mu}{1-\delta},$$

$$\text{for} \quad V_O^P = \underbrace{r\big(\pi + x + \delta V_O^P\big) + (1-r)q(\pi + \delta V_O^P)}_{\text{P persists}} + \underbrace{(1-r)(1-q)\overbrace{\frac{\delta r}{1-\delta(1-r)}\big(\pi + x + \delta V_O^P\big)}^{\delta V_O^A}}_{\text{Transition to A}}$$

$$\text{and} \quad V_O^A = \underbrace{(1-r)\delta V_O^A}_{\text{A persists}} + \underbrace{r\big(\pi + x + \delta V_O^P\big)}_{\text{Transition to P}} \implies V_O^A = \frac{r}{1-\delta(1-r)}\big(\pi + x + \delta V_O^P\big).$$

The continuation value for an autocratic regime, V_O^A, reflects the following. In weak-threat periods, the opposition consumes 0. By contrast, in high-threat periods, the opposition consumes $\pi + x$ and the regime transitions to power sharing. Starting with a power-sharing regime, V_O^P, the opposition consumes π in low-threat periods in which the ruler cannot renege, plus an additional x in high-threat periods. However, in low-threat periods in which the ruler reneges, the opposition consumes 0. Because a transition to an autocratic regime occurs, the opposition consumes 0 until the next high-threat period, when it consumes $\pi + x$. Thus, the *Transition to A* term in the continuation value encompasses both (a) the probability of transitioning from a power-sharing regime to an autocratic regime and (b) the opposition's present-discounted value to re-entering a power-sharing regime. The opposition consumes 0 in all periods before the latter event occurs.

Solving the recursive equations and substituting them into the inequality yields the set of proposals the opposition accepts, expressed as per-period averages.

$$\frac{1-\delta(1-r)}{1-\delta(1-r)q}\big(\pi + (1-\delta(1-r)q)x\big) \geq p(\pi)(1-\mu). \tag{C.1}$$

Setting this as an equality enables solving for the transfer $x_q^*(\pi)$ that makes the opposition indifferent between accepting and revolting, given the power-sharing level π

$$\frac{1-\delta(1-r)}{1-\delta(1-r)q}\big(\pi + (1-\delta(1-r)q)x_q^*(\pi)\big) = p(\pi)(1-\mu)$$

$$\implies x_q^*(\pi) = \frac{p(\pi)(1-\mu)}{1-\delta(1-r)} - \frac{\pi}{1-\delta q(\pi)(1-r)}. \tag{C.2}$$

Retaining Equation C.1 as an inequality and setting $x = 1-\pi$ (the maximum the ruler can transfer) yields the no-revolt constraint stated in Equation 13.

Optimal power-sharing level. The following derives the analogs to $\overline{\pi}$ and $\underline{\pi}$ from the baseline model, respectively denoted as $\overline{\pi}_q$ and $\underline{\pi}_q$. The following presumes that opposition willingness (Equation 14) holds. We can rewrite Equation 14 as an explicit threshold for $q_1 \equiv q(1, p^{\max})$,

$$q_1 > \frac{p^{\max}(1-\mu) - (1-\delta(1-r))}{\delta(1-r)p^{\max}(1-\mu)}. \tag{C.3}$$

Given this, we can state and prove the analog to Lemma A.1.

Lemma C.1 (Threshold for corner solution to temporary transfer (imperfect enforcement))**.** *Assume Equation C.3 holds.*

Case 1. *If* $\left.\frac{dx_q^*(\pi)}{d\pi}\right|_{\pi=0} < 0$*, then a unique threshold* $\overline{\pi}_q \in (0,1)$ *exists such that*

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

for $\overline{\pi}_q$ *implicitly defined as* $\frac{p(\overline{\pi}_q)(1-\mu)}{1-\delta(1-r)} = \frac{\overline{\pi}_q}{1-\delta q(\overline{\pi}_q)(1-r)}$.

Case 2. *If* $\left.\frac{dx_q^*(\pi)}{d\pi}\right|_{\pi=0} > 0$*, then a unique threshold* $\overline{\pi}_q \in (\overline{\pi}_{q,0}, 1)$ *exists, for* $\overline{\pi}_q$ *characterized in Case 1 and a unique threshold* $\overline{\pi}_{q,0} \in (0,1)$ *implicitly defined as* $\left.\frac{dx_q^*(\pi)}{d\pi}\right|_{\pi=\overline{\pi}_{q,0}} = 0$.

Proof. The two derivatives used throughout the proof are

$$\frac{dx_q^*(\pi)}{d\pi} = \frac{1-\mu}{1-\delta(1-r)}p'(\pi) - \frac{1}{1-\delta(1-r)q}\left(1 + \frac{\delta(1-r)\pi}{1-\delta(1-r)q}q'(\pi)\right), \tag{C.4}$$

which is ambiguous in sign, and

$$\frac{d^2x_q^*(\pi)}{d\pi^2} = \frac{1-\mu}{1-\delta(1-r)}\underbrace{p''(\pi)}_{=0}$$

$$-\frac{\delta(1-r)}{\big(1-\delta(1-r)q\big)^2}\left[\pi\underbrace{q''(\pi)}_{=0} + \left(1+\frac{1}{1-\delta(1-r)q}\right)q'(\pi) + 2\frac{\delta(1-r)\pi}{1-\delta(1-r)q}\big(q'(\pi)\big)^2\right] < 0. \tag{C.5}$$

Case 1. Applying the intermediate value theorem establishes existence for $\overline{\pi}_q$

- *Lower bound:* $x_q^*(0) = \frac{p^{\min}(1-\mu)}{1-\delta(1-r)} > 0$.
- *Upper bound:* $x_q^*(1) < 0$ is guaranteed by Equation C.3.

- *Continuity:* The continuity of $x_q^*(\pi)$ follows from the assumed continuity of $p(\pi)$ and $q(\pi)$.

Strict monotonicity establishes the unique threshold claim. For this case, Equation C.4 is strictly negative at $\pi = 0$, $\left.\frac{dx_q^*(\pi)}{d\pi}\right|_{\pi=0} < 0$. Therefore, Equation C.5 implies $\frac{dx_q^*(\pi)}{d\pi} < 0$ for all $\pi > 0$.

Case 2. Applying the intermediate value theorem establishes existence for $\overline{\pi}_{q,0}$

- *Lower bound*: This is equivalent to the scope condition for this case that $\left.\frac{dx_q^*(\pi)}{d\pi}\right|_{\pi=0} > 0$.
- *Upper bound*: Given $q'(\pi) > 0$, we can ignore that term in Equation C.4 and it suffices to demonstrate
$$\frac{1-\mu}{1-\delta(1-r)}(p^{\max} - p^{\min}) < \frac{1}{1-\delta(1-r)q_1}.$$
Equation C.3 provides a lower bound for q_1 that we can substitute in
$$\frac{1-\mu}{1-\delta(1-r)}(p^{\max} - p^{\min}) < \frac{1}{1-\delta(1-r)\left(\frac{p^{\max}(1-\mu)-(1-\delta(1-r))}{\delta(1-r)p^{\max}(1-\mu)}\right)}.$$
Straightforward algebraic simplification and rearrangement yields $p^{\min}(1-\mu) > 0$, a true statement.
- *Continuity:* The continuity of $\frac{dx_q^*(\pi)}{d\pi}$ follows from the assumed continuity of $p'(\pi)$ and $q'(\pi)$.

The uniqueness of $\overline{\pi}_{q,0}$ follows from Equation C.5. Given this, we can apply the intermediate value theorem to establish existence for $\overline{\pi}_q$

- *Lower bound:* $x_q^*(\overline{\pi}_{q,0}) > 0$ follows from $x^*(0) > 0$ and $\frac{dx_q^*(\pi)}{d\pi} > 0$ for all $\pi < \overline{\pi}_{q,0}$.
- *Upper bound:* Same as Case 1.
- *Continuity:* Same as Case 1.

To establish the unique threshold, $\left.\frac{dx_q^*(\pi)}{d\pi}\right|_{\pi=\overline{\pi}_{q,0}} = 0$ combined with Equation C.5 implies $\frac{dx_q^*(\pi)}{d\pi} < 0$ for all $\pi > \overline{\pi}_{q,0}$. ■

Lemma C.2 (Peaceful power-sharing threshold with imperfect enforcement)**.** *Assume Equation C.3 holds.*

Case 1. *If* $\frac{d\Theta_q(\pi)}{d\pi}\big|_{\pi=0} > 0$*, then a unique threshold* $\underline{\pi}_q \in (0, \overline{\pi}_q)$ *exists such that*

$$\Theta_q(\pi) \begin{cases} < 0 & \text{if } \pi < \underline{\pi}_q \\ = 0 & \text{if } \pi = \underline{\pi}_q \\ > 0 & \text{if } \pi > \underline{\pi}_q, \end{cases}$$

for $\underline{\pi}_q$ *implicitly defined as*

$$\Theta_q(\underline{\pi}_q) = \frac{1-\delta(1-r)}{1-\delta(1-r)q(\underline{\pi}_q)}\underline{\pi}_q + (1-\delta(1-r))(1-\underline{\pi}_q) - p(\underline{\pi}_q)(1-\mu) = 0.$$

Case 2. *If* $\frac{d\Theta_q(\pi)}{d\pi}\big|_{\pi=0} < 0$*, then a unique threshold* $\underline{\pi}_q \in (\pi_{q,0}, \overline{\pi}_q)$ *exists, for* $\underline{\pi}_q$ *characterized in Case 1 and a unique threshold* $\pi_{q,0} \in (0, \overline{\pi}_q)$ *implicitly defined as* $\frac{d\Theta_q(\pi)}{d\pi}\big|_{\pi=\pi_{q,0}} = 0$.

Proof. The two derivatives used throughout the proof are

$$\frac{\partial \Theta_q}{\partial \pi} = \frac{1-\delta(1-r)}{1-\delta(1-r)q} + \frac{1-\delta(1-r)}{(1-\delta(1-r)q)^2}\delta(1-r)\pi q'(\pi) - (1-\delta(1-r)) - \underbrace{(p^{\max} - p^{\min})}_{p'(\pi)}(1-\mu), \tag{C.6}$$

which is ambiguous in sign, and

$$\frac{\partial^2 \Theta_q}{\partial \pi^2} = \frac{2\delta(1-r)(1-\delta(1-r))}{(1-\delta(1-r)q)^2}\left(q'(\pi) + \frac{\delta(1-r)}{1-\delta(1-r)q}\pi(q'(\pi))^2\right)$$
$$- \underbrace{p''(\mu)}_{=0}(1-\mu) + \frac{1-\delta(1-r)}{(1-\delta(1-r)q)^2}\delta(1-r)\pi \underbrace{q''(\pi)}_{=0} > 0. \tag{C.7}$$

Each of the non-zero terms is strictly positive, which establishes the sign.

Case 1. Applying the intermediate value theorem establishes existence for $\underline{\pi}_q$

- *Lower bound:* $\Theta_q(0) < 0$ is guaranteed by Assumption 1.
- *Upper bound:* $\Theta_q(\overline{\pi}_q) = (1-\delta(1-r))(1-\overline{\pi}_q) > 0$, which follows from substituting the implicit equation for $\overline{\pi}_q$ into $\Theta_q(\overline{\pi}_q)$.
- *Continuity:* The continuity of $\Theta_q(\pi)$ follows from the assumed continuity of $p(\pi)$ and $q(\pi)$.

Strict monotonicity establishes the unique threshold claim. For this case, Equation C.6 is strictly positive at $\pi = 0$, $\frac{d\Theta_q(\pi)}{d\pi}\big|_{\pi=0} > 0$. Therefore, Equation C.7 implies $\frac{d\Theta_q(\pi)}{d\pi} > 0$ for all $\pi > 0$.

Case 2. Applying the intermediate value theorem establishes existence for $\pi_{q,0}$

- *Lower bound:* $\frac{d\Theta_q(\pi)}{d\pi}\big|_{\pi=0} < 0$ is the assumed scope condition of this case.
- *Upper bound*: Given $q'(\pi) > 0$, it suffices to eliminate that term in Equation C.6 and demonstrate

$$\frac{1-\delta(1-r)}{1-\delta(1-r)q(\overline{\pi}_q)} - (1-\delta(1-r)) - (p^{\text{max}} - p^{\text{min}})(1-\mu) > 0.$$

  Given the implicit definition of $\overline{\pi}_q$, the left-hand side is equivalent to

$$\frac{p(\overline{\pi}_q)(1-\mu)}{\overline{\pi}_q} - (1-\delta(1-r)) - (p^{\text{max}} - p^{\text{min}})(1-\mu).$$

  Substituting in the functional form assumption for $p(\pi)$ yields

$$\frac{((1-\overline{\pi}_q)p^{\text{min}} + \overline{\pi}_q p^{\text{max}})(1-\mu)}{\overline{\pi}_q} - (1-\delta(1-r)) - (p^{\text{max}} - p^{\text{min}})(1-\mu).$$

  Algebraic simplification yields

$$\frac{(1-\overline{\pi}_q)p^{\text{min}}(1-\mu)}{\overline{\pi}_q} + \underbrace{p^{\text{min}}(1-\mu) - (1-\delta(1-r))}_{>0 \text{ by Assumption } 1} > 0.$$

- *Continuity:* The continuity of $\frac{d\Theta_q(\pi)}{d\pi}$ follows from the assumed continuity of $p'(\pi)$ and $q'(\pi)$.

The uniqueness of $\pi_{q,0}$ follows from Equation C.7. Given this, we can apply the intermediate value theorem to establish existence for $\underline{\pi}_q$

- *Lower bound:* $\Theta_q(\pi_{q,0}) < 0$ follows from Assumption 1 and $\frac{d\Theta_q(\pi)}{d\pi} < 0$ for all $\pi < \pi_{q,0}$.
- *Upper bound:* Same as Case 1.
- *Continuity:* Same as Case 1.

To establish the unique threshold, $\frac{d\Theta_q(\pi)}{d\pi}\big|_{\pi=\pi_{q,0}} = 0$ combined with Equation C.7 implies $\frac{d\Theta_q(\pi)}{d\pi} > 0$ for all $\pi > \pi_{q,0}$. ■

Ruler willingness. Using the same steps as presented in the paper, the following characterizes the ruler's consumption along a peaceful path. This enables expressing the ruler willingness condition. In a high-threat period, the ruler's expected lifetime consumption stream is

$$(1-\delta)R(\pi) = 1 - \pi - x + \delta V_R^P,$$

$$\text{for} \quad V_R^P = r(1-\pi-x+\delta V_R^P) + (1-r)q(1-\pi+\delta V_R^P) + (1-r)(1-q)(1+\delta V_R^A)$$

$$\text{and} \quad V_R^A = (1-r)(1+\delta V_R^A) + r(1-\pi-x+\delta V_R^P).$$

Substituting the continuation value into the consumption stream while incorporating the two constraints on the transfer (high enough that the opposition accepts, non-negative) yields the ruler's constrained optimization problem

$$\max_x \; R_q(\pi) \text{ s.t. Equation C.1 holds and } x \geq 0,$$

$$\text{for} \quad R_q(\pi) \equiv 1 - \frac{1-\delta(1-r)}{1-\delta(1-r)q(\pi)}\pi - (1-\delta(1-r))x. \tag{C.8}$$

Assuming Equation C.1 is the binding constraint, we can substitute in $x_q^*(\pi)$ from Equation C.2 to yield

$$R_q(\pi)\Big|_{x=x_q^*} = 1 - p(\pi)(1-\mu), \tag{C.9}$$

which is identical to Equation 4. Thus, for the same reason as in the baseline model, the ruler's utility along a peaceful path is maximized at $\pi = \underline{\pi}_q$, the lowest level that enables buying off the opposition. Consequently, the form of the ruler willingness condition is identical; the only change is that the power-sharing level is now $\underline{\pi}_q$.

$$\textbf{Ruler willingness.} \qquad \underbrace{\Delta p(\underline{\pi}_q)}_{\text{Threat-enhancing effect (Eq. 1)}} (1-\mu) \leq \mu. \tag{C.10}$$

Strong opposition credibility. The strong opposition credibility condition is identical in form to Equation 11, replacing $\underline{\pi}$ with $\underline{\pi}_q$. The continuation values from Equations 9 and 10 are unchanged (other than replacing $\underline{\pi}$ with $\underline{\pi}_q$) because the opposition's lifetime expected utility upon transitioning to a power-sharing regime is pinned down by its reservation value to revolting. The solution $\underline{\pi}_q$ already compensates the opposition for the fact that the ruler will engineer periodic autocratic reversals along the equilibrium path.

$$\textbf{Strong opposition credibility.} \quad 1-\delta(1-r) - p^{\text{min}}(1-\mu) + \gamma \leq 0,$$

$$\text{for} \quad \gamma \equiv \delta r \underbrace{\Delta p(\underline{\pi}_q)}_{\text{Threat-enhancing effect (Eq. 1)}} \frac{1-\mu}{1-\delta}. \tag{C.11}$$

Divergent effects of π and q. Counterintuitively, more frequent opportunities to renege *worsen* the ruler's payoff, from the perspective of a high-threat period along a peaceful path of play. This follows directly from $\underline{\pi}_q > \underline{\pi}$. The consumption terms are $p(\underline{\pi}_q)(1-\mu)$ for the opposition and $1 - p(\underline{\pi}_q)(1-\mu)$ for the ruler; these are identical in form to the baseline game but with a higher power-sharing level. Because the ruler must compensate the opposition for his limited ability to commit to not renege, $q < 1$, the opposition amasses stronger bargaining leverage via the threat-enhancing effect than in the baseline game.

Thus, two aspects of the ruler's commitment ability, π and q, yield divergent effects. As we saw in the analysis of exogenous power sharing, the ruler does not want to commit to permanently giving away an arbitrarily large amount of spoils to the opposition. Instead, the ruler benefits from raising π only up to the point that basement spoils are sufficient to enable buying off the opposition. By contrast, the ruler always wants to be able to tie his hands against reneging (higher q), at least from the perspective of a high-threat period.

C.2 Comparative Statics

Proposition C.1 (Comparative statics for opposition willingness)**.**

> ***Part a. Frequency of high-threat periods.*** *A unique threshold $\hat{r} < 1$ exists such that for $r < \hat{r}$, opposition willingness fails. The implicit characterization of $\hat{r}$ is $\Theta_q(1, p^{max})\big|_{r=\hat{r}} = 0$.*
>
> ***Part b. Effects of $\mathbf{p^{max}}$.***
>
> ***Case 1. Offensive capabilities dominate.*** *If $\frac{d\Theta_q(1,p^{max})}{dp^{max}}\Big|_{p^{max}=1} < 0$, then higher p^{max} makes opposition willingness strictly harder to hold, meaning $\frac{d\Theta_q(1,p^{max})}{dp^{max}} < 0$ for all p^{max}.*
>
> ***Case 2. Defensive capabilities dominate.*** *If $\frac{d\Theta_q(1,p^{max})}{dp^{max}}\Big|_{p^{max}=p^{min}} > 0$, then higher p^{max} makes opposition willingness easier to hold, meaning $\frac{d\Theta_q(1,p^{max})}{dp^{max}} > 0$ for all p^{max}.*
>
> ***Case 3. Defensive capabilities dominate for high $\mathbf{p^{max}}$.*** *If $\frac{d\Theta_q(1,p^{max})}{dp^{max}}\Big|_{p^{max}=p^{min}} < 0$ and $\frac{d\Theta_q(1,p^{max})}{dp^{max}}\Big|_{p^{max}=1} > 0$, then a unique threshold $\hat{p}_q^{max} \in (p^{min}, 1)$ exists such that higher p^{max} makes opposition willingness easier to hold if and only if $p^{max} > \hat{p}_q^{max}$. The implicit characterization of $\hat{p}_q^{max}$ is $\Theta_q(1, \hat{p}_q^{max}) = 0$.*

Proof of Part a. To establish the upper bound,

$$\Theta_q(1, p^{\max})\big|_{r=1} = 1 - p^{\max}(1-\mu) > 0.$$

To establish uniqueness,

$$\frac{\partial \Theta_q(1, p^{\max})}{\partial r} = \frac{\delta(1-q)}{(1-\delta(1-r)q)^2} > 0.$$

Proof of Part b. Cases 1 and 2 and the uniqueness claim in Case 3 follow directly from the strict monotonicity of $\frac{\partial \Theta_q(1,p^{\max})}{\partial (p^{\max})}$,

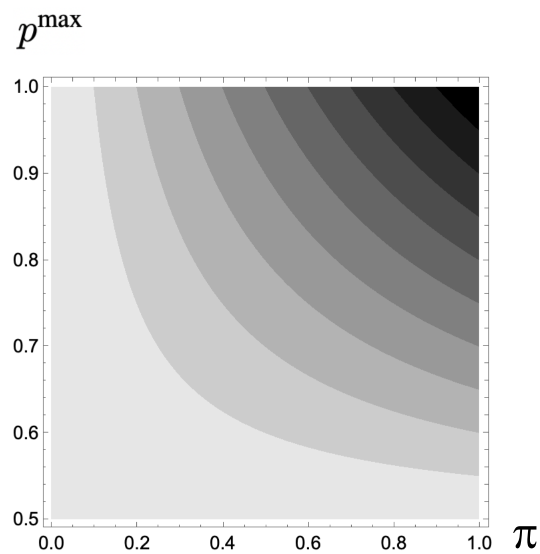
$$\frac{\partial^2 \Theta_q(1, p^{\max})}{\partial (p^{\max})^2} = \frac{\delta(1-r)(1-\delta(1-r))}{(1-\delta(1-r)q)^2}\left(\underbrace{\frac{\partial^2 q}{\partial (p^{\max})^2}}_{=0} + \frac{2\delta(1-r)}{1-\delta(1-r)q}\left(\frac{\partial q}{\partial p^{\max}}\right)^2\right) > 0.$$

Applying the intermediate value theorem demonstrates existence for $\hat{p}_q^{\max} \in (p^{\min}, 1)$. The bounds follow from the assumptions for the case, and $\Theta_q(1, p^{\max})$ is continuous in $p^{\max}$. ■

C.3 Additional Figures

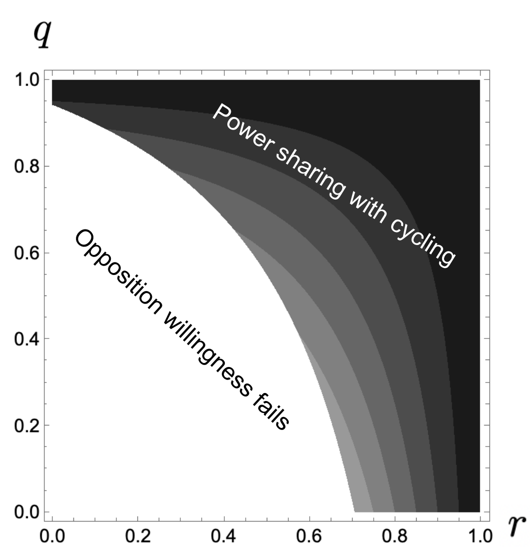
Figure C.1 plots $q(\pi, p^{\max})$ from Equation 12, with darker colors corresponding with higher values of q. Figure C.2 plots the long-run equilibrium frequency of periods with power sharing, fixing q as a parameter. The frequency equals $r + (1 - r)q$ if opposition holds (Equation 14), and 0 if not. The white region expresses parameter values in which opposition willingness fails, and darker colors correspond with higher values of $r + (1 - r)q$.

Figure C.1: Heat Map for Function $q(\pi, p^{\max})$



Notes: $p^{\min} = 0.5$, $q^{\min} = 0.5$, $d = 1$.

Figure C.2: Power Sharing with Cycling



Notes: $\delta = 0.85$, $\mu = 0.25$, $p^{\max} = 1$.