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 sharing power with the opposition, which permanently bolsters commitment to deliver spoils. 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 this threat-enhancing effect. First, bolstering the opposition's coercive capabilities creates a commitment problem for the opposition. This can make the ruler 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 stabilize power-sharing deals by improving the opposition's defense of 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, with no powerful groups or institutions that 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. Canonical models of political transitions provide the departure point (Acemoglu and Robinson 2000, 2001, 2006; Castañeda Dower et al. 2018, 2020; Powell 2024). In these models, the autocrat faces a commitment problem. 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 political reforms.[1] However, the ruler cannot commit to offer concessions in any future periods in which the opposition lacks a coercive threat. When societal threats arise rarely, the opposition rejects bargains involving *temporary* transfers only because its shadow of the future is unfavorable. Co-opting the opposition requires 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 provides 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 universally

[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.

incorporate the institutional mechanism, but commonly 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 groups and other societal groups in cabinets, rulers seek to prevent rebellions from emerging (Goodwin and Skocpol 1989; 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.[2] Empirically, in Africa, members of ethnic groups with positions in the central government launch and succeed at coups at higher rates than members of groups lacking a foothold at the center (Roessler 2016). 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 would be able to leverage their central position to overthrow the ruler (Young and Turner 1985; Acemoglu et al. 2004; van Dam 2011).

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, because they do not completely disarm, can therefore protect themselves against transgressions by the government. However, these deals nonetheless carry 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. The deal called for military integration, but the Minister of Defense used his troops to attack the government, emerging victorious in 1982 (Nolutshungu 1996).

Regional autonomy deals carry similar risks because local interests can leverage their regional stronghold to secede (Walter 2009; Cederman et al. 2015, 2022; Germann and Sambanis 2021).

[2] Seats in the legislature serve a similar purpose of co-optation, although most legislators are farther from the center of power (Gandhi 2008; Blaydes 2010; Guriev and Treisman 2019; Meng 2021).

For example, limited electoral reforms in Western colonies after 1945 routinely empowered larger nationalist movements that propelled independence (Lee and Paine 2024). In Iraqi Kurdistan after 1991, the Peshmerga enabled Kurdish leaders to expel the Iraqi military from northern Iraq (Katzman 2010). Earlier in European history, land grants enabled nobles to amass wealth and military power beyond the control of the state (Bloch 1961).[3]

Given its importance, the present model incorporates the coercive aspect of authoritarian power sharing in addition to the standard institutional dimension. Across an infinite horizon, a ruler bargains over spoils with an opposition actor who periodically poses a threat of revolt ("high threat"). The ruler has two levers, both of which are continuous choices. First, how much power to share, which creates a permanent basement level of spoils for the opposition in every period (commitment effect) and raises the opposition's probability of succeeding in a revolt (threat-enhancing effect). Second, how much to redistribute in temporary transfers, a choice the ruler makes only in high-threat periods as an emergency reaction to stave off a revolt.

A common result in existing theories is that threats of revolt trigger the ruler to share power, thereby solving the commitment problem. However, even if the *opposition has a credible threat to revolt*, three distinct frictions created by the threat-enhancing effect can prevent actors from peacefully sharing power.

First, the ruler might deliberately provoke a revolt rather than 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, the threat-enhancing effect can make the *ruler unwilling* to share power.

Second, when the opposition's threat of revolt lacks *strong credibility*, the opposition might ac-

[3]Another variant of the threat-enhancing effect arises when a ruler shares power within the inner circle by designating a successor. This creates a "crown prince" problem because the designated successor can leverage his stronger position to seize power early (Herz 1952). However, because this relationship entails rotation in office across generations, the present model with two long-lived actors does not directly capture this idea.

cept temporary transfers at present while waiting for a power-sharing deal in the future—but this also generates a risk of conflict. The opposition surely revolts in a high-threat period if the ruler will *never* share power. However, sometime in the future, the opposition will again have a credible threat to revolt. If the ruler shares power at that juncture, the opposition's reservation value discretely increases because the threat-enhancing effect reallocates power in its favor. Thus, the threat-enhancing effect creates a wedge between the thresholds at which the opposition revolts (a) if never offered a power-sharing deal and (b) if not always offered a power-sharing deal. For parameter values within this wedge, the equilibrium entails the ruler mixing between sharing power and not, and the opposition mixing between accepting temporary transfers and revolting. Given the continuous choice over power-sharing levels, this wedge does not exist without the threat-enhancing effect.

Third, power-sharing deals require enforcement mechanisms. 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.[4] One way that power-sharing deals can tie the ruler's hands and become self-enforcing is by reallocating power to enable the opposition to *defend* its newfound spoils against autocratic reversals. To capture this idea, I extend the model to allow the ruler periodic opportunities to renege on power-sharing deals, thus relaxing the assumption that sharing power creates a permanent basement level of spoils for the opposition. Reallocating power toward the opposition reduces the frequency of subversion opportunities, which can *promote* peace by making the *opposition willing* to accept a power-sharing deal. Nonetheless, peaceful power sharing is fraught for two reasons. First, the offensive consequences of sharing power (the threat-enhancing effect that raises the opposition's ability to overthrow the ruler) can overwhelm the defensive consequences. Second, even if the defensive consequences predominate, the distribution of power cannot shift so much that the ruler becomes unwilling to share power.

[4]For discussions of weak institutions, see Svolik (2012); Powell (2024). Although I (implicitly) focus on overt transgressions, recent research highlights stealth tactics that erode the value of these institutions without overt transgressions (Varol 2014), which threaten democratic stability as well (Helmke et al. 2022; Luo and Przeworski 2023).

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. Building upon canonical models of commitment problems and conflict by adding a threat-enhancing effect yields substantially different findings for the conditions under which a ruler chooses to share power and when sharing power successfully 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 unpromising circumstances, 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. Power sharing is inherently fraught because either the ruler or opposition may lack the ability to commit to a division that both sides accept, given their respective reservation values to conflict.

2 Contributions to Related Research

2.1 Core Elements of Setup

The most closely related formal models have a similar infinite-horizon setup in which an opposition actor poses a periodic threat and a ruling actor has a strategic option to reform institutions (Acemoglu and Robinson 2000, 2001, 2006; Castañeda Dower et al. 2018, 2020; Powell 2024). None of these models, though, have a threat-enhancing effect, which drives the new results here. This is not the first model with a mechanism resembling the threat-enhancing effect (Francois et al. 2015; Meng 2019; Paine 2021, 2022; Kenkel and Paine 2023).[5] However, each of these models lacks at least one of the two key elements of the present model and the aforementioned canoni-

[5] In other related models, the player making the bargaining offers can endogenously amass power over time, as opposed to giving power away to its opponent, which creates a distinct set of tradeoffs (Fearon 1996; Chadefaux 2011; Powell 2013; Gibilisco 2021; Luo 2023).

cal models: (a) threats fluctuate over time, which creates a commitment problem because the ruler cannot commit to future transfers beyond what is guaranteed by power-sharing institutions, and (b) sharing power enables the ruler to deliver more spoils. The novel results here arise from analyzing the interaction of the commitment and threat-enhancing effects.

The choice to model institutional commitment as conferring a basement level of spoils (or permanent control over an asset) follows the approach in Powell (2024). Others model the commitment effect in terms of allowing the opposition to win elections and set the policy agenda, either with a binary choice in which the opposition sets policy in all future periods (Acemoglu and Robinson 2006) or a continuous choice over the fraction of periods in which the opposition can set policy (Castañeda Dower et al. 2018). It is straightforward to demonstrate that either set of microfoundations—basement spoils or policy control—for a power-sharing deal can yield equivalent consumption streams. Conceptualizing power sharing in terms of a basement level of spoils, though, situates the model unambiguously within the realm of authoritarian politics and sidesteps distinct questions about when incumbents willingly step down from power upon losing elections, as studied in models of self-enforcing democracy (Przeworski 1991; Przeworski et al. 2015; Chacón et al. 2011).

2.2 Ruler Unwilling to Share Power

In the most closely related models, sharing power yields a higher payoff for the ruler than incurring a revolt. 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 respond to high threats by sharing power. The core logic is similar in Acemoglu and Robinson (2006), although they model an additional policy lever. The ruling elite may choose to repress rather than share power (i.e., franchise expansion

[6]More precisely, Acemoglu and Robinson (2006) and Castañeda Dower et al. (2018) assume that revolutions always succeed with probability 1, and the cost 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).

in their model). Repression is costly for the ruling elite but defeats a revolution with probability 1. Thus, elites may forgo co-optation only because they can leverage an asymmetric conflict technology.[7] 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.[8]

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 of limited commitment by the opposition. Specifically, the opposition cannot commit to forgo leveraging the full amount of 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 Opposition Lacks Strong Credibility to Revolt

A standard finding in existing models is that the ruler does not offer permanent power-sharing concessions unless the opposition can credibly revolt. A more subtle implication, though, is that the opposition may nonetheless forgo revolting today in anticipation of the ruler sharing power tomorrow. The opposition necessarily revolts in reaction to a proposal lacking a power-sharing provision only when its threat of revolt is *strongly credible*; the failure of this condition yields a unique equilibrium in mixed strategies. This finding pertains to existing discussions of mixed-

[7] In an extension, Acemoglu and Robinson relax the assumption that repression succeeds with probability 1, but this characterization of their mechanism is qualitatively unaltered for parameter values in which elites choose to repress.

[8] Below I show that in the present framework (i.e., one that lacks an additional option of repression), ruler willingness cannot fail unless sharing power reallocates power toward the opposition.

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 masses revolt if the ruling elites *never* offer to share power and (b) the masses revolt if the ruling elites do not *always* offer to share power.[9]

2.4 Defending Power-Sharing Deals

In the most closely related existing models, the distribution of power is fixed between the ruler and opposition. Thus, the ruler cannot reallocate power to enable the opposition to defend its spoils, as in the present model. Nonetheless, the opposition may be unwilling to accept any power-sharing deal in Powell (2024). Ruling elites can exert costly effort to unwind 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, Powell does not incorporate the coercive consequences of power sharing, nor analyze how this mechanism can enable the opposition to defend its spoils even if formal institutions are weak.

The present extension with 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. However, they explicitly do not analyze parameter values in which revolutions occur along the equilibrium path, nor do they allow the frequency of opportunities to renege to vary as a function of the level of power sharing. In Acemoglu and Robinson (2008), elites can exert effort under democracy to magnify their political power, thereby making democracy less valuable for the masses. However, they do not analyze political transitions in that model, and therefore do not consider the consequences of elite obstinance for undermining the opposition's willingness to accept a franchise-expansion deal in the first place.[10]

In other related models, formal rules create expectations about prohibited behavior and enable agents to coordinate to punish transgressions by the ruler (Weingast 1997; Myerson 2008; Fearon

[9] Appendix B.2 provides details.

[10] See also Finkel and Gehlbach (2020), who examine how elites can undermine the functioning of reforms intended to empower the local populace.

2011; Gehlbach and Keefer 2011). Thus, in these models, 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.

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 the players share a common discount 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 $\pi_t \in [0, 1]$. 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.[11]

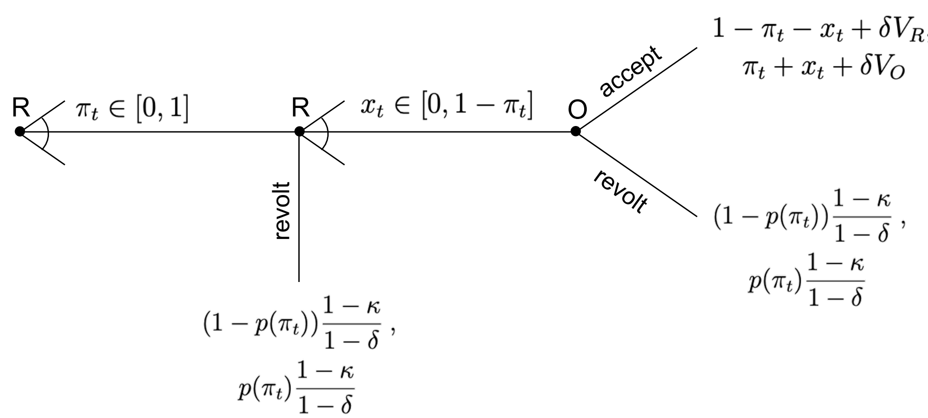
After setting the power-sharing level in a high-threat period, the next move in the stage game is for the ruler to decide either to provoke a revolt or make a continuous bargaining offer. The revolt option, which yields the payoffs discussed next, could entail the ruler committing an atrocity or attempting to directly occupy the opposition's territory, which necessarily prompts an armed

[11]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-shot choice resembles the setup in existing models such as Acemoglu and Robinson (2006) or Castañeda Dower et al. (2018). In an extension presented later, I allow the ruler to subsequently lower π_t.

response.[12] If instead the ruler bargains, he proposes a one-period (i.e., temporary) transfer $x_t \in [0, 1 - \pi_t]$. The bounds express that the ruler cannot demand a net transfer from the opposition nor offer more than its total spoils in that period, after accounting for the π_t already controlled by the opposition.

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 $\pi_t + x_t$ for the opposition, and they move to the next period with the same respective continuation values as following a low-threat period. The opposition's 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 $1 - \kappa$ in the period of the conflict and every subsequent period, where $\kappa \in (0, 1)$ 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.

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 $0 \leq p^{\min} < p^{\max} \leq 1$

[12] Footnote 22 discusses the rationale for modeling a direct trigger-revolt option.

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 $\alpha''(\pi_t) \leq 0$.[13] The magnitude of the threat-enhancing effect is $p(\pi_t) - p^{\text{min}}$. Given the assumptions on $p(\pi_t)$, this yields

$$\textbf{Magnitude of threat-enhancing effect.}^{14} \quad \Delta p(\pi_t) \equiv \alpha(\pi_t)(p^{\text{max}} - p^{\text{min}}). \tag{1}$$

4 Analysis: Exogenous Power Sharing

I first characterize optimal actions when fixing the level of power sharing as an exogenous constant, $\pi_t = \pi$ for all t, and thus temporary transfers are the ruler's only lever. A peaceful equilibrium requires an intermediate value of π, as low π induces the opposition to revolt and high π causes the ruler to trigger a revolt. All proofs appear in Appendix A.

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. This is simple when treating π as a parameter. The ruler's strategy specifies an offer $x \rightarrow [0, 1]$ and the opposition's strategy specifies a response $\alpha : [0, 1] \rightarrow \{0, 1\}$, where $\alpha = 1$ indicates acceptance and $\alpha = 0$ indicates conflict.[15]

[13] 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 probability of winning, 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.

[14] 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 some of 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 $\pi_t > 0$. 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 this functional form for $\alpha(\pi_t)$ makes $p(\pi_t)$ discontinuous at $\pi_t = 0$, all the following formal statements are unchanged.

[15] With exogenous power sharing, all equilibria are in pure strategies. Later I extend the notation to allow for mixed

4.1 No-Revolt Constraint

In a high-threat period, the opposition accepts any transfer proposal x satisfying

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

$$\text{for} \quad V_O = \pi + rx + \delta V_O \implies V_O = \frac{\pi + rx}{1-\delta}.$$[16]

This yields the set of temporary transfers that the opposition accepts, expressed as per-period averages.

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

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 opposition decides whether to revolt in the current high-threat period $(1-\delta)$ and will face an identical calculus in a fraction r of future periods (δr).

Peaceful bargaining requires that the opposition forgoes a revolt upon achieving its maximum consumption stream, which 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

No-revolt constraint. $$\Theta^*(\pi) \equiv \underbrace{\pi}_{\text{Basement spoils}} + \underbrace{(1-\delta(1-r))(1-\pi)}_{\text{Top-up in H periods}} - \underbrace{p(\pi)(1-\kappa)}_{\text{Revolt}} \geq 0. \tag{3}$$

I impose two assumptions throughout. Assumption 1 is that the no-revolt constraint fails at $\pi = 0$, which implies that the opposition cannot be bought off with temporary transfers only in high-threat periods. I phrase this as *opposition credibility* holding because, during the analysis of endogenous power sharing, this implies that conflict will occur if the ruler chooses not to share any power.

strategies, which are possible in equilibrium in the full game.

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

Assumption 1 (Opposition credibility holds)**.**

$$\Theta^*(0) = 1 - \delta(1-r) - p^{min}(1-\kappa) < 0.$$

Assumption 2 is that, at $\pi = 1$, a marginal increase in power sharing relaxes the no-revolt constraint. This is not otherwise guaranteed because sharing power raises not only the opposition's basement level of spoils, but also its probability of winning.[17] Assumption 2 guarantees a positive marginal effect for *high-enough* values of π, formalized with a threshold π_0 in Lemma 1. However, given the weak concavity of $p(\pi)$, this assumption permits the possibility that the threat-enhancing effect dominates at lower values of π; that is, if $p'(\pi)$ is very steep at low values of π and flattens out for higher values. Thus, Assumption 2 does not require $\frac{d\Theta^*(\pi)}{d\pi} > 0$ for *all* parameter values.

Assumption 2 (High π relaxes the no-revolt constraint)**.**

$$\left.\frac{d\Theta^*(\pi)}{d\pi}\right|_{\pi=1} = \delta(1-r) - p'(1)(1-\kappa) > 0.$$

These two assumptions yield a threshold such that if $\pi \geq \pi^*$, then the ruler can offer a top-up transfer in every high-threat period large enough to buy off the opposition.

Lemma 1 (Threshold π for peaceful bargaining)**.**

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

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

for π^* *implicitly defined as* $\Theta^*(\pi^*) = 0$.

Case 2. *If* $\left.\frac{d\Theta^*(\pi)}{d\pi}\right|_{\pi=0} < 0$*, then a unique threshold* $\pi^* \in (\pi_0, 1)$ *exists, for* π^* *characterized in Case 1 and a unique threshold* $\pi_0 \in (0,1)$ *implicitly defined as* $\left.\frac{d\Theta^*(\pi)}{d\pi}\right|_{\pi=\pi_0} = 0$.

[17] Regardless of *marginal* effects, the *level* $\pi = 1$ ensures peaceful bargaining without an additional assumption: $\Theta^*(1) = 1 - p^{\max}(1-\kappa) > 0$.

4.2 Equilibrium Bargaining Outcomes

Figure 2 provides visual intuition for the equilibrium bargaining outcomes, 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 conflict 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 κ because this is the surplus saved from preventing fighting (which creates a bargaining range). The dashed blue lines express, for all values of π, consumptions amounts at $\pi = 0$. This provides a necessary comparison case in the subsequent analysis with endogenous π.

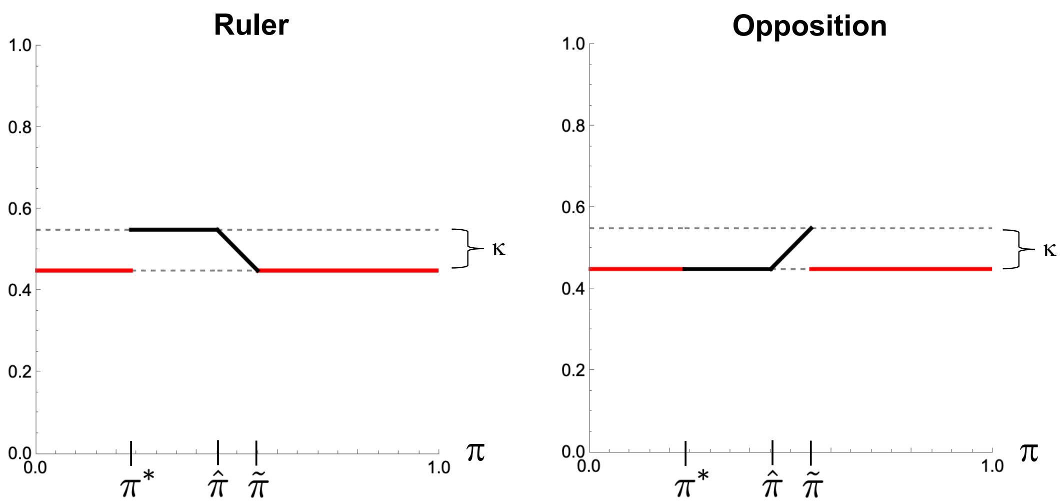
The no-revolt constraint fails if basement spoils are too low, $\pi < \pi^*$.[18] Consequently, conflict occurs and total surplus equals $1 - \kappa$. Each player's utility is determined by its respective reservation value to conflict, $(1 - p(\pi))(1 - \kappa)$ for the ruler and $p(\pi)(1 - \kappa)$ for the opposition. In Panel A, there is no threat-enhancing effect because $p(\pi)$ is constant. Therefore, the minmax payoffs are flat (and hence there is not a separate blue line in this figure). By contrast, in Panel B, $p(\pi)$ strictly increases in π, and thus the opposition's minmax payoff slopes upward whereas the ruler's slopes downward.

Raising π to π^* satisfies the no-revolt constraint, which increases joint consumption to 1. Consequently, the ruler's consumption discretely jumps above its minmax whereas the opposition continues to consume its reservation value. By virtue of making the bargaining offers, the ruler can hold the opposition down to its reservation value, and thereby consume all the surplus saved from

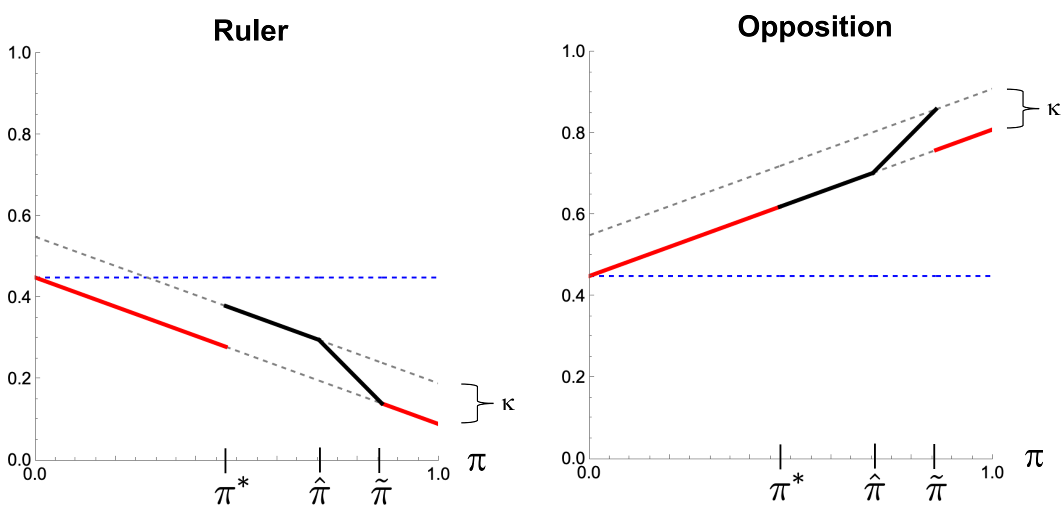
[18] See Equation 3 and Lemma 1.

Figure 2: Equilibrium Consumption with Exogenous Power Sharing

Panel A. Basement spoils only



Panel B. Basement spoils and threat-enhancing effect



Notes: $\delta = 0.9$, $\kappa = 0.1$, $r = 0.2$, $p^{\min} = 0.5$, $\alpha(\pi) = \pi$. In Panel A, $p^{\max} = 0.5$; in Panel B, $p^{\max} = 0.9$.

preventing a revolt. Re-expressing Equation 2 with equality, rearranging, and rewriting the transfer as $x^*(\pi)$ yields an interior-optimal transfer

$$\pi + (1 - \delta(1-r))x^*(\pi) = p(\pi)(1-\kappa) \implies x^*(\pi) = \frac{-\pi + p(\pi)(1-\kappa)}{1 - \delta(1-r)}. \tag{4}$$

Substituting this term into the left-hand side of Equation 2 demonstrates that the opposition's average per-period consumption (from the perspective of a high-threat period) is $p(\pi)(1-\kappa)$, leaving $1-p(\pi)(1-\kappa)$ for the ruler.[19] In the region extending to $\hat{\pi}$, 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 threat-enhancing effect affects consumption in this range. Raising basement spoils has no net effect; although higher π raises the opposition's consumption in low-threat periods, its willingness to accept a lower transfer in high-threat periods perfectly offsets this effect.[20] Another comparison between the panels highlights that π^* 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.[21]

Higher basement spoils drive the equilibrium transfer to 0, and thus consumption along a peaceful path is determined entirely by the allocation of basement spoils. This threshold is $\pi = \hat{\pi}$, which satisfies $x^*(\hat{\pi}) = \frac{-\hat{\pi}+p(\hat{\pi})(1-\kappa)}{1-\delta(1-r)} = 0$. Moving to the right of this point, the players' respective payoffs are $1-\pi$ and π. Because the ruler cannot hold the opposition down to indifference, the ruler trades off between preventing conflict, which raises total surplus, and pocketing a larger share of total consumption. For fairly low values of π in this range, the former consideration wins out. The interaction is peaceful, and in both panels, the ruler's consumption strictly decreases in π while the opposition's strictly increases; in Panel B, this effect is reinforced by the threat-enhancing effect. This is the only set of parameter values in which the opposition consumes strictly more than its reservation value to fighting.

Finally, if basement spoils are too high, then the ruler triggers a revolt. This threshold is $\pi = \tilde{\pi}$, formally characterized in Appendix A.1. A peaceful interaction would require the ruler to permanently give away so much to the opposition that consumption would fall below his minmax. The ruler is willing to destroy surplus to counteract this effect. Consequently, the ruler's and opposition's respective consumption amounts are identical to those in the $\pi < \pi^*$ region.[22]

[19] See also Appendix Equation A.2.

[20] Appendix A.1 provides details. See also Paine (2024).

[21] Using the implicit definition of π^* from Lemma 1, it is straightforward to show $\frac{dx^*}{dp(\pi)} > 0$.

[22] Only for $\pi > \tilde{\pi}$ does the ruler exercise his direct option to trigger a revolt along the equilibrium path. For

Proposition 1 formally characterizes the equilibrium bargaining outcomes.

Proposition 1 (Equilibrium bargaining with fixed power-sharing level)**.** *Suppose $\pi_t = \pi$ for all t. The following constitute the equilibria strategy profiles.*[23]

- *If $\pi < \pi^*$, 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 $(1 - p(\pi))(1 - \kappa)$ and the opposition's is $p(\pi)(1 - \kappa)$.*
- *If $\pi \in [\pi^*, \hat{\pi}]$, then in every high-threat period, the ruler offers $x_t = x^*(\pi)$ (defined in Equation 4). 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 $1 - p(\pi)(1 - \kappa)$ and the opposition's is $p(\pi)(1 - \kappa)$.*
- *If $\pi \in (\hat{\pi}, \tilde{\pi}]$, 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 $(1-p(\pi))(1-\kappa)$ and the opposition's is $p(\pi)(1 - \kappa)$.*

5 Analysis: Endogenous Power Sharing

The ruler, when deciding how much power to share, chooses either the minimum level of basement spoils needed to buy off the opposition ($\pi_t = \pi^*$) or refuses to share power ($\pi_t = 0$), thereby triggering a revolt. One key condition for an equilibrium with power sharing is ruler willingness: the ruler must prefer peace while bargaining from a weaker position over fighting from a stronger

$\pi < \hat{\pi}$, modeling this direct option is observationally irrelevant because the ruler could achieve the same outcome by proposing a small transfer that the opposition would reject (this applies, for example, to the discussion of ruler willingness below). As shown in the subsequent analysis of endogenous power sharing, though, the ruler never sets $\pi > \tilde{\pi}$ along an equilibrium path. Thus, the full equilibrium characterization would be unchanged even if the ruler lacked the direct trigger-revolt option. Removing this option would mean that the ruler's consumption could, in principle, fall below his reservation value to conflict, which is the rationale for modeling a trigger-revolt option.

[23] The equilibrium is unique for all parameter values except $\pi < \pi^*$. Here, there are multiple equilibria because the ruler is indifferent among any $x_t = [0, 1 - \pi]$. However, all equilibria are payoff equivalent because, along the equilibrium path, the opposition rejects any offer.

position. Another key condition is strong opposition credibility; if this fails, the opposition can be induced to wait for a power-sharing deal in the future. Only if both conditions are met does there exist a pure-strategy power-sharing equilibrium (which, when it exists, is unique).

As before, the solution concept is MPE, although now the strategies are more involved because π_t is an endogenous state variable. If $\pi_t = 0$, then the ruler chooses $\pi \to [0,1]$. The ruler also proposes a temporary transfer $x : [0,1] \to [0,1]$ and the opposition responds to proposals with a strategy $\alpha : [0,1]^2 \to \{0,1\}$. After eliminating certain actions that cannot occur in any equilibrium, I define mixtures over particular actions.

5.1 Preliminary Results for Equilibrium Analysis

After the ruler has shared a positive amount of power $\pi_t > 0$, Proposition 1 characterizes equilibrium actions, with π set to whatever level the ruler chose in the period t when he set $\pi_t > \pi_{t-1}$.[24] 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 $\pi_t = \pi^*$, the minimum level that satisfies the opposition's no-revolt constraint (see Equation 3 and Lemma 1). Meanwhile, the opposition surely accepts a proposal with a power-sharing level of at least $\pi_t = \pi^*$ (conditional on also receiving a large-enough transfer), whereas it surely rejects a positive power-sharing amount less than this threshold.

Lemma 2 (Preliminary results for equilibrium analysis)**.**

Opposition's actions.

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

Ruler's actions. *No equilibria exist in which the ruler puts positive probability on proposals other than* $(\pi_t, x_t) \in \big\{(0,1), (\pi^*, 1-\pi^*)\big\}$.[25]

[24] 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.

[25] For some parameter values, if the ruler offers $\pi_t = 0$, he is indifferent over the precise transfer offer because a

Given the binary set of possible optimal proposals, we can further simplify the statement of Markovian strategies. We can express the ruler's strategy as a Bernoulli draw over each choice in a high-threat period, with probability σ_R of proposing $(\pi_t, x_t) = (\pi^*, 1 - \pi^*)$ 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 the ruler plays a mixed strategy for any $\sigma_R \in (0, 1)$. 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 the temporary transfer, $\sigma_O = 0$ corresponding to a pure strategy of always revolting if not offered a power-sharing deal, and the opposition plays a mixed strategy in response to a temporary transfer proposal if $\sigma_O \in (0, 1)$. Lemma 2 shows that the opposition necessarily accepts with probability 1 if offered $(\pi_t, x_t) = (\pi^*, 1 - \pi^*)$, and thus this component of the opposition's best-response function is presumed in all the subsequent propositions.

Recall the opposition credibility condition (Assumption 1). A plausible conjecture, following the standard logic of models of costly conflict, is that the ruler necessarily offers $\pi_t = \pi^*$ 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.[26]

This conjecture, however, is incorrect for the present model. Sharing power boosts the opposition's probability of succeeding in a revolt. The threat-enhancing effect creates a wedge between autocratic and power-sharing regimes. The opposition credibility condition from Assumption 1 is but the first of three conditions needed to induce a pure-strategy equilibrium with power sharing; ruler willingness and strong opposition credibility are also needed.

revolt occurs with probability 1 regardless of the precise amount. 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 $\pi_t = 0$.

[26]Moreover, unlike in Acemoglu and Robinson (2006), the ruler lacks access to an alternative lever such as repression; and, following the logic of Castañeda Dower et al. (2020), we might expect all payoff-distinct equilibria to be in pure strategies because the power-sharing choice is continuous.

5.2 Ruler Willingness

The second key condition is *ruler willingness*. The ruler is willing to share power if and only if his maximum consumption stream along a peaceful path exceeds his utility to incurring a revolt. This is not guaranteed because of the threat-enhancing effect.

Given Lemma 2, the relevant comparison in a high-threat period is between (a) sharing the minimum amount of power to induce peace ($\pi_t = \pi^*$) and buying off an opposition who wins with probability $p(\pi^*)$, and (b) perpetuating an autocratic regime ($\pi_t = 0$) and facing a revolt that succeeds with probability p^{min}. Using the ruler's consumption terms described earlier and derived formally in Appendix A.1, this yields an incentive-compatibility constraint for the ruler to share power

$$1 - p(\pi^*)(1-\kappa) \geq (1 - p^{\text{min}})(1-\kappa).$$

This simplifies to

$$\textbf{Ruler willingness.} \qquad \underbrace{\Delta p(\pi^*)}_{\text{Threat-enhancing effect (Eq. 1)}} (1-\kappa) \leq \kappa. \tag{5}$$

Ruler willingness is determined by (a) the threat-enhancing effect (the magnitude of the shift in the distribution of power),[27] compared to (b) the surplus destroyed by fighting, κ. 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 fighting. However, in the present model, this benefit does not guarantee that the ruler will act as needed to prevent fighting. When sharing power is necessary to buy off the opposition, the loss from the adverse shift in power may outweigh the gains from preventing costly conflict. Returning to Figure 2, examining the blue line in Panel B demonstrates that the ruler's utility is higher at $\pi = 0$ than $\pi = \pi^*$, and thus ruler willingness fails for those parameter values.

[27]This term is multiplied by post-conflict surplus, which affects both players' reservation values to fighting.

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 *ruler* cannot commit to deliver a sufficient amount of spoils to the opposition. However, in this case, conflict occurs because the *opposition* cannot commit to forgo leveraging its higher probability of winning a revolt. Whenever ruler willingness fails, a Pareto-improving deal exists. Suppose that, following a power-sharing deal, the opposition could commit to bargain as if its probability of winning was some $p' \in (p^{\text{min}},\ p^{\text{min}} + \frac{\kappa}{1-\kappa})$. On the one hand, this would ensure that the opposition does better than revolting against an autocratic regime, in which its per-period expected reservation value is $p^{\text{min}}(1-\kappa)$. As seen in Panel B of Figure 2, the opposition's consumption strictly increases for all $\pi < \pi^*$. On the other hand, the adverse shift in the ruler's bargaining position is not so large that the ruler prefers to fend off a revolt—which preserves the surplus that conflict would have destroyed. Formally, as $p^{\text{max}} \to p^{\text{min}}$, Equation 5 is sure to hold, as shown in Panel A of Figure 2. 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, even if 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.[28]

> **Proposition 2** (Conflict if ruler willingness fails)**.** *If ruler willingness fails (Equation 5), then the unique equilibrium strategy profile includes $\sigma_R = 0$. Along the equilibrium path, the ruler never shares power and a revolt occurs in the first high-threat period.*

[28] This mechanism resembles a first-strike advantage. The ruler moves first and triggers the opposition to launch a revolt that it wins with probability p^{min}, as opposed to sharing power and having to buy off an opposition who wins with probability $p(\pi^*)$. Powell (2006) conceptualizes first-strike advantages as a subset of conflicts triggered by commitment problems.

5.3 Power Sharing in Pure and Mixed Strategies

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, the opposition might accept a pure-transfers proposal at *present* if the ruler will share power in the *future*, yielding a unique equilibrium in mixed strategies.

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 pure temporary transfers ($\sigma_O = 0$). 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 $(\pi_z, x_z) = (\pi^*, 1 - \pi^*)$ in the next high-threat period z. A pure-strategy equilibrium requires the opposition to revolt today, as opposed to accepting a pure-transfers proposal today and waiting for a power-sharing deal tomorrow

$$\underbrace{\frac{p^{\min}(1-\kappa)}{1-\delta}}_{\text{Revolt now}} \geq \underbrace{1 + \delta V_O}_{\text{Wait}}, \tag{6}$$

$$\text{for} \quad V_O = \underbrace{r\frac{p(\pi^*)(1-\kappa)}{1-\delta}}_{\text{Move to power sharing}} + \underbrace{(1-r)\delta V_O}_{\text{Autocracy persists}}. \tag{7}$$

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 $p(\pi^*)$, 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:[29]

[29] Appendix B.2 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 and that in Acemoglu and Robinson (2017) and Castañeda Dower et al. (2020).

$$\textbf{Strong opposition credibility.} \quad \underbrace{1-\delta(1-r)-p^{\min}(1-\kappa)}_{\text{Opposition credibility (Asst 1)}}+\underbrace{\gamma}_{\text{Wedge}} \leq 0,$$

$$\text{for} \quad \gamma \equiv \delta r \underbrace{\Delta p(\pi^*)}_{\text{Threat-enhancing effect (Eq. 1)}} \frac{1-\kappa}{1-\delta}. \tag{8}$$

This inequality encompasses the terms from the opposition credibility condition (Assumption 1) plus an additional wedge γ that encompasses the distinct thresholds at which the opposition revolts (a) if *never* offered a power-sharing deal and (b) if not *always* offered a power-sharing deal. Absent a threat-enhancing effect, $\Delta p(\pi^*) = 0$, the wedge $\gamma = 0$. This would make Equation 8 identical to Assumption 1, and the opposition could not profitably deviate by accepting a proposal lacking a power-sharing provision.

Proposition 3 (Pure-strategy power sharing)**.** *Suppose ruler willingness (Equation 5) and strong opposition credibility (Equation 8) both hold. The unique equilibrium strategy profile includes $\sigma_R = 1$ 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 unique equilibrium is in mixed strategies; the opposition can profitably deviate from either always accepting or always rejecting proposals that lack a power-sharing provision. 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 $\sigma_R^* \in (0,1)$:

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

$$\text{for} \quad V_O = r\Bigg(\underbrace{\sigma_R^* \frac{p(\pi^*)(1-\kappa)}{1-\delta}}_{\text{Move to power sharing}} + \underbrace{(1-\sigma_R^*)\frac{p^{\min}(1-\kappa)}{1-\delta}}_{\text{Revolt or wait}}\Bigg) + \underbrace{(1-r)\delta V_O}_{\text{Autocracy persists}}. \tag{10}$$

These resemble the preceding system of equations, with two exceptions. First, Equation 9 is an equality, unlike the inequality in Equation 6. Second, V_O is a function of a non-degenerate probability σ_R^* (Equation 10), as opposed to the ruler sharing power with probability 1 in the next high-threat period (Equation 7). 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.

The ruler strictly prefers to share power rather 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 $\sigma_O^* \in (0,1)$:

$$\underbrace{\frac{1-p(\pi^*)(1-\kappa)}{1-\delta}}_{\text{Share power}} = \underbrace{\overbrace{\sigma_O^*\delta V_R}^{\text{Autocracy persists}} + \overbrace{(1-\sigma_O^*)\frac{(1-p^{\text{min}})(1-\kappa)}{1-\delta}}^{\text{Opposition revolts}}}_{\text{Wait}}, \tag{11}$$

$$\text{for} \quad V_R = \underbrace{(1-r)(1+\delta V_R)}_{\text{Autocracy persists}} + \underbrace{r\frac{1-p(\pi^*)(1-\kappa)}{1-\delta}}_{\text{Share power or wait}}. \tag{12}$$

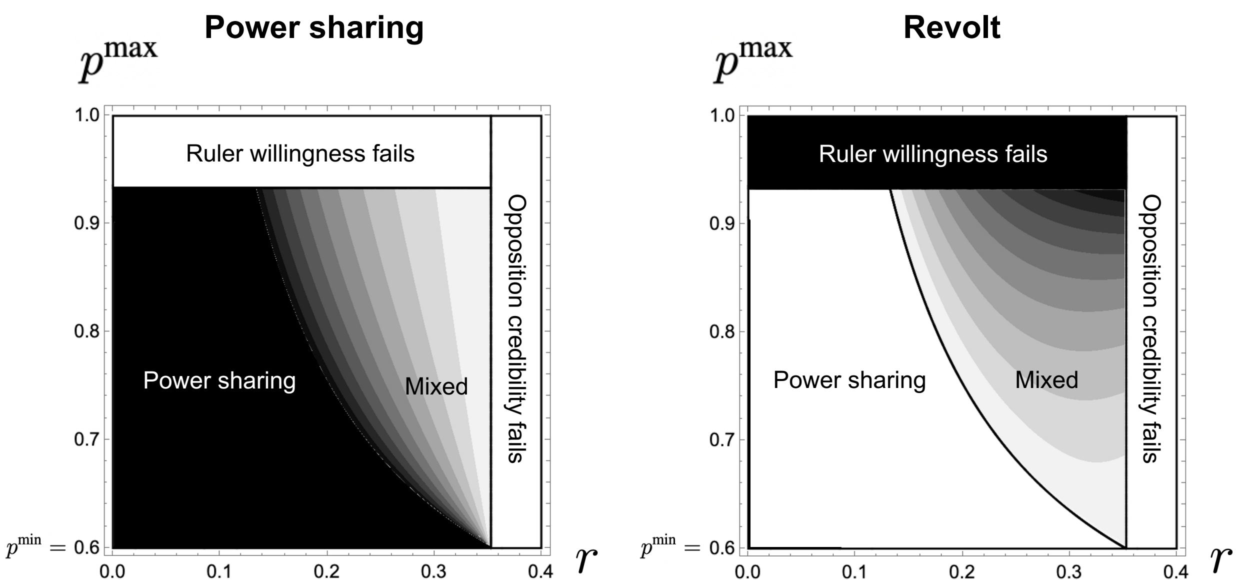
The indifference condition equates the ruler's expected utility to sharing power with that to waiting, which requires the opposition to put the correct weight on each of accepting and revolting. The continuation value expresses that autocracy persists if the next period is low threat, whereas another 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.

Proposition 4 (Mixed-strategy power sharing)**.** *Suppose ruler willingness holds (Equation 5) and strong opposition credibility fails (Equation 8). The unique equilibrium strategy profile includes $\sigma_R = \sigma_R^*$ and $\sigma_O = \sigma_O^*$, for the unique $\sigma_R^* \in (0,1)$ and $\sigma_O^* \in (0,1)$ defined in Equations 9 through 12. Along the equilibrium path, in high-threat periods, the probability that the ruler shares power is σ_R^* and the probability of conflict is $(1-\sigma_R^*)(1-\sigma_O^*)$.*

5.4 COMPARATIVE STATICS

Figure 3 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 revolt (right panel). White indicates probability 0; black indicates probability 1; and gray indicates interior probabilities, with darker colors indicating higher probabilities.[30]

Figure 3: Comparative Statics



Notes: $\delta = 0.85$, $\kappa = 0.25$, $p^{\text{min}} = 0.6$, $q^{\text{min}} = 0.65$, $q^{\text{max}} = 1$, and $\alpha(\pi_t) = 1$ for all $\pi_t > 0$.

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 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 opposition credibility concerns the opposition's threat to revolt when its

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

probability of winning equals p^{min}.

Ruler willingness (Equation 5) fails in the upper region. The ruler does not share power, and conflict occurs. High p^{max} violates ruler willingness by exacerbating the threat-enhancing effect $p^{\text{max}} - p^{\text{min}}$. 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 Equations C.4 and A.2).[31]

In the pure-strategy power-sharing region, the ruler shares power with probability 1 and conflict 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. As shown in Equation 8, the wedge between these two conditions does not exist without $r > 0$. Another high-threat period never occurs if $r = 0$, which makes identical (a) the ruler *never* offering a power-sharing deal and (b) not *always* offering a power-sharing deal. Higher r decreases the expected time until the next high-threat period, which makes the opposition more willing to wait for a power-sharing deal.

Intermediate r violates strong opposition credibility without violating (weak) opposition credibility. 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. Furthermore, 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.

[31] Under a more general functional form for $p(\pi_t)$, r would indirectly affect the ruler willingness condition by altering $p(\pi^*)$.

6 Extension: Offensive versus Defensive Consequences of Power Sharing

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 $\pi_t = 0$. The frequency of subversion opportunities depends on the strength of institutions and the opposition's coercive capabilities. 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-enhancing effect. Now, however, there is an additional effect whereby reallocating power enables the opposition to better *defend* its spoils. These two forces determine whether an *opposition willingness* constraint is met, which concerns whether the opposition accepts the best-possible offer the ruler can make.

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 defend the spoils promised in a power-sharing deal and thereby block the ruler from reneging.

I impose a technical assumption analogous to that in the baseline model that the ruler can choose $\pi_t > \pi_{t-1}$ only once, while also now permitting reneging in periods when that opportunity arises. In any period with $\pi_{t-1} = 0$, the ruler either shares no power or shares at the same level as the prior power-sharing regime. Formally, if $\pi_{t-1} = 0$ and the history contains only periods with $\pi_z = 0$ for all $z < t$, then the ruler chooses $\pi_t \in [0, 1]$. Conversely, if $\pi_{t-1} = 0$ and $\pi_z > 0$ for any $z < t$, then

$\pi_t \in \{0, \Pi_{t-1}\}$, where $\Pi_{t-1} = \pi_y$ for the most recent period y such that $\pi_y > 0$.

Two functional form assumptions ease the interpretation of the comparative statics. 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

$$q(\pi_t, p^{\text{max}}) = \left(1 - \frac{\Delta p(\pi_t)}{1 - p^{\text{min}}}\right) q^{\text{min}} + \frac{\Delta p(\pi_t)}{1 - p^{\text{min}}} \underbrace{\left((1 - d)q^{\text{min}} + d\right)}_{\text{Maximum } q}. \tag{13}$$

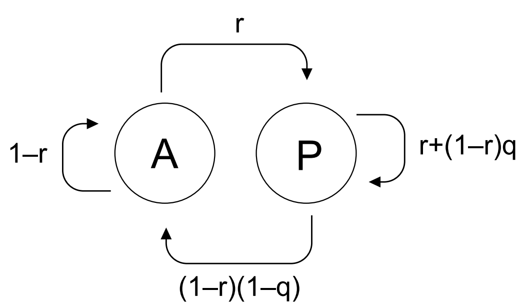
The lower bound $q^{\text{min}} \geq 0$ corresponds with the inherent strength of institutions: the opposition's ability to defend its spoils when its coercive strength is at its baseline level p^{min}, either because the ruler shares no power, $\pi_t = 0$, or because there is no threat-enhancing effect, $\Delta p(\pi_t) = 0$. However, if the ruler gives all spoils permanently to the opposition, $\pi_t = 1$, and the opposition wins with probability 1 in this circumstance, $p^{\text{max}} = 1$, then q achieves its maximum value, $(1 - d)q^{\text{min}} + d$. The parameter d encompasses the degree to which raising either π_t or p^{max} improves the opposition's ability to defend its spoils. At the limit with $q^{\text{min}} = 1$, then $q(\pi_t, p^{\text{max}}) = 1$ for any π_t or p^{max}, as in the baseline model. Appendix Figure C.1 presents a heat map depicting how $q(\pi_t, p^{\text{max}})$ varies in each argument, and Appendix C provides supporting technical details.

6.2 Equilibrium Characterization

Along a peaceful equilibrium path, regime transitions exhibit the following trajectory, with π_q^* denoting the equilibrium level of basement spoils under power-sharing regimes (presented below). In an autocratic regime with $\pi_{t-1} = 0$, the opposition poses a low threat with probability $1 - r$. In such periods, the ruler faces no pressure to reform, and the regime remains autocratic into the next period. Conversely, with probability r, the opposition poses a high threat. This compels the ruler to offer $\pi_t = \pi_q^*$, and the next period begins with a power-sharing regime.

In a power-sharing regime, the regime persists into the next period if either the opposition poses a high threat, probability r; or the opposition poses a low threat but the ruler cannot renege, probability $(1-r)q$. Conversely, with probability $(1-r)(1-q)$, the ruler reneges on the power-sharing deal by setting $\pi_t = 0$, and the next period begins as autocratic. 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.[32] Figure 4 summarizes the per-period transition probabilities between autocratic regimes (A) and power-sharing regimes (P).

Figure 4: Regime Transitions along the Equilibrium Path



As before, the equilibrium level of power sharing makes the opposition indifferent between accepting or revolting in a high-threat period, and the temporary transfer tops up the opposition's total consumption to 1. This power-sharing level is denoted as $\pi_q^* > 0$, with an implicit characterization (Appendix C.1 provides details):

$$\Theta_q(\pi_q^*, p^{\max}) = 0, \quad \text{for} \quad \Theta_q(\pi, p^{\max}) \equiv \underbrace{\frac{1-\delta(1-r)}{1-\delta(1-r)q(\pi)}\pi}_{\text{“Basement” spoils}} + \underbrace{(1-\delta(1-r))(1-\pi)}_{\text{Top-up in H periods}} - \underbrace{p(\pi)(1-\kappa)}_{\text{Revolt}}. \tag{14}$$

The main difference from the no-revolt constraint in the baseline model (Equation 3) is a multiplier on π, which equals $\frac{1-\delta(1-r)}{1-\delta(1-r)q} \in (0,1]$. Thus, sharing π no longer creates a true *basement* level of spoils for the opposition, who consumes 0 during autocratic reversal spells. The multiplier on π strictly increases in q and equals 1 when $q = 1$, as in the baseline game. By contrast, the multiplier

[32] 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 or the ruler is sufficiently impatient (low δ).

on the top-up transfer $1 - \pi$, which equals $1 - \delta(1 - r)$, is the same as in Equation 3. As before, the opposition consumes 1 in every high-threat period, which comes from its basement spoils π and the transfer $1 - \pi$.

The key condition is *opposition willingness*. Because the most lucrative path with power sharing entails $\pi = 1$, opposition willingness requires

$$\Theta_q^*(1, p^{\max}) = \frac{1 - \delta(1 - r)}{1 - \delta(1 - r)q(1, p^{\max})} - p^{\max}(1 - \kappa) \geq 0. \tag{15}$$

If the ruler lacks opportunities to renege, as in the baseline model, then opposition willingness necessarily holds, as $\Theta_q^*\big|_{q=1} = 1 - p^{\max}(1 - \kappa) > 0$. However, lower values of q can cause this condition to fail because $-\frac{\partial \Theta_q^*}{\partial q} < 0$. If $q = 0$, then power-sharing deals are meaningless. The ruler reneges in every low-threat period, and thus the opposition gains positive consumption only in high-threat periods—as would occur along an equilibrium path in which $\pi_t = 0$ for all t. Thus, the opposition credibility condition (Assumption 1) guarantees the failure of opposition willingness at $q = 0$. If opposition willingness fails, then conflict occurs along the equilibrium path, even if the aforementioned triggers of conflict are not present.

Proposition 5 (Equilibrium with opportunities to renege)**.** *Suppose opposition credibility (Assumption 1), ruler willingness (Appendix Equation C.6), and strong opposition credibility (Appendix Equation C.7) all hold.*[33]

> ***Case 1. Opposition willingness holds.*** *If Equation 15 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 sharing ($\pi_t = \pi_q^*$). 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 15 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.*

[33] Appendix C.1 details the ruler willingness and strong opposition credibility conditions for this extension.

6.3 Comparative Statics

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

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

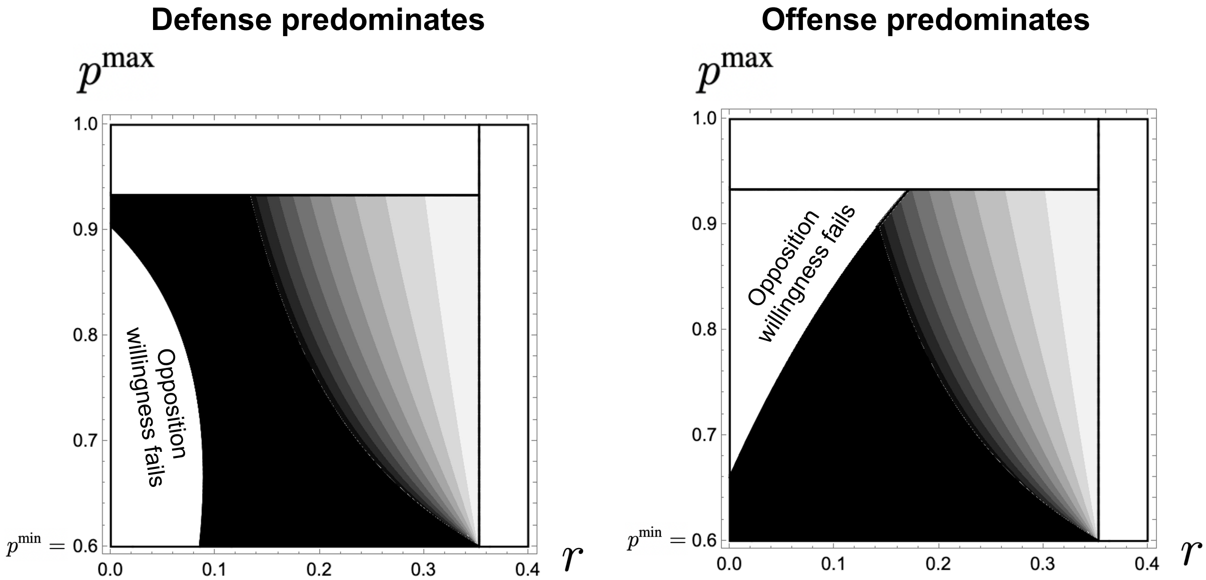
On the one hand, by reducing the ruler's opportunities to renege, higher $p^{\max}$ facilitates opposition willingness by enabling the opposition to *defend* the spoils promised in a power-sharing deal. On the other hand, a coercively stronger opposition—engendered by the threat-enhancing effect—has better *offensive* capabilities to succeed in a revolt, which mitigates against opposition willingness.

Figure 5 illustrates the two most interesting cases. It resembles the power-sharing panel from Figure 3, with the addition of a region in which opposition willingness fails. 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 defensive consequences of reallocating power dominate in the left panel (Equation 16 is positive) whereas the offensive consequences dominate in the right panel (Equation 16 is negative). Thus, in the left panel, raising $p^{\max}$ greatly increases q. Consequently, a higher level of $p^{\max}$ can switch opposition willingness from failing to holding. Conversely, in the right panel, raising $p^{\max}$ has no effect on q, but does increase p. Consequently, raising $p^{\max}$ can switch opposition willingness from holding to failing. Appendix Proposition C.1 formalizes these comparative statics results.[34]

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 5).

[34] The colors correspond with the per-period probability of a power-sharing deal in a high-threat period. Along a peaceful equilibrium path, however, cycling will occur. See Appendix Figure C.2.

Figure 5: Comparative Statics for Opposition Willingness



Notes: $\delta = 0.85$, $\kappa = 0.25$, $p^{\min} = 0.6$, and $\alpha(\pi_t) = 1$ for all $\pi_t > 0$. In the left panel, $q^{\min} = 0.65$ and $q^{\max} = 1$. In the right panel, $q^{\min} = q^{\max} = 0.82$.

Thus, moderate increases in $p^{\max}$ can breed stable power sharing whereas large increases undermine it, as shown in the left panel by allowing $p^{\max}$ to range between $p^{\min}$ and 1 while fixing $r = 0.05$.[35] 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 (see Equation A.3). 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.[36]

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 arrange-

[35] 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.

[36] This claim follows from the straightforward observation that 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.

ments: 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 into the model 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 the ruler has periodic opportunities to renege, reallocating power toward the opposition may be necessary for them to defend their 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.

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

A Supporting Information for Exogenous Power Sharing

A.1 Ruler's Consumption Along a Peaceful Path

The text provides supporting details for the opposition's payoffs, including a characterization of the no-revolt threshold $\pi = \pi^*$. The following provides additional details on the ruler's consumption, including characterizations of the threshold at which the transfer goes to 0 ($\pi = \hat{\pi}$) and the threshold at which the ruler triggers a revolt rather than buys off the opposition ($\pi = \tilde{\pi}$).

Suppose that a peaceful bargaining path is possible, that is, $\pi \geq \pi^*$. Supposing the transfer in high-threat periods is x and this transfer satisfies Equation 2, the ruler's expected lifetime consumption stream from the perspective of a high-threat period is

$$1 - \pi - x + \delta V_R,$$

$$\text{for } V_R = 1 - \pi - rx + \delta V_R \implies V_R = \frac{1 - \pi - rx}{1 - \delta}.$$

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

$$\max_x \; R(\pi) \text{ s.t. Equation 2 holds and } x \geq 0,$$

$$\text{for } R(\pi) \equiv 1 - \pi - (1 - \delta(1 - r))x. \tag{A.1}$$

The ruler's consumption stream along a peaceful path strictly decreases in x in the unconstrained problem, which ensures a constraint will bind.

Interior-optimal transfer. If a strictly positive transfer is needed to satisfy Equation 2, then the ruler satisfies this constraint with equality and therefore makes the opposition indifferent between accepting and revolting. This corresponds with the transfer $x^*(\pi)$ derived in Equation 4. 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 Equation C.4 yields the following consumption stream for the ruler

$$R(\pi)\big|_{x=x^*} = 1 - p(\pi)(1 - \kappa). \tag{A.2}$$

The threat-enhancing effect, captured by a higher probability of winning $p(\pi)$, is the only channel through which π affects the ruler's consumption. By contrast, the institutional commitment effect, captured by higher basement spoils π, has no effect (Paine 2024 provides more details). We can see this by setting $x = x^*$ in $R(\pi)$ from Equation C.4 and taking the total derivative

$$\left.\frac{dR}{d\pi}\right|_{x=x^*} = \underbrace{\overbrace{\frac{\partial R}{\partial \pi}}^{\uparrow \text{ concessions in L}} + \overbrace{\frac{\partial R}{\partial x^*}\frac{\partial x^*}{\partial \pi}}^{\downarrow \text{ concessions in H}}}_{\text{Net commitment effect}=0} + \underbrace{\frac{\partial R}{\partial x^*}\frac{\partial x^*}{\partial p}p'(\pi)}_{\text{Threat-enhancing effect}<0} \quad . \tag{A.3}$$

For the threat-enhancing effect, higher $p(\pi)$ raises the temporary transfer needed to buy off the opposition in high-threat periods $\left(\frac{\partial x^*}{\partial p} > 0\right)$. This reduces the ruler's consumption $\left(\frac{\partial R}{\partial x^*} < 0\right)$. However, the institutional commitment mechanism has no net effect on the ruler's consumption because the two constituent components of this mechanism perfectly offset. On the one hand, higher π reduces the ruler's consumption in low-threat periods by providing more rents to the opposition not warranted by its contemporaneous threat of revolt. Thus, the direct effect of institutional commitment is $\frac{\partial R}{\partial \pi} = -1$. On the other hand, higher π reduces the temporary transfer needed to buy off the opposition in high-threat periods $\left(\frac{\partial x^*}{\partial \pi} < 0\right)$. This raises the ruler's consumption $\left(-\frac{\partial R}{\partial x^*} > 0\right)$. Thus, the indirect effect of institutional commitment is strictly positive. These two effects perfectly offset because the ruler and opposition discount the stream of transfers in an identical manner: $\frac{\partial R}{\partial x^*}\frac{\partial x^*}{\partial \pi} = -\big(1-\delta(1-r)\big)\frac{-1}{1-\delta(1-r)} = 1$.

Zero transfer. A different constraint binds if π is large. An opposition with large-enough basement spoils consumes so much in all periods that it lacks a credible threat to fight in high-threat periods, even if not offered a temporary transfer. The threshold is $\pi > \hat{\pi}$, for $\hat{\pi}$ implicitly defined as $\hat{\Theta}(\hat{\pi}) = \hat{\pi} - p(\hat{\pi})(1-\kappa) = 0$. Intuitively, if $\pi > p(\pi)(1-\kappa)$, then the opposition consumes more than its reservation value to fighting in every period. This obviates any incentive to revolt in high-threat periods, reflected by a negative interior-optimal transfer demand, x^*. Thus, if $\pi > \hat{\pi}$, the transfer hits its lower bound of $x^*(\pi) = 0$. In this case, the ruler's per-period consumption stream is $1-\pi$, which can easily be seen by substituting $x^*(\pi) = 0$ into $R(\pi)$ from Equation C.4.

Peaceful bargaining or conflict? If a revolt occurs, the ruler's expected per-period average payoff is $(1-p(\pi))(1-\kappa)$. If $x^*(\pi) > 0$, then a sufficiently low offer x_t will induce the opposition to fight. When instead $x^*(\pi) \leq 0$, the opposition accepts any offer, and therefore the ruler must exercise its direct conflict choice to induce that outcome.

If basement spoils are high enough that bargaining entails the interior-optimal offer, $\pi \leq \hat{\pi}$, then the ruler necessarily consumes more along a peaceful than conflictual path. Formally, $1-p(\pi)(1-\kappa) > (1-p(\pi))(1-\kappa)$ reduces to $\kappa > 0$. Thus, the assumed costliness of conflict suffices to induce the ruler to buy off the opposition, if possible. This 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.

However, higher values $\pi > \hat{\pi}$ disable the ruler from holding the opposition down to indifference. Rather than countenance the sizable rents permanently conceded to the opposition, the ruler might prefer to face a revolt. This is true when $\pi > \tilde{\pi}$, for $\tilde{\pi}$ implicitly defined as $1-\tilde{\pi} = (1-p(\tilde{\pi}))(1-\kappa)$. This term equates the ruler's consumption along a peaceful path to its expected value to conflict.

For some purposes, it is useful to write this as $\tilde{\Theta}(\tilde{\pi}) = \tilde{\pi} - \kappa - p(\tilde{\pi})(1-\kappa) = 0$. The following technical lemma formalizes important characteristics of the thresholds just introduced.

Lemma A.1 (Threshold values for bargaining)**.** *The aforementioned thresholds are unique and satisfy* $\hat{\pi} > \pi^*$ *and* $\tilde{\pi} \in \big(\max\{0, \hat{\pi}\}, 1\big)$.

A.2 PROOFS

Proof of Lemma 1.

The two derivatives used throughout the proof are

$$\frac{d\Theta^*(\pi)}{d\pi} = \delta(1-r) - p'(\pi)(1-\kappa) \qquad \text{and} \qquad \frac{d^2\Theta^*(\pi)}{d\pi^2} = -p''(\pi)(1-\kappa)$$

If $p''(\pi) = 0$ (linear), then $\frac{d^2\Theta^*(\pi)}{d\pi^2} = 0$, which implies $\frac{d\Theta^*(\pi)}{d\pi}$ has the same sign for all $\pi \in [0,1]$. Consequently, to satisfy Assumption 2, we must be in Case 1 of the lemma. If instead $p''(\pi) < 0$, then $\frac{d^2\Theta^*(\pi)}{d\pi^2} > 0$.

Case 1. Applying the intermediate value theorem demonstrates existence for π^*.

- Lower bound: $\Theta^*(0) < 0$ by Assumption 1.
- Upper bound: $\Theta^*(1) = 1 - p^{\text{max}}(1-\kappa) > 0$.
- Continuity follows from assuming $p(\cdot)$ is class $\mathcal{C}^2$.

To establish the unique threshold, $\frac{d\Theta^*(\pi)}{d\pi}\Big|_{\pi=0} > 0$ combined with $\frac{d^2\Theta^*(\pi)}{d\pi^2} \geq 0$ implies $\frac{d\Theta^*(\pi)}{d\pi} > 0$ for all $\pi \in [0,1]$. In the knife-edge case $\frac{d\Theta^*(\pi)}{d\pi}\Big|_{\pi=0} = 0$, we must have $\frac{d^2\Theta^*(\pi)}{d\pi^2} > 0$ to satisfy Assumption 2, which also implies $\frac{d\Theta^*(\pi)}{d\pi} > 0$ for all $\pi \in [0,1]$.

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

- Lower bound $\frac{d\Theta^*(\pi)}{d\pi}\Big|_{\pi=0} < 0$: Assumed in Case 2.
- Upper bound $\frac{d\Theta^*(\pi)}{d\pi}\Big|_{\pi=1} > 0$: Established by Assumption 2.
- Continuity follows from assuming $p(\cdot)$ is class $\mathcal{C}^2$.

The unique threshold claim follows from $\frac{d^2\Theta^*(\pi)}{d\pi^2} > 0$. Given this, we can apply the intermediate value theorem to demonstrate existence for π^*.

- Lower bound: $\Theta^*(\pi_0) < 0$ follows from Assumption 1 and $\frac{d\Theta^*(\pi)}{d\pi} < 0$ for all $\pi \in [0, \pi_0)$.
- Upper bound: Same as in Case 1.
- Continuity: Same as in Case 1.

To establish the unique threshold, $\frac{d\Theta^*(\pi)}{d\pi} > 0$ for all $\pi \in (\pi_0, 1]$ combined with $\frac{d^2\Theta^*(\pi)}{d\pi^2} > 0$ implies $\frac{d\Theta^*(\pi)}{d\pi} > 0$ for all $\pi \in (\pi_0, 1]$. ■

Proof of Lemma A.1.

Step 1. Prove a unique threshold $\hat{\pi} \in \big(\max\{\pi_0, 0\}, 1\big)$ exists such that $\hat{\Theta}(\pi) > 0$ if and only if $\pi > \hat{\pi}$. The proof of this statement is identical to the proof of Lemma 1.

Step 2. Prove $\pi^* < \hat{\pi}$. Setting $\Theta^*(\pi^*) = \hat{\Theta}(\hat{\pi})$ and rearranging yields $\delta(1-r)(\hat{\pi} - \pi^*) - \big(p(\hat{\pi}) - p(\pi^*)\big)(1-\kappa) = (1 - \delta(1-r))(1-\hat{\pi})$. The right-hand side is strictly positive, which implies the left-hand side must be strictly positive to balance the equation. This is true if and only if $\pi^* < \hat{\pi}$ for the following reason. $\frac{d\Theta^*(\pi)}{d\pi} > 0$ over the domain $\big[\min\{\pi^*, \hat{\pi}\}, \max\{\pi^*, \hat{\pi}\}\big]$ because $\min\{\pi^*, \hat{\pi}\} > \pi_0$. Therefore, for any $\pi_L < \pi_H$ within this domain, we have $\delta(1-r)(\pi_H - \pi_L) - \big(p(\pi_H) - p(\pi_L)\big)(1-\kappa) > 0$.

Step 3. Prove a unique threshold $\tilde{\pi} \in \big(\max\{\pi_0, 0\}, 1\big)$ exists such that $\tilde{\Theta}(\tilde{\pi}) > 0$ if and only if $\pi > \tilde{\pi}$. The proof of this statement is identical in form to the proof of Lemma 1, although now the bounds when applying the intermediate value theorem to establish the existence of $\tilde{\pi}$ are $\tilde{\Theta}(0) = -\kappa - p^{\min}(1-\kappa) < 0$ and $\tilde{\Theta}(1) = (1 - p^{\max})(1-\kappa) > 0$.

Step 4. Prove $\hat{\pi} < \tilde{\pi}$. Setting $\hat{\Theta}(\hat{\pi}) = \tilde{\Theta}(\tilde{\pi})$ and rearranging yields $\delta(1-r)(\tilde{\pi} - \hat{\pi}) - \big(p(\tilde{\pi}) - p(\hat{\pi})\big)(1-\kappa) = \kappa - (1 - \delta(1-r))(\tilde{\pi} - \hat{\pi})$. Proof by contraction; suppose not, and $\hat{\pi} \geq \tilde{\pi}$. The right-hand side is strictly positive and the left-hand side is weakly negative for the reasons discussed in Step 2, which yields a contradiction. ■

Proof of Lemma 2. Any equilibrium with a positive power-sharing choice entails the ruler sharing exactly π^* (see Lemma 1). This is the minimum amount of basement spoils at which the opposition forgoes revolting upon consuming 1 in every high-threat period. Consequently, the opposition revolts in response to any proposal that includes $\pi \in (0, \pi^*)$. However, for all $\pi \geq \pi^*$, a corresponding offer $x_t = x^*(\pi) = \max\{x^*(\pi), 0\} \leq 1$ exists that induces the opposition to accept, for $x^*(\pi)$ defined in Equation 4.

The ruler only considers making either of two power-sharing proposals, $\pi_t \in \{0, \pi^*\}$. Proposing any $\pi_t \in (0, \pi^*)$ would raise the opposition's probability of winning without inducing acceptance, which cannot be optimal. Formally, the ruler's minmax value to offering $\pi_t = 0$ is $(1 - p^{\min})(1-\kappa)$, which equals $\max\limits_{\pi \in [0,1]} (1 - p(\pi))(1-\kappa)$. Nor will the ruler share strictly more power than needed to buy off the opposition (see Equation C.4). Along a peaceful path, the ruler's utility from the perspective of a high-threat period is either

$$\begin{cases} 1 - p(\pi)(1-\kappa) & \text{if } \pi \leq \hat{\pi} \\ 1 - \pi & \text{if } \pi > \hat{\pi}, \end{cases}$$

both of which strictly decrease in π. These considerations leave $\{0, \pi^*\}$ as the set of possible optimal choices of π_t. This can also be seen in Panel B of Figure 2: the ruler's consumption strictly decreases in π at all points except $\pi = \pi^*$. The preceding bargaining analysis characterizes the optimal transfers for each level of π_t. ■

B Supporting Information for Endogenous Power Sharing

B.1 Proofs and Additional Results

Proof of Proposition 4.

Characterize σ_R^*. Solving Equation 10 for V_O, substituting into Equation 9, and rearranging yields an implicit characterization $\Omega_R(\sigma_R^*) = 0$, for

$$\Omega_R(\sigma_R) = 1 - \delta(1-r) - p^{\min}(1-\kappa) + \delta r \Delta p(\pi^*) \frac{1-\kappa}{1-\delta}\sigma_R. \tag{B.1}$$

Applying the intermediate value theorem establishes existence. The lower bound $\Omega_R(0) < 0$ is equivalent to the opposition credibility condition (Assumption 1) holding, the upper bound $\Omega_R(1) > 0$ is equivalent to strong opposition credibility failing (Equation 8), and $\Omega_R(\cdot)$ is continuous. Uniqueness follows from

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

the intuition for which is that the opposition benefits from a higher probability of the ruler sharing power.

Characterize σ_O^*. Solving Equation 12 for V_O, substituting into Equation 11, and rearranging yields an implicit characterization $\Omega_O(\sigma_O^*) = 0$, for

$$\Omega_O(\sigma_O) = -\big(\kappa - \Delta p(\pi^*)(1-\kappa)\big)(1-\sigma_O) - \frac{1-\delta}{1-\delta(1-r)}\Big(1 - \delta(1-r) - p(\pi^*)(1-\kappa)\Big)\sigma_O. \tag{B.2}$$

Applying the intermediate value theorem establishes existence. The lower bound $\Omega_O(0) < 0$ is equivalent to the ruler willingness condition (Equation 5) holding; the upper bound $\Omega_O(1) > 0$ is equivalent to an analog of the opposition credibility condition holding but with $p(\pi_t) = p(\pi^*)$, which makes opposition credibility strictly easier to hold; and $\Omega_O(\cdot)$ is continuous. Uniqueness follows from

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

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

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

- ***Case 1.*** *A unique threshold $\tilde{r} \in (0, 1)$ exists such that for $r > \tilde{r}$, opposition credibility fails (such parameter values are ruled out by Assumption 1). The threshold $\tilde{r}$ is unaffected by p^{max}.*
- ***Case 2.*** *A unique threshold $\tilde{p}^{max} > p^{min}$ exists such that for $p^{max} > \tilde{p}^{max}$, ruler willingness fails (Equation 5). Supposing that opposition credibility holds ($r < \tilde{r}$), Proposition 2 characterizes equilibrium strategies and outcomes. The threshold $\tilde{p}^{max}$ is unaffected by r.*
- ***Case 3.*** *Suppose opposition credibility ($r < \tilde{r}$) and ruler willingness ($p^{max} < \tilde{p}^{max}$) both hold.*
  - ***Part a.*** *A unique threshold $\hat{r} \in (0, \tilde{r})$ exists such that for $r < \hat{r}$, strong opposition credibility holds (Equation 8). Proposition 3 characterizes equilibrium strategies and outcomes. An increase in p^{max} decreases $\hat{r}$.*
  - ***Part b.*** *Suppose strong opposition credibility fails ($r > \hat{r}$). Proposition 4 characterizes equilibrium strategies and outcomes. The following lists some key characteristics of the equilibrium mixing probabilities. Figure B.1 provides a visual summary.*
    - $\sigma_R^*(\tilde{r}) = 0$
    - $\sigma_R^*(\hat{r}) = 1$
    - $\frac{d\sigma_R^*}{dr} < 0$
    - $\sigma_R^*(r) \in (0, 1)$ *for* $r \in (\tilde{r}, \hat{r})$

Proof of Case 1. The implicit characterization is $\Theta_{\tilde{r}}(\tilde{r}) = 0$, for

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

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

Case 2. The implicit characterization is $\Theta_{\tilde{p}^{\max}}(\tilde{p}^{\max}) = 0$, for

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

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

Case 3, part a. The implicit characterization is $\Theta_{\hat{r}}(\hat{r}) = 0$, for

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

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

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

Case 3, part b. Recall that Equation B.1 characterizes σ_R^*. For the following, set $\Delta p(\pi^*) = p^{\max} - p^{\min}$.

- At $r = \tilde{r}$, opposition credibility holds with equality. Consequently,

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

  Consequently, $\sigma_R^*(\tilde{r}) = 0$ if and only if $\sigma_R^* = 0$.

- At $r = \hat{r}$, strong opposition credibility holds with equality. Consequently,

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

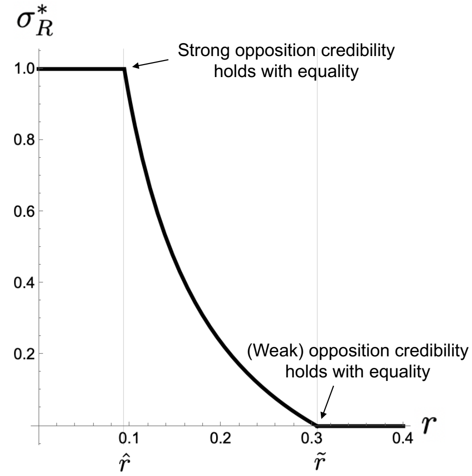
  Consequently, $\sigma_R^*(\hat{r}) = 0$ if and only if $\sigma_R^* = 1$.

- Applying the implicit function theorem yields

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

- Follows directly from the first three results because σ_R^* is continuous. ■

Figure B.1: Mixed Probability of Revolt as Function of r



Notes: $\delta = 0.9$, $\kappa = 0.25$, $p^{\min} = 0.5$.

B.2 Extension: Comparing Mixed-Strategy Ranges Across Models

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 original model that the ruler can choose any positive level of power sharing $\pi_t \in (0, 1]$. Now, the power-sharing level is constrained by an exogenous lower bound. Formally, $\pi_t \in \{0\} \cup [\pi^{\min}, 1]$, for $\pi^{\min} \geq 0$. At $\pi^{\min} = 0$, we have the original model. However, for higher values $\pi^{\min}$, the ruler faces a constraint.

I re-evaluate each of the three main conditions for power sharing. The opposition credibility condition (Assumption 1) is unchanged because it pertains to the opposition's calculus if the ruler does not share power. However, the other two key conditions differ. I first discuss ruler willingness before analyzing the main condition of interest, strong opposition credibility. This enables me to contrast the rationale for a mixed-strategy range across models.

Ruler willingness. This condition is now

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

For $\pi^{\min} \leq \pi^*$, the analysis is unchanged from the original model, as the ruler can still set $\pi_t = \pi^*$. For $\pi^{\min} \in (\pi^*, \hat{\pi}]$, the ruler chooses a power-sharing level $\pi^{\min} > \pi^*$, 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. In both cases, the ruler's per-period average consumption along a peaceful path equals total output, 1, minus the opposition's reservation value to revolting, $p(\pi_t)(1 - \kappa)$. Either inequality can be rearranged to resemble the form of the expression in Equation 5, $\Delta p(\pi_t)(1-\kappa) \geq \kappa$, which clearly highlights the relationship between the threat-enhancing effect and ruler willingness.

However, for $\pi^{\min} > \hat{\pi}$, the lower bound on spoils exceeds the threshold such that the transfer hits a corner at 0, $x^*(\hat{\pi}) = \frac{-\hat{\pi}+p(\hat{\pi})(1-\kappa)}{1-\delta(1-r)} = 0$. Thus, the ruler can no longer hold the opposition down to indifference. 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, $1-\pi^{\min}$. The inequality for the $\pi^{\min} > \hat{\pi}$ case is nearly identical to the corresponding condition in the analysis of exogenous power sharing, setting $p(\pi) = p^{\min}$. Following the same logic as the last part of Proposition 1, when $\pi^{\min}$ is too high, the ruler prefers to incur a revolt rather than permanently give away a large amount of spoils, despite the irrelevance of the threat-enhancing effect.

Strong opposition credibility. This condition is now $1-\delta(1-r)-p^{\min}(1-\kappa)+\gamma \leq 0$, for

$$\gamma \equiv \begin{cases} \delta r \Delta p(\pi^*)\frac{1-\kappa}{1-\delta} & \text{if } \pi^{\min} \leq \pi^* \\ \delta r \Delta p(\pi^{\min})\frac{1-\kappa}{1-\delta} & \text{if } \pi^{\min} \in (\pi^*, \hat{\pi}] \\ \frac{\delta r}{1-\delta}\big(\pi^{\min} - p^{\min}(1-\kappa)\big) & \text{if } \pi^{\min} > \hat{\pi}. \end{cases}$$

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 $\hat{\pi}$. For $\pi^{\min} \leq \hat{\pi}$, the opposition's reservation value to revolting determines each player's consumption. Consequently, $\gamma > 0$ is a function of the threat-enhancing effect $\Delta p(\pi^*)$. However, for $\pi^{\min} > \hat{\pi}$, the opposition's reservation value to revolting does not affect consumption, which instead depends directly on the magnitude of $\hat{\pi}$. 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) opposition credibility 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 the present model. 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.

Finally, note that a wedge 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.

C SUPPORTING INFORMATION FOR EXTENSION

C.1 ANALYSIS

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

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

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

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

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 1). 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.

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

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

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

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

Retaining Equation C.1 as an inequality and setting $x = 1-\pi$ (the maximum the ruler can transfer) yields a no-revolt constraint analogous to Equation 3

No-revolt constraint. $$\Theta_q(\pi, p^{\max}) \equiv \underbrace{\frac{1-\delta(1-r)}{1-\delta(1-r)q}}_{\text{“Basement” spoils}}\pi + \underbrace{(1-\delta(1-r))(1-\pi)}_{\text{Top-up in H periods}} - \underbrace{p(\pi)(1-\kappa)}_{\text{Revolt}} \geq 0. \tag{C.3}$$

This is the same expression used to characterize π_q^* in Equation 14. Imposing an assumption analogous to Assumption 2 enables presenting and proving a lemma analogous to Lemma 1 to establish the existence and uniqueness of π_q^*.

Assumption C.1 (High π relaxes the no-revolt constraint)**.**

$$\left.\frac{\partial \Theta_q^*(\pi, p^{max})}{\partial \pi}\right|_{\pi=1} =$$

$$\delta(1-r)\frac{1-\delta(1-r)}{1-\delta(1-r)q(1,p^{max})}\left(q(1,p^{max})+\frac{\frac{\partial q}{\partial \pi}}{1-\delta(1-r)q(1,p^{max})}\right)-p'(\pi)(1-\kappa) > 0$$

Lemma C.1 (Threshold π for peaceful bargaining in extension)**.**

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

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

for π_q^* *implicitly defined as* $\Theta_q^*(\pi_q^*) = 0$.

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

Proof. The full proof is identical in structure to the proof of Lemma 1. Thus, it suffices to establish that the second derivative is strictly positive.

$$\frac{\partial \Theta_q^*}{\partial \pi} = \delta(1-r)\frac{1-\delta(1-r)}{1-\delta(1-r)q}\left(q+\frac{\frac{\partial q}{\partial \pi}}{1-\delta(1-r)q}\right) - \frac{\partial p}{\partial \pi}(1-\kappa)$$

$$\frac{\partial^2 \Theta_q^*}{\partial \pi^2} = \frac{\delta(1-\delta(1-r))(1-r)}{\big(1-\delta(1-r)q\big)^2}\left[\pi \underbrace{\frac{\partial^2 q}{\partial \pi^2}}_{=0} + 2\left(1+\frac{\delta\pi(1-r)}{1-\delta(1-r)q}\frac{\partial q}{\partial \pi}\right)\frac{\partial q}{\partial \pi}\right] - \underbrace{\frac{\partial^2 p}{\partial \pi^2}}_{=0}(1-\kappa) > 0.$$

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

Ruler willingness. Following the same steps as in Appendix A.1, we characterize the maximum consumption amount for the ruler along a peaceful path. This enables expressing the ruler willingness condition.

The ruler's expected lifetime consumption stream from the perspective of a high-threat period 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

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

$$\text{for} \quad R_q(\pi) \equiv 1 - \frac{1-\delta(1-r)}{1-\delta q(1-r)}\pi - (1-\delta(1-r))x. \tag{C.4}$$

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

$$R_q(\pi)\big|_{x=x_q^*} = 1 - p(\pi)(1-\kappa), \tag{C.5}$$

which is identical to Equation A.2. Thus, for the same reason as in the baseline model, the ruler's utility along a peaceful path is maximized at $\pi = \pi_q^*$, 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 π_q^*.

$$\textbf{Ruler willingness.} \qquad \underbrace{\Delta p(\pi_q^*)}_{\text{Threat-enhancing effect (Eq. 1)}} \qquad (1-\kappa) \leq \kappa. \tag{C.6}$$

Perhaps surprising, the ruler's utility strictly decreases in q. The optimal power-sharing level is higher in the extension than the baseline game because $\frac{\partial \Theta_q^*}{\partial q} > 0$ and $\pi^* = \pi_q^*\big|_{q=1}$. This reflects that the ruler must compensate the opposition during power-sharing spells for the subsequent autocratic reversals that will occur along the equilibrium path. However, as Equation C.5 shows (see also the discussion in Appendix A.1), the power-sharing level affects the ruler's utility only through the opposition's probability of winning. Thus, the ruler would strictly benefit from greater ability to commit to not renege (i.e., higher q). Furthermore, the ruler's utility exhibits a discontinuous drop at the point at which q is small enough that opposition willingness fails.

Strong opposition credibility. The strong opposition credibility condition is identical in form to Equation 8, replacing π^* with π_q^*. The continuation values from Equations 6 and 7 are unchanged (other than replacing π^* with π_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 π_q^* already compensates the opposition for the fact that the ruler will engineer periodic autocratic reversals along the equilibrium path.

$$\textbf{Strong opposition credibility.} \quad 1-\delta(1-r)-p^{\min}(1-\kappa)+\gamma \leq 0,$$
$$\text{for} \quad \gamma \equiv \delta r \underbrace{\Delta p(\pi_q^*)}_{\text{Threat-enhancing effect (Eq. 1)}} \frac{1-\kappa}{1-\delta}. \tag{C.7}$$

C.2 Comparative Statics

Proposition C.1 (Coercive effect of power sharing and opposition willingness)**.**

Part a. Frequency of mobilization. *Higher r makes opposition willingness strictly easier to hold.*

Part b. Offensive capabilities dominate. *If $\left.\frac{d\Theta_q^*(1,p^{max})}{dp^{max}}\right|_{p^{max}=1} < 0$, then higher p^{max} makes opposition willingness strictly harder to hold.*

Part c. Defensive capabilities dominate. *If $\left.\frac{d\Theta_q^*(1,p^{max})}{dp^{max}}\right|_{p^{max}=p^{min}} > 0$, then higher p^{max} makes opposition willingness easier to hold.*

Part d. Defensive capabilities dominate for high p^{max}. *If $\left.\frac{d\Theta_q^*(1,p^{max})}{dp^{max}}\right|_{p^{max}=p^{min}} < 0$ and $\left.\frac{d\Theta_q^*(1,p^{max})}{dp^{max}}\right|_{p^{max}=1} > 0$, then a unique threshold $\hat{p}_q^{max}$ exists such that higher p^{max} makes opposition willingness easier to hold if and only if $p^{max} > \hat{p}_q^{max}$.*

Proof of Part a.

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

Proof of Parts b–d. After establishing $\frac{\partial^2\Theta_q^*(1,p^{\max})}{\partial(p^{\max})^2} > 0$, each claim follows from straightforward applications of the intermediate value theorem and the strict monotonicity of $\Theta_q^*(1,p^{\max})$ in $p^{\max}$ for the specified parameter values.

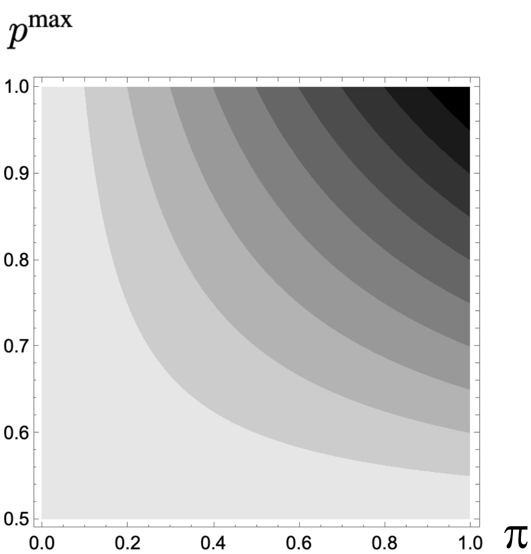
$$\frac{\partial^2\Theta_q^*(1,p^{\max})}{\partial(p^{\max})^2} = \frac{\delta(1-r)(1-\delta(1-r))}{(1-\delta(1-r)q)^2}\left(\underbrace{\frac{\partial^2 q}{\partial(p^{\max})^2}}_{=0} + \frac{2\delta(1-r)}{1-\delta(1-r)q}\left(\frac{\partial q}{\partial p^{\max}}\right)^2\right) > 0$$

■

C.3 ADDITIONAL FIGURES

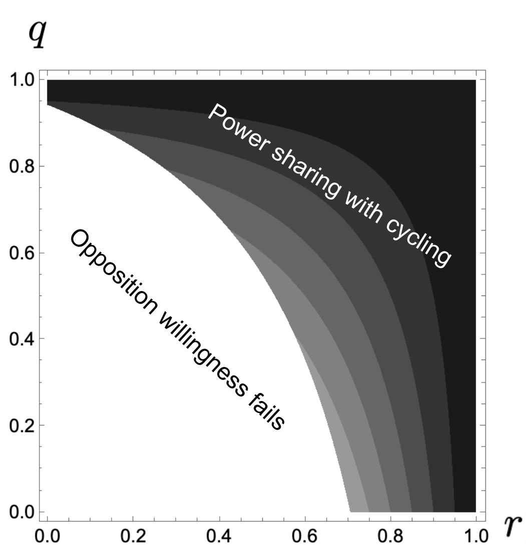
Figure C.1 plots $q(\pi, p^{\max})$ from Equation 13, with darker colors corresponding with higher values of q. Figure C.2 plots the frequency of periods with power sharing, fixing q as a parameter. The frequency equals $r + (1-r)q$ if opposition holds (Equation 15), and 0 if not. The white region expresses 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: $\delta = 0.85$, $\kappa = 0.25$, $p^{\max} = 1$.