ESSAYS ON POLITICAL ECONOMY

by

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A mis padres, Félix y Laura.

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Abstract

This dissertation starts from the observation that, in most democracies, political competition is organized along party lines. Political parties are generally resilient organizations that survive electoral defeats; hence, we refer to them as long-lived organizations. A widespread assumption in the dynamic political economy literature is that electoral competition involves politicians who cannot run again for office after an electoral defeat and thus, have an effectively shorter time horizon when making policy choices. In this dissertation, consisting of two non-coauthored and one coauthored paper, I explore the implications of long-lived parties for policy-making, electoral competitiveness, interest groups' rent-seeking, and, more broadly, voters' welfare.

Rather than a purely technical assumption, the long-liveness of political parties is important for understanding the political economy and the policy-making of developed countries in the last decades. Before the 2008 economic crisis, western democracies were generally characterized by stable party systems. In those party systems, political parties could expect to remain electorally competitive beyond the immediate future and to regain power if they lost it. Since the 2008 crash, however, the medium-term survival of major parties has grown increasingly uncertain. European major political families after 1945, the Social Democrats and the Conservatives or the Christian Democrats, have decreased their electoral turnout. New parties from the radical left, populist right, green or liberal family have appeared—and sometimes disappeared after some electoral cycles. In other countries like the US, the party system has not been plagued with new competitors but party elites are subjected to intense pressure from outsiders. To understand the implications of this change, we need a theory of how long-lived parties' behavior differs from the one of short-lived organizations or independent political candidates.

The first chapter of this dissertation studies how the long-liveness assumption affects the dynamic incentives of parties to prioritize reelection against other policy objectives. In particular, it emphasizes how the parties' choices when they hold power are affected by their expectations about the rival party's future choices. The second chapter delves into how political parties can achieve long-term agreements with other political organizations, like interest groups and lobbies, due to their long-lived nature. Hence, this chapter studies the *quid-pro-quo* dynamic agreements

between an interest group and two political parties and how these agreements evolve with the process of political turnover. Lastly, the third chapter analyzes the informational role of the opposition party's promise to repeal the incumbent party's policies. This chapter wants to improve our understanding of how the opposition can influence policy-making even if it is out of power and lacks any form of veto power.

Chapter 1. Persistence in Power of Long-lived Parties.

This paper presents a dynamic model of electoral competition in which parties are long-lived organizations. In each period, the incumbent chooses between two policies. The competitive policy yields a greater reelection probability. The accommodative policy is the one that, absent electoral effects, the incumbent would prefer. The analysis reveals that parties' incentives to win reelection feed on themselves via a dynamic strategic complementarity effect: the expectation that the rival party will prioritize reelection once in power increases the government's incentives to prioritize reelection today. I consider both virtuous and perverse accountability, in which the competitive policy is socially better or worse, respectively. Parties' competitiveness is more likely under perverse accountability, and it is disincentivized by political turnover, party discipline, and parties' impatience. Lastly, checks and balances foster accommodative policies not only under divided governments but also when government is unified.

Chapter 2. Which Side Are You On? Interest Groups and Relational Contracts.

This paper studies *quid-pro-quo* dynamic agreements between an interest group and two political parties. Political parties repeatedly compete for office. Before each election, the interest group decides which party to support. When in power, parties choose the rent they transfer to the interest group to buy its support. Yet, binding agreements are not possible, so agreements must be self-enforcing. When electoral uncertainty is low, the interest group favors an opportunistic agreement in which it always supports the current incumbent. As electoral uncertainty increases, the interest group prefers an exclusive agreement in which it supports a single party even when it is in opposition. An interest group with more inefficient rents is also less likely to favor an opportunistic agreement. The model offers a novel explanation for why studies on the impact of campaign contributions on policymaking find mixed evidence. Besides, my results shed new light on existing empirical findings by showing that interest groups' long-term loyalty does not necessarily imply an ideological alignment, and interest groups' opportunism can be a signal of effective institutions. Lastly, I study the impact of emergencies, weak political parties, and the interest group's entry costs on the interest group's best agreement.

Chapter 3. The Politics of Repeal. (Coauthored with Wioletta Dziuda and Antoine Loeper)

New information, economic shocks, or geopolitical changes frequently create an opportunity for reforms. The incumbent, however, can use such opportunities to pass partisan reforms that are not beneficial to the median voter. And indeed, the opposition frequently promises to repeal those reforms claiming that they simply represent partisan overreach. Are these repeals a salutary filter of the incumbent's partisan policies, or are they rather a cynical electoral strategy even when the reforms are welfare-improving? We investigate this question in an informational model of electoral politics. There exist two types of reforms: the common interest one, which is unanimously liked, and the one, which is beneficial only to the incumbent. The reform type is known to the parties but not to the voter. We show that when the parties' benefit from the common interest reform is sufficiently high, the electoral competition leads parties to provide perfect information to the voter. When the parties' benefit from the common-interest reform is below a certain threshold, all equilibria feature the opposition party reacting to the attempts at common-interest reform with a promise of repeal. Such inefficient repeals weaken the information that the voter obtains from observing a promise of repeal. We show that incumbents respond to this in two ways: by foregoing common interest reforms (gridlock) and/or by doubling down on partisan reforms.

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Chapter 1

Persistence in Power of Long-lived Parties

1.1 Introduction

In 2018, the academic David Faris published a book titled It's Time to Fight Dirty: How Democrats Can Build a Lasting Majority in American Politics. Some of Faris' most audacious proposals included packing the Supreme Court or dividing California into seven states. Ezra Klein contextualized this book as a response to an electoral system that had been previously rigged by Republicans, for example, through gerrymandering.

> As Democrats feel the right had been engaged in one long power grab, they are starting to feel like suckers for not grabbing more power themselves. [...] Even Eric Holder, President Obama's former attorney general, has taken up the battle cry: when they go low, we kick them. That is what this New Democratic Party is about.

Steel (2013) identifies an analogous change in politician's expectations behind the tumultuous end of the Roman Republic. The Roman republican system aimed to produce high levels of political turnover among the magistrates holding *imperium*—the right to command standing armies. However, during the late Republic, outstanding political leaders used their power to have *imperium* for long uninterrupted periods of time. Ceneus Pompeius in 78BC went as far as using an unspoken threat of violence when [he] refused to disband his army when instructed. Pompeius modified his competitors' expectations. His behavior in turn provoked the emulation of the most ambitious of his contemporaries [Julius Caesar].

Every incumbent politician often faces a trade-off between using office for policy goals or for electoral gains. As the previous examples suggest, that choice can depend on what the incumbent expects her rival to do once in power. This paper offers a parsimonious model that sheds some light on the role of these expectations. The model starts from the observation that political competition involves long-lived players that survive electoral defeats—i.e., political parties. As a result, the consequences for a party of being ousted from power depend on when it can expect to regain it, which depends on how its rival will act once in power. Hence, when trading-off maximizing the probability of reelection versus implementing its preferred policy, the optimal strategy of the incumbent party depends on how its rival will resolve that trade-off once in power. This paper's central insight is that the parties' incentives to win the next election feed on themselves via a dynamic strategic complementarity effect: the expectation that the rival party will cling to power, prioritizing reelection once in office, increases the current government's incentives to do the same.

I consider a . Parties care about voters' welfare but also about being in power. Importantly, political parties are modeled as long-lived players resilient to electoral defeats. This means that, after they lose an election, they remain in political competition. Following the literature on electoral accountability, the incumbent party faces a trade-off between securing reelection and a policy gain. In each period, the incumbent has to choose between a policy that yields a greater probability of reelection—the *competitive policy*—and a policy that, absent electoral effects, the incumbent would prefer—the *accommodative policy*. This trade-off can be rationalized along different lines. Under virtuous accountability—as Stokes (2005) refers to it—the competitive policy is socially efficient, and thus it is electorally rewarded (see Barro (1973), Ferejohn (1986), or Duggan and Martinelli (2017)). Under perverse accountability, parties gain electoral advantage from socially harmful policies, as a result of, for instance, informational frictions or weak institutions (see, e.g., Dixit and Londregan (1996), Lizzeri and Persico (2001), or Canes-Wrone et al. (2001)).[1] This paper takes the incumbent's trade-off as given and assumes the existence of these two policies. Electoral outcomes are stochastic. At the end of each period, the next office holder is drawn from a probability distribution that depends on the policy implemented by the current incumbent, as previously discussed. Thus, if a political party is ousted from power, how long the party will stay in opposition depends on how its rival will act. Besides, the incumbent may have an *incumbency advantage*, which exogenously produces persistence in power.

The analysis reveals that parties' incentive to enact the competitive policy feeds on itself via a dynamic strategic complementarity effect. To see why, consider the calculus of the incumbent. Its expectation that the rival party will enact competitive policies once in power increases the expected time the rival will remain in power, consequently raising the stakes of the next election. This *raised-stakes effect* increases the incumbent's incentives to choose a competitive policy today. To isolate the impact of that dynamic mechanism and abstract away from other dynamic link-

[1] Ashworth (2012) offers an exhaustive review of the different mechanisms by which accountability can produce misaligned incentives between voters and incumbents.

ages due to history-dependant strategies, I focus on pure-strategy Markov perfect equilibria (henceforth equilibria).

The *raised-stakes effect* is at the root of the main findings of the model. First, I show that for a subset of parameters, the equilibrium in which both parties implement accommodative policies coexists with the equilibrium in which both parties implement competitive policies. Thus, policy choices rely crucially on the parties' expectations of each other. The centrality of parties' expectations suggests the importance of coordination devices and institutions that affect the likelihood of accommodative policies being enacted in the future. Three examples of such institutions are a check and balances system that gives veto power to the opposition in some periods, terms limits, and party leadership selection (each discussed respectively in Sections 1.6, 1.8, and 1.7). These institutions affect parties' expectations of their rivals' behavior, and thus their effect is magnified through the *raised-stakes effect*. For instance, in the case of checks and balances, each party expects to be unable to implement competitive policies when it is elected but constrained by the veto of the rival party—i.e., when the government is divided. This expectation lowers the next election's stakes, diminishing the present government's incentives to enact competitive policies. Therefore, when checks and balances constrain incumbent's discretion over policies, they affect the incumbent's choices not only when the government is divided, but also when the government is unchecked by the rival party.

Second, as the incumbency advantage of any given party decreases, both parties become more likely to choose accommodative policies. An increase in political turnover (in the form of a lower incumbency advantage) induces parties to be less concerned about losing power, thereby reducing the incentives for political competitiveness. This result points towards a novel channel in which political turnover impacts policymaking. In the perverse accountability case, unlike in many dynamic political economy models, a greater political turnover benefits the voters.[2] Third, as parties become more patient, the *raised-stakes effect* increases, and competitive policies become more likely to be implemented.

The aforementioned results assume that parties are long-lived organizations capable of disciplining their members to internalize the party's objectives over a long horizon. The strategic effects highlighted in this paper disappear if, on the contrary, parties' decisions are taken by leaders who, once electorally defeated, can no longer run for office and are indifferent to their party's future thereafter.

My model is institutionally sparse; it only requires any party that holds power to choose whether to use its incumbency for policy goals or electoral gains. Thanks to its simplicity, the paper's insights can be generalized to three different litera-

[2]See, for instance, the 'roving bandits' theory of Olson (1993), and the dynamic political economy literature on fiscal policy (e.g., Persson and Svensson (1989); Alesina and Tabellini (1990); Azzimonti (2011); Piguillem and Riboni (2021)) and on dynamic political bargaining (e.g., Bowen et al. (2014)).

tures: virtuous and perverse accountability, and oligarchic politics. Under virtuous accountability, the competitive policy benefits the voters and has a non-negative payoff for the challenger (absent electoral effects). In a virtuous accountability model a là Barro (1973) and Ferejohn (1986), parties are only office motivated and the competitive policy is simply incumbent's costly effort. Alternatively, Duggan and Martinelli (2017) assume policy- and office-motivated parties. Thereby, through a competitive policy, the incumbent party relinquishes its own policy preferences to increase its likelihood of reelection. In this case, the competitive policy has a positive payoff for the challenger party in terms of moderation.[3]

In a perverse accountability model, the competitive policy implies a negative payoff for the challenger. These policies are often inefficient or socially undesirable. An extreme example can be a threat of violence on the challenger's sympathizers. Another example is targeted local expenditure in regions inhabited by the incumbent's supporters. The incumbent's trade-off under perverse accountability can be rationalized along the lines of Rogoff (1990), Lizzeri and Persico (2001), Canes-Wrone et al. (2001), Maskin and Tirole (2004), Padró i Miquel (2007), Ashworth and De Mesquita (2009).

Whether society's accountability is of the virtuous or perverse type is policy-specific and depends on institutional or informational aspects that are out of this paper's scope. Nonetheless, I show that competitive policies in perverse accountability have an intrinsic advantage with respect to competitive policies in virtuous accountability. Suppose the rival party is expected to behave competitively once it attains power. In that case, the more harmful competitive policies are for the opposition party, the higher the stakes of the next election. Expectations play a key role in this calculus. Thus, interestingly, coordination of expectations and equilibria multiplicity are more relevant under perverse than under virtuous accountability.

Lastly, the model applies to oligarchic politics where both parties are elite groups, and the competitive policy is popular among poorer voters—e.g., redistribution, political rights—but detrimental to elite politicians (North et al. (2009)).[4] In the late Roman Republic, for example, politicians from the *popularis* faction, like the Gracchi brothers, appealed to the poor with policies contentious among the patrician elite: the redistribution of public land or the availability of free grain (Steel (2013)).[5] My results can explain why several oligarchic regimes try to reduce intra-elite conflict

[3]For instance, in the usual one-dimensional policy space model, parties are assumed to have opposed policy preferences, each more extreme than the median voter's. In this setting, the competitive policy is closer to the median voter's ideal than the accommodative policy.

[4]Some papers listed as perverse accountability models can be interpreted as oligarchic politics models, e.g., Canes-Wrone et al. (2001) if the elite is assumed to be better informed about policy than the voters.

[5]In Meiji Japan, Itagaki Taisuke and Ōkuma Shigenobu, in their competition with other oligarchs, fostered popular participation in politics, pushing for the establishment of a constitution (Ramseyer et al. (1998)).

by favoring political turnover.

The paper is organized as follows. The next section reviews the related literature. In Sections 3, 4, and 5 the model is presented, followed by a discussion of its main insights. Section 1.6 considers two extensions of the baseline model. The importance of strong parties as opposed to personalistic leaders, and the role of term limits are discussed in the next two sections. The last section concludes.

1.2 Literature review

This paper departs from the literature on electoral accountability in that actors are long-lived organizations. Ferejohn (1986) also considers an extension with long-lived parties but analyzes only the voter's best equilibria, ignoring the dynamic strategic complementarity central to this paper.[6] More generally, the focus of attention in the electoral accountability literature is in the ability of voters to discipline incumbent politicians, whereas my analysis studies the strategic interaction between the incumbent party and its rival. In line with this paper's approach, Bernhardt et al. (2019) study long-lived parties' strategic interactions under perverse accountability.[7] Nonetheless, Bernhardt et al. consider a mechanically competitive party (a *demagogue*) and a mechanically accommodative party. Hence, there is no room for either the *raised-stakes effect* or equilibrium multiplicity.

A growing body of literature studies policy dynamics when today's policy affects tomorrow's allocation of political power (e.g., Padró i Miquel (2007); Bai and Lagunoff (2011); and Acemoglu et al. (2015)). However, my paper's core insight—that the incumbent's incentives to cling to power today increase if it expects the rival party to cling to power in the future—is absent from these papers or not studied. The two papers closer to mine, Azzimonti (2011) and Dziuda and Loeper (2023), have a different focus of attention. Azzimonti (2011) investigates how parties' behavior affects private investment unveiling a *tragedy of the commons* logic. Dziuda and Loeper (2023) show how voters' desire for policy stability induces parties to behave more ideologically. In both papers, there exists a dynamic linkage between today's policy and tomorrow's electoral outcome, but the role of the incumbent's expectations about how long it will take to regain power after an electoral defeat is not discussed. Farther afield to my paper is the line of work that began with Kramer (1975) and has been further developed by Forand (2014) and Nunnari and Zápal (2017), in which there is an asynchronous policy competition by which incumbents commit to a policy before the opposition. Lastly, the settings of Bai and Lagunoff

[6]Anesi and Buisseret (2022) also study long-lived parties in an accountability setting, albeit with a focus on the voter's best subgame perfect equilibrium.

[7]In Bernhardt et al. (2019) a policy is an allocation of resources between consumption and investment in an electoral setting where voters are short-sighted. A competitive policy is an allocation that over-consumes and under-invests.

(2011) and Acemoglu et al. (2015) do not encompass this model. The setting of Bai and Lagunoff (2011) assumes endogenous but deterministic changes in power. In Acemoglu et al. (2015), stochastic transitions are ordered. Hence, a stable allocation of power is reached in a finite number of periods. Conversely, in my setting, the stochastic transitions (elections) are not ordered, power continuously shifts back and forth between the two parties, and these transitions are affected by the incumbent's choice.

The effect of parties in political competition is studied by an important literature in political science and economics (e.g., Roemer and Roemer (2009); Caillaud and Tirole (2002); Snyder Jr and Ting (2002)). Through its discussion of the role played by long-lived parties, this paper contributes to the branch of this literature that focuses on inter-temporal problems (e.g., Kalandrakis et al. (2009); Klašnja and Titiunik (2017)).

The literature on electoral competition and market competition is connected through several insights. Given the importance of incumbency, this model resembles a *schumpeterian competition* framework in which the incumbent innovator can get involved in anti-competitive practices. If innovators are assumed to be long-lived agents that do not leave the market after losing their dominant position, this paper's main insight is transferable to the industrial organization literature.

1.3 The model

Consider the following game, denoted by Γ. There are two political parties, l and r, which interact in discrete time over infinitely many periods, and discount their payoffs by the common discount factor β. Let $\mathcal{K}_t \in \{l, r\}$ denote the incumbent in period t.

Every period t, the incumbent implements a policy, which is denoted by $\mathcal{Q}_t \in \{A, C\}$, where A refers to an accommodative policy and C to a competitive policy. The opposition is inactive. At the end of period t, a political contest takes place; the winner holds office in period $t+1$.

If the party in power in period t is k and its policy decision is q, party l's probability of winning office for period $t+1$ is denoted by $p(k, q)$. Party r's probability is then given by $1 - p(k, q)$. I assume the following functional form for $p(k, q)$:

$$p(l, q) = \nu + a_l + m_l \mathbb{1}_{\{q=C\}}$$
$$p(r, q) = \nu - a_r - m_r \mathbb{1}_{\{q=C\}}.$$

This specification includes three elements: (i) *Valence*, $\nu \in (0, 1)$, which captures l's relative popularity among the electorate, regardless of its actual hold on power. (ii) *Incumbency advantage*, $a_l, a_r \geq 0$, which makes reelection easier for the incumbent. (iii) *Competitive policy*, which further increases the reelection probability of the incumbent. I refer to $m_l > 0$ ($m_r > 0$) as the electoral advantage provided by the competitive policy to party l (r).[8] An *electoral environment* is a pair of advantage parameters (m_l, m_r).

For any party k and policy q, let $y_k(k', q)$ denote the party k's payoff derived from policy q implemented by incumbent k'. Without lost of generality, $y(k, A) = 0$ for any $k \in \{l, r\}$.[9] The incumbent's cost from competitiveness is captured by parameter $y \geq 0$, so $y_l(l, C) = y_r(r, C) = -y$. Lastly, $y_l(r, C) = y_r(l, C) = \chi$. Parameter $\chi \in \mathbb{R}$ measures the degree to which the opposition party benefits ($\chi > 0$) or suffers ($\chi < 0$) from the competitive policy. The party l's stage payoff in a period in which k holds power and its policy choice is q is,

$$v_l(k, q) = b_l \mathbb{1}_{\{k=l\}} + y_l(k, q)$$

where $b_l > 0$ is l's office rents, and I allow for $b_l \neq b_r$. The following assumption implies that, in the case of virtuous accountability, parties must get a sufficiently greater payoff from holding power than from being in opposition irrespective of the policy they implement.

Assumption 1. $\chi < \frac{\beta \min\{m_r b_l, m_l b_r\}}{1-\beta(a_l+a_r)}$.

In what follows, the term symmetric setting refers to Γ with $m_l = m_r$, $a_l = a_r$, $b_l = b_r$, and $\nu = \frac{1}{2}$.

As mentioned before, this model applies, under concrete parameter assumptions, to the settings of different literatures. First, if $\chi \geq 0$, this model can be interpreted as a virtuous accountability model of pure moral hazard—where y captures the incumbent's cost of effort. If $\chi = 0$, parties are only office motivated; if $\chi > 0$, parties are both office and policy motivated and hence, benefit from competitive policies. Second, if $\chi < 0$, this model applies to environments of perverse accountability, where the competitive policy harms the constituency of the opposition party, for example through pervasive patronage or violence. Lastly, for the case of oligarchic politics, to assume $\chi = -y$ captures the notion that both parties belong to the elite and are equally damaged by the median voter's preferred policies.

1.4 Two finite horizon examples

To build intuition for the main results, let me first analyze Γ truncated to two periods and three periods, assuming a symmetric, perverse accountability setting with $\chi = -y$ for simplicity.[10]

[8] For the probabilities to be well defined, parameters are bounded, $m_l \in [0, 1-\nu-a_l]$ and $m_r \in [0, \nu - a_r]$.

[9] One can always set $y_k(k', A) = 0$ for some party k. Besides, the office rent parameter allows me to set $y_{k''}(k', A) = 0$ for the other party as well.

[10] The details of the operations are available in the online Appendix.

Example 1. *Consider Γ truncated to two periods. In the last period, T, there are no future elections and an accommodative policy is implemented. Straightforward algebra shows that the expected payoff gain for $T-1$'s incumbent from implementing C instead of A is $-y+\beta mb$. This formula captures the primary trade-off between the policy cost and persistence in power. If $\beta mb - y < 0$ the incumbent party strictly prefers $\mathcal{Q}_{T-1} = A$; otherwise it strictly prefers $\mathcal{Q}_{T-1} = C$.*

Example 2. *Consider Γ truncated to three periods. Periods T and $T-1$ are analyzed in Example 1, hence we study now the initial period, $T-2$. Assume first $\beta mb - y < 0$. Then, $\mathcal{Q}_{T-1} = A$. The expected payoff gain for $T-2$'s incumbent from implementing C instead of A is*

$$-y + \beta m(1 + \beta 2a)b.$$

The term $\beta 2ab$ above can be viewed as a compounding effect that captures the part of the benefit of implementing C in $T-2$ that accrues to the incumbent in periods $T-1$ and T. Intuitively, the competitive policy makes the incumbent more likely to be reelected, which increases its chances of being the incumbent in two periods from this one, due to incumbency advantage.

Consider now the case $\beta mb - y > 0$, so $\mathcal{Q}_{T-1} = C$. The decision in the initial period is determined by

$$-y + \beta m(1 + \beta(2m + 2a))b.$$

The above expression captures the key idea that the gains from the competitive policy are greater when the competitive policy is expected to be implemented by the next incumbent. The electoral gain for $T-2$'s incumbent is now $2m+2a$, instead of $2a$. The compounding effect is capturing the raised-stakes effect*.*

1.5 The infinite horizon model

At the beginning of any period t the public history is $h^t = (k_0, q_0, \ldots, k_{t-1}, q_{t-1}, k_t)$. Let $\mathcal{H}^t$ denote the set of all possible histories at time t. A (pure) strategy for player k at time t is a mapping from the current history to the action $\mathcal{Q}_t$ it chooses if elected. Notice that at the beginning of period t, the only payoff relevant variable is the identity of the incumbent party $\mathcal{K}_t$. Hence, a pure *Markov strategy* is simply an element of $\{A, C\}$. I refer to the strategy $\sigma_k = A$ as the *accommodative strategy*, and $\sigma_k = C$ as the *competitive strategy*. A *pure-strategy Markov perfect equilibrium* (henceforth PMPE or equilibrium) is a subgame perfect Nash equilibrium in which players use pure Markov strategies. In this paper, I restrict attention to PMPE.

The incumbent k's expected gain from implementing the competitive instead of the accommodative policy given continuation play $\sigma \equiv (\sigma_l, \sigma_r)$ is denoted by Δ_k^σ and has the following form:

$$\Delta_k^\sigma = -y + m_k \beta D_k^\sigma, \tag{1.5.1}$$

where D_k^σ denotes k's expected payoff of being the incumbent in period $t+1$ in equilibrium σ. In a nutshell, D_k^σ is k's expected value of reelection. It is the compounding effect of Example 2, now compounded over an infinite horizon because the probability of being the incumbent in any future period is affected by today's policy choice.

The following two formulas (derived for l) pin down the infinite-horizon equilibria.[11] When both parties are expected to implement accommodative policies in the future, the expected payoff gain of implementing the competitive policy is

$$\Delta_l^{A,A} = -y + m_l \beta D_l^{A,A}, \tag{1.5.2}$$

where

$$D_l^{A,A} = \left(1 + \beta \frac{a_l + a_r}{1 - \beta(a_l + a_r)}\right) b_l.$$

Similarly, when both parties are expected to implement competitive policies in the future,

$$\Delta_l^{C,C} = -y + m_l \beta D_l^{C,C}, \tag{1.5.3}$$

where

$$D_l^{C,C} = \left(1 + +\beta \frac{a_l + a_r + m_l + m_r}{1 - \beta(a_l + a_r + m_l + m_r)}\right)(b_l - y - \chi).$$

Proposition 1. *The expectation of future competitive behavior increases the incentives to behave competitively today. Formally, a party's Markov best response correspondence is monotonically increasing in its rival competitiveness, that is, for all $k \in \{l, r\}$, $\Delta_k^{A,A} \geq 0 \Rightarrow \Delta_k^{C,C} > 0$.*

Proof: All proofs in the Appendix.

Proposition 1 presents the *raised-stakes effect*. When the rival party is expected to behave competitively in the future, the incumbent has a greater incentive to keep its hold on power; competitive policies are the means to do so. Therefore, the rival party's future competitiveness begets the incumbent's present competitiveness. The *raised-stakes effect* is a dynamic strategic complementarity between the strategies of the parties (i.e., the game is quasi-supermodular). For the *raised-stakes effect* to exist in the virtuous accountability setting, competitive policies cannot be too beneficial for the opposition party—this is the condition that Assumption 3 imposes on our parameters. Under perverse accountability and also for a sufficiently low χ under the virtuous one, a stronger formulation of the *raised-stakes effect* is also valid. In that case, for any incumbent's strategy, the incumbent's value of reelection is higher if it expects its rival to be competitive, i.e., for any $\sigma_l \in \{A, C\}$, $D_l^{\sigma_l, C} > D_l^{\sigma_l, A}$.[12]

[11] To relate this result with the previous examples, if $\chi = -y$, and the setting is symmetric, $D_k^{A,A} = b + \beta \frac{2a}{1-\beta(2a)} b$ and $D_k^{C,C} = b + \beta \frac{2a+2m}{1-\beta(2a+2m)} b$.

[12] The condition for this stronger formulation of the *raised stakes effect* is that $\chi < \hat{\chi}_l$, where $\hat{\chi}_l \equiv \beta m_r \min\{\frac{b_l}{1-\beta(a_l+a_r)}, \frac{b_l - y}{1-\beta(a_l+a_r+m_l)}\}$, and the analogous for party r.

The set of equilibria as a function of (m_l, m_r) is described in Figure 1.1. The following proposition characterizes the equilibrium and shows that there exists a region with equilibria multiplicity, which is a result of the *raised-stakes effect*.

Proposition 2. *There always exists an equilibrium. Formally, if for any strategy profile σ, $\mathcal{M}^\sigma$ denotes the set of electoral environments for which σ is an equilibrium,*

(i) Region $\mathcal{M}^{A,A}$ is characterized by $\Delta_l^{A,A} \leq 0$ and $\Delta_r^{A,A} \leq 0$.

(ii) Region $\mathcal{M}^{C,C}$ is characterized by $\Delta_l^{C,C} \geq 0$ and $\Delta_r^{C,C} \geq 0$.

(iii) Region $\mathcal{M}^{C,A}$ ($\mathcal{M}^{A,C}$) is characterized by $\Delta_l^{A,A} \geq 0, \Delta_r^{C,C} \leq 0$ ($\Delta_l^{C,C} \leq 0, \Delta_r^{A,A} \geq 0$).

(iv) Region $\mathcal{M}^{A,A} \cap \mathcal{M}^{C,C}$ is a non-negligible parameter region. That is, there exists a set of electoral environments for which the two symmetric equilibria coexist.

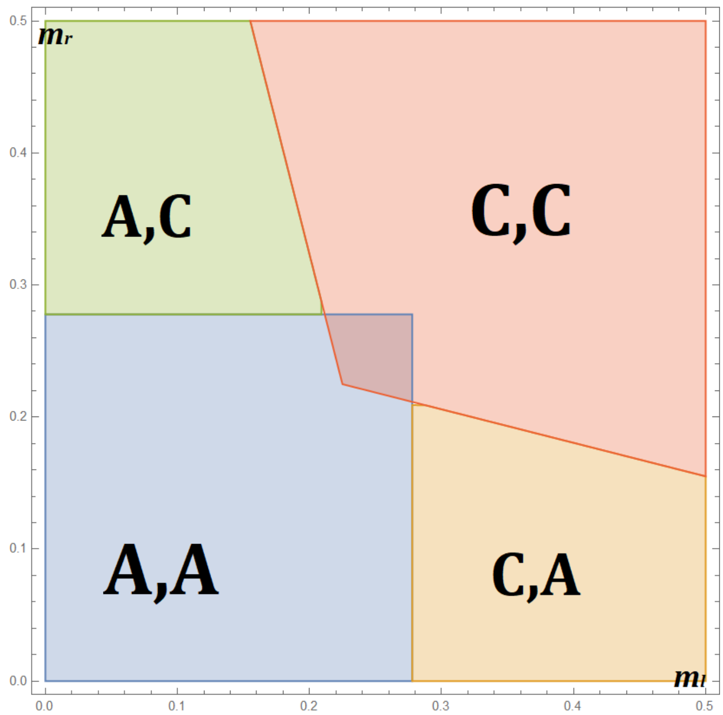


FIGURE 1.1 Equilibria regions in the space of electoral environments with $\beta = 0.9$, $y = 20$, $b_l = b_r = 5$, $a_l = a_r = 0$, and $\chi = -y$.

1.5.1 Comparative statics

The next proposition considers the impact of an increase in m_k.

Proposition 3. *For any m_l, m_r, m_l', m_r', such that $m_l' \geq m_l$, $m_r' \geq m_r$, and for all $k \in \{l, r\}$, if there exists an equilibrium of $\Gamma(m_l, m_r)$ such that $\sigma_k = C$ for some (both) player k, then there exists an equilibrium of $\Gamma(m_l', m_r')$ such that $\sigma_k = C$ for the same (both) player k.*

As m_k increases, not surprisingly, party k is more likely to use the competitive policy in equilibrium. The proposition further shows that the other party k' also becomes more likely to use the competitive policy. The intuition for that result relies on the *raised-stakes effect*: as party k becomes more likely to act competitively, not losing the next election becomes more important for k'.

Proposition 4. *(i) Region $\mathcal{M}^{A,A}$ increases (and $\mathcal{M}^{C,C}$ decreases) in the inclusion sense as y increases, and as β, a_l and/or a_r decrease.*

(ii) The regions are unaffected by ν.

The comparative static with respect to the cost parameter y is intuitive and does not require much elaboration. The negative effect of impatience is less straightforward than it seems. This result comes not only from the fact that the cost of competitiveness is borne today, whereas its benefits materialize in the next election; but also from the fact that the *raised-stakes effect* is compounded over all future elections, as explained in Example 2.

The most interesting comparative static result concerns the effect of incumbency advantage. Since both incumbency advantage and the competitive policy contribute to incumbents' persistence in power, and the latter is costly, one might expect some degree of substitutability between them. On the contrary, if being elected implies great persistence in power for the following periods, parties give greater value to office. Thus, the marginal incentives for competitiveness increase.

Proposition 5. *Regions $\mathcal{M}^{C,C}$ and $\mathcal{M}^{A,A} \cap \mathcal{M}^{C,C}$ increase in the inclusion sense as χ decreases.*

Proposition 5 is a product of the *raised-stakes effect.* First, if the opposition is expected to behave competitively once in power, the incumbent's value of reelection increases more under perverse than under virtuous accountability. The rival's competitiveness is worse under perverse accountability, which rises the incumbent's incentives for competitiveness. Second, expectations about future behavior become more relevant under perverse accountability, enlarging (in the inclusion sense) the region where the accommodative and the competitive equilibria coexist.

Proposition 6. *The set of electoral environments in which party k plays C (i.e., $\mathcal{M}^{C,C} \cup \mathcal{M}^{C,A}$ for party l and $\mathcal{M}^{C,C} \cup \mathcal{M}^{A,C}$ for party r) increases in the inclusion sense as b_l and/or b_r increase.*

As party r becomes more office motivated, it is more likely to use competitive policies and hence, party l also becomes more likely to resort to competitive policies.

1.5.2 Discussion

The previous results can shed some light on governing parties' behavior in various settings. First, the *raised-stakes effect* produces equilibrium multiplicity, which highlights the role of belief coordination. Two countries identical in regards to their fundamentals (e.g., institutions, political polarization) may find themselves in observationally very different equilibria. For example, in the case of perverse accountability, either with general interest policies and a high political turnover or with pervasive clientelism and a low political turnover.

Second, accommodative policies are more likely to be implemented as incumbency advantage decreases. The literature on the *strategic use of fiscal policy* has indirectly explored the link between political turnover and efficiency (see, e.g., Persson and Svensson (1989); Alesina and Tabellini (1990); Azzimonti (2011)). In these papers, the expectation of political turnover generates incentives for the incumbent to inefficiently issue debt so as to constrain the next incumbent. In contrast, this model offers a nuanced insight: the expectation of political turnover fosters efficiency under perverse accountability but depletes it under virtuous accountability. Also, this mechanism provides a rationale for why oligarchic regimes often try to reduce intra-elite conflict through (often informal) rules favoring political turnover. For instance, in PRI Mexico, presidents stayed only six years in office; similarly, in the Roman Republic, politicians were not supposed to seek immediate reelection to a magistracy that held *imperium.* A related insight is posed by North et al. (2009): in oligarchic regimes, an intensification of intra-elite competition can lead to policies catering to the interests of poorer sections of society.

Third, Proposition 5 shows that coordination of expectations is more relevant in perverse than in virtuous accountability. This second insight complements Padró i Miquel (2007) emphasis on the importance of expectations—in his case, from voters, in my case, from parties—for malfunctioning accountability to exist. Note that this result—a byproduct of the *raised-stakes effect*—appears only if we consider a setting with at least three periods.

In light of the idea of democratic backsliding, perverse accountability competitiveness may well be a first step in institutional decay. If we were to interpret competitive policies as the capture of institutions by the incumbent, the assumption that policies decay after one period must change to allow for the stickiness that characterizes institutions. However, the basic forces at play do not change; thus, this result points towards the importance of expectations in sustaining a well-functioning democracy. This insight is absent from the existing literature on backsliding. Most dynamic models, e.g., Luo and Przeworski (2023), feature politicians that, once defeated, cannot return to power, an assumption under which—as I show in Section 1.7—the *raised-stakes effect* does not exist. Fearon (2011) discusses the role of long-lived parties in the sustainability of democracy. In Fearon's framework, long-lived parties—because they can return to power—make it more likely that the incumbent respects an electoral defeat. However, Fearon (2011) does not discuss the role of equilibrium multiplicity and belief coordination of expectations in the presence of long-lived parties.

1.6 Checks and balances system

In the classical argument formulated by James Madison, checks and balances are devised as a second safeguard against government abuses, the first being electoral accountability. Quoting Madison ['Federalist Papers' No. 51], a dependence on the people is, no doubt, the primary control on the government; but experience has taught mankind the necessity of auxiliary precautions. Following this argument, in the first part of this section, I explore the effects of checks and balances over political parties' competitiveness under the perverse accountability interpretation of the model.

Consider a game that differs from the baseline game Γ only in that at any period, with some probability $\xi \in [0, 1)$, the government is divided, and with the remaining probability $1 - \xi$ the government is unified. At any period in which the government is unified, the incumbent chooses the policy unilaterally, as in the baseline model. Let Q_u^k denote incumbent k's policy choice when the government is unified. At any period in which the government is divided, the incumbent makes a policy proposal to the opposition party, which the opposition party can accept or reject. Party k's proposal is denoted by $Q_d^k \in \{A, C\}$. Party k's acceptance decision is denoted by $N_{Q_d}^k \in \{0, 1\}$, where Q_d is the incumbent's proposal. An accepted proposal is implemented. Otherwise, in case of rejection, there is government inaction, which implies an accommodative policy and no electoral advantage for the incumbent. For simplicity, I assume a symmetric setting.

A pure Markov strategy is a tuple $(Q_u^k, Q_d^k, N_A^k, N_C^k)$. It is immediate to see that in equilibrium the competitive policy is always vetoed by the opposition party. Therefore, the accommodative policy is proposed and implemented in every divided government.[13] I refer to strategy $\sigma = (Q_u^k, Q_d^k, N_A^k, N_C^k)$ as Q_u^k, given that Q_d^k and $N_{Q_d}^k$ are the same in any equilibria with $\chi \leq 0$, and $\mathcal{M}_{CB}^{\sigma}$ denotes the set of electoral environments for which equilibrium σ exits.

Proposition 7. *Suppose a symmetric setting and $\chi \leq 0$.*

(i) An equilibrium exists, and all equilibria are outcome equivalent to a competitive equilibrium in which both parties play $(C, A, 1, 0)$, or an accommodative

[13]One might think that the electoral benefit of the competitive policy may also accrue to the opposition party. Hence, during the divided government periods, the m parameter of the incumbent may be smaller. However, as long as $\chi \leq 0$ and $m > 0$, the competitive policy is never implemented in the equilibrium path.

equilibrium in which both parties play $(A, A, 1, 0)$.

(ii) The parameter region $\mathcal{M}^{A,A}_{CB} \cap \mathcal{M}^{C,C}_{CB}$ *is non-negligible.*

(iii) Region $\mathcal{M}^{C,C}_{CB}$ *and* $\mathcal{M}^{A,A}_{CB} \cap \mathcal{M}^{C,C}_{CB}$ *decrease in the inclusion sense in the probability* ξ *that the government is divided. Region* $\mathcal{M}^{A,A}_{CB}$ *is unaffected by* ξ.

To interpret the last statement of Proposition 7 it is helpful to distinguish the direct effect and the *raised-stakes effect* of an increase in ξ. The direct effect is that fixing parties' behavior in a unified and divided government, ξ increases the probability that government is divided, and thus, increases the likelihood of accommodative policies (strictly so in the competitive equilibrium). Besides, the *raised-stakes effect* captures that ξ also affects how parties behave when the government is unified. The possibility of a divided government following in the future lowers the value of reelection. Thereby, unified governments are also less likely to implement competitive policies under a checks and balances system.

It is interesting to connect Proposition 7 to Persson et al. (1997). In their model, checks and balances reduce the ability of officeholders to divert rents for private uses. Divided governments imply a separation of powers which has a contemporaneous disciplining effect. In contrast, in this paper, checks and balances affect the incumbent's discretion to use office for building an electoral advantage. As a result, checks and balances affect policymaking not only when the government is divided—via the direct effect—but also when it is unified—via the *raised-stakes effect*.

As Madison argued, we can conclude that checks and balances counteract the effect of malfunctioning accountability. An alternative interpretation of this result, not completely detached from the Founding Father's intentions, is that checks and balances facilitate accommodation between competing elite factions.[14] However, my model points also, for the same reasons, that checks and balances reduce the incentives for competitiveness under virtuous accountability. If competitive policies benefit opposition through moderation, i.e., $\chi > 0$, vetoing a competitive policy implies renouncing a beneficial policy, absent electoral effects. The following proposition characterizes the region where this occurs.

Proposition 8. *Let* $\bar{\chi} = \frac{\beta m(b-(1-\xi)y)}{1-\beta(2a+m(1-\xi))}$. *Suppose a symmetric setting and* $\chi \in [0, \bar{\chi})$. *A competitive policy is not enacted under a divided government in equilibrium.*

Proposition 8 presents a novel channel in which checks and balances can have a polarizing effect on policymaking. It is well known that supermajority requirements

[14]For Alexander Hamilton, history taught that of those men who have overturned the liberties of republics the greatest number have begun their career by paying an obsequious court to the people, commencing Demagogues, and ending Tyrants. By contrast, the constitution's chief opponents saw the federal republic as an aristocratic construction that [...] could lead only to the rule of the rich. (Thompson (2022))

can block good policies (Tsebelis (2002); Compte and Jehiel (2010)). Dynamic models like Acemoglu et al. (2015) and Dziuda and Loeper (2018) have shown that static models underestimate the severity of this effect, a feature also present in this paper, in which parties' patience increases the set of blocked competitive policies. Further, in accordance with previous results, the set of blocked competitive policies increases with incumbency advantage, and the policy choices under unified governments are affected by the coordination of expectations.

1.7 A model with party leaders

The model analyzed so far shows that ongoing political rivalry between long-lived parties induces them to resort to competitive policies, more so the more patient they are. However, often policy decisions are not taken by long-lived parties but by party leaders who are typically replaced after losing an election and, thus, have a shorter time horizon. Hence, one might conjecture that competitive policies are less likely to be implemented when decisions are taken by replaceable party leaders.

In this section, I show that the above intuition is misleading. The reason is that, whereas parties can return to power after losing an election, leaders cannot, so they have stronger incentives to win reelection and stronger incentives for electoral competitiveness. Thus, the model suggests that a strong party system limits the incumbent's incentive to use the office to build an electoral advantage. Ferejohn (1986), in his Proposition 4, pointed to this effect of long-lived parties for virtuous accountability with office-motivated parties, i.e., $\chi = 0$; this section generalizes this result for parties both office and policy motivated and under both virtuous and perverse accountability.

Consider the following game, denoted by Γ^L. Suppose each party chooses a leader for the election. Each party k is endowed with an infinite pool of identical leaders, denoted J^k. After an electoral victory, the leader chooses the policy and keeps her position until the next electoral defeat. Then she leaves the political arena and becomes a citizen. The new leader is drawn randomly from the pool of candidates. For each party k, an additional state $\mathcal{S}^k(t) \in J^k$ captures the identity of the leader of party k in period t.

A parameter $\mu \in [0, 1]$ captures the degree to which the leader internalizes her party's interests. As long as leader j keeps her leadership position, she has the same payoff as her political party; but once she becomes a mere citizen, she weights by μ her party's payoff.[15] Hence, μ captures the ability of the party to align its candidate's

[15] The results extend to the case in which, once leader j becomes a citizen, she weights by $1 - \mu$ a citizen's payoff that consists in $y_j(j', A) = 0$ and $y_j(j', C) = \chi$ for $j' \neq j$. This parametrization can be convenient for perverse accountability, as the citizen may internalize the inefficiencies of competitive policies.

incentives with its incentives as a long-lived organization. In what follows, I refer to μ as the degree of *party discipline*.[16] The baseline model corresponds to the case of perfect party discipline, i.e., $\mu = 1$. The stage payoff of leader j of party l is

$$v_{l,j}(k, s^l, q) = \begin{cases} b_l \mathbb{1}_{\{k=l\}} + y(k,q) \text{ if } s^l = j \\ \mu\big(b_l \mathbb{1}_{\{k=l\}} + y_l(k,q)\big) \text{ if } s^l \neq j. \end{cases}$$

Under imperfect party discipline, leaders incorporate both the party's loss of incumbency and their own loss of leadership (*leadership effect*). The expected gain from being competitive for incumbent j of party k in an equilibrium $\sigma \in \{(A,A),(C,C)\}$, is

$$\Delta^\sigma_{l,j} = -y + m_l\beta\big((1-\mu)H^\sigma_{l,j} + \mu D^\sigma_l\big), \tag{1.7.1}$$

where

$$H^\sigma_{l,j} \equiv b_l + y_l(l,\sigma_l) + \beta\frac{1}{1-\beta p(l,\sigma_l)}p(l,\sigma_l)\big(b_l + y_l(l,\sigma_l)\big),$$

captures the *leadership effect*, and where D^σ_l is unchanged from the baseline model. Equation (1.7.1) shows that party discipline, as captured by μ, determines the relative weight of the *raised-stakes* and the *leadership* effects. Let $\mathcal{M}^\sigma_\mu$ denote the set of electoral environments for which equilibrium σ exists in Γ^C with party discipline μ.

Proposition 9. *For any μ_1, μ_2, such that $\mu_1 < \mu_2$, $\mathcal{M}^{A,A}_{\mu_1} \subset \mathcal{M}^{A,A}_{\mu_2}$ and $\mathcal{M}^{C,C}_{\mu_2} \subset \mathcal{M}^{C,C}_{\mu_1}$.*

In words, Proposition 9 means that the *leadership-effect* is greater than the *raised-stakes effect*, i.e., $H^\sigma_{k,j} > D^\sigma_k$ for any $k \in \{l, r\}$. Thus, a strong party system lowers the stakes of each election.

Proposition 9 has interesting implications for the selection of leaders. Reflecting on political representation, David Runciman pointed out that representative democracy was designed to exclude three categories of people from actually winning power: the young, the less educated, and the poor.[17] In this paper, all politicians in the pool of candidates of each party are identical. However, suppose that political candidates differ in their characteristics. In that case, a party prefers to select leaders whose characteristics are such that—even if they do not survive electoral defeat—their incentives are more aligned to that of their long-lived party. Since parties are more inclined towards accommodative policies than candidates, it is in their interest to select less office-motivated agents—e.g., wealthy or educated agents with good options outside of politics—and agents with a lower discount factor—like older candidates with a shorter time horizon. The incentive for selection is greater the lower party discipline is. Notably, the effect of these characteristics is reinforced

[16]Following Klašnja and Titiunik (2017), I understand a strong party organization as one with the ability to constrain its members' actions.

[17]Quote from 'The Philosopher and The News', episode 'David Runciman and Political Representation' (2021), web link: https://newsphilosopher.buzzsprout.com/1577503/7340365-david-runciman-political-representation.

through the *raised-stakes effect*. If one party selects candidates with the aforementioned characteristics, accommodative policies are more likely to be enacted by both parties.

This logic offers a rationale for the well-documented over-representation of the old, educated, and wealthy in politics. Regarding the wealth bias in politics, this mechanism complements explanations that focus on differences in campaign resources (Campante (2011)), the sensitivity of poor voters to wealthier voters' outcomes (Bartels (2008)), and correlations between private sector skills and political negotiating ability (Mattozzi and Snowberg (2018)).

1.8 Term limits

This section introduces a two-period term limit in the baseline model and focuses on how the interaction of term limits with party discipline affects policy dynamics. To that end, I compare the effect of term limits on long-lived parties and on (undisciplined) political leaders.[18] For simplicity, I study the cases of perfect party discipline, i.e., $\mu = 1$ (as in the baseline model), and no party discipline, i.e., $\mu = 0$. Further, I assume a symmetric setting.

Let Γ^T be the game that differs from Γ^L only in that after two successive electoral victories, a political party substitutes its leader with a new one. Incumbency advantage is treated as candidate-specific: when a leader runs for a second time, she has a positive incumbency advantage $a > 0$, which she has not when she runs for the first time.[19] Formally, I introduce in Γ^C the incumbent leader's experience as an additional state; that is, $\mathcal{E}^k \in \{0, 1\}$ captures whether the incumbent party k's current leader has incumbency advantage ($\mathcal{E}^k = 1$) or not ($\mathcal{E}^k = 0$). If party k holds power in period t, its leader running for office has experience e^k and its policy choice is q, party l's probability of winning office for period $t + 1$ is denoted by $p(k, q, e^k)$:

$$p(l, q, e^l) = \frac{1}{2} + a\mathbb{1}_{\{e^l=1\}} + m\mathbb{1}_{\{q=C\}}$$
$$p(r, q, e^r) = \frac{1}{2} - a\mathbb{1}_{\{e^r=1\}} - m\mathbb{1}_{\{q=C\}}.$$

Term limits enrich the strategy space: a political leader may now choose different policies during her first and second mandates. A pure *Markov strategy* is a pair (Q_1, Q_2) such that $Q_1, Q_2 \in \{A, C\}$, where Q_1 is the policy choice of the first mandate, and Q_2 is the policy choice of the second mandate. I refer to strategy (Q_1, Q_2) as Q_1Q_2.

[18]Smart and Sturm (2013) study the effect of term limits in an accountability model but do not consider long-lived parties.

[19]Glaeser (1997) assumes similarly that term limits reduce incumbency advantage by forcing the turnover of competitive leaders. Chatterjee and Eyigungor (2020) show that a party's reelection probability depends on whether its leader can run again for office.

An undisciplined political leader would always choose the accommodative policy in her second mandate, though not necessarily during her first. However, perhaps surprisingly, a perfectly disciplined leader may choose the accommodative policy in her first mandate and not in her second. A new leader's electoral success is more likely to guarantee her party a future reelection than an electoral success by an experienced leader, who would be replaced in the next election. Let $\Delta_k^\sigma(e^k)$ denote the expected gain from being competitive in equilibrium σ for the current leader of the incumbent party k with experience e^k. The following proposition formalizes this intuition:

Proposition 10. *Suppose a symmetric setting. For undisciplined party leaders, the incentives to behave competitively during the first mandate are higher than during the second mandate. For perfectly disciplined party leaders, the incentives to behave competitively during the second mandate are higher than during the first mandate. Formally, if $\mu = 0$, then $\Delta_k^\sigma(0) > \Delta_{k,j}^\sigma(1)$, but if $\mu = 1$, then $\Delta_k^\sigma(1) > \Delta_{k,j}^\sigma(0)$ for any $k \in \{l, r\}$.*

Thus, interestingly, the effect of term limits depends on party discipline. Proposition 10 is consistent with the evidence of Charnock et al. (2012) on the U.S.—a weak party system. Whereas first-term presidents engage in strategic travel based on Electoral College considerations, second-term presidents abandon this permanent campaign mentality and prefer to travel abroad. Because term limits are uncommon in parliamentary democracies—which often have strong parties, there is no systematic evidence of the relation between term limits, strong party systems, and electoral competitiveness.

Let $\mathcal{M}_{T,\mu}^\sigma$ and $\mathcal{M}_\mu^\sigma$ denote the set of electoral environments for which equilibrium σ exists in Γ^T and Γ^L, respectively, with party discipline μ.

Proposition 11. *Suppose a symmetric setting, then $\mathcal{M}_{\mu=0}^{A,A} \subset \mathcal{M}_{\mu=1}^{A,A} \subset \mathcal{M}_{T,\mu=1}^{AA,AA} \subset \mathcal{M}_{T,\mu=0}^{AA,AA}$.*

The two outer inclusions of Proposition 11 show that term limits foster accommodative policies for both levels of party discipline.[20] Party discipline, however, has an opposite effect when term limits are in place than when they are absent. Whereas party discipline reduces electoral competitiveness when there are no term limits, i.e., $\mathcal{M}_{\mu=0}^{A,A} \subset \mathcal{M}_{\mu=1}^{A,A}$, it increases electoral competitiveness when term limits are in place, i.e., $\mathcal{M}_{T,\mu=1}^{AA,AA} \subset \mathcal{M}_{T,\mu=0}^{AA,AA}$.

Under perverse accountability, term limits improve policymaking. Nonetheless, if there exist unmodelled costs of government turnover, like setup costs, there may still be a trade-off regarding term limits. Interestingly, Proposition 11 suggests this

[20]This result extends to soft-term limits like the ones considered by Acemoglu et al. (2013a). Soft limits are a better approximation to the term limits relevant in many developing countries.

trade-off is more likely to go in favor of term limits in a weak party system. This result can provide a welfare rationale about why it is common to find term limits in presidential democracies—which often give more centrality to the candidate than to the political party—and not so in parliamentary democracies with relatively stronger parties.

1.9 Conclusion

This paper develops a tractable dynamic model of party competition where parties are long-lived agents, and the incumbent party has the discretion to enact an accommodative or competitive policy—which helps it endure in power. The analysis reveals that parties' incentives to win reelection feed on themselves via the *raised-stakes effect*, which emphasizes the importance of parties' expectations of each other.

This work points towards different lines of future research. A key assumption of this model is the incumbent's discretion to enact competitive policies. To be exercised, the institutional environment must allow such discretion. For example, in 1985, the Spanish Socialist Party (PSOE) transferred the control of the semi-public banking sector—the *cajas*—to the regional governments, increasing local politicians' discretion. Many *cajas* were overexposed to risky loans, creating an important burden for the public coffers during the 2008 financial crisis, and followed political lending cycles that favored the regional incumbent (see Fernández-Villaverde et al. (2013); and Lavezzolo and Illueca (2023)). PSOE did not control all regional governments, so the party often suffered the consequences of the same discretion it had created. It would be interesting to explore why a party increases governments' discretion knowing it can turn against itself. For instance, one might conjecture that a more impatient party would allow for that discretion. However, we know that impatience makes competitive policies less likely to be enacted. Thus, a longer time horizon may have an ambiguous impact on the choice of the rules that limit governments' discretion.

Finally, in a multiparty environment where coalition governments are formed, the incentives for competitive policies can significantly differ from those in a two-party system. Consider a competitive policy that increases the expected vote share in the next election of all coalition members. Although in principle, such a policy is electorally beneficial for any party in the coalition, some members may prefer to veto it. A competitive policy's change in expected vote shares can make some party no longer indispensable in the next coalition. Thus, coalitions, as opposed to one-party governments, may promote accommodative policies.

Appendix 1.A Proofs

Proof of Propositions 1 and 2

I denote by $CV_k^{\sigma}(k', q)$ party k's expected continuation payoff from period $t+1$ onwards when k' is period t incumbent, its policy choice is q, and the continuation play is σ. Using the notations introduced at the beginning of Section 1.5, $\Delta_k^{\sigma} = -y + \beta(CV_k^{\sigma}(k, C) - CV_k^{\sigma}(k, A))$, so checking that a one-shot profitable deviation does not exist is equivalent to showing that $\Delta_k^{\sigma} \leq 0$ (≥ 0) when $\sigma_k = A$ ($\sigma_k = C$). To compute $\Delta_l^{A,A}$, I solve the following system of equations for all $k \in \{l, r\}$:

$$CV_l^{A,A}(k, A) = p(k, A)(b_l + \beta CV_l^{A,A}(l, A)) + (1 - p(k, A))\beta CV_l^{A,A}(r, A),$$
$$CV_l^{A,A}(k, C) = p(k, C)(b_l + \beta CV_l^{A,A}(l, A)) + (1 - p(k, C))\beta CV_l^{A,A}(r, A).$$

The solution to the above system of equations together with $\Delta_k^{A,A} = -y + \beta(CV_k^{A,A}(k, C) - CV_k^{A,A}(k, A))$ yields (1.5.2). Using analogous steps, I obtain (1.5.3), which proves Proposition 2 parts (i) and (ii). Similarly,

$$\Delta_l^{A,C} = \frac{\beta m_l(b_l - \chi)}{1 - \beta(a_l + a_r + m_r)} - y$$
$$\Delta_l^{C,A} = \frac{\beta m_l b - (1 - \beta(a_l + a_r))y}{1 - \beta(a_l + a_r + m_l)}.$$

One can see that $\Delta_l^{A,C} \leq 0$ if and only if $\Delta_l^{C,C} \leq 0$, and $\Delta_l^{C,A} \geq 0$ if and only if $\Delta_l^{A,A} \geq 0$. This proves Proposition 2 part (iii).

To prove Proposition 1, note that $\Delta_l^{A,A} \geq 0$ if and only if $y \leq \frac{\beta m_l b_l}{1-\beta(a_l+a_r)}$ and $\Delta_l^{C,C} \geq 0$ if and only if $y \leq \frac{\beta m_l(b_l-\chi)}{1-\beta(a_l+a_r+m_r)}$. Then, $\Delta_k^{A,A} \geq 0 \Rightarrow \Delta_k^{C,C} \geq 0$ follows then from the fact that $\frac{\beta m_l b_l}{1-\beta(a_l+a_r)} < \frac{\beta m_l(b_l-\chi)}{1-\beta(a_l+a_r+m_r)}$ if and only if $\chi < \frac{\beta m_r b_l}{1-\beta(a_l+a_r)}$ (Assumption 3). A direct implication of this result is the existence of a set of electoral environments with positive mass for which $\Delta_l^{C,C} > 0$ and $\Delta_l^{A,A} < 0$, which proves Proposition 2 part (iv). Lastly, to show that an equilibrium always exists consider that *(a)* if $\Delta_k^{A,A} \leq 0$ for $k \in \{l, r\}$, at least equilibrium (A, A) exists. *(b)* If, w.l.o.g., party l's condition $\Delta_l^{A,A} > 0$ this implies that $\Delta_l^{C,C} > 0$. Hence, either $\Delta_r^{C,C} \leq 0$, in which case equilibrium (C, A) exists, or $\Delta_r^{C,C} \geq 0$ and equilibrium (C, C) exists. □

Proof of Proposition 3

Let there be an equilibrium of $\Gamma(m_l, m_r)$ such that, wlog., party l plays $\sigma_l = C$. From Proposition 2, to prove that there exists an equilibrium in $\Gamma(m_l', m_r')$ such that l plays $\sigma_l = C$, it suffices to show that $\Delta_l^{C,C}(m_l, m_r)$ is non-decreasing in m_l and m_r, which it is. □

Proof of Propositions 4, 5 and 6

The result regarding $\mathcal{M}^{A,A}$ follow from the fact that $\Delta_k^{A,A}$ for $k \in \{l, r\}$ decreases in y; increases in β, b_k, a_l, a_r, and χ; and it is independent of ν. The proof for $\mathcal{M}^{C,C}$ is analogous. $\square$

Proof of Proposition 7

In the model with checks and balances, $\Delta_k^{A,A}$ is (1.5.2), and $\Delta_k^{C,C} = \frac{\beta m(b-(1-\xi)(y+\chi))}{1-2\beta(a+(1-\xi)m)} - y$, $\Delta_k^{A,C} = \frac{\beta m(b-(1-\xi)\chi}{1-\beta(2a+(1-\xi)m)} - y$, and $\Delta_k^{C,A} = \frac{\beta m(b-(1-\xi)y}{1-\beta(2a+(1-\xi)m)} - y$. It follows from straightforward algebra that, for any non-positive χ, $\Delta_k^{C,A} \geq 0$ implies $\Delta_k^{A,C} > 0$; thus, no asymmetric equilibrium exists. Lastly, note that $\Delta_k^{C,C}$ decreases in ξ. $\square$

Proof of Proposition 8

Let $\Upsilon_k^\sigma \equiv \chi + \beta(CV_k^\sigma(k', C) - CV_k^\sigma(k', A))$, where $k' \neq k$, be the expected gain for opposition k from not vetoing the competitive policy given continuation play σ and let $Q_u^l Q_d^l N_A^l N_C^l$, $Q_u^r Q_d^r N_A^r N_C^r$ denote equilibrium $\sigma = (Q_u^k, Q_d^k, N_A^k, N_C^k)_{k \in \{l,r\}}$. Every equilibria where the competitive policy is not vetoed is outcome equivalent to one of the equilibria discussed hereafter. Consider first, equilibrium $(CC10, CA01)$. One can see that

$$\Upsilon_r^{CC10,CA01} = \chi - \frac{\beta m(b - \chi - (1-\xi)y}{1 - 2\beta(a+m) + \beta m l \xi}$$

is zero evaluated in $\bar{\chi}$, and thus negative for any lower χ. Secondly, consider equilibrium $(CC01, CC01)$. For $k \in \{l, r\}$, $\Upsilon_k^{CC01,CC01} = \chi - \frac{\beta m(b-\chi-y)}{1-2\beta(a+m)}$, which is increasing in χ and is negative evaluated in $\bar{\chi}$.

Lastly, consider equilibrium $(CC10, AA01)$, where $\Delta_l^{CC10,AA01} = \frac{\beta m l(b-y)}{1-\beta(2a+m)} - y$ and $\Delta_r^{CC10,AA01} = \frac{\beta m(b-\chi)}{1-\beta(2a+m)} - y$; and $\Delta_r^{CC10,AA01}$ is positive evaluated in $\bar{\chi}$ in the region where $\Delta_l^{CC10,AA01} \geq 0$. Thus, none of these equilibria exists for a $\chi < \bar{\chi}$. $\square$

Proof of Proposition 9

I denote by $CV_{k,j}^\sigma(k', j', q)$ the expected continuation payoff of leader j of party k from period $t+1$ onwards when party k' is period t incumbent, j' is the leader of party k, the policy choice is q, and the continuation play is σ. To compute $\Delta_{l,j}^{A,A} = -y + \beta(CV_{l,j}^\sigma(l, j, C) - CV_k^\sigma(l, j, A))$, I solve the following system of equations for all $k \in \{l, r\}$, $Q \in \{A, C\}$, and $j', j'' \neq j$:

$$CV_{l,j}^{A,A}(k, j, Q) = p(k, Q)(b_l + \beta CV_{l,j}^{A,A}(l, j, A)) + (1 - p(k, Q))\beta CV_{l,j}^{A,A}(r, j', A),$$
$$CV_{l,j}^{A,A}(k, j', Q) = p(k, Q)(\mu b_l + \beta CV_{l,j}^{A,A}(l, j', A)) + (1 - p(k, Q))\beta CV_{l,j}^{A,A}(r, j'', A).$$

Once we obtain from the above system equation (1.7.1), one can check that $H_{k,j}^\sigma > D_k^\sigma$ for any $k \in \{l, r\}$. For $\sigma = (A, A)$ this follows from $\nu > a_r$ and $1 - \nu > a_l$, and for $\sigma = (C, C)$ this follows from $\nu > a_r + m_r$ and $1 - \nu > a_l + m_l$ (see footnote 8). $\square$

Proof of Proposition 10

The result for $\mu = 0$ is straightforward. To obtain the result for $\mu = 1$, I denote by $CV_l^{\sigma}(k, q, e_k')$ party l's expected continuation payoff from period $t+1$ onwards when party k is period t incumbent, its policy choice is q, the experience of k's leader running in the $t+1$ election is e^k, and the continuation play is σ. To compute $\Delta_l^{A,A}(e^k) = -y + \beta(CV_l^{\sigma}(l, C, \hat{e}^k) - CV_l^{\sigma}(l, A, \hat{e}^k))$, where e^k is the period t incumbent's experience and $\hat{e}^k \neq e^k$ denotes the experience of the incumbent party leader running for the $t+1$ election, I solve the following system of equations for all $k \in \{l, r\}$, $Q \in \{A, C\}$:

$$CV_l^{A,A}(k, Q, 0) = p(k, Q, 0)(b_l + \beta CV_l^{A,A}(l, A, 1)) + (1 - p(k, Q, 0))\beta CV_l^{A,A}(r, A, 1),$$
$$CV_l^{A,A}(l, Q, 1) = p(l, Q, 1)(b_l + \beta CV_l^{A,A}(l, A, 0)) + (1 - p(l, Q, 1))\beta CV_l^{A,A}(r, A, 1),$$
$$CV_l^{A,A}(r, Q, 1) = p(r, Q, 1)(b_l + \beta CV_l^{A,A}(l, A, 1)) + (1 - p(r, Q, 1))\beta CV_l^{A,A}(r, A, 0).$$

The solution to the above system of equations yields for $e^l, e^r \in \{0, 1\}$:

$$\Delta_l^{AA,AA}(e^l) = (1 + \beta p(l, A, e^l))\frac{\beta m(1 + \beta p(l, A, 1))}{1 + \beta - \beta^2(1 - p(l, A, 0)^2)}b - y. \qquad (1.A.1)$$

Hence, one can see that $\Delta_l^{AA,AA}(1) > \Delta_l^{AA,AA}(0)$. Using analogous steps, I shows the same result for a party playing either CC or AA in equilibria (CC, CC), (AA, CC), (AA, AC), and (CC, AC)—note that the result follows directly for a party playing AC in equilibrium. For equilibrium (CC, CC):

$$\Delta_l^{CC,CC}(e^l) = (1 + \beta p(l, C, e^l))\frac{\beta m(1 + \beta p(l, C, 1))(b - \chi - y)}{1 + \beta + \beta^2(p(l, A, 0)^2 - m - (a + m)(a + 3m)) - 2\beta^3 mp(l, C, 1)^2} - y,$$

For equilibrium (AA, CC):

$$\Delta_l^{AA,CC}(e^l) = (1 + \beta p(l, A, e^l))\frac{\beta m(1 + \beta p(l, C, 1))(b - \chi)}{1 + \beta + \beta^2(p(l, A, 0)p(l, C, 0) - m - (a + m)^2) - \beta^3 mp(l, C, 1)p(l, A, 1)} - y,$$
$$\Delta_r^{AA,CC}(e^r) = (1 + \beta p(l, C, e^r))\frac{\beta m(1 + \beta p(l, A, 1))(b - y)}{1 + \beta + \beta^2(p(l, A, 0)p(r, C, 0) - (a + m)^2) - \beta^3 mp(l, A, 1)p(l, C, 1)} - y.$$

For equilibrium (AA, AC):

$$\Delta_l^{AA,AC}(e^l) = \frac{(1 + \beta p(l, A, e^l))\beta m(b + \beta p(l, A, 1)(b - \chi))}{1 + \beta + \beta^2(p(l, A, 0)p(r, C, 0) - a(m + a)) - \beta^3 m(p(l, A, 0)^2 - a(1 - a))} - y.$$

For equilibrium (CC, AC):

$$\Delta_l^{CC,AC}(e^l)) = \frac{(1 + \beta p(l, C, e^l))\beta m(b - y + \beta p(l, A, 1)(b - y - \chi))}{1 + \beta + \beta^2(p(l, A, 0)^2 - a(a + 3m) - m(1 + m)) - 2\beta^3 mp(l, A, 1)p(l, C, 1)} - y.$$

Hence, for $\hat{\sigma} \in \{(CC, CC), (AA, CC), (AC, AC), (AA, AC), (CC, AC)\}$ and $k \in \{l, r\}$, one can see that $\Delta_k^{\hat{\sigma}}(1) > \Delta_k^{\hat{\sigma}}(0)$.

Lastly, one needs to prove that no equilibrium in which strategy CA is played exists. I consider a party k that plays strategy CA in equilibrium σ and show first, that $\Delta_k^\sigma(0)$ and $\Delta_k^\sigma(1)$ decrease with respect to y; second, that thresholds $\bar{y}_0^\sigma$ and $\bar{y}_1^\sigma$ exist such that $\Delta_k^\sigma(0) \geq 0$ for any $y \leq \bar{y}_0^\sigma$ and $\Delta_l^\sigma(1) \leq 0$ for any $y \geq \bar{y}_1^\sigma$. To prove that σ is not an equilibrium, it suffices to show that $\bar{y}_1^\sigma - \bar{y}_0^\sigma > 0$.

To show that (CA, CC) is not an equilibrium, note that

$$\Delta_l^{CA,CA}(0) = \beta m \frac{(1+\beta p(l,C,1))(1+\beta p(l,A,0))b - \beta(a+m)y}{1+\beta(1-\beta((a+m)^2 - p(l,A,0)^2)} - y,$$
$$\Delta_l^{CA,CA}(1) = \beta m \frac{(1+\beta p(l,C,1))(1+\beta p(l,A,1))b - (1+\beta p(l,O,1))y}{1+\beta(1-\beta((a+m)^2 - p(l,A,0)^2)} - y,$$

which decrease in y. Hence, there exist thresholds:

$$\bar{y}_0^{CA,CA} = \beta m(b(1+\beta p(l,C,1)) - \chi)\frac{1+\beta p(l,C,1))}{1+\beta-\beta^2(a(a+m) - \beta p(l,A,0)^2)},$$
$$\bar{y}_1^{CA,CA} = \beta m(b(1+\beta p(l,C,1)) - \chi)\frac{1+\beta p(l,A,0))}{1+\beta(1+m)-\beta^2(a(a+m) - \beta p(l,A,0)^2)},$$

and the sign of $\bar{y}_1^{CA,CA} - \bar{y}_0^{CA,CA}$ is given by the sign of $a\beta(1+\beta p(l,C,1))(1+\beta p(l,C,1))$, which is positive. To show that (CA, AA) is not an equilibrium, note that

$$\Delta_l^{CA,AA}(0) = \frac{\beta m((1+\beta p(l,A,1))(1+\beta p(l,A,0))b - a\beta y)}{1+\beta-\beta^2(a(a+m)+p(l,P,0)^2)} - y,$$
$$\Delta_l^{CA,AA}(1) = \frac{\beta m(1+\beta p(l,A,1))((1+\beta p(l,C,1))b - y)}{1+\beta-\beta^2(a(a+m)+p(l,P,0)^2)} - y,$$

which decrease in y. Hence, there exist thresholds:

$$\bar{y}_0^{CA,AA} = \beta m(1+\beta p(l,A,1))\frac{1+\beta p(l,A,0)}{1+\beta-\beta^2(a^2 - p(l,A,0)^2)}b,$$
$$\bar{y}_1^{CA,AA} = \beta m(1+\beta p(l,A,1))\frac{1+\beta p(l,C,1)}{1+\beta(1+m)-\beta^2(a^2 - p(l,A,0)p(l,C,0))}b,$$

and the sign of $\bar{y}_1^{CA,AA} - \bar{y}_0^{CA,AA}$ is given by the sign of $a\beta(2+\beta(2+\beta(p(l,A,0) - 2a(a+m)))$, which is positive. To show that (CA, CC) is not an equilibrium, note that

$$\Delta_l^{CA,CC}(0) = \frac{\beta m((1+\beta p(l,C,1))(1+\beta p(l,A,0))(b-\chi) - \beta(a+m+\beta m p(l,C,1))y)}{1+\beta-\beta^3 m p(l,C,1)^2 - \beta^2(a(a+3m)+m(1+2m) - p(l,C,0)p(l,A,0))} - y$$
$$\Delta_l^{CA,CC}(1) = \frac{\beta m(1+\beta p(l,C,1))((1+\beta p(l,C,1))(b-\chi) - y)}{1+\beta-\beta^3 m p(l,C,1)^2 - \beta^2(a(a+3m)+m(1+2m) - p(l,C,0)p(l,A,0))} - y$$

which decrease in y. Hence, there exist thresholds:

$$\bar{y}_0^{CA,CC} = \frac{\beta m(1+\beta p(l,C,1))(b-\chi)(1+\beta p(l,A,0))}{1+\beta+\beta^2(p(l,C,0)p(l,A,0) - m - (a+m)^2) - \beta^3 m p(l,C,1)p(l,A,1)},$$
$$\bar{y}_1^{CA,CC} = \frac{\beta m(1+\beta p(l,C,1))(b-\chi)(1+\beta p(l,C,1))}{1+\beta(1+m)+\beta^2(p(l,A,0)^2 - (a+m)^2) - \beta^3 m p(l,C,1)^2}.$$

and the sign of $\bar{y}_1^{CA,CC} - \bar{y}_0^{CA,CC}$ is given by the sign of $1+\beta p(l,C,1)(1+\beta p(r,C,1) - \beta^2 m p(l,C,1))$, which is positive. To show that (CA, AC) is not an equilibrium, note that

$$\Delta_l^{CA,AC}(0) = \beta m \frac{(1+\beta p(l,A,0))(b+(b-\chi)\beta p(l,A,1)) - \beta(a+\beta m p(l,A,1))y)}{1+\beta-\beta^3 m p(l,A,1)p(l,C,1) - \beta^2(a(a+2m)+m-p(l,C,0)p(l,A,0))} - y,$$
$$\Delta_l^{CA,AC}(1) = \beta m \frac{(1+\beta p(l,C,1))(b+\beta p(l,A,1)(b-\chi)) - (1+\beta p(l,A,1))y}{1+\beta-\beta^3 m p(l,A,1)p(l,C,1) - \beta^2(a(a+2m)+m-p(l,C,0)p(l,A,0))} - y,$$

which decrease in y. Hence, there exist thresholds:

$$\bar{y}_0^{CA,AC} = \frac{\beta m(b+(b-\chi)\beta p(l,A,1))(1+\beta p(l,A,0))}{1+\beta(1-a\beta(1+\beta)m - a^2\beta(1+\beta m) - \beta p(l,A,0)(p(l,A,0)(1+\beta m)-m))},$$
$$\bar{y}_1^{CA,AC} = \frac{\beta m(b+(b-\chi)\beta p(l,A,1))(1+\beta p(l,C,1))}{1+\beta(1+m)+\beta^2(p(l,A,0)^2 - a(a+m)) - \beta^3 m p(l,A,1)p(l,C,1)}.$$

and the sign of $\bar{y}_1^{CA,AC} - \bar{y}_0^{CA,AC}$ is given by the sign of

$$1+\beta(2-2\beta^2 m p(l,A,1)p(l,C,1)) + \beta^2(p(r,C,0) - 2a(a+2m)),$$

which is positive. Therefore, no equilibrium with strategy CA exists. □

Proof of Proposition 11

From Proposition 9 we know that $\mathcal{M}_{\mu=0}^{A,A} \subset \mathcal{M}_{\mu=1}^{A,A}$. To show that $\mathcal{M}_{\mu=1}^{A,A} \subset \mathcal{M}_{T,\mu=1}^{AA,AA}$, consider $\Delta_l^{AA,AA}(1)$ given by (1.A.1) and $\Delta_l^{A,A}$ given by (1.5.2). It follows from straightforward algebra that

$$\Delta_l^{AA,AA}(1) = \beta m \frac{2+\beta(1+2a)}{2+\beta(1-2a)} b - y,$$

and $\frac{2+\beta(1+2a)}{2+\beta(1-2a)} < \frac{1}{1-\beta 2a}$. Thus, $\Delta_l^{AA,AA}(1) < \Delta_l^{A,A}$. Lastly, to show that $\mathcal{M}_{T,\mu=1}^{A,A} \subset \mathcal{M}_{T,\mu=0}^{AA,AA}$, note that $\beta m b - y < 0$ is the condition for equilibrium (AA, AA) in Γ^T with $\mu = 0$, and thus, it suffices to see that $\frac{2+\beta(1+2a)}{2+\beta(1-2a)} > 1$. □

Chapter 2

Which Side Are You On? Interest Groups and Relational Contracts

2.1 Introduction

Many interest groups try to influence policymaking through *quid-pro-quo* relationships with political parties. However, not all interest groups behave the same as they face the most basic fact of politics: power changes hands in a frequent and not fully predictable way. In particular, some interest groups invariably choose the incumbent's side and desert a political party after it loses office. This upholding of incumbents is, e.g., a common strategy of the US firms that operate under heavy regulation (Fouirnaies and Hall (2014)). Other interest groups maintain long-term loyalties to a single party, even when it is out of power. This was the case, e.g., of the monopolistic conglomerates (*zaibatsu*) of Imperial Japan or of the Italian mafia, which supported Silvio Berlusconi's Forza Italia between 1994 and 2013—including the eight years it was out of power (Buonanno et al. (2016)). More generally, heterogeneity is the norm: among the Political Action Committees (PACs) in the US House of Representatives, 45 percent of them concentrate at least three-quarters of their contributions on a party, and the remaining share tends to support the majority party's incumbents (Chamon and Kaplan (2013)).[1] Two questions hence naturally arise: How does an interest group optimally allocate its electoral support

[1]This heterogeneity of relationships also appears when countries choose their allegiances in another country's domestic politics. Ivan Krastev observed: Poland decided [...] it will not be involved in American domestic politics. So Kaczyński probably feels closer ideologically to Trump, but he will never go into traps invented to take Biden [...] Here, Orbán made a choice, which is kind of very unexpected for a small European country. He decided to enter the domestic politics of the United States and totally bet on Trump and the Republican Party. (Financial Times, Rachman Review, 29th September 2022)

across parties over time? Why do different interest groups follow different strategies?

To answer these questions, this paper explores *quid-pro-quo* agreements between political parties and an interest group in a setting where power changes hands stochastically, and binding contracts are not possible. The first assumption captures the unpredictability of politics already mentioned. The second refers to the fact that these agreements between parties and interest groups lack third-party enforcement. As Dal Bó and Di Tella (2003) emphasize, the special interests literature largely ignores these credibility problems:

> Grossman and Helpman (1994), e.g. analyze a two-period model in which lobbies choose political contributions in the first period and the government sets policy in the second. Lobbies pay if the government delivers, although after it delivers there are no incentives for the lobbies to pay.

In this paper, agents' promises are credible due to relational incentives—the threat of a cooperation break-up—and hence, agreements are *relational contracts*.[2] I show that the interest group prefers two relational contracts depending on its characteristics and the institutional setting. These contracts resonate with reality: either the interest group sustains a long-term exclusive relationship with a single party or opportunistically exchanges favors with each period's incumbent, whichever party is.

The paper considers a parsimonious dynamic model of relational incentives between two political parties and an interest group capable of affecting electoral outcomes (for concreteness, a firm). Parties compete for office in repeated elections which the firm can influence. In each period, the elected party decides whether to transfer a rent to the firm. The rent in each period is non-negative and bounded above by a constraint on the *incumbent's discretion.* Whereby there is a limit on the amount of rents that can be transferred in each period, which broadly captures the level of discretion that the incumbent enjoys. Electoral outcomes are stochastic. After the rent is transferred, the firm can support one of the parties, increasing its probability of winning the coming election. Besides, I allow for an incumbency electoral advantage to exist, which exogenously produces persistence in power (though results are not qualitatively dependent on it). Notably, the firm cannot guarantee reelection, which implies that elections always entail uncertainty. The firm is a rent-seeker with no political preferences. Rent extraction bears an *efficiency loss* that both parties suffer, regardless of which currently holds power. This feature of the model reflects the fact that rents are frequently extracted from a common pool of goods enjoyed by the whole of society (e.g., clean air or market competition).

[2] The term 'contract' was occasionally used explicitly. For example, a local electoral agreement between the Conservatives and the Catholic Church in Italy in 1894 produced a common list of candidates called *lista contrattuale*, and delegates from both sides signed a *dichiarazione di contratto* (Kalyvas (1996)).

Binding agreements are impossible; hence a contract is simply an equilibrium of the game.

I characterize the firm's best contract and focus on the evolution of the relationship between the firm and the parties as power changes hands. The analysis reveals that two relational contacts have particular relevance: *(i)* the *Exclusive contract*, in which the firm always supports the same party when it holds power. In return, the party transfers a large amount of rents. *(ii)* The *Opportunistic contract*, in which the firm supports each-period incumbent, whichever it is, and both parties transfer some rents.

An intuitive approach suggests advantages for each kind of relationship. On the one hand, there are gains from long-term loyalty. As parties are involved in a zero-sum competition for office, an incumbent is willing to pay more to a firm that will stick to it in the future. On the other hand, a party out of power has little to offer, so exogenous political turnover can impel the firm to cooperate with each period incumbent—that is, with both parties.

The core insight behind this paper's results relates the firm's best contract to the level of incumbents' discretion. If the amount of transferable rents per period is not too limited, cooperation with both parties is sub-optimal for the firm. Competition for office is zero-sum, so improving one party's electoral prospects implies worsening its adversary's. Thus, the interest group can obtain more rents by sustaining an *Exclusive contract*. However, when the amount of transferable rents is severely limited, the firm cannot extract the full value of long-term loyalty to a single party. In that case, the firm prefers to gain access to whichever party holds power, and the firm's best contract is the *Opportunistic contract*.

This brings us to a central comparative static derived in the paper: as the firm faces greater electoral uncertainty, it is more likely to prefer an exclusive relationship. If electoral uncertainty is sufficiently large, the *Exclusive contract* with the initial incumbent is the unique firm's best contract. On the contrary, if electoral uncertainty is small, the firm's best contract is the *Opportunistic contract*. Importantly, this result is independent of whether the increase in political fluctuations is due to a reduction in incumbency advantage or the firm's electoral influence. The intuition behind this result is twofold. First, incumbents expect to hold power for a shorter time in a more uncertain environment. Thus, they attach more value to the firm's loyalty after a defeat, decreasing their willingness to pay to an opportunistic firm. Second, as persistence in power becomes more uncertain, the parties are willing to pay a lower price for incumbency, implying that the discretion constraint is less likely to bind in the *Exclusive contract*.

My second central comparative static is that, as rents transferred to a firm become more inefficient, the firm is more likely to prefer exclusiveness. The intuition is again twofold. Firms that require more costly concessions actually receive less of them. As a result, first, opportunistic firms need to switch to promise long-term loyalty. Second, discretion constraints are less likely to bind in the *Exclusive contract*.

Some interesting implications for empirical research arise from these results. This paper shows that exclusive relationships are not necessarily the result of ideological alignments, contrary to the widespread implicit assumption of most of the literature. Without disregarding the role played by ideology, exclusive relationships can also be preferred by un-ideological rent-seekers. An interesting example of this is presented by De Feo and De Luca (2017):

> After World War II, many old mafiosi who had survived the fascist era supported a Sicilian separatist movement [...]. Meanwhile, a new political force was emerging as the leading Italian governing party, the Christian Democrats (DC), and several mafia bosses decided to move their political preference toward that party [...] Supporting the incumbent party guaranteed several advantages to the mafia, which could directly access important leading figures at the government level to defend its economic interests (e.g., the allocation of public procurement contracts in the areas of its activities) and lobby for softer legislation on mafia-related crimes, the protection of mafia members at different levels in judicial trials, and lower investment in mafia-controlling activities

Hence, the start of the long-term relationship between the Sicilian mafia and the DC was a result of the DC's hold on government at the moment in which the mafia recovered their influence.

The second implication points out a link between lobbies' opportunism and high institutional quality. The incumbent's discretion to transfer rents is hard to observe and measure. The disguised mechanisms for rent transferring at politicians' disposal are often unknown and highly dependent on the particularities of each economic sector.[3] Besides, the supervision of officeholders may come from different branches of the state, like the judiciary, independent agencies, or rival politicians, which makes it hard to measure its aggregated effectiveness. My results suggest that we can learn about the constraints on incumbents' discretion by observing the interest groups' behavior across periods. In particular, it follows from this paper's core insight that opportunistic interest groups in a specific economic sector and country indicate effective restrictions on incumbents' discretion to transfer rents.

An enduring puzzle has been the mixed empirical evidence for the claim that campaign contributions are rewarded with favorable policies (see Ansolabehere et al.

[3] Disguised mechanisms transfer resources to special interests but may be justifiable on other, more palatable, grounds. Coate and Morris (1995) showed that such mechanisms could be used in equilibrium, even when they are Pareto inferior to direct transfers.

(2003); Fowler et al. (2020)). The papers analyzing this question typically associate a *quid pro quo* agreement with a positive correlation between the policies enacted by the party holding power in a certain period t and the electoral support it received in period $(t-1)$. More formally, the time-t rent transferred by the incumbent party is regressed with respect to the interest group's time-$(t-1)$ electoral support to that same party. However, suppose that players follow an *Opportunistic contract*. Then, the interest group supports the present officeholder—who may coincide or not with the next period's one—and all political actors understand this. In that case, the above empirical exercise would not reflect exchanges of favors but rather the incumbent's electoral persistence.

To explore the additional implications of this paper's framework, I consider the following extensions of the baseline model. Suppose a shock temporarily increases the amount of rents that can be transferred, for example, because of an emergency like a pandemic or a war increase the government's discretion. The firm extracts the extra rents available in that exceptional period by becoming exclusive towards that period incumbent. Thus, a temporal shock permanently modifies the balance of electoral power.[4]

In a second extension, the baseline model is compared with a *weak party system* to gain insight into the importance of long-lived parties. The results above rely on the assumption that parties are long-lived organizations resilient to electoral defeat. In a weak party system, parties have leaders who, once electorally defeated, can no longer run for office and are indifferent to their party's future after that. This feature is closer to the standard in a principal-agent setting, where the principal has the prerogative to terminate her relationship with an agent forever. Intuitively, the firm's best contract under weak parties is opportunistic. However, the absence of long-term relationships does not necessarily imply that a weak party system is less extractive. Leaders face replacement if defeated, so each election entails higher stakes than for a party and, thus, an incentive to pay more for reelection. As a result, the comparison between both party systems is non-monotonic with respect to the level of discretion. First, when the discretion to transfer rents is sternly restricted, the firm behaves opportunistically in both party systems and rents are identical. Increasing incumbents' discretion leads to the weak party system becoming more extractive due to leaders' higher stakes. However, if constraints are eased further, the firm can extract the full value of a long-term relationship, and the long-lived party system becomes more extractive.

As a last extension, I introduce in the baseline model an *entry cost* for the first time the interest group influences an election—which captures, e.g., the effort of building a political network or establishing an electoral machine. In its best contract, the interest group does not participate on-path, but both political parties

[4]This result resonates with the empirical findings of papers studying the New Deal expenditure (Kantor et al. (2013)) and the effect of land reforms (Caprettini et al. (2021); Carillo et al. (2022)).

pay rents to it under the off-path threat of its active participation. Nevertheless, even when the interest group does not participate on-path, the entry cost affects the equilibrium rents because it affects the credibility of the off-path threats. This insight speaks to the well-establish Tullock paradox: an insignificant electoral impact of the lobby translates into substantial rent payments by the parties.

The rest of the paper is organized as follows. The next section reviews the related literature. In Sections 2.3, 2.4, 2.5 and 2.6 the baseline model is presented, followed by a discussion of its main insights and implications. Sections 2.5.1, 2.7 and 2.8 consider extensions of the baseline model. The last section concludes. The appendix contains the proofs of all the results presented in the text.

2.2 Literature review

This paper contributes to the extensive research on special interest politics (e.g., Coate and Morris (1995); Grossman and Helpman (2001)) by bringing together dynamics, stochastic changes in power, and relational contracts—sustained by off-path threats. Some papers in the special interests literature have given threats a relevant role. Chamon and Kaplan (2013) study an electoral competition model where a lobby conditions its campaign contributions on both parties' favors, hence allowing threats to play a relevant role. However, because their model is static, they consider binding contracts where the credibility of threats cannot be discussed. The unrealistic assumption of binding contracts has pushed the literature to circumvent this problem in several ways. Dal Bó and Di Tella (2003) assume that a punishment technology in which the interest group invests before the incumbent makes its policy choice. Wolton (2021) assumes that the lobby's threats directly affect the legislative outcome relevant to the lobby. Fox and Rothenberg (2011) propose that incumbents choose their policies to signal ideological alinement to interest groups. In contrast, this paper presents a dynamic setting with non-binding contracts.[5] Besides, this model contributes to the study of the dynamics of cooperation between political parties and interest groups. This topic has only recently begun to be addressed formally by papers like Callander et al. (2022). In particular, this paper is the first to study how these *quid pro quo* agreements evolve as political turnover occurs.

This paper is related to a growing literature that studies models of relational incentives applied to political economy questions (e.g., Dixit et al. (2000); Acemoglu and Robinson (2008), Acemoglu et al. (2011a); Yared (2010); Padró i Miquel and

[5]Various empirical papers have studied the capture of the political system by special interests. The literature on politically connected firms, initiated by Fisman (2001), has accumulated evidence on firms' benefits from political connections in various countries (e.g., Faccio (2006); Ferguson and Voth (2008)). The influence of organized violent groups on the political system has been thoroughly studied in the case of the Italian Mafia (Buonanno et al. (2016); De Feo and De Luca (2017)) or the Colombian paramilitaries (Acemoglu et al. (2013b)), among others.

Yared (2012); Anesi and Buisseret (2022); Liao and McClellan, 2023). The most important difference with this previous literature is that I assume that agents' actions can affect elections, but only stochastically. Previously, Acemoglu et al. (2008) and Yared (2010) considered an electoral accountability environment where a representative voter could reelect or oust from power the incumbent with certainty. Alternatively, Dixit et al. (2000), Acemoglu et al. (2011a), and Liao and McClellan (2023) study settings where the allocation of political power fluctuates stochastically but exogenously.

Lastly, this paper also addresses a relevant question that has already received some attention: how can a leader's supporters make their leader, once in power, abide by her promises? Or, similarly, when are leaders' promises before attaining power credible? Myerson (2008) emphasizes the importance of communication between the leader's supporters. This paper contributes to this question by studying the role of relational incentives.

2.3 Model

Time is discrete and infinite, indexed by $t \geq 0$. There are two political parties, ℓ and r, and one interest group, for concreteness, a firm, f. All players discount their payoffs by the common discount factor $\beta \in (0,1)$ and are all risk neutral. Every action is publicly observable. Political parties like being in power and dislike transferring rents. The firm has no political preferences and solely values rent extraction.

Timing. At the beginning of each period $t \in \mathbb{N}$, the incumbent $\mathcal{I}(t)$ who holds power decides the rent $x(t) \in [0, \tau]$ transferred to the firm in that period, where $\tau > 0$ captures the discretion of each period's incumbent. The incumbent's discretion can be limited, e.g., by the judicial system, or because politicians have time or agenda limitations.[6] The opposition is inactive. Then the firm decides whether and which party to support in the next election. Formally, it chooses an action $s(t) \in [-1, 1]$, where $s = 1$, and $s = -1$ denotes supporting party ℓ, and supporting party r, respectively.[7] Finally, an election takes place; the winner holds power in period $t+1$. The timing of the game within a period is depicted in Figure 2.1. Hereafter I assume, without loss of generality, that the initial incumbent is party ℓ. Throughout, i, x, and s refer to an arbitrary realization of the random variables $\mathcal{I}(t)$, $\mathcal{X}(t)$, and $\mathcal{S}(t)$, respectively.

Election. Party ℓ's probability of wining office in $t+1$ is denoted by $p(i, s)$

[6] Because rents are a public bad that can be used as part of a party's punishment, τ partially resembles the notion of limited liability from an standard principal-agent setting (see Fong and Li (2017)).

[7] That the firm backs only one party in each election is supported by Fowler et al. (2020) and Chamon and Kaplan (2013), who show that, in the US congressional elections, it is extremely rare for an interest group to contribute to both parties' campaigns in the same race.

where i and s are period-t incumbent and the firm's action, respectively. Party r's probability is $1 - p(i, s)$. I assume the following functional form for $p(i, s)$:

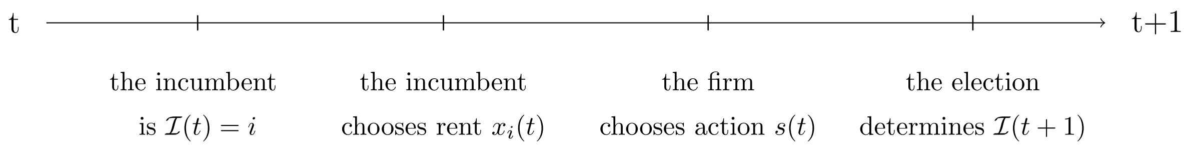
$$\begin{aligned} p(\ell, s) &= \frac{1}{2} + a + ms \\ p(r, s) &= \frac{1}{2} - a + ms \end{aligned} \tag{2.3.1}$$

The above specification introduces two elements: (i) *incumbency advantage*, $a \geq 0$, which makes the incumbent's reelection exogenously easier; (ii) *firm's support* weighted by $m > 0$, a parameter that captures its electoral influence. The following assumption establishes that elections always feature uncertainty despite the firm's choice.

Assumption 2. $\frac{1}{2} + a + m < 1$.

Assumption 2 implies that the firm is unable to guarantee reelection with probability 1 to an incumbent, and it cannot oust the incumbent from power with certainty either.

FIGURE 2.1 Timeline



Payoffs. Let $y_j(.)$ be the player j's per-period payoff. The firm is a rent-seeker; its payoff given a rent x is:

$$y_f(x) = x.$$

Parties suffer rent extraction and obtain an office benefit $b > 0$. Party ℓ's payoff when it holds power and chooses a rent x_ℓ is

$$y_\ell(\ell, x_\ell) = b - kx_\ell,$$

and when party r holds power and chooses a rent x_r, it is

$$y_\ell(r, x_r) = -kx_r,$$

where parameter $k > 0$ captures how inefficient rent extraction is. Party r's payoff is defined symmetrically. Players maximize their expected discounted stream of payoffs at the current period.

2.3.1 Discussion of the Model

Political arena. This model departs from the standard principal-agent setting to capture some distinctive features of the political arena. *(i)* Players are long-lived.

Any party will occupy office with certainty in the future despite the firm's actions. This feature is absent from the relational contracts literature—which typically assumes that if the principal fires an agent, she does not reappear in any future period. *(ii)* The firm's reward for political parties—electoral support—affects parties' zero-sum competition for office. Thus, improving one party's electoral prospects implies worsening its adversary's. *(iii)* Rent extraction is a public bad for the parties.

2.3.2 Relational contracts

Let $h_t \equiv (i_0, x_{i_0}, s_0, \ldots, i_{t-1}, x_{i_{t-1}}, s_{t-1}, i_t)$ denote a realized history up to date t, including the period-t incumbent, i_t. Let $\mathcal{H}_t$ be the set of all possible time-t histories. Party j's public strategy function is denoted $x_{j,t}$ and maps any possible time-t history into a rent choice: $x_{j,t} : \mathcal{H}_t \to [0, \tau]$. Similarly, firm's public strategy is denoted s_t and maps any possible time-t history and any incumbent's rent extraction into an electoral support choice: $s_t : \mathcal{H}_t \times [0, \tau] \to [-1, 1]$.[8] Let $\sigma = (x, s)$ denote a profile of public strategies for the three players. Let

$$v_j^\sigma(h_t) \equiv (1-\beta)\mathbb{E}\big[\sum_{s=0}^{\infty} \beta^s y_j(\mathcal{I}(t+s), \mathcal{X}(t+s)) \mid h_t, \sigma\big] \tag{2.3.2}$$

denote j's expected discounted payoff from the start of period t onwards conditional on all public information at the start of period t and on continuation play σ. Lastly, let

$$w_j^\sigma(h_t) \equiv p(i, s(h_t))v_j^\sigma(\mathcal{I}(t+1) = \ell, \mathcal{H}_{t+1}) + (1 - p(i, s(h_t)))v_j^\sigma(\mathcal{I}(t+1) = r, \mathcal{H}_{t+1})$$

denote j's expected discounted payoff from $t+1$ onwards conditional on continuation play σ and conditional on all public information at the start of period t (hence no the winner of period t election).[9] This expression conditions only on the information available after the rent extraction, making explicit the uncertainty of future electoral outcomes. Thus,

$$v_j^\sigma(h_t) = (1-\beta)y_j(i(h_t), x(h_t)) + \beta w_j^\sigma(h_t).$$

In what follows, I refer to $v_j^\sigma(.)$ as value and to $w_j^\sigma(.)$ as pre-election value. As shown by Mailath et al. (2006), the techniques from Abreu et al. (1990) are valid in dynamic games with a finite set of states, as this model. An equilibrium can be represented in a recursive fashion.[10]

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[8] Since action sets are continuous variables there is no need to consider mixed strategies.

[9] Note that as $v_j^{\mathcal{C}}(h_t)$ and $w_j^{\mathcal{C}}(h_t)$ denote on-path payoffs, they are uniquely pinned down by history $h_t \in \mathcal{H}_t$.

[10] Any public history, the entire public history of the game is subsumed in the continuation value of each player, and associated with these continuation values is a sequence of actions and continuation values.

Definition 1. *A relational contract (or simply, contract) is a Subgame Perfect Nash Equilibrium in which all players use public strategies, i.e., a Perfect Public Equilibrium (hereafter, equilibrium).*

A relational contract describes behavior both on and off the equilibrium path. I am interested in the agent's on-path behavior, so I restrict attention to equilibria in which, after a unilateral deviation, the continuation play corresponds to the worst equilibrium for the deviator (Abreu (1988)). Let $\underline{v}_j(i)$ and $\underline{w}_j(i)$, respectively, denote player j's value and pre-election value in its worst equilibrium when i holds power.

An strategy profile $\sigma = (x, s)$ is a relational contract (i.e., an equilibrium) if and only if the following *enforcement constraints* hold at every history $h_t \in \mathcal{H}_t$: (i) each party, when it holds office, is willing to extract the prescribed rents,

$$\begin{aligned} &-(1-\beta)kx_\ell(h_t) + \beta w^\sigma_\ell(h_t) \geq \beta \underline{w}_\ell(\ell), \\ &-(1-\beta)kx_r(h_t) + \beta w^\sigma_r(h_t) \geq \beta \underline{w}_r(r); \end{aligned} \tag{2.3.3}$$

and (ii) the firm is willing to execute its prescribed action,

$$w^\sigma_f(h_t) \geq \underline{w}_f.^{11} \tag{2.3.4}$$

Note that in the firm's worst contract the parties repeatedly choose zero rents irrespective of the history, so $\underline{w}_f = 0$, and thus the firm's enforcement constraint is trivially satisfied.[12] With a slight abuse of notation, I denote by $\mathcal{C} = (x, s)$ the restriction of the contract to its on-path histories.

As there are many self-enforcing contracts, the question of which to select is relevant. Contrary to Levin (2003) and the subsequent literature, I do not focus on the efficient contract. Because this is a distribution problem between risk-neutral agents, any contract belongs to the Pareto frontier. Instead, this paper focuses on the best contract for the firm, which I understand as the social worst-case scenario. By characterizing the firm's best contract, this paper delves into how interest groups manage some distinctive features of the political arena, namely the uncertainty of electoral outcomes, and the fact that parties are long-lived (so even if a deviator is ousted from office, it will eventually return to it).

Besides, the following class of simple contracts plays an important role in the analysis

Definition 2. *A contract is* (on-path) stationary *if there exists $x_\ell, x_r \in [0, \tau]$, and $s_\ell, s_r \in [-1, 1]$ such that at every on-path history $h_t \in \mathcal{H}_t$, $x_\ell(h_t) = x_\ell$, $x_r(h_t) = x_r$, and $s(h_t)$ is s_ℓ (s_r) if the incumbent at history h_t is ℓ (r).*

[11] Note that the only relevant one-shot deviation to consider for an incumbent is to transfer no rent at all.

[12] Therefore, results are unchanged if the interest group has commitment power.

In words, under a stationary contract, all players play (on-path) an action that depends only on the current incumbent's identity and thus, the contract is a tuple $\mathcal{C} = (x_\ell, x_r, s_\ell, s_r)$.

For expositional purposes, it is useful to name some contracts after the firm's on-path stationary strategy:

Definition 3. *A contract that prescribes on-path*

(i) $s_i = 1$ *(*$s_i = -1$*) for any* $i \in \{\ell, r\}$ *is a* ℓ-Exclusive contract *(*r-Exclusive contract*), and is denoted* $\mathcal{C}^L$ *(*$\mathcal{C}^R$*),*

(ii) $s_\ell = 1$ *and* $s_r = -1$ *is an* Opportunistic contract*, and is denoted* $\mathcal{C}^O$*,*

(iii) $s_\ell = 1$ *and* $s_r \in (-1, 1)$ *is an* ℓ-Biased contract*, which constitutes a class of contracts indexed by* s_r*,*

(iv) $s_i = 0$ *for any* $i \in \{\ell, r\}$ *is a* Neutral contract*, and is denoted* $\mathcal{C}^N$*.*

Thus, in a *ℓ-Exclusive contract*, the firm loyally supports party ℓ whereas in an *Opportunistic contract*, the firm supports always the current incumbent. I denote by v_j^L, v_j^R, v_j^O, v_j^B, and v_j^N player j's value in each of these contracts, respectively.

Definition 4. *For any firm's on-path strategy* s*, the* maximum-rent s-contract *is a firm's best contract (i.e., maximizes rent extraction) among all the contracts with the firm's on-path strategy* s*.*

2.4 The Firm's Best Contract

In this section, I characterize the firm's best relational contract. Recall first that given the payoff specification, rents are a public bad for the parties and political competition is zero-sum. Hence, observe that conditional on a level of rent inefficiency k, the sum of playoffs is fixed:

$$y_\ell(i, x_i) + y_r(i, x_i) + 2ky_f(x_i) = b.$$

Therefore, maximizing the firm's value is the same as minimizing the sum of the parties' values. As a result, if a contract exists that equalizes both parties' values to their worst contract value, that contract is the firm's best contract. The following lemma formalizes this notion.

Lemma 1. *Suppose that the firm's best contract makes the initial incumbent's enforcement constraint bind at the initial period. Then, the firm's best contract is the opposition's worst contract.*

The next step to determine which contracts can be self-enforcing is to characterize the worst punishment for an incumbent after it deviates. To minimize the incumbent's value, the other two players cooperate. Thus, the incumbent's worst punishment is a (non-trivial) relational contract. Besides, as a result of the relationship that Lemma 1 establishes between the firm's best contract and the opposition's worst contract, the worst punishment for the incumbent and the firm's best contract are interlinked.

Lemma 2. *Suppose that the firm's best contract makes the initial incumbent's enforcement constraint bind at the initial period. Then, the worst punishment for an incumbent after it deviates prescribes:*

(i) Until the incumbent is electorally defeated for the first time, the firm supports its adversary and the incumbent extracts zero rents

(ii) When the incumbent is ousted from power for the first time, the continuation play is given by the firm's best contract from that period onwards.

Lemma 2 implies that the worst punishment for a deviator has two phases. In the first phase, the deviator retains office, and the firm then supports the adversary party, making more likely to transition to the second phase. The second phase starts when the deviator loses office. Then the continuation play maximizes the firm's value from that period onwards—which is the same as minimizing the value of the deviator (now the opposition party). The firm's electoral clout is the only available punishment tool in the first phase because the incumbent retains office. However, the second phase combines rent extraction and the firm's support.

The following proposition shows my first main result. Hereafter, we say that rents are unconstrained if τ is large enough so that it does not impose a binding constraint on the incumbent's choices in equilibrium.

Unconstrained rents. If rents are unconstrained, the firm's best contract is such that it gives permanent support on path to the initial incumbent (party ℓ).

Proposition 12. *Suppose rents are unconstrained. Any firm's best contract is a* maximum-rent ℓ-Exclusive contract. *In any such contract, both parties' value is minimized among all contracts.*

Furthermore, and as a result, the worst punishment for the party ℓ is the maximum-rent r-Exclusive contract*, and viceversa for party r.*

To build some intuition for Proposition 12, it is helpful to compare the firm's best *ℓ-Exclusive contract* with the firm's best *Opportunistic contract*. Two of the model's features are key for this exercise: rents are a public bad for the parties and political competition is zero-sum. Naively, one may conjecture that an opportunistic firm benefits from incentivizing every period incumbents to extract rents. However, this conjecture is not correct since every rent transferred by a party is equally suffered by the other. Thus, every rent that party r is expected to extract in the future crowds out party ℓ's willingness to extract rents in the present by the same (present value) amount. Formally, for any *Opportunistic contract* in which party r extracts some positive rent, there is an alternative *Opportunistic contract* in which party ℓ transfers a rent of equal present value at the initial period instead. This alternative *Opportunistic contract* is an equilibrium if the original contract is so, and both contracts give the same rent extraction. Hence, there always exists a firm's best *Opportunistic contract* such that only party ℓ extracts rents.[13] Recall next that parties are involved in a zero-sum competition for office. Thus, party ℓ is willing to transfer more rents if the firm grants it exclusive electoral support than if it behaves opportunistically.

Since binding agreements are impossible, any *Exclusive contract* that is the firm's optimal must be with the initial incumbent—the only party that can make up-front payments in exchange for cooperation. The initial opposition cannot credibly promise to match these up-front payments: it can neither transfer any rent while out of power nor credibly promise to pay these rents as soon as it wins the election because, by then, the effect of the firm's support in previous periods is irreversible. This logic produces a form of path-dependence not previously studied in the literature.[14]

Proposition 12 establishes the optimality of an entire class of contracts that can be constructed in multiple ways. The next remark describes a particularly intuitive maximum-rent *ℓ-Exclusive contract* whose rents are on-path stationary, which helps to bring the Proposition's results to real-world examples.

Remark 1. *Suppose rents are unconstrained. There exists a* maximum-rent ℓ-Exclusive contract *contract that is on-path stationary, and it takes the following form: only party ℓ makes positive rent extraction, i.e., $(x_\ell, x_r) = (\hat{x}, 0)$, where*

$$\hat{x} = \frac{2\beta m}{k(1-\beta)} b. \tag{2.4.1}$$

[13] The front-loading of rents implies *(i)* that it is unnecessary to incentivize the initial opposition to take part in rent extraction on-path and *(ii)* that it is possible to separate the maximization of the joint payoffs of the firm and the initial incumbent—which is done through a *ℓ-Exclusive contract*—from the division of the surplus between them. The second of these features is not different in essence from how in Levin (2003) the initial wage allows separating the maximization of surplus from its distribution between principal and agent, but the first feature is inherent to our model.

[14] Acemoglu et al. (2011b) also features an initial incumbency advantage for an elite political party collaborating with the bureaucracy, which grants the elite persistence in power. However, this initial incumbency advantage requires deterministic elections. The introduction of probabilistic elections in Acemoglu et al. (2011b) does not unravel the initial incumbency advantage of the elite party, but turns it into a transitional effect that disappears in the long term. In contrast, in this paper initial incumbency advantage is permanent.

In that contract, party ℓ's enforcement constraint (2.3.3) binds in every on-path history.

Equation (2.4.1) of $\hat{x}$ is key to understand the mechanics of the model. Rent $\hat{x}$ is the highest per-period rent that a firm can receive in exchange for an exclusive relationship. Intuitively, it increases when rent extraction is less inefficient (k), the firm is electorally more influential (m), office benefits (b) are higher, and players are more patient. Any of these parameter changes imply that the party finds cooperation with the firm more valuable relative to the punishment following a deviation.

It may appear puzzling that (2.4.1) can exceed the office rent (b). To see why, we study party ℓ's enforcement constraint (2.3.3):

$$\begin{aligned}(1-\beta)k\hat{x} &= \beta(w^L_\ell(\ell) - \underline{w}(\ell)) \\ &= \beta\Big(p(\ell,1)v^L_\ell(\ell) + (1-p(\ell,1))v^L_\ell(r)\Big) - \beta\Big(p(\ell,-1)\underline{v}_\ell(\ell) + (1-p(\ell,-1))\underline{v}_\ell(r)\Big),\end{aligned}$$

First, when party ℓ transfers a rent equal to $\hat{x}$, its enforcement constraint (2.3.3) binds. Hence, when it is elected on-path, party ℓ receives its worst value conditional on holding power, i.e., $v^L_\ell(\ell) = \underline{v}_\ell(\ell)$. So, if party ℓ deviates and is reelected, it receives the same value as if it complies with the contract and is reelected. However, if party ℓ loses the election on-path, it receives a better value than its worst value conditional on being in opposition, i.e., $v^L_\ell(r) > \underline{v}_\ell(r)$, since it still receives electoral support and its rival extracts zero rents. On the contrary, if party ℓ loses the election after a deviation, it receives its worst value conditional on being in opposition—that is, the *r-Exclusive contract* value. This implies that a deviation is punished with: *(i)* a $2m$ decrease in the winning probability of the coming election, and *(ii)* a worse continuation value in the case of defeat. One can then rewrite party ℓ's enforcement constraint (2.3.3) as:

$$(1-\beta)k\hat{x} = \beta\Big(2m\big(\underline{v}_\ell(\ell) - \underline{v}_\ell(r)\big) + (1-p(\ell,1))\big(v^L_\ell(r) - \underline{v}_\ell(r)\big)\Big), \qquad (2.4.2)$$

where $\underline{v}_\ell(\ell) - \underline{v}_\ell(r) = \frac{1-\beta(1-2m)}{1-\beta 2a}b$ and $v^L_\ell(r) - \underline{v}_\ell(r) = \frac{\beta 2mb+(1-\beta)k\hat{x}}{1-\beta 2a}$. We see then that $\hat{x}$ appears also on the r.h.s. of (2.4.2) because it constitutes also part of party ℓ's punishment. In a nutshell, party ℓ does not only extract rents to pay back from the firm's electoral support, but also to avoid a punishment in which it will enjoy no electoral support and similar rents will be extract by its adversary. Solving the above equation, we obtain rent $\hat{x}$.

Also, we can now see why, perhaps surprisingly, (2.4.1) does not depend on the incumbency advantage (a). Observe that the incumbency advantage has two effects. On the one hand, it increases the value of incumbency by increasing the officeholder's persistence in power (both $\underline{v}_\ell(\ell) - \underline{v}_\ell(r)$ and $v^L_\ell(r) - \underline{v}_\ell(r)$ increase w.r.t. a). On the other hand, it softens the party's punishment by reducing its probability of losing the election ($1 - p(\ell, 1)$ increases w.r.t. a). Finally, these two effects exactly offset each other.

Proposition 12 shows that, despite the uncertain fluctuations of political power, the firm prefers to promise its loyal support to a single party and keep its promise even when the party loses power. Real-world *quid pro quo* relationships are often sticky. For example, after losing power in 1995 and again in 2008, Silvio Berlusconi kept obtaining higher vote shares in municipalities plagued by the mafia. However, Proposition 12 does not reflect the variety of relationships between lobbies and political parties. Opportunistic behavior is commonly observed. In Ghana, a stable two-party system since 1992, most local chiefs endorse the incumbent by influencing voters through persuasion and prestige. In their study of the U.S. House and state legislatures, Fouirnaies and Hall (2014) found a 20-25 percentage-point increase in the share of donations flowing to a party when it becomes the new incumbent. It is hence natural to ask what feature of this stylized model drives the superiority of exclusive relationships?

Constrained rents. A key assumption for the optimality of exclusive relationships is the initial incumbent's discretion to transfer sufficiently large rents so as to make the opposition's cooperation in rent extraction unnecessary. The following proposition shows how the firm's best relational contract changes with the introduction of constraints on incumbents' discretion.

Proposition 13. *Let*

$$\hat{\tau} \equiv \frac{2\beta m}{k(1 - \beta 2(a + m))} b. \tag{2.4.3}$$

A firm's best contract is:

(i) If $\tau \geq \hat{x}$, a maximum-rent ℓ-Exclusive contract *with $(x_\ell, x_r) = (\hat{x}, 0)$.*

(ii) If $\tau \in (\hat{\tau}, \hat{x})$, the ℓ-Biased contract *(see Definition 3) with rents $(x_\ell, x_r) = (\tau, \tilde{x}_r)$, where $\tilde{x} \in (0, \tau)$ and $\tilde{s}_r \in (-1, 1)$ solve the system of equations given by the parties' binding enforcement constraints:*

$$\begin{aligned} -(1-\beta)k\tau + \beta w_\ell^B(\ell; \tilde{x}_r, \tilde{s}_r) &= \beta \underline{w}_\ell(\ell), \\ -(1-\beta)k\tilde{x}_r + \beta w_r^B(r; \tilde{x}_r, \tilde{s}_r) &= \beta \underline{w}_r(r). \end{aligned}$$

(iii) If $\tau \leq \hat{\tau}$, the Opportunistic contract *with rents $(x_\ell, x_r) = (\tau, \tau)$. Moreover, the opportunistic strategy is the only firm's strategy that can support the maximum payments $(x_\ell, x_r) = (\tau, \tau)$ for every $\tau \in [0, \hat{\tau}]$.*

The intuition behind Proposition 13 is as follows. If rents are unrestricted, the ℓ-*Exclusive contract* is optimal because long-term relationships with the initial-incumbent are inherently superior, as seen in Proposition 12. If the amount of transferable rents is intermediate, the firm can only partially exploit the benefits of

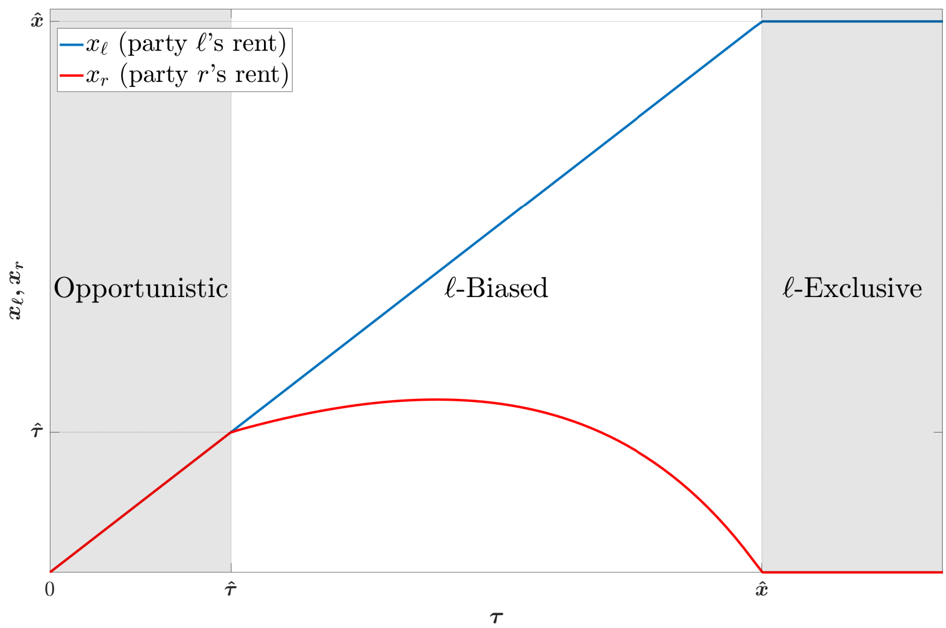

FIGURE 2.2 Per-period rent transferred by party ℓ (red) and party r (blue) with respect to discretion τ for $m = 0.3$, $\beta = 0.91$, $b = 10$, $a = 0$, and $k = 1$.

exclusiveness. So roughly speaking, the firm tilts the electoral field in favor of the initial incumbent until its willingness to pay for that advantage hits the discretion constraint and uses the remaining electoral clout to extract some rent when its adversary is in power. If the amount of transferable rents is severely limited, the firm cannot exploit the benefit of an exclusive relationship. The best it can do is to access the little rents at the incumbent's discretion each period through an opportunistic strategy.

To understand why opportunism is the firm's best strategy when discretion is severely constrained, it is instructive to compare the *Opportunistic contract* to a contract in which the firm stays neutral every period (i.e., *Neutral contract*). First, though opportunism implies a disloyalty to the current incumbent, overall it is better than staying neutral because whereas electoral support occurs in the present, future disloyalty is discounted. Moreover, the firm's actions further discount this disloyalty. The firm's support for the incumbent's rival will only materialize if the incumbent fails reelection—a more unlikely event with the firm on its side. Lastly, opportunism increases the value of incumbency, making parties more willing to pay for the firm's reward: reelection. In a *Neutral contract*, a party's perks from power are the immediate office benefits (b) plus the extra persistence in power provided by the incumbency advantage (a). On the contrary, if the firm behaves opportunistically, a party's perks from power are the office benefits (b), the incumbency advantage (a), and the firm's support (m). These effects are captured in the denominator of $\hat{\tau}$—i.e., $k(1-\beta 2(a+m))$—which includes $(a+m)$. As a result, despite there exist other contracts that sustain $(x_\ell, x_r) = (\tau, \tau)$ for some $\tau < \hat{\tau}$, only the *Opportunistic contract* maximizes rent extraction for every $\tau \in [0, \hat{\tau}]$.

Equation (2.4.3) of threshold $\hat{\tau}$ complements our understanding of the model's mechanics. Threshold $\hat{\tau}$ is the greatest rent transferred in the region where the *maximum-rent Opportunistic contract* is optimal. When the incumbent transfers a rent equal to $\hat{\tau}$, its enforcement constraint (2.3.3) binds:

$$\begin{aligned}(1-\beta)k\hat{\tau} &= \beta(w_\ell^O(\ell) - \underline{w}_\ell(\ell)) \\ &= \beta\Big(p(\ell,1)v_\ell^O(\ell) + (1-p(\ell,1))v_\ell^O(r)\Big) - \beta\Big(p(\ell,-1)\underline{v}_\ell(\ell) + (1-p(\ell,-1))\underline{v}_\ell(r)\Big)\end{aligned}$$

Since (2.3.3) binds, an elected party receives on-path its worst value conditional on holding power, i.e., $v_\ell^O(\ell) = \underline{v}_\ell(\ell)$. So, if party ℓ deviates and is reelected, it receives the same value as if it is reelected on path. Consider now the case in which party ℓ is defeated on path. Then, on-path actions are the worst possible for party ℓ while it is in opposition—i.e., $s_r = -1$ and $x_r = \tau$—and when ℓ regains power, it receives $\underline{v}_\ell(\ell)$. So, if party ℓ deviates and is defeated, it receives the same value as if it is defeated on path, i.e., $v_\ell^O(r) = \underline{v}_\ell(r)$. Altogether, this implies that a deviation is punished only with a $2m$ decrease in the coming election-winning probability. Thus, one can rewrite party ℓ's enforcement constraint (2.3.3) as:

$$(1-\beta)k\hat{\tau} = \beta 2m\big(\underline{v}_\ell(\ell) - \underline{v}_\ell(r)\big),$$

where $\underline{v}_\ell(\ell) - \underline{v}_\ell(r) = \frac{(1-\beta)b}{(1-\beta 2(a+m))}$. Combining the last two equations, we obtain threshold $\hat{\tau}$.

The *ℓ-Biased contract* offers an illustrative example of the role of threats in my results. In Proposition 13, as we increase the discretion τ, the firm's strategy becomes closer to a *ℓ-Exclusive* strategy in the sense that s_r increases. However, as Figure 2.2 shows, party r's rent $\tilde{x}_r$ does not monotonically decrease in τ but is hump-shaped. Note that as the discretion rises, the parties' punishment becomes worse. Thus, for a fixed support $\tilde{s}_r$, the maximum rent each party is willing to pay to sustain the relationship increases. This logic counterbalances the effect of decreasing electoral support.

I conclude this section with two comments. First, the firm's strict preference for different contracts in different institutional settings relies on the existence of electoral uncertainty. If electoral uncertainty were to tend to zero, political turnover would disappear and the firm would be naturally indifferent between the three contracts.

Lastly, since the game is constant-sum, at any equilibrium and any history, there is no continuation play that gives all players a greater continuation value. So the contracts characterized so far are renegotiation-proof according to standard definitions of renegotiation proofness.[15]

[15]For the case of political games, Acemoglu et al. (2008) introduce a qualification to this definition

2.5 The Determinants of the Firm's Influence

In this section, I investigate the main drivers of the firm's behavior and its rent extraction. By way of clarification, throughout I refer to the set of the firm's best contracts becoming more exclusive in the following sense: thresholds $\hat{\tau}$ and $\hat{x}$ decrease. The next proposition comes back to one of the key questions of this paper and shows how *quid pro quo* relationships relate to the uncertainty of the political arena.

Proposition 14. *(i) Rent extraction (weakly) increases in a and m.*

(ii) As a or m increases, the set of the firm's best contracts becomes less exclusive.

Part *(i)* of Proposition 14 shows that electoral uncertainty is socially beneficial, independently of whether we focus on the sources of incumbents' persistence that are exogenous (the incumbency advantage a) or endogenous (the firm's influence m). This result unveils a new positive effect of political turnover unconnected from the electoral accountability rationale.

The intuition behind part *(i)* of Proposition 14 is as follows. Electoral uncertainty depreciates the party's reward to cooperation: incumbency. If there is little persistence in power, parties' willingness to pay for reelection decreases. Now, this logic applies to both opportunistic and exclusive relationships. However, note that there is a non-trivial aspect in the role of incumbency advantage. A smaller incumbency advantage also implies that the incumbent can not secure an important reelection probability without the firm's support, which could increase its willingness to pay for cooperation.

Part *(ii)* of Proposition 14 shows, perhaps surprisingly, that the firm's optimal response to greater uncertainty is greater loyalty to a single party. The intuition behind this result is two-fold. First, in a more unstable environment, the moment in which a party will lose power and the opportunistic firm will desert it is (in expectation) closer in the future. Effectively, greater electoral uncertainty implies that incumbents discount less the firm's disloyalty after defeat. As a consequence, they are willing to extract lower rents to keep an opportunistic relationship ongoing, which explains why the threshold $\hat{\tau}$ decreases with electoral uncertainty. Second, as we said, incumbency loses value with greater uncertainty. As a result, rent $\hat{x}$ decreases, implying that it is more likely that the incumbent's discretion is enough to extract the full value of the exclusive relationship. This insight is consistent with Fouirnaies (2021) study on elections held in the United Kingdom from 1885 to 2019. The study found that when the limit on campaign spending was raised

of renegotiation-proofness, which is that it should only apply to all active players. However, though this qualification is relevant in a model with short-lived candidates like Acemoglu et al. (2008), it is less so in a model of long-lived parties.

(which indicates an increase in the interest groups' influence represented by m), the incumbents' financial and electoral advantages were enhanced.

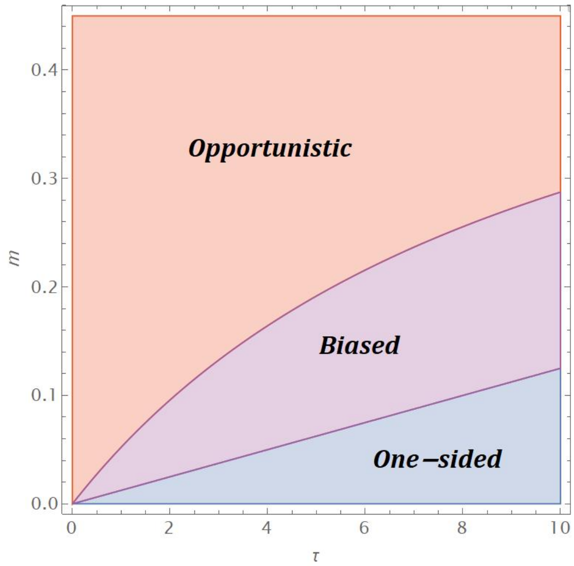

Figure 2.3 Firm's best contract as a function of the discretion and the influence parameters for $\beta = 0.8$, $b = 10$, $a = 0.05$, and $k = 1$.

Proposition 15. *(i) Rent extraction (weakly) decreases in k and τ.*

(ii) As k or/and τ increases, the set of the firm's best contracts becomes more exclusive.

This proposition has a number of important implications. First and foremost, firms whose rents are more inefficient (higher k) prefer the *ℓ-Exclusive contract.* Intuitively, if each dollar of rent is more costly, each party is less willing to transfer rents. Hence, the discretion constraint is less likely to bind and the firm does not need to incentivize both parties to do rent extraction. This implication of the model can be tested on public procurement data. Rents can be quantified through public contracts that are not awarded to the best bidder, where the public efficiency loss can be estimated by comparing the productivity of the politically connected firm with that of the leading bidder in the contest.

Lastly, it is interesting to consider the results for the firm's influence m and the incumbent's discretion τ together. Both parameters can be thought to capture the quality of democratic institutions. Discretion τ measures the extent to which the government can favor certain groups via patronage and influence m measures the extent to which such groups can pay back via an electoral advantage. Interestingly, as Figure 2.3 shows, an increase in institutional quality can make the firm either more or less opportunistic, depending on the dimension of (m, τ) in which the change occurs. This result is particularly relevant if we attach an intrinsic value to the existence of a balance of political power. Then, my model suggests that reforms constraining officeholders' discretion are superior to those that target lobbies' electoral influence, e.g., campaign contributions.

2.5.1 The Long-lasting Effect of Emergencies

Disturbances like wars, pandemics, or social agitation can force governments to increase public expenditure or pass major pieces of legislation rapidly. In these junctures, the constraints under which incumbents operate in ordinary years are relaxed because of the magnitude of the concurring events. Building on previous insights, we can show that an emergency can have a long-lasting effect on the balance of electoral power.

Consider the previous model with the only difference that there exists one emergency period in which there the incumbent enjoys a greater discretion than ordinarily, i.e., $\tau < \breve{\tau}$. An emergency is a shock that occurs only once and has a one-period duration; the players anticipate its possibility, and it is publicly observed. In each pre-crisis period, there is a probability $\lambda > 0$ of a crisis independent of the incumbent. For expositional purposes, let $\breve{\tau} \leq \hat{x}$ and $\tau \leq \hat{\tau}$.

Let i and o denote the incumbent and the opposition in the emergency period, respectively.

Proposition 16. *A firm's best contract prescribes:*

(i) before the emergency, an Opportunistic strategy *and rents* $\{x_\ell, x_r\} = \{\tau, \tau\}$*;*

(ii) in the emergency period, the incumbent i extracts a rent $x_i = \breve{\tau}$ and it is supported after;

*(iii) after the emergency, an i-*Biased strategy *and rents* $\{x_i, x_o\} = \{\tau, \tilde{x}_o\}$*, where* $\tilde{x}_o \in (0, \tau)$ *and* $\tilde{s}_o \in (-1, 1)$ *make both parties' enforcement constraints bind.*

Proposition 16 shows that crises have a long-lasting effect on the balance of electoral power. By increasing the government's discretion, crises allow the party in power to rewrite previous agreements and shift them in its favor. This finding resonates with empirical evidence. Kantor et al. (2013) find that the New Deal spending contributed to the persistence of the Democratic party majorities in the mid-20th century. Two papers document the appearance of similar electoral loyalties in Italy arising from one-time events: the redistribution of land both by the Christian Democrats in the 1950 Land Reform (Caprettini et al. (2021)) and by the Mussolini regime before (Carillo et al. (2022)). Also, the American Civil War and the increase in public expenditure it brought along produced a realignment of corporate interests towards the Republican Party, which helped to sediment Republican electoral dominance during the Gilded Age.

2.5.2 Asymmetric Political Parties.

We have unrealistically assumed an electoral system where parties' probabilities of winning office are symmetric. However, we could allow for a more general function for the electoral probability given by: $p(i,s) = \phi + a(\mathbb{1}_{\{i=\ell\}} - \mathbb{1}_{\{s=r\}}) + ms$, where ϕ is the left's electoral valance and the baseline model corresponds to $\phi = \frac{1}{2}$. The paper's qualitative results are the same in this more general model. Namely, when governments have limited discretion, a firm's optimal strategy is opportunism, and when these constraints are sufficiently eased, the firm prefers to exclusively support the initial incumbent. The only difference is that for intermediate levels of discretion, the firm tilts its support in favor of the party with a higher valence. The intuition behind this result, however, is not different from the one of the symmetric model. In the baseline model, there exists a level of discretion $\hat{\tau}$ at which the parties' enforcement constraint binds when the firm behaves opportunistically and, as a result, it tilts its support in one party's favor. In the asymmetric model, the party with a higher valence cannot be punished as hard as the other party. Therefore, its enforcement constraint in the *Opportunistic contract* binds for a lower level of discretion. Then, there exists a range of discretions for which the firm obtains from both parties the rent τ but only by playing a biased strategy in favor of the party with higher valence. However, as the discretion constraint eases further, the incentive for siding with the initial incumbent identified in Proposition 12 appears and makes the firm's best contract converge to the one of the symmetric model.

2.6 Implications for Empirical Research

So far, we have seen how different *quid pro quo* relations service the interest group's goal of maximizing rents in the presence of power fluctuations. Given that little research has addressed the dynamics of these relationships before, it is interesting to reflect on the implications of Propositions 12 and 13 for empirical research.

Exclusiveness and ideology. Proposition 12 suggests that exclusive relationships are not necessarily the result of an ideological alignment. They can be the optimal choice of a rent-seeking lobby—a possibility generally ignored by the empirical literature, which typically associates exclusiveness with confluent ideological preferences (Ferguson and Voth (2008); Acemoglu et al. (2013b)).

Some intriguing directions for future research follow from this notion. Are lobbies' ideological arguments no more than ex-post justifications to legitimize what is simple rent maximization? How can we test whether an exclusive relationship reflects an ideological alignment? To address this issue, we need to identify interest groups with an exogenous starting date—thus facing an exogenously determined initial incumbent.[16] A technological change that brings the appearance of new firms provides an exogenous starting date. New technologies, besides, often create the need for new regulation, increasing the incumbent's discretion during the early stages of the industry and thus, according to my analysis, reinforcing the interest group's drive towards the initial incumbent. The appearance of private TV in Italy offers an illustrative example. In the 1980s, the need to regulate the private TV market in Italy was palatable. The businessman Silvio Berlusconi sought connections with the political system to position himself in an advantageous position. Despite the long-lasting dominance of Christian Democrats in Italian politics, he established a close friendship with the contemporary Prime Minister, the Socialist Bettino Craxi. Berlusconi and Craxi's collaboration survived the latter's loss of the premiership and many of his corruption scandals (Ginsborg (2003)).

The importance of discretion. We have yet a very limited understanding of the main drivers behind the different dynamics followed by the firms' electoral support. Fouirnaies and Hall (2014) document that US firms operating in heavily regulated markets, such as finance and pharmaceuticals, are more likely to be opportunistic and maximize access to incumbents. This paper, however, focuses on a variable that is still to be better understood: the discretion of incumbents to affect the firm's profitability. Hence, an empiricist approach to this paper's results would not focus on the level of regulation under which different firms operate but on how flexible this regulation is. In particular, how likely it is that one party can significantly modify regulation during its tenure in power. Similarly, regarding public procurement, the focus would not be on the dependency of firms on public contracts and subsidies but on which is the incumbent's discretion to adjudicate these contracts and approve these subsidies with little oversee from other institutions or the public. An unexpected change in the executive's discretion to affect the regulation of a specific sector can be an opportunity to test this prediction. For example, in June 2022 the Supreme Court ruled that the Environmental Protection Agency could not put state-level caps on carbon emissions under the 1970 Clean Air Act and that those decisions must come from Congress instead. As the ruling curtailed the executive's ability to influence the energy sector's profitability, we might expect to observe changes in those firms' political behavior in subsequent political cycles.

Opportunism as a signal of solid checks and balances. Opportunistic relationships are particularly unpopular in the media—often seen as a signal of a rotten system in which special interests buy up every political party. However, Proposition 13 establishes that such relationships can arise due to effective constraints on the executive, pointing hence in a very different direction to the popular discourse. In the model, admittedly, every political party is up for sale because it is office-motivated. But lobbies' opportunism is not the byproduct of a rotten institutional

[16] This is an essential qualification to discard some lobbies that appear because they feel neglected by the current government.

system; on the contrary, it results from governments operating under effective constraints. This insight becomes particularly relevant if we think that the constraints on the executive are a multidimensional concept that is very hard to measure, as it involves the action of very different institutions that also vary from one country to another. However, my results suggest that we can learn about the incumbent's ability to transfer resources to interest groups by observing the behavior of those groups when political turnover occurs.

Do campaign contributions buy favorable policies? The lack of consistent evidence on whether campaign contributions produce favorable policies in return is a long-lasting puzzle in the special interests literature. The importance that Proposition 13 gives to *Opportunistic relationships* and the evidence in Fouirnaies and Hall (2014) and Fouirnaies and Hall (2018) of its widespread existence motivate us to delve into the implications of opportunism for this classical puzzle.

The papers addressing this question consider an interest group's objective at a certain period t. Different papers consider different interest groups' objectives, e.g., roll-call votes in a bill the group is lobbying for or increases in the firm's market valuation. In the model, this variable accounts for the rents transferred to the firm by the time-t incumbent. Then, these papers regress the rents transferred by the time-t incumbent on the interest group's electoral support for the time-t incumbent in the election of period $(t-1)$:

$$Rents(t) = \gamma_0 + \gamma_1 Support\ for\ time\text{-}t\ incumbent(t-1) + \gamma_2 D(t) + \varepsilon_t, \qquad (2.6.1)$$

where $D(t)$ denotes a vector of independent observables and $\varepsilon(t)$ denotes a vector of unobservables. These studies claim that if campaign contributions produce policy favors in return, the γ_1 coefficient should be positive and statistically significant. However, Ansolabehere et al. (2003) review thirty-six papers with a similar regression and report that in three out of four instances, campaign contributions had no statistically significant effects on legislation or had the wrong sign. More recently, Fowler et al. (2020) use a regression discontinuity design exploiting both close congressional, gubernatorial, and state legislative elections and within-campaign changes in market beliefs about US Senate races and conclude that corporate campaign contributions do not buy significant political favors—at least not on average.

Suppose now that we run regression (2.6.1) in a data set where interest groups are following *Opportunistic contracts*. At period $(t-1)$, interest groups would support the period-$(t-1)$ officeholder, who may not coincide with the next period's one. Nonetheless, the time-t incumbent would transfer rents to that interest group regardless of its previous support. The incumbent would understand that the group's behavior is part of a non-written contract by which the electoral support accrues to the incumbent at each election. Hence, the coefficient γ_1 would not reflect *quid pro quo* exchanges but rather the incumbent's persistence in power.

2.7 Weak Political Parties

I have so far assumed political parties that survive electoral defeats. However, often policy decisions are not taken by long-lived parties but by party leaders who are replaced after losing an election and thus have a shorter time horizon. For the purpose of this section, I take a *weak political party* to be an organization with no ability to discipline its short-sighted leaders to internalize the party's long-term objectives. The baseline model corresponds to the case of perfect party discipline—a strong party system. This section investigates the firm's preferred relational contract under weak parties and the implications of the party system for rent extraction.

Consider the following game. Suppose each party randomly chooses a leader from an infinite pool of mass 1 of identical leaders, denoted Z. After an electoral victory, the leader chooses the rent and keeps her position until she is electorally defeated, then, she leaves the political arena and becomes a mere citizen again. The new party leader is randomly drawn from the pool of candidates.

Because parties are weak, the leader does not internalize her party's interests beyond her replacement. As long as she keeps her leadership position, she has the same preferences as her party; but once she becomes a citizen, she only suffers the rents burden. The stage payoff of leader z_ℓ when i is the incumbent is:

$$v_{z_\ell}(i) = \begin{cases} b - kx_{z_\ell} \text{ if } i = z_\ell \\ -kx_i \text{ if } i \neq z_\ell. \end{cases}$$

The following proposition shows that, intuitively, under a weak party system, the firm's best contract is opportunistic.

Proposition 17. *The firm's best contract is the maximum-rent* Opportunistic contract*, which prescribes the same rent extraction for any leader,* $x_z = \min\{\tau, \hat{x}^O\}$ *for any* $z \in Z$*, where*

$$\hat{x}^O = \frac{2\beta m}{k(1 - \beta p(\ell, 1))} b, \tag{2.7.1}$$

and it makes the incumbent's enforcement constraint bind at every period.

Although there is no systematic study of strong and weak political parties in the context of special interests, some evidence scattered across the literature supports Proposition 17. DellaVigna et al. (2016) studied connections between media firms and the Italian prime minister Silvio Berlusconi during 1993-2009, a period in which the Italian party system had imploded and individual candidates were more relevant than party organizations. DellaVigna et al. (2016) compare a short-sighted and a forward-looking measure of Bersluconi's power and show that political exchanges in that context were short-term and driven by incumbency. Hickey (2014) shows that in Canada—a Parliamentary system with strong parties—personal connections in lobbying have less importance than in the U.S.

2.7.1 Rent Extraction under different Party Systems

Once we have characterized the firm's best contract under both party systems, a natural question arises: do interest groups prefer to operate in a weak party system? Parties' long-liveness aims to capture how political competition is structured along the lines of political organizations. However, the literature on relational contracts, mainly inspired by labor principal-agent relationships, typically assumes that if an agent is fired, she will not reappear in any future period. Comparing both party systems allows us to understand better the implications of the long-liveness assumption.

On the one hand, replaceable leaders face higher stakes than long-lived parties in each election: they can lose both office and party leadership.[17] As a consequence, they value electoral support more than long-lived parties. On the other hand, a long-lived party can derive a greater utility from collaborating with the firm than a leader, as the party also cares about electoral support after it is ousted from power. In a nutshell, a weak party system implies higher stakes for the incumbent in each election but no long-term relationships. No party system is invariably more extractive than the other, and moreover, the comparison between the two systems is non-monotonic. The next proposition formalizes this result.

Proposition 18. *Consider $\hat{\tau}$ and $\hat{x}$ from Proposition 13. There exists a $\hat{\hat{\tau}} \in (\hat{x}^O, \hat{x})$ such that in the firm's best contract:*

(i) If $\tau \leq \hat{\tau}$, both party systems extract the same rents,

(ii) If $\tau \in (\hat{\tau}, \hat{\hat{\tau}})$, the weak party system extracts greater rents than the strong party system,

(iii) If $\tau > \hat{x}^O$, the strong party system extracts greater rents than the weak party system.

The intuition of Proposition 18 is as follows. If the amount of transferable rents is sternly limited, the firm's best contract is identical in both party systems. Contracts in each party system gradually differ as discretion increases. A region exists—i.e., $\tau \in (\hat{\tau}, \hat{\hat{\tau}})$—where the firm is strictly better off in a weak party system, as it takes advantage of leaders' higher electoral stakes. However, as the discipline constraint eases, the gains from long-term loyalty outweigh any extra electoral motivation of leaders. Thus, the firm prefers to cooperate with long-lived parties. Lastly, note that if electoral uncertainty disappears, the firm becomes indifferent between the two party systems, i.e., formally, if $\frac{1}{2} + a + m \to 1$, then $\hat{x}^O \to \hat{x}$.

[17] That electoral stakes are smaller with long-lived parties is shown, for an accountability model, by Ferejohn (1986); for democratization, by Przeworski (1991) and Fearon (2011); and in the presence of malfunctioning accountability, like in patronage politics, by Delgado Vega (2022). This setting differs from these papers in that to make reelection more likely is not a prerogative of the incumbent but of the firm.

2.8 Entry Cost

This section considers an extension of the baseline game in which the firm suffers an entry cost the first time it affects an election. This cost captures different barriers to entry into lobbying, e.g., the effort of building a political network, gathering funds, hiring lobbying specialists, or establishing an electoral machine (Kerr et al. (2014)).

Consider a game that differs from the baseline model only in that if the firm affects the election outcome for the first time, it incurs a participation cost. Formally, at the beginning of each period t, if $s = 0$ has been played at all previous periods, either $s(h_t) = 0$ again, or the firm incurs a cost $\zeta > 0$ and then $s \in [-1, 1]$ for the period t onwards.[18] For simplicity, I assume unconstrained rents.

Because participation is costly, for a sufficiently high entry cost, the interest group prefers to refrain from participating electorally on the equilibrium path. Thus, the firm's best contract is a *Neutral contract* in which both parties extract rents despite not receiving any electoral support in exchange. Payments have a deterrence role; the parties pay under the off-path threat of being punished. In a party's punishment, the firm incurs the entry cost and participates electorally. Thus, despite no on-path participation, the threat's credibility depends on the entry cost. In particular, there exists a threshold $\bar{\zeta}$ such that if the entry cost is higher than $\bar{\zeta}$, the firm cannot credibility promise to punish a deviating party because there is no contract that produces sufficient rents to compensate for the entry cost.

Proposition 19. *Let* $\underline{\zeta} \equiv \frac{m\beta(2-\beta(1-2m))}{k(1-\beta)(1-\beta 2a)}b$ *and* $\bar{\zeta} \equiv \frac{m\beta(2-\beta(1+2(a-m)))}{k(1-\beta)^2(1-\beta 2a)}b$*, where* $\underline{\zeta} < \bar{\zeta}$*. The firm's best contract is*

(i) If $\zeta \leq \underline{\zeta}$*, the maximum-rent* ℓ-Exclusive contract*,*

(ii) If $\zeta \in [\underline{\zeta}, \bar{\zeta}]$*, the maximum-rent* Neutral contract *(see the Appendix for a formal characterization),*

(iii) If $\bar{\zeta} < \zeta$*, the firm does not participate neither on-path nor off-path and there is no rent extraction.*

In a nutshell, the firm's best contract has three regions depending on the entry cost. For a low cost, the firm participates on-path and off-path the same way as in the baseline model. The firm does not participate on-path for an intermediate cost but threatens to participate off-path. There is no rent extraction for a sufficiently high cost, as the firm cannot credibility threaten to participate if a deviation occurs.

The Tullock paradox. Tullock (1989) noticed that lobbying expenditures in the US were lower than one should expect from standard rent-seeking models.

[18]If the timing is modified such that the cost is incurred after the incumbent chooses the rent, the main results of the section are qualitatively unaffected, although they are more cumbersome in expositional terms.

Several papers have offered different explanations for this fact. Polborn (2006) argues that because lobbies strategically choose the moment they should 'attack' certain legislation, they need moderate expenditures. Bombardini and Trebbi (2011) consider that interest groups supply monetary contributions but also votes, and the puzzle can be explained by the omission of these votes from the calculation. Ansolabehere et al. (2003) argue that when some legislation helps an entire sector, PACs contributions are subjected to collective action problems.

Proposition 19 offers a parsimonious explanation to the Tullock paradox: rent extraction is not made only in return for interest groups' active support but also in return for its inaction. Hence, a fraction of rents is constituted by *deterrence rents*.

2.9 Conclusions

This paper models the agreements between political parties and interest groups as relational contracts. This modeling choice captures that these agreements lack third-party enforcement; thus, they need to be self-sustained by the credible threat of a break-up of cooperation. In the model, two political parties repeatedly compete for office in a setting where electoral outcomes are uncertain. In each period, the incumbent party decides the rent transferred to the interest group. After that, the interest group chooses to support one of the parties, increasing its probability of being in power next period. Rents bear a cost for both parties, and the government's discretion limits the rents that can be transferred each period.

This paper shows how the interest group's best relational contract in the presence of power fluctuations depends on the interest group's characteristics and the institutional setting. The most relevant insight relates to the interest group's best contract with electoral uncertainty. If the firm faces a sufficiently unstable political arena, the *Exclusive contract* with the initial incumbent is the unique firm's best contract. On the contrary, in a more stable political arena, the firm prefers to behave opportunistically. These results and, more generally, the centrality of incumbency in my analysis opens interesting directions for the reinterpretation of empirical evidence, for example, in public procurement studies.

This paper is an invitation for future research on special interest politics that puts credibility and dynamics on center stage. A next step in this direction would be the study of settings with multiple organized interests. Firms that belong to the same industry may benefit from each other's rents—e.g., because they favor the whole industry—or may suffer from them—e.g., because rents give an advantage to one firm over the others. Also, given the centrality of the initial period when incumbents' discretion is high, it would be interesting to investigate the dynamics generated when different interest groups start their activity in different periods.

Appendix 2.A Notation

Note that any on-path history $h \in \mathcal{H}$ is characterized by *(i)* the calendar time $T(h)$; and *(ii)* the electoral outcomes until $T(h)$, i.e., the number $N(h)$ of government changes and the times $G_1(h), \ldots, G_{N(h)}(h)$ in which these changes occurred. So the set of feasible on-path histories is

$$\mathcal{H} \equiv \{(t, n, g_1, \ldots, g_n) \in \mathbb{N}^{n+2} \times [0,1]^t : 0 < g_1 < \ldots < g_n \leq t \text{ and } n \leq g_n\}.$$

Consider any pair of on-path histories h and h'. We say that h' follows h if $t < t'$; $n \leq n'$, $g_1 = g'_1$, $\ldots$, $g_n = g'_n$; and $g_n \leq g'_{n'}$. In that case, let $Pr(h'|s,h)$ denote the probability that h' occurs conditional on h and the firm's on-path strategy s. Also, let $\Omega(s;h,h') \equiv \beta^{t'-t}Pr(h'|s,h)$ be the discounted probability that h' occurs conditional on h and s.

Let $\mathcal{H}(N)$ denote the set of on-path histories $h \in \mathcal{H}$ such that $N(h) = N$, i.e., there have been N governments changes. Lastly, let $\mathcal{H}^*(N)$ denote the set of histories $h \in \mathcal{H}(N)$ such that $T(h) = G_N(h)$, i.e., there have been N governments changes and the last government change occurred in the last period.

Appendix 2.B Proofs of the Main Results (Propositions 12 and 13)

Preliminary steps to the proof of Propositions 12 and 13

The tuple of value functions (v_f, v_ℓ, v_r) are defined as the expected present payoffs by (2.3.2). Since the parties' stage payoffs are bounded, the values of (v_f, v_ℓ, v_r) are also bounded. The firm's value and the parties' values lie in the range $[0, \tau]$ and $[-k\tau, b]$, respectively. The lower bound $-k\tau$ in the party's value corresponds to the maximal feasible rent being extracted every period and the party never holding power. The upper bound b corresponds to the party holding power every period and no rents being extracted.

Let $\mathfrak{F}(\alpha)$ be the set of public strategy profiles σ such that the incumbent i's value at every on-path history $h \in \mathcal{H}$ satisfies:

$$v_i^\sigma(i,h) \geq (1-\beta)b + \beta\alpha, \tag{2.B.1}$$

where α is a arbitrarily specified value that belongs to $[-k\tau, b]$. First, we want to establish that there exists in $\mathfrak{F}(\alpha)$ a lowest pre-election value for the incumbent. Thus, consider the following minimization problem:

$$M(\alpha) = \inf_\sigma w_i^\sigma(h_0) \text{ subject to } \sigma \in \mathfrak{F}(\alpha)$$

To show that there exists a solution for the above minimization problem we need to show that the set to which σ belongs $\mathfrak{F}(\alpha) = \{\sigma \mid v_i^\sigma(h_t) \geq \alpha \text{ for any } h \in \mathcal{H}, i \in \{\ell, r\}\}$ is compact. Each σ is a stochastic vector process that can be identified with an element of $\Sigma \equiv [0,\tau]^\infty \times [-1,1]^\infty$. Endow this space with the product topology. Then, Σ is a compact set because it is the infinite product of compact sets. Since $\mathfrak{F}(\alpha)$ is a subset of Σ, to prove its compactness we therefore only need to prove that it is closed. Under the product topology, the players' value functions (v_f, v_ℓ, v_r) are continuous. Thus, as (2.B.1) is a weak inequality satisfied by a continuous function, the set $\mathfrak{F}(\alpha)$ is compact. Since $\mathfrak{F}(\alpha)$ is a metrizable space, it follows from its compactness that it is also sequentially compact. Consequently, there exists a subsequence $\sigma_{(n)}^w \in \mathfrak{F}(\alpha)$ such that $\sigma_{(n)}^w \to \sigma^w \in \mathfrak{F}(\alpha)$ and $w_i^{\sigma^w}(h_0) = M(\alpha)$, which is the lowest pre-election value for the given α and σ^w is the strategy profile associated with it.

Let $\underline{w}$ denote the worst equilibrium pre-election value for the incumbent. Since the firm's incentive compatibility is trivially satisfied and the opposition is inactive, then $\sigma \in \mathfrak{F}(\alpha)$ is an equilibrium (i.e., a contract) if it satisfies (2.B.1) for $\alpha = \underline{w}$. Thus $\underline{w}$ is, by definition, the lowest pre-election value among the strategy profiles that belong to $\mathfrak{F}(\underline{w})$, and we use therefore a fixed point argument to determine $\underline{\alpha}$.

Plan of the Proof: We consider the problem of characterizing the contract $\mathcal{C}^w$ that gives the incumbent's lowest equilibrium pre-election value $\underline{w}$—i.e., the incumbent's worst contract—and relate this contract with the firm's best contract $\mathcal{C}^*$. We proceed in the following steps. First, Lemmas 1 and 2 establish a relationship between the parties' worst contract (i.e., worst punishment) and the firm's best contract. Second, I make a distinction between (i) when τ is large enough so that the incumbent's choice is unconstrained in equilibrium—which I refer to as unconstrained rents—and (ii) the cases in which τ constrains the incumbent's choices in equilibrium. For the unconstrained-rents case, Lemmas 3 and 1 characterize the firm's best strategy profile in $\mathfrak{F}(\alpha)$ and then, Lemma 1 relates it to $\sigma^w(\alpha)$, which allows Proposition 12 to use a fixed point argument to determine α and obtain $\mathcal{C}^w$ and $\mathcal{C}^*$. For the constrained-rents case, Lemma 5 characterizes the profile $\sigma^w(\alpha)$ in $\mathfrak{F}(\alpha)$ and then, Proposition 13 relates $\sigma^w(\alpha)$ to the firm's best strategy profile, and uses a fixed point argument to determine α and obtain $\mathcal{C}^w$ and $\mathcal{C}^*$.

The following proofs of the Lemmas 1 and 2 characterize the incumbent's and the opposition's worst strategy profile with respect to the firm's best strategy profile under the assumption that the firm's best contract is such that the initial incumbent's enforcement constraint binds at the initial period.

Proof of Lemma 1:

W.l.g., consider h_0 as our history of reference and party r as the opposition party.

Consider the problem of characterizing the opposition's worst $\sigma \in \mathfrak{F}(\alpha)$. If the incumbent's constraint (2.B.1) binds at h_0: $v_\ell^\sigma(\ell, h_0) = (1-\beta)b + \beta\alpha$. Since the game is constant sum, one can write the opposition's value as a function of the other two player's values, i.e., $v_r^\sigma(\ell, h_0) = \beta b - \beta\alpha - k v_f^\sigma(\ell, h_0)$. Thus, minimizing $v_r^\sigma(\ell, h_0)$ is equivalent to maximizing $v_f^\sigma(\ell, h_0)$ among all $\sigma \in \mathfrak{F}(\alpha)$ in which the incumbent's constraint (2.B.1) binds at h_0.

Proof of Lemma 2:

Step 1. Suppose $\tilde{\sigma} = (\tilde{x}, \tilde{s})$ is party ℓ's worst $\sigma \in \mathfrak{F}(\alpha)$. In $\tilde{\sigma}$, party ℓ's enforcement constraint (2.B.1) binds at h_0, so

$$(1-\beta)(b - k\tilde{x}_\ell(h_0)) + \beta\tilde{w}_\ell(h_0) = (1-\beta)b + \beta\alpha.$$

Hence, there exists another strategy profile, denoted $\sigma^w = (x^w, s^w)$, that minimizes party ℓ's value by prescribing $x_\ell^w(h_0) = 0$ and $w_\ell^w(h_0) = \alpha$. Hereafter, I focus on σ^w, which has

$$w_\ell^w(h_0) \equiv p(\ell, s^w(h_0))v_\ell^w(\ell, h^\ell) + (1 - p(\ell, s^w(h_0)))v_\ell^w(r, h^r). \tag{2.B.2}$$

where $h^\ell \in \mathcal{H}(0)$ and $h^r \in \mathcal{H}^*(1)$.

Step 2. *In this step, we characterize the sequence of actions following h^ℓ.*

Note that party ℓ's value $v_\ell^w(\ell, h^\ell)$ does not affect players' incentives in any history that follows h^r. Using Step 1 reasoning, there exists a profile $\sigma^{w,1} = (x^{w,1}, s^{w,1})$ with identical actions as σ^w at h_0 and at any history that follows h^r, and that prescribes $x_\ell^{w,1}(h^\ell) = 0$ and $w_\ell^{w,1}(h^\ell) = w_\ell^w(h_0)$. By construction, (i) $\sigma^{w,1}$ prescribes a $w_\ell^{w,1}(\ell, h_0) \leq \alpha$, and (ii) if $\sigma^w \in \mathfrak{F}(\alpha)$, then $\sigma^{w,1} \in \mathfrak{F}(\alpha)$.

Step 3. *In this step, we characterize the sequence of actions following h^r.*

We can now rearrange (2.B.2) to obtain

$$w_\ell^w(h_0) = \frac{1}{1 - \beta p(\ell, s^w(h_0))}(p(\ell, s^w(h_0))(1-\beta)b + (1 - p(\ell, s^w(h_0)))v_\ell^w(r, h^r)),$$

and it follows from $v_\ell^w(r, h^r) < b$ that $w_\ell^w(h_0)$ is increasing with respect to $s^w(h_0)$, so $w_\ell^w(h_0)$ is minimized for $s^w(h_0) = -1$. Therefore, to minimize party ℓ's value $v_\ell(h_0)$, σ^w must prescribe $s^w(h) = -1$ and $x^w(h) = 0$ for any $h \in \mathcal{H}(0)$. Lastly, it follows from Lemma 1 that party ℓ's value once it is ousted from power for the first time—i.e., $v_\ell^w(r, h^r)$ where $h^r \in \mathcal{H}^*(1)$—is minimized by the firm's best $\sigma \in \mathfrak{F}(\alpha)$ from history h^r onwards. Therefore, the incumbent's worst punishment value is:

$$\gamma(\alpha) \equiv \frac{1}{1 - \beta p(\ell, -1)}(p(\ell, -1)(1-\beta)b + \beta(1 - p(\ell, -1))v_j^*(i; \alpha)), \tag{2.B.3}$$

where $v_j^*(i; \alpha)$ denotes the opposition's value in the firm's best strategy profile from that period onwards. $\square$

Lemma 3. *Let $\sigma = (x, s)$ belong to $\mathfrak{F}(\alpha)$. For some τ large enough, there exists another compatible strategy profile $\sigma^* = (x^*, s^*)$ with the same on-path strategy for the firm, i.e., $s^* = s$, and such that x^* yields a weakly greater expected discounted rent at history h_0. Further, σ^* satisfies the following properties:*

(i) the rent extracted by the initial incumbent—i.e., $x^*_\ell(h_0)$—is positive and, at any other history, rents are zero,

(ii) $x^*_\ell(h_0)$ is such that (2.B.1) binds in history h_0.

Proof:

This proof is constructive, and its structure is as follows: I start with an arbitrary strategy profile $\sigma = (x, s) \in \mathfrak{F}(\alpha)$ and construct through various steps a σ^* which satisfies the following properties: (a) σ^* gives a weakly greater level of rent extraction than σ, (b) $\sigma^* \in \mathfrak{F}(\alpha)$, and (c) σ^* satisfies Lemma 3. At each step, we construct a new strategy profile within $\mathfrak{F}(\alpha)$ which weakly improves rents and adds part of Lemma 3 conditions.

Step 1. *We first construct a strategy profile $\sigma^1 \in \mathfrak{F}(\alpha)$ that gives weakly greater rents than σ and such that the incumbent ℓ's constraint (2.B.1) binds at h_0.*

Suppose that σ prescribes a rent in history h_0 such that the incumbent's constraint (2.B.1) does not bind. Then, consider an alternative strategy profile, denoted σ^1, identical on-path to σ except that at history h_0 the incumbent extracts a rent that makes its constraint bind. This rent satisfies the incumbent's constraint (2.B.1), hence if $\sigma \in \mathfrak{F}(\alpha)$, then $\sigma^1 \in \mathfrak{F}(\alpha)$. By construction, expected rent extraction at h_0 is greater in σ^1 than in σ.

Step 2. *Consider $\sigma^1 = (x^1, s)$ in $\mathfrak{F}(\alpha)$ constructed in Step 1. In this step, we construct a strategy profile $\sigma^2 = (x^2, s)$ in $\mathfrak{F}(\alpha)$ that gives weakly greater present rents than σ^1 and such that for any $h \in \mathcal{H}(0)$ and $h \neq h_0$, $x^2(h) = 0$.*

Suppose profile σ^1 prescribes a positive rent in some history $\hat{h} \in \mathcal{H}(0)$ with $\hat{h} \neq h_0$—i.e., $x^1_\ell(\hat{h}) > 0$. We consider an alternative strategy profile, denoted $\hat{\sigma} = (\hat{x}, s)$, identical on-path to σ^1 except for (i) $\hat{\sigma}$ prescribes no rent extraction in history $\hat{h}$—i.e., $\hat{x}_\ell(\hat{h}) = 0$—and (ii) in the initial period, $\hat{\sigma}$ prescribes

$$\hat{x}_\ell(h_0) = x^1_\ell(h_0) + \Omega(s; h_0, \hat{h}) x^1_\ell(\hat{h}).$$

By construction of $\hat{\sigma}$, (i) both strategy profiles give the same present rents and, (ii) because party ℓ's constraint (2.B.1) at h_0 is the same as in σ^1 and party ℓ's constraint at $\hat{h}$ has been relaxed, if $\sigma^1 \in \mathfrak{F}(\alpha)$, then $\hat{\sigma} \in \mathfrak{F}(\alpha)$. Using the same procedure for any history $h \in \mathcal{H}(0)$ different from h_0, we construct a profile $\sigma^2 = (x^2, s)$ such that $x^2(h) > 0$ if and only if $h = h_0$ and such that σ^2 gives the same present rents as σ^1 at h_0.

Step 3. *Consider $\sigma^2 = (x^2, s)$ constructed in Step 2. In this step, we construct a strategy profile $\sigma^* = (x^*, s)$ in $\mathfrak{F}(\alpha)$ that gives weakly greater present rents at h_0 than σ^2 and such that, for any $h \in \mathcal{H}(n)$ with $n \geq 1$, $x^*(h) = 0$.*

Suppose that σ^2 prescribes for some history $\hat{h} \in \mathcal{H}(1)$ a rent $x_r^2(\hat{h}) > 0$. Then, consider an alternative strategy profile, denoted $\hat{\sigma} = (\hat{x}, s)$, identical on-path to σ except for (i) there is no rent extraction at $\hat{h}$—i.e., $\hat{x}_r(\hat{h}) = 0$—(ii) in h_0, it prescribes:

$$\hat{x}_\ell(h_0) = x_\ell^2(h_0) + \Omega(s; h_0, \hat{h}) x_r^2(\hat{h}). \tag{2.B.4}$$

To see that $\hat{\mathcal{C}} \in \mathfrak{F}(\alpha)$ note that from (2.B.4)

$$\beta \hat{w}_\ell(h_0) = \beta w_\ell^2(h_0) + (1-\beta)\Omega(s; h_0, \hat{h}) k x_r^2(\hat{h}); \tag{2.B.5}$$

and party ℓ's enforcement constraint in h_0 is

$$(1-\beta)(1-\pi)k\hat{x}_\ell(h_0) \leq \beta(\hat{w}_\ell(h_0) - \alpha).$$

Thus, substituting (2.B.4) and (2.B.5), we see that both sides of the above inequality are the same in σ^2 as in $\hat{\sigma}$. Hence, if $\sigma^2 \in \mathfrak{F}(\alpha)$, then $\hat{\sigma} \in \mathfrak{F}(\alpha)$. Note that $\hat{\sigma}$ implies the same present rents as σ^2. Consider now using the same procedure for every history in which party r holds power—every $h \in \mathcal{H}(n)$ with n odd—and using Step 2 procedure for every history in which party ℓ holds power—every $h \in \mathcal{H}(n)$ with n even and $h \neq h_0$. Then, we obtain a strategy profile σ^* that gives weakly greater present rents at h_0 than σ^2, belongs to $\mathfrak{F}(\alpha)$, and satisfies Lemma 3. □

Lemma 4. *Let rents be unconstrained and let $\sigma^* = (x^*, s^*)$ be a strategy profile in $\mathfrak{F}(\alpha)$ that maximizes rent extraction and satisfies Lemma 3. Then, $s(h) = 1$ for any on-path history $h \in \mathcal{H}$.*

Proof:

To define the firm's best strategy profile in $\mathfrak{F}(\alpha)$, instead of maximizing among all possible $\sigma \in \mathfrak{F}(\alpha)$, we can maximize among all $\sigma \in \mathfrak{F}(\alpha)$ with a rent scheme satisfying Lemma 3. This implies maximizing only w.r.t. the firm's on-path strategy.

Consider $\sigma^* = (x^*, s^*)$ that satisfies Lemma 3, so constraint (2.B.1) bind at h_0:

$$(1-\beta)kx_\ell^*(h_0) = \beta(w_\ell^*(\ell, h_0) - \alpha). \tag{2.B.6}$$

Hence σ^* maximizes $x_\ell^*(h_0)$—which is the same as maximizing $w_\ell^*(\ell, h_0)$—prescribing $s^*(h) = 1$ for any on-path $h \in \mathcal{H}$. Recall that the firm's enforcement constraint is always satisfied, thus the choice of s is unconstrained and $\sigma^* \in \mathfrak{F}(\alpha)$. □

Proof of Proposition 12 and Remark 1:

Together, Lemmas 3 and 4 characterize a firm's best strategy profile in $\mathfrak{F}(\alpha)$. Lemma 1 establishes that characterizing a party's worst equilibrium strategy profile is equivalent to characterizing the firm's best strategy profile in $\mathfrak{F}(\alpha)$. Hence, we have obtained a party's worst pre-election value from any history h onwards as a function of α, that is, we have obtained an application $\alpha \to \gamma(\alpha)$, where $\gamma(\alpha)$ is given by (2.B.3) where $v_j^*(i;\alpha)$ is r's initial value in an ℓ-*Exclusive* strategy profile satisfying Lemma 3, i.e.,

$$v_j^*(i;\alpha) = \beta\alpha + \beta\frac{(1-2p(\ell,1)+\beta 2a)b}{1-\beta 2a}.$$

Step 1 shows that $\alpha \to \gamma(\alpha)$ has a fixed point. Step 2 gives a closed form solution for this fixed point and thus, characterizes both a party's worst equilibrium contract and a firm's best equilibrium contract. Step 3 proofs Remark 1 by constructing a firm's best contract which is on-path stationary.

Step 1. *There exists an $\underline{w}$ such that $\gamma(\underline{w}) = \underline{w}$ and it is a fixed point of the application $\alpha \to \gamma(\alpha)$.*

Since (i) $\gamma(\alpha)$ is continuous and linear w.r.t. α, (ii) $\gamma(\alpha) > \alpha$ as $\alpha \to -\infty$, and (iii) $\gamma(\alpha) < \alpha$ for some α, the existence of $\underline{w}$ follows from the Intermediate Value Theorem.

Step 2. *We solve the fixed point $\underline{w}$ of the application $\alpha \to \gamma(\alpha)$ and derive from it a firm's best contract.*

As $\alpha \to \gamma(\alpha)$ is a linearly increasing contraction, it has a unique fixed point. Evaluated on $\underline{w}$, the initial incumbent's rent given by (2.B.6) becomes:

$$x_\ell(h_0;\alpha=\underline{w}) = \frac{2\beta mb(1-\beta(1-p(\ell,1))}{(1-\beta)(1-\beta 2a)k(1-\beta)};$$

an increasing function of m, a, β, bounded for any $\beta < 1$. Therefore, the firm's best contract C^* is a *maximum-rent ℓ-Exclusive contract* with rent $x_\ell(h_0;\alpha=\underline{w})$ at h_0 and no on-path rents onwards.

Step 3. *Consider contract $\mathcal{C}^* = (x^*, s^*)$ constructed in Step 2. Let $\mathcal{C}^L = (\hat{x}, s^L)$ denote the on-path stationary ℓ-*Exclusive contract *described in Remark 1. In this step, we show that $\mathcal{C}^L$ attains the same initial value for the three players as $\mathcal{C}^*$.*

First, party ℓ's value at h^0 in $\mathcal{C}^*$, is

$$v_\ell^*(h_0) = -(1-\beta)kx_\ell^*(h_0) + \frac{1-\beta(1-p(\ell,1))}{1-\beta 2a}b; \tag{2.B.7}$$

and in $\mathcal{C}^L$, is

$$v_\ell^L(h_0) = \frac{1-\beta(1-p(\ell,1)}{1-\beta 2a}(b-k\hat{x}). \tag{2.B.8}$$

Since $\hat{x} = \frac{4\beta mb}{k(1-\beta)}$ equates (2.B.8) to (2.B.7), the result follows. □

We have then characterized the firm's best contract for a discretion τ large enough so that it does not constrain the incumbent's rent choices in equilibrium. We proceed now to do the same for the case in which τ constraints the incumbent's rent choices in the firm's best equilibrium.

Lemma 5. *Suppose that there exists a strategy profile in $\mathfrak{F}(\alpha)$ such that $x(h) = \tau$ and $s(h) = 1$ for any $h \in \mathcal{H}(0)$ and $v_r(h) = (1-\beta)b + \beta\alpha$ for any $h \in \mathcal{H}^*(1)$. Then, this strategy profile is the opposition's worst strategy profile in $\mathfrak{F}(\alpha)$.*

Proof:

First, at any $h \in \mathcal{H}(0)$ rent extraction is maximal and at any $h \in \mathcal{H}^*(1)$ the opposition's value is the lowest possible, α. Then, at any $h \in \mathcal{H}(0)$, $v_r(h) \in (-\tau, (1-\beta)b+\beta\alpha)$ for any firm's strategy. Since $v_r(h) < (1-\beta)b+\beta\alpha$, then $s(h) = 1$ minimizes the opposition's value. □

Proof of Proposition 13:

The proof is as follows: steps 1, 2, and 3 prove the conditions under which the *maximum-rent Opportunistic contract* exists and it is the firm's preferred contract. Steps 4 and 5 show the same for the *ℓ-Biased contract.*

Step 1. *Let x^τ be the strategy that prescribes the incumbent to always extract the maximal rent—i.e., $x^\tau(h) = \tau$ for any on-path history $h \in \mathcal{H}$. In this step, we show that if there exists a pair (τ, s) such that $\sigma = (x^\tau, s)$ belongs to $\mathfrak{F}(\alpha)$, then $\sigma^O = (x^\tau, s^O)$ belongs also to $\mathfrak{F}(\alpha)$ for the same τ, where s^O is the opportunistic strategy.*

By definition, any strategy profile that features x^τ is the firm's best profile. Note that, given strategy x^τ, any on-path pre-election value of the firm is the same—i.e., $\bar{w}_f = \tau$. Thus, since the game is constant sum, at any $h \in \mathcal{H}$,

$$w_\ell(h) = b - w_r(h) - k\tau. \tag{2.B.9}$$

Also, note that $\sigma = (x^\tau, s)$ belongs to $\mathfrak{F}(\alpha)$ if it satisfies for any on-path history $h \in \mathcal{H}$ the incumbent's constraint (2.B.1):

$$(1-\beta)k\tau \le \beta(w_i^\sigma(i,h) - \alpha).$$

Let $w_i^O(i)$ ($w_j^O(i)$) denote the incumbent's (opposition's) pre-election value in σ^O, which are identical for any history on-path. Hence, the incumbent's enforcement constraint of σ^O is identical in every on-path period. Then, since both in σ^O and in σ a rent τ is extracted every period, if for some τ there exists at least one on-path history $\hat{h} \in \mathcal{H}$, such that σ prescribes a pre-election value $w_i^\sigma(i,\hat{h}) \le w_i^O(i)$ and $\sigma \in \mathfrak{F}(\alpha)$, then $\sigma^O \in \mathfrak{F}(\alpha)$ also for the same τ.

We now show that for any profile $\sigma = (x^\tau, s)$ in $\mathfrak{F}(\alpha)$ there exists at least one history $\hat{h} \in \mathcal{H}$, such that σ prescribes a pre-election value $w_i^\sigma(i, \hat{h}) \leq w_i^O(i)$.

Suppose for a contradiction that σ belongs to $\mathfrak{F}(\alpha)$ and for every $h \in \mathcal{H}$, $w_i^\sigma(i, h) > w_i^O(i)$. We build now σ by maximizing $w_\ell^\sigma(\ell, h_0)$ under the constraint of $w_i^\sigma(i, h) > w_i^O(i)$ for every on-path history $h \neq h_0$. Consider

$$w_\ell(\ell, h_0) = p(\ell, s(h_0))((1-\beta)(b - k\tau) + \beta w_\ell(\ell, h_1^\ell)) + (1 - p(\ell, s(h_0)))(-(1-\beta)k\tau + \beta w_\ell(r, h_1^r)) \tag{2.B.10}$$

where $h_1^\ell \in \mathcal{H}(0)$ and $h_1^r \in \mathcal{H}^*(1)$. From $w_i^O(i) > w_j^O(i)$, $w_i^\sigma(i, h) > w_i^O(i)$ and (2.B.9), it follows that

$$w_\ell^\sigma(\ell, h_1^\ell) > w_i^O(i) > w_j^O(i) > w_\ell^\sigma(r, h_1^r).$$

Thus, since $w_\ell(\ell, h_1^\ell) > w_\ell(r, h_1^r)$, $s(h_0) = 1$ maximizes (2.B.10). Applying the same reasoning to any other on-path history $h \in \mathcal{H}(0)$, we have that $s(h) = 1$ and hence we can write (2.B.10) as:

$$w_\ell^\sigma(\ell, h_0) = \frac{1-\beta}{1-\beta p(\ell, 1)}\Big(-k\tau + p(\ell, 1)b\Big) + (1 - p(\ell, 1)) \sum_{h_t^r \in \mathcal{H}^*(1): t=0}^{\infty} \beta^{t+1} p(\ell, 1)^t w_\ell^\sigma(r, h_t^r),$$

where $h_t^r \in \mathcal{H}^*(1)$ and it is such that $T(h_t^r) = t$. Note that from (2.B.9) it follows that $w_\ell^\sigma(r, h_t^r) = b - k\tau - w_r^\sigma(r, h_t^r)$. Besides, consider the incumbent's on-path pre-election value in $\mathcal{C}^O = (x^\tau, s^O)$,

$$w_i^O(i) = \frac{(1-\beta)(-k\tau + p(\ell, 1)b) + (1 - p(\ell, 1))\beta w_j^O(i)}{1 - \beta p(\ell, 1)}.$$

Note that from (2.B.9) it follows that $w_j^O(i) = b - k\tau - w_i^O(i)$. Therefore, $w_\ell^\sigma(\ell, h_0) > w_i^O(i)$ implies that $w_i^O(i) > w_r^\sigma(r, h_t^r)$ for at least one on-path history $h_t^r \in \mathcal{H}^*(1)$.

Step 2. *In this step, we show that there exists a unique discretion constraint $\hat{\tau}$ such that the strategy profile $\sigma^O = (x^\tau, s^O)$ is an equilibrium (i.e., contract) and its enforcement constraint (2.3.3) binds.*

Let discretion $\hat{\tau}(\alpha)$ be such that the incumbent's constraint (2.B.1) in σ^O binds,

$$(1-\beta)k\hat{\tau}(\alpha) = \beta(w_\ell^O(\ell) - \alpha), \tag{2.B.11}$$

which yields

$$\hat{\tau}(\alpha) = \beta \frac{(1 + (1-\beta)2(a+m))b}{2k(1 - \beta 2(a+m))} - \frac{\alpha}{k}.$$

First, we characterize for a given α and its associated discretion $\hat{\tau}(\alpha)$ a party ℓ's worst $\sigma \in \mathfrak{F}(\alpha)$, which I denote by $\sigma^w = (x^w, s^w)$. Since $\sigma^O = (x^\tau, s^O)$ is a firm's best strategy profile and it makes the incumbent's constraint (2.B.11) bind, it follows from Lemmas 1 and 5 that the profile σ^w prescribes for any $h \in \mathcal{H}(0)$, $x^w(h) = 0$ and $s^w(h) = -1$, and for any $h \in \mathcal{H}(n)$ with $n \geq 1$, the continuation play of σ^O.

Once strategy profile σ^w is characterized, we can obtain the incumbent's worst pre-election value as a function of a given α and when τ is such that (2.B.11) binds. Then the incumbent's worst pre-election value is (2.B.3) where $v_j^*(i,h;\alpha)$ is the opposition's value in σ^O,

$$v_j^*(i,h;\alpha) = v_\ell^O(r) = \frac{\beta(1-2(a+m))b - 2k(2\pi + \beta k(1-2(a+m+\pi)))\hat{\tau}(\alpha)}{2(1-2\beta(a+m))},$$

and the discretion constraint $\hat{\tau}(\alpha)$ is given by (2.B.11).

The application $\alpha \to \gamma(\alpha)$ is linearly increasing and by the same reasoning as in the proof of Proposition 12 one can show that it has a unique fixed point:

$$\underline{w} = \frac{1-2m-\pi+2(-1+2\beta)(a(-1+\pi)-m\pi)}{-4a\beta(1-\pi)+2(1-\pi-2\beta m\pi)}b.$$

Evaluated on $\underline{w}$, the discretion constraint $\hat{\tau}(\alpha)$ becomes:

$$\hat{\tau} \equiv \hat{\tau}(\underline{w}) = \frac{\beta 2m}{k(1-2\beta(a+m)}b.$$

One can check that $\hat{\tau}$ is bounded for any $\beta < 1$ and $\hat{\tau} < \bar{x}_\ell^L$, where $\bar{x}_\ell^L$ is defined in Remark 1. Therefore, when discretion $\tau = \hat{\tau}$, party ℓ's worst contract from h_0 onwards, which I denote by $\mathcal{C}^w$, is the strategy profile $\sigma^w = (x^w, s^w)$.

Step 3. *Consider discretion $\hat{\tau}$ defined in Step 2. In this step, we show that for any $\tau \leq \hat{\tau}$ the strategy profile $\sigma^O = (x^\tau, s^O)$ is a contract (i.e., equilibrium) and, otherwise, it is not.*

Consider contract $\mathcal{C}^w = (x^w, s^w)$ from Step 2. An Opportunistic strategy profile with x^τ is an equilibrium for some τ if and only if

$$(1-\beta)k\tau \leq \beta(w_\ell^O(\ell) - w_\ell^w(\ell, h_0)).$$

As $w_\ell^O(\ell) - w_\ell^w(\ell, h_0)$ monotonically decreases in τ, this condition holds for any $\tau \leq \hat{\tau}$. Therefore, the *maximum-rent Opportunistic contract* is a firm's best contract for any $\tau \leq \hat{\tau}$.

Step 4. *Consider a value α and a τ such that $\tau > \hat{\tau}(\alpha)$. In this step, we characterize the parties' worst strategy profile.*

Consider a ℓ-Biased strategy profile denoted by $\sigma^B = (x^B, s^B)$ and characterized by the support $\tilde{s}_r$ and the on-path stationary rents $x_\ell^B = \tau$ and $x_r^B = \tilde{x}_r$, where $\tilde{x}_r \in (0, \tau)$.

Let σ^B be such that, for a given discretion $\tau(\alpha)$, the pair $(\tilde{x}_r(\alpha), \tilde{s}(\alpha))$ makes the incumbent's enforcement constraint (2.B.1) binds at every on-path period,

$$\begin{aligned} (1-\beta)k\tau(\alpha) =& \beta(w_\ell^B(\ell; \tilde{x}_r(\alpha), \tilde{s}(\alpha)) - \alpha), \\ (1-\beta)k\tilde{x}_r(\alpha) =& \beta(w_r^B(r; \tilde{x}_r(\alpha), \tilde{s}(\alpha)) - \alpha). \end{aligned} \tag{2.B.12}$$

Note that by construction the strategy profile σ^B belongs $\mathfrak{F}(\alpha)$. First, we establish that σ^B is the firm's best strategy profile in $\mathfrak{F}(\alpha)$. Second, the strategy profile σ^B satisfies Lemma 5 characterization, so it is the opposition's worst $\sigma \in \mathfrak{F}(\alpha)$. Also, as ℓ's enforcement constraint binds at h_0, σ^B is the incumbent's worst $\sigma \in \mathfrak{F}(\alpha)$. Thus, σ^B is the firms' best strategy profile in $\mathfrak{F}(\alpha)$.

Hence, the incumbent ℓ's worst pre-election value is given by a strategy profile, denoted σ^w, which prescribes $x^w(h) = 0$ and $s^w(h) = -1$ for any $h \in \mathcal{H}(0)$ and for any $h \in \mathcal{H}(n)$ with $n \geq 1$, the continuation play of the *maximum-rent r-Biased strategy profile.*

Step 5. *In this step, we obtain the firm's best contract for $\tau \in [\hat{\tau}, \hat{x}]$.*

Consider the strategy profile σ^w constructed in Step 4. From σ^w one obtains the incumbent's worst pre-election value as a function of the arbitrary value α for the cases in which discretion is such that $\tau > \hat{\tau}(\alpha)$. The incumbent's worst pre-election value is (2.B.3) where:

$$v_j^*(i,h;\alpha) = v_r^B(\ell) = \frac{\beta(1-2(a+m))(b-k\tilde{x}_r(\alpha)) - k(2-\beta(1+2(a+\frac{m}{2}(1-\tilde{s}(\alpha)))))\tau}{2(1-2\beta(a+\frac{m}{2}(1-\tilde{s}(\alpha))))}$$

and $(\tilde{x}_r(\alpha), \tilde{s}(\alpha))$ are given by (2.B.12). The application $\alpha \to \gamma(\alpha)$ is linearly increasing and by the same reasoning as in the proof of Proposition 12 one can show that it has a unique fixed point, which is

$$\underline{w} = \frac{(1-2(m-a)-4\beta a)b - k(1-2(a-m))}{2(1-2\beta a)}.$$

Evaluated on $\underline{w}$ and, for simplicity, assuming $\pi = \frac{1}{2}$, $(\tilde{x}_r(\alpha), \tilde{s}(\alpha))$ become:

$$\begin{aligned}
\tilde{x}_r(\underline{w}) &= \frac{(b+k\tau)(2b\beta m-(1-\beta)k\tau)}{k(b\beta(1-2a)-(1-\beta)k\tau)},\\
\tilde{s}(\underline{w}) &= \frac{(1-\beta)(k(1-2\beta(a+m))\tau - 2b\beta m)}{\beta m((1-2a)b\beta-(1-\beta)k\tau)} - 1.
\end{aligned}$$

One can check that if $\tau = \hat{\tau}$, $(\tilde{s}(\underline{w}), \tilde{x}_r(\underline{w})) = (-1, \hat{\tau})$; if $\tau = \hat{x}$, $(\tilde{s}(\underline{w}), \tilde{x}_r(\underline{w})) = (1, 0)$, and for any intermediate values of τ, $\tilde{s}(\underline{w}) \in (-1, 1)$ and $\tilde{x}_r(\underline{w}) \geq 0$. Further,

$$\frac{\partial \tilde{s}}{\partial \tau} = \frac{(1-\beta)b(1-2\beta a)(1-2(a+m))kb}{m((1-2a)b\beta-(1-\beta)k\tau)^2},$$

is positive. Therefore, if $\tau \in [\hat{\tau}, \hat{x}]$ the firm's best contract is the *maximum-rent ℓ-Biased contract* with support $\tilde{s}(\underline{w})$ and stationary rents $(x_\ell^*, x_r^*) = (\tau, \tilde{s}(\underline{w}))$. □

Proof of Propositions 14 and 15

Note that thresholds $\hat{x}$ and $\hat{\tau}$ are monotonically increasing (decreasing) with respect to m and a (k). □

Appendix 2.C Proofs of the Extensions

Proof of Proposition 16

First, we show that the contract outlined in Proposition 16 is the firm's best contract. Before the emergency, rent extraction is the highest possible. At the emergency period, the contract makes party i' value equal to its worst contract value. Since it makes party o's enforcement constraint bind when it holds power, by Lemma 5, it also makes o's value equal its worst contract value.

Second, we want to show that since $\tau < \hat{\tau}$, the parties' enforcement constraint does not bind before the emergency occurs. Suppose that the incumbent's enforcement constraint binds. Then, by a similar argument as in Proposition 13, we have that the ℓ's worst contract at some history $h \in \mathcal{H}(N)$ prescribes: *(i)* condition on the emergency having not occurred, for a $h' \in \mathcal{H}(N)$, $s(h') = -1$ and not rent extraction; and from history $h'' \in \mathcal{H}^*(N+1)$, the continuation play of the firm's best contract, and *(ii)* from the period an emergency occurs onwards, the continuation play of the firm's best contract. Then, the party ℓ's enforcement constraint is:

$$\begin{aligned}(1-\beta)k\hat{\tau} &= \beta(w_\ell^*(\ell) - \underline{w}_\ell(\ell)) \\ &= \beta 2m\Big(\lambda(v_\ell^*(\ell) - v_\ell^*(r)) + (1-\lambda)(v_i^*(\hat{h}, i) - v_o^*(\hat{h}, i))\Big),\end{aligned}$$

where as the incumbent's enforcement constraint binds $v_\ell^*(\ell) - v_\ell^*(r) = \frac{1}{1-\beta\lambda 2(m+a)}\big((1-\beta)b + \beta(1-\lambda)2(m+a)(v_i^*(\hat{h}, i) - v_o^*(\hat{h}, i))\big)$. Then,

$$\begin{aligned}(1-\beta)k\tau &= \beta 2m\left(\lambda\frac{(1-\beta)b + \beta(1-\lambda)2(m+a)(v_i^*(\hat{h}, i) - v_o^*(\hat{h}, i))}{1-\beta\lambda 2(m+a)} + (1-\lambda)(v_i^*(\hat{h}, i) - v_o^*(\hat{h}, i))\right) \\ &= \beta 2m\left(\frac{\lambda}{1-\beta\lambda 2(m+a)}(1-\beta)b + \left(\frac{1-\lambda}{1-\beta\lambda 2(m+a)}\right)(v_i^*(\hat{h}, i) - v_o^*(\hat{h}, i))\right) \\ &> \beta 2m\frac{(1-\beta)b}{1-\beta 2(m+a)}\end{aligned}$$

Note that $v_i^*(\hat{h}, i) - v_o^*(\hat{h}, i) > v_\ell^*(\hat{h}, i) - v_o^*(\hat{h}, i) = \frac{(1-\beta)b}{1-\beta 2(m+a)}$ as in a *i-Biased* strategy profile the electoral support accrues more to the emergency-incumbent i than to the emergency-opposition o compared with an opportunistic strategy profile. And hence,

$$\beta 2m\left(\frac{\lambda}{1-\beta\lambda 2(m+a)}(1-\beta)b + \left(\frac{1-\lambda}{1-\beta\lambda 2(m+a)}\right)(v_i^*(\hat{h}, i) - v_o^*(\hat{h}, i))\right) > \beta 2m\frac{(1-\beta)b}{1-\beta 2(m+a)}$$

So if $\tau < \hat{\tau}$, the incumbent's enforcement constraint can not bind before the emergency.

Lastly, note that the setting after the emergency is identical to the baseline model. By a similar argument as in Proposition 13, it follows from $\tau < \hat{\tau}$ and $\check{\tau} < \hat{x}$ that the *i-Biased contract* outlined in Proposition 16 for the periods after the emergency exists. □

Lemma 6. *The leader z_ℓ's worst contract prescribes, when z_ℓ is the incumbent, $s = -1$ and no rent extraction; and when z_ℓ is not the incumbent, it is identical to the firm's best contract.*

Proof of Lemma 6 and Proposition 17:

The structure of the leader's worst contract and the firm's best contract in a weak party system are easily deductible. Besides, from the symmetry of the opportunistic strategy profile, it follows that any leader extracts the same rent. Let v^{out} and x^{out} denote, respectively, a leader's expected value after an electoral defeat and the other leaders' rent extraction. To characterize the rent scheme, consider leader z's enforcement constraint when rents are unconstrained,

$$(1-\beta)k\hat{x}^O = \beta(cv_z^O(z, \hat{x}^O, x^{out}) - \underline{cv}_z(z, x^{out})),$$

where $\underline{cv}_z(z, x^{out})$ is leader z's worst punishment value. Solving this equation yields

$$\hat{x}^O(x^{out}) = \frac{4\beta m(b + kx^{out})}{k2(1-\beta p(\ell,-1)}.$$

Hence, we obtain z's rent as an application $x^{out} \to \hat{x}^O(x^{out})$, which is a contraction as it is linearly increasing with respect to x^{out} with an slope smaller than 1, i.e., $\frac{4\beta m}{2(1-\beta p(\ell,-1)} < 1$. Lastly, we solve the fixed of the application $x^{out} \to \hat{x}^O(x^{out})$, obtaining (2.7.1). $\square$

Proof of Proposition 18:

First, we compute both firm's values when rents are unconstrained in the strong party system—i.e., $v_f^S(\ell) = \frac{\beta 2m(1-\beta p(\ell,-1))}{k(1-\beta)(1-\beta 2a)}b$—, and the weak party system—i.e., $v_f^W(\ell) = \hat{x}^O$. Then,

$$v_f^S(\ell) - v_f^W(\ell) = \frac{1 - 4a + 4(a^2 - m^2)}{k(1-\beta)(1-\beta 2a)2(1-\beta p(\ell,1))}\beta^3 mb,$$

which is positive, so the firm is better off in a strong party system when rents are unconstrained. Second, note that $\hat{x}^O \in (\hat{\tau}, \hat{x})$, which follows from straightforward algebra. Lastly, for $\tau \le \hat{x}^O$, the firm in a weak party system extracts every period the highest feasible rent. Thus, the firm is strictly better-off in a weak party system if $\tau \in (\hat{\tau}, \hat{x}^O)$ and indifferent between the party systems if $\tau \in [0, \hat{\tau}]$. $\square$

Lemma 7. *Let*

$$\bar{\zeta} \equiv \frac{m\beta(2 - \beta(1 + 2(a-m)))}{k(1-\beta)^2(1-\beta 2a)}b.$$

The maximum-rent Neutral *is:*

(i) *if* $\zeta \leq \bar{\zeta}$, *such that* $(x_\ell, x_r) = (x^D, x^D)$ *and*

$$(1-\beta)kx^N = \beta(w_\ell^N(\ell; x_N) - \underline{w}_\ell(\ell)),$$

where $\underline{w}_\ell(\ell)$ *is such that the firm participates and it is given by a maximum-rent* Exclusive contract *with the winner of the first election—i.e.,*

$$\underline{w}_\ell(\ell) = p(\ell, 0)v_\ell^L(\ell) + (1 - p(\ell, 0))v_\ell^R(r) \tag{2.C.1}$$

such that $v_\ell^L(\ell)$ $(v_\ell^R(r))$ *is given by a maximum-rent* ℓ-Exclusive contract *(maximum-rent* r-Exclusive contract*).*

(ii) $\bar{\zeta} < \zeta$, *the firm does not participate neither on-path nor off-path and there is no rent extraction.*

Proof of Lemma 7 and Proposition 19:

First, conditional on participation on-path, the firm's best contract follows from Proposition 12. Second, it follows from Proposition 12 that party ℓ's worst pre-election value is given by (2.C.1). Third, conditional on not participation on-path, any Neutral contract such that the initial incumbent's constraint binds is a maximum-rent Neutral contract. Hence, Lemma 7 describes a maximum-rent Neutral contract.

Lastly, threshold $\underline{\zeta}$ is the entry cost such that the firm's values at h_0 in contracts $\mathcal{C}^L = (\bar{x}^L, s^L)$ and $\mathcal{C}^D = (\bar{x}^N, s^N)$ are equal:

$$-(1-\beta)\underline{\zeta} + v_f^L(\ell) - v_f^N(\ell) = 0.$$

Threshold $\bar{\zeta}$ is the entry cost such that the firm's value at h_0 in contract $\mathcal{C}^L = (\bar{x}^L, s^L)$ is zero:

$$-(1-\beta)\bar{\zeta} + v_f^L(\ell) = 0.\square$$

Chapter 3

The Politics of Repeal

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3.1 Introduction

Economic crises, international upheavals, or new information open a window of opportunity for reforms. Incumbents may use those opportunities to address the underlying problem with a welfare-enhancing proposal or may instead take advantage of the smoke screen created by those events to pass partisan reforms. If the reform takes time to deliver observable effects, voters will be uncertain of which of the two has been the incumbent's chosen course of action. However, the opposition will not be confused by the smoke screen and can react by, in turn, promising to repeal the reform as soon as it gains power. In these circumstances, the voter will try to learn about the incumbent's policy choice from the opposition's positioning with respect to the reform.

Consider, for example, the Affordable Care Act (ACA) of 2010. Raising insurance premiums and the crisis of uninsured were ostensibly the reasons for why Democrats pursued the healthcare reform. After its passing, the Republicans immediately committed to its repeal. When explaining his commitment to repeal, Senator Mitch McConnell characterized Obamacare as chaotic and unacceptable, implying that it was not beneficial for most US citizens but rather the product of the Democrats' ideological preferences.

In situations like these, the opposition's potential repeal serves dual roles. First, by promising a repeal, the opposition offers the voters an option to undo a partisan reform. Second, by promising a repeal, the opposition signals to the voters that the reform is indeed partisan. Absent any electoral motivation, the opposition would always use the safeguard of repeals to the voter's satisfaction. However, if the opposition is also office-motivated, the repeal's informational rationale creates a potential for abuse. If voters believe that the opposition's calls for repeal signal the partisan nature of the incumbent's reforms, they reward the opposition electorally. This creates an electoral temptation to do inefficient repeals, whereby the opposition cries wolf even when the incumbent's reform is welfare-improving. Did Republicans truthfully identify ACA as a partisan reform? Or were they instead trying to get an electoral advantage by convincing the voter that the reform was partisan when it was not?

Given this dual role of repeals, a question naturally arises: when is the opposition's promise to repeal the incumbent's policies a salutary safeguard against partisan reforms, and when is it instead a cynical electoral strategy? Can the threat of repeals backfire and lead to excessive gridlock whereby the incumbents are paralyzed with inaction even when considering potential welfare-improving reforms? Or may the strategic use of repeals by the opposition weaken its informational value and instead lead to the incumbents passing more partisan reforms?

We address these questions in a model with two parties—one incumbent and one opposition—one voter, and a potential reform. The reform can either be common-interest or partisan. The common-interest reform is Pareto improving while the partisan reform benefits the incumbent at the expense of the voter and the other party. Political parties are office- and policy-motivated, while the voter cares about the policy and some exogenous stochastic party-specific factors. The timing of the game is as follows. First, the reform type is drawn exogenously and observed by the parties. Second, the incumbent chooses whether to enact the reform, and its choice also determines its electoral platform for the next election. If the incumbent implements the reform, the opposition has an opportunity to promise to uphold it or repeal it. Lastly, the voter observes the parties' platforms, updates her belief about the reform type, and chooses whether to reelect the incumbent in a framework of probabilistic voting. The electoral platform of the winner is then implemented.

Our analysis starts with the complete information benchmark, in which the voter observes the reform type before the election. In this benchmark, the informational rationale for repeal is absent, and hence the opposition's repeals are always efficient: the opposition promises a repeal if and only if the reform is partisan. Hence, repeals simply allow the voter to get rid of undesirable reforms. We show that when the voter's electoral choice is driven mainly by the policy payoff and parties care highly about office—a situation we call *high electoral incentives*—the incumbent is deterred by the electoral loss from implementing a partisan reform that the opposition promises to repeal, and foregoes such reform completely. In such case, the equilibrium implements the voter's preferred outcome, which we refer to as the *disciplined equilibrium*: only reforms benefiting the voter are implemented, and they are always implemented when available. Conversely, when office motivation is low and voter's decision is mainly driven by other non-policy related factors—a situation we call *low electoral incentives*—the incumbent implements all reforms. The opposition promised to repeal those reforms, but since the voter's decision depends on non-policy factors as well, partisan reforms sometimes persist.

We show that introducing incomplete information need not necessarily affect the outcomes. When parties' benefit from the common-interest reform is sufficiently high relative to their office motivation, the complete information benchmark equilibrium survives. For such parameters, a repeal confers to the opposition an electoral advantage that is not sufficient to induce it to forgo the policy payoff from the common-interest reform. Hence, the opposition repeals only partisan reforms of the incumbent, thereby perfectly revealing information to the voters.

When the parties' payoff from the common-interest policy is sufficiently low, however, the temptation to score an electoral gain at the expense of a common-interest reform is too great, and inefficient repeals (on or off path) occur in all equilibria.

Not surprisingly, as inefficient repeals arise in equilibrium, the voter's welfare suffers. However, this welfare depletion does not come solely from the fact that common-interest reforms are untruthfully repealed by the opposition if elected. More interestingly, the threat of inefficient repeals distorts the incumbent's equilibrium behavior in two distinct ways.

First, the opposition's promise to repeal the common interest reform can lead the incumbent to forego the common interest reform—a form of perverse disciplining we refer to as *gridlock*. This effect comes from the fact that if the opposition's electoral advantage from repeal is large enough, the incumbent is deterred from enacting the common-interest reform in the first place. Hence, inefficient inaction arises in this model even if the opposition lacks any veto power. Instead, inaction appears driven by the fear of an electoral defeat that a promise of repeal would entail. We show that this gridlock equilibrium always exists whenever the complete information equilibria do not survive. Moreover, as in the complete information benchmark, the partisan reform is implemented if and only if the electoral incentives are low. Hence, the voter obtains the worst possible outcome when the electoral incentives are low: only partisan reforms are proposed.

Second, the opposition's excessive use of repeals blunts their disciplining force on the incumbent. To see why, note that if the voter knows that the common interest reform can also be repealed, the informational value of the repeal is weakened. Hence, the voter is less likely to punish the incumbent when the opposition promises to repeal its reform. As a result, the electoral threat of a repeal might not be strong enough to deter the incumbent from enacting its partisan reform. We refer to such equilibria as *obstructionist* and show that they exist when the prior probability of the reform being common interest is sufficiently high. By providing conditions for the existence of the obstructionist equilibrium, this paper contributes to a study of when widely beneficial reforms become part of parties' political strife.

In much of the electoral accountability literature, the more voters condition their votes on the incumbent's policies (as opposed to their ideological preferences) and the more office-motivated politicians are, the more effective elections are at disciplining incumbents. Indeed, this result persists in our complete information benchmark. In contrast, when voters are not perfectly informed, a more office-motivated opposition has greater incentives to repeal a common-interest reform for electoral gains, and those electoral gains are greater the more reform-responsive the voter is. Therefore, a non-monotonicity appears: a voter who rewards common-interest policies more in the election can get less common-interest policies and be worse off.[1]

This last result is reminiscent of political pandering (Morris (2001), Canes-Wrone et al. (2001), Heidhues and Lagerlöf (2003), Majumdar and Mukand (2004), Maskin and Tirole (2004), Prat (2005), and Ottaviani and Sørensen (2006), Acemoglu et al. (2013a)). In these models, the policymaker chooses a policy that is believed to be better by the voter in order to signal her ability to discern which policies are beneficial or her congruence with the voters (in Heidhues and Lagerlöf (2003), the congruence of her platform). Hence, greater office motivation increases the politicians' incentives to pander. In our paper, since the voter believes that repeals signal partisan policies, there is a temptation for the opposition to repeal any of the incumbent's proposals, and this temptation increases with office motivation. There are multiple differences, however. First, in our model, both parties are known to be fully informed about the policy type. Thus the desire to pander is driven by the desire to deliver the policy that the voter believes she wants. Second, the belief to which the parties pander is endogenous: the model does not assume a priori that repeals signal partisanship—this follows from the parties' behavior. Finally, parties move sequentially: the incumbent introduces the reform, and the opponent chooses whether to repeal it.

We extend our model to allow the opposition to initiate a reform: to run on a reform platform in the absence of a reform by the incumbent. W further assume that the policy can be also right-partisan in that it benefits the opposition at the expense of the incumbent and the voter, so the voter may be weary of the opposition's initiative. All our results survive in this extension, but when the reform is ex-ante more likely to be left-partisan than right-partisan, a new equilibrium arises in which it is the opposition that initiates a reform. This equilibrium is driven by the mirror of the forces that drive the Obstructionist equilibrium: a reform that is perceived to be beneficial to one party makes this party weary of implementing it, while gives leeway to the other party to do so. We show that these forces lead to what we call Nixon-goes-to-China result: a reform perceived ex ante as more likely to be left-partisan is more likely to be implemented by the right party and vice versa. This result is reminiscent of the observation that some important reforms were counter-

[1]For an excellent overview of how office motivation may lead to more efficient outcomes, see Duggan and Martinelli (2017).

intuitively undertaken by the parties less ideologically prone to like them, and Nixon going to China in 1972 is one famous example of that (see Rodrik (1993), Williamson (1994) and Cukierman and Tommasi (1998) for examples). Unlike in Cukierman and Tommasi (1998), we show that this observation is not driven solely by the fact that left-leaning parties are voted out of office if they propose left leaning policies, but by the fact that they fail to propose them in the first place.

This paper emphasizes the role of opposition in the reform-making process. In that, it responds to Key et al. (1961) observation that

> *if a legislator is to worry about the attitude of his district, what he needs really to worry about is, not whether his performance pleases the constituency at the moment, but what the response of his constituency will be in the next campaign when persons aggrieved by his position attack his record. The constituency, thus, acquires a sanction largely through those political instruments that assure a challenge of the record. In the large, that function is an activity of the minority party. (p. 499).*

Most of theoretical papers treat opposition as passively providing the voter with an alternative to the incumbent. The existing literature on the active role of the opposition in policy-making has focused on checks-and-balances systems in which the opposition has formal veto power (Keith (1998), Tsebelis (2002), Brady and Volden (2006), Compte and Jehiel (2010), Bowen et al. (2014), Dziuda and Loeper (2016) and Dziuda and Loeper (2018)). In our model, the opposition's role stems from its informational advantage over the voter. Uninformed voters try to infer the quality of the reform by observing the opposition's reaction to it.

The rest of the paper is organized as follows. We review the related literature in the next section. In Section 3.3, we present the model and discuss its main assumptions. In Section 3.4, we derive preliminary results. In Section 3.5, we solve the benchmark in which the voter observes the reform type, and in Section 3.6, we solve the full model. The appendix contains the proofs of all the results presented in the text.

3.2 Literature Review

Our model fits the tradition of the two-candidate Downsian model (Harold (1929), Downs (1957)), in that two parties offer platforms with commitment, albeit our policy space is vastly simplified: there are only two policy positions—reform or not. We depart from this model by assuming that parties propose platforms sequentially and that they are both office- and policy-motivated (like in Wittman (1983) and Calvert (1985)). When the voter has complete information about her policy preference, our results align with the literature: parties converge on the voter's ideal point when the office motivation is strong enough. When we additionally depart from the literature by assuming that the voter is uncertain about her preferences, the obstructionist equilibrium features policy divergence on issues where there is no policy conflict of interest between the parties and the voter. Hence, policy divergence appears not driven by policy motivation but by electoral considerations.

This paper contributes to a series of papers that study the conditions under which widely beneficial reforms fail to be implemented. Famously, Fernandez and Rodrik (1991) argue that uncertainty about the distribution of gains and losses from reform may prevent it from being passed (see also Strulovici (2010)). In Dziuda and Loeper (2016) and Dziuda and Loeper (2018) and Austen-Smith et al. (2019), a unanimously preferred reform is not enacted for fear that it might not be repealed when it stops being unanimously preferred. Dziuda and Loeper (2023) show that if the incumbent faces a legislative time constraint, it may forego a common-interest reform in order to prioritize changing the status quo on a partisan issue. In this paper, we abstract from distributional uncertainty of Fernandez and Rodrik (1991) and Strulovici (2010)), and focus instead on the inefficiency stemming from the parties' strategic interaction, like Dziuda and Loeper (2016) and Dziuda and Loeper (2018) and Austen-Smith et al. (2019). Unlike these papers, however, we do not assume that the opposition has veto power. Instead, the inefficient lack of reforms appears as a result of the parties' informational advantage over the voter and their use of this advantage to compete for votes. In this respect, our paper is close to Bueno de Mesquita and Dziuda (2023). They assume that the voter is uncertain about whether common-interest reforms exist, and show a party aligned with the median voter has an incentive to persuade her that most reform-making is an ideological zero-sum game as a way of solidifying its electoral advantage. In that model, however, the opposition acts only as a passive alternative to the incumbent—so it is unable to convey any information to the voter.

The paper contributes to the literature on whether electoral competition between office-motivated parties can aggregate information in an efficient way. The pandering papers mentioned above generally obtain a negative answer as the candidates pander to the voter's priors. Laslier and Straeten (2004) and Gratton (2014) show that the candidates may choose the efficient platforms when the voter is also partially informed. In contrast, we obtain platform divergence when the voter is uninformed. Kartik et al. (2015) consider electoral competition between two office-motivated parties that observe private signals about voters' optimal policy. They find an anti-pandering effect: each party chooses a more extreme policy than what it would choose based on its signal alone. However, the platform divergence in that model is driven by the fact that each party receives a partial signal about the state and tries to anticipate what platform will be the most attractive to the voter once she observes both parties' platform choices. In contrast, both parties have the same information in our model.[2]

The other main branch of this literature studies reform convergence to the median voter's preferred reform when parties are policy-motivated (Schultz 1996, Martinelli 1999, Martinelli and Matsui (2002), Kartik et al. (2015)). Our paper differs from these articles in two regards. First, we assume parties to be both office- and policy-motivated. Second, our parties choose their electoral platforms sequentially, not simultaneously, a feature that allows us to capture the opposition's reactiveness in reform-making.

In our model, the opposition is reactive—that is, it chooses its electoral reform after the incumbent has chosen its own. This assumption of asynchronous reform competition resembles the seminal work of Kramer (1975) and Wittman (1977), which has been further developed by Forand (2014) and Nunnari and Zápal (2017) The incumbent's commitment to a reform before the opposition announces its own electoral platform leads in many of these papers to incumbency disadvantage and reform convergence to the median voter's preferences. In Forand (2014), reform convergence depends on the intertemporal calculus of the opposition, and its key determinants are parties' risk aversion and time-discounting. In this paper, though incumbency disadvantage is also present in the incomplete information equilibria, parties are risk neutral and the equilibria which feature incumbency disadvantage are precisely those in which the voter is worse off.

3.3 The Model

The game takes place over two periods $t \in \{1, 2\}$, with two political parties and a representative voter, indexed by l, r, and m, respectively. In each period, one party holds power, and party l is the initial incumbent. In the first period, the incumbent obtains the opportunity to implement a reform, and decides whether to do so. If the incumbent implements the reform, the opposition chooses whether to promise the voter that it will repeal the reform should it come to power. The voter observes the parties' choices and promises and decides whom to elect for the second period.

Formally, nature randomly determines the reform type $\theta \in \{L, C\}$ at the start of the game. Policies L and C stand for left-partisan and common-interest reform, respectively. Reform type θ is drawn from the distribution P with full support. Parties are policy specialists, so they observe the type of the available reform θ, but the voter is uninformed and only holds the prior P.

In $t = 1$, after observing θ, the incumbent l chooses whether to enact the reform, denoted by $a_l = 1$, or not, denoted by $a_l = 0$. If the incumbent enacts a reform, the

[2]See also Bernhardt et al. (2007) for a model of electoral competition in which the candidates have private information about the median voter's ideal point.

opposition announces its intent to either keep it, denoted by $a_r = 1$, or to repeal it, denoted by $a_r = 0$, if it is elected in period 2. The opposition is reactive, so if the incumbent does not enact a reform, the opposition does not have a real choice, and we trivially set $a_r = 0$ in that case. We view this as a reasonable assumption for the study of repeals, but we relax this assumption in Section 3.7 and show that most of the results hold unchanged. We call (a_l, a_r) electoral platforms and assume that each party is committed to implement its platform if elected in $t = 2$. The voter observes the platforms (a_l, a_r) and decides whether to reelect the incumbent, denoted by $e = l$, or not, denoted by $e = r$. In period 2, the electoral winner e implements its platform a_e, and the game ends.

Payoffs: For simplicity, all players receive payoffs only from the second-period outcomes. Without loss of generality, we normalize to zero the payoff when no reform is implemented in $t = 2$. When the common-interest reform is implemented in $t = 2$, every player benefits. We allow for the common-interest reform payoffs of the voter and the parties to differ, i.e., $U_m(C) = u$ and $U_k(C) = v$, for $k \in \{l, r\}$ and for $u, v > 0$. When the left-partisan reform is implemented, the voter and the opposition r lose, i.e., $U_m(L) = U_r(L) = -1$, and the incumbent l benefits, i.e., $U_l(L) = 1$.

Parties are also office-motivated; the party that holds power in period 2 receives an office rent $b > 0$. Hence, party i's total payoff from the action profile (a_l, a_r, e) in state θ is

$$a_e U_i(\theta) + \mathbb{1}_{\{e=i\}} b.$$

In addition to the reform payoff, voters receive a stochastic preference shock which enters their payoff additively. That is, they receive a stochastic additive payoff ϖ if they reelect the incumbent, and this payoff is uniformly distributed on the interval $[-\frac{1}{2\psi}, \frac{1}{2\psi}]$ with $\psi > 0$. The voter observes ϖ before the election but after the parties choose their platforms. The voter's total payoff from the action profile (a_l, a_r, e) in state θ is therefore

$$a_e U_m(\theta) + \mathbb{1}_{\{e=l\}} \varpi.$$

Strategies and Equilibrium: Party i's strategy maps θ into $\Delta\{0, 1\}$. We denote by $q_l(\theta)$ the probability that the incumbent l enacts reform θ and by $q_r(\theta)$ the probability that the opposition r commits to uphold reform θ if enacted by the incumbent.

The equilibrium concept is Perfect Bayesian Equilibrium (henceforth, PBE or equilibrium). A PBE requires that *(i)* each player's choices are sequentially rational given her belief at the time of choice and the other players' strategies and *(ii)* that the voter's belief about the policy type satisfies Bayes' rule on the equilibrium path.

We make the following assumption on the parameters.

Assumption 3. *The parameters satisfy:*

(i) $\psi < \min\{\frac{1}{2}, \frac{1}{2u}\}$;

(ii) $\psi < \frac{1}{2u(b+1)}$.

In Section 3.4, we show that the Assumption 3 (i) ensures that for any belief about θ and any pair of platforms (a_l, a_r) the reelection decision is not deterministic. Assumption 3 (ii) rules out what we view as pathological equilibria (see Lemma 14 in the Appendix). We explain the role of this assumption when we discuss Lemma 8 below.

3.3.1 Discussion of the Model

Interpretation of the reform type. We view the model as applying to situations where an opportunity for reform arises for various reasons, and the voter may reasonably lack certainty about whether the reform is overall beneficial for the society or is simply a partisan grab by the incumbent. Consider, for example, the case of the 2022 invasion of Ukraine. The breakout of the war re-opened the debate in many European countries about defense expenditure. The right-wing parties tend to desire higher defense expenditure than what a median voter would prefer, so in the absence of the war, the median voter may be unwilling to move away from the status quo. However, under these new circumstances, the complexities of international relations make it hard for the voters to know whether the rightist incumbent that proposes a raise in defense expenditures is using this situation to simply move policies toward its ideological preferences or whether the increase in defense expenditure is necessary for the country's security. In other cases, the problem may preexist, but new information can arrive to the public debate—e.g., an alarming rise of temperatures—or a new feasible reform—e.g., a novel technology. These circumstances may genuinely create opportunities for welfare-improving reform, but the parties may also use them as a smoke screen to fulfill their partisan objectives.

Interpretation of payoffs. We assume that a reform is either common interest or benefits one party at the expense of its adversary party and the voter. We do not allow for reforms that benefit one party and the voter over the status quo at the other party's expense. This choice of payoffs is in line with our view of what an opportunity for reform is: a war in Ukraine or a new technology may indeed present an opportunity to increase overall welfare but may also simply create an excuse to change the status quo away from what the median voter (and the other party) wants.

Policy space: For expositional purposes, we assume an asymmetric policy space in which the reforms are either common interest or left-partisan. We add the possibility of reforms being right-partisan and, under Assumption 3 (ii), results would be unchanged because the incumbent would never enact a right-partisan reform. As we show in Section 3.7, adding the possibility of right-partisan reforms becomes relevant only if we allow the opposition to be active and not only reactive.

Reactive opposition and the commitment assumption. We allow the opposition to repeal an enacted reform but not promise a new one. Through this reactiveness of opposition, we aim to capture the politics of repeal instead of studying a standard electoral competition model in which both parties announce a policy platform for the future. By definition, repeals are about reforms that have been previously enacted. Consider the ACA example from the introduction. Both parties had been talking about the necessity of healthcare reform for a while, but those discussions were rather vague and hardly signified the parties' commitment to a particular plan. During Obama's administration, a possibility for reform arose (either because the Democrats figured out a Pareto-improving way to do so or because the President's charisma and political maneuvering allowed them to execute a partisan policy change), and they took it. Naturally, a party implementing a concrete reform is more committed to it than a party just announcing a vague reform proposal. Similarly, a promise of repeal seems more concrete than a typical policy proposal and hence seems more binding than other promises may be. Due to the more committal nature of these, we think our focus is warranted.

In the Ukraine example, however, it may seem that the opposition could run on the promise of increasing defense spending even if the incumbent has not acted on the issue. Therefore, in Section 3.7, we consider the extension in which the opposition can initiate a reform. Most of our results remain unchanged, although new equilibria arise.

First-period payoff relevance and learning. Realistically, the incumbent's reform choice in period 1 affects players' payoffs also in that period. However, assuming this would only increase the incumbent's incentive to implement any reform without altering the parties' strategic interaction that we are studying here. Another simplification we make is that the voter does not learn about the type of the reform between the moment it is enacted and the election. The informational role of repeals would still arise as long as the learning is not perfect, so again the same strategic forces would arise as in our model. We make those two simplifications to isolate the informational role of repeals in the simplest model.

3.4 Premilinaries

Elections: Let $\pi(a_l, a_r)$ denote the voter's belief that the reform is common interest given platforms (a_l, a_r). For a fix (a_l, a_r), the voter's expected payoff gain from electing the incumbent instead of the opposition is

$$\mathbb{E}_\pi[a_l U_m(\theta) - a_r U_m(\theta)] + \varpi, \tag{3.4.1}$$

where $\mathbb{E}_\pi$ is the expectation taken with respect to the voter's belief π. The voter reelects the incumbent l if (3.4.1) is positive. Hence, the probability of reelection for the incumbent l perceived by the parties at the moment they make their platform choices is

$$z(a_l, a_r, \pi) \equiv \frac{1}{2} + \psi \mathbb{E}_\pi[(a_l - a_r)U_m(\theta)], \tag{3.4.2}$$

Note that the voter's expected utility depends on her beliefs only if the parties' announcements differ. Hence, $z(1, 1, \pi) = z(0, 0, \pi) = \frac{1}{2}$ for any belief π, whereas

$$z(1, 0, \pi) = \frac{1}{2} + \psi(\pi(1 + u) - 1).$$

Assumption 3 (i) on ψ ensures that $z(a_l, a_r, \pi) \in (0, 1)$ for all (a_l, a_r). We refer to ψ as the *policy responsiveness* of the voter; the larger ψ is, the more the reelection depends on the parties' platforms.

Lemma 8 below establishes that in any equilibrium, the opposition party r repeals partisan reform L if enacted.

Lemma 8. *In any equilibrium,*

$$q_r(L) = 0.$$

Lemma 8 is driven by Assumption 3 (ii). Assumption 3 (ii) can be rewritten as $2\psi u(b+1) \leq 1$, which means that parties' electoral incentives, as determined by the office rent b and the voter's policy responsiveness ψ, are not too large relative to the cost of implementing a partisan policy, 1. This means that even if the voter were to believe that the platform profile $(1, 0)$ signals that the reform is common interest, the opposition's electoral chances by promising a repeal are still sufficient so that it will choose never to uphold the incumbent's partisan reforms.[3] In the absence of Assumption 3 (ii), electoral incentives would trump any policy considerations of the parties.

Given Lemma 8, to characterize the equilibria, it remains to obtain the opposition's repeal intent of reform C, $q_r(C)$ and probability of enactment of reforms C and L by the incumbent, $q_l(C)$ and $q_l(L)$. In particular, we are interested in when the opposition repeals common-interest reforms to gain electoral advantage. The following definition will be useful for this analysis.

Definition 5. *We say that repeals are inefficient when the opposition commits to repeal a common-interest reform with positive probability, i.e., if*

$$q_r(C) < 1.$$

Otherwise, we say repeals are efficient.

[3] If this was not the case, the opposition would cater to such beliefs by never repealing the partisan reform, which could be sustained in equilibrium since the platform profile $(1, 0)$ would be off-path.

3.5 Informed Voter Benchmark

As a benchmark, we first examine at the complete information model, in which the voter and the parties observe the reform type θ. Let Γ denote this game.

In this setting, the repeals have no informational role; hence, the interests of the opposition and the voter are aligned. Clearly, then, the opposition's repeals are always efficient and the opposition will uphold any common-interest reform of the incumbent. Therefore, the incumbent's and the voter's interests are also aligned when $\theta = C$ and the incumbent enacts the common-interest reform whenever possible.

In this setting, the repeals have no informational role; hence, the interests of the opposition and the voter are aligned. Clearly, then, the opposition's repeals are always efficient, and the opposition will uphold any common-interest reform of the incumbent. Therefore, the incumbent's and the voter's incentives are only misaligned when the reform is partisan. The incumbent enacts the common-interest reform whenever possible. But when the available reform is partisan, will the opposition's threat of repeal discipline the incumbent? That is, will the incumbent forego the left-partisan reform because of its electoral consequences? Intuitively, the incumbent has more incentives to forego the partisan reform when it severely hurts its electoral prospects—when either office rents or voter's policy responsiveness are greater. The next proposition and Figure 3.1 summarize this discussion.

Proposition 20. *When the voter is perfectly informed, then an strategy profile is an equilibrium if and only if:*

1. *Repeals are efficient:*
$$q_r(L) = 0 \text{ and } q_r(C) = 1;$$
2. *Common interest reform is always implemented:*
$$q_l(C) = 1;$$
3. *And*

   (i) $q_l(L) = 1$ *if* $\psi < \frac{1}{2(1+b)}$ (Partisan *equilibrium);*

   (ii) $q_l(L) = 0$ *if* $\psi > \frac{1}{2(1+b)}$ (Disciplined *equilibrium).*

We will say that the *electoral incentives are strong* when

$$\psi > \frac{1}{2(1+b)}, \tag{3.5.1}$$

and low when the reverse strict inequality holds.[4]

[4]For clarity of the exposition, in the main text of the paper, we ignore the knife-edge case of $\psi > \frac{1}{2(1+b)}$. We refer the reader for the complete characterization of the equilibria in the case $\psi = \frac{1}{2(1+b)}$

When the electoral incentives are weak, the incumbent is willing to implement its partisan reform even when the voter correctly identifies that reform as partisan and its rival is committed to repeal it. The decrease in the reelection probability from proposing this reform is too small compared to the payoff gain from implementing it in the case of reelection. So if the electoral incentives are low, repeals are useful, but only mechanically, providing the voter with an option that involves no partisan reform.

Conversely, when the electoral incentives are strong, efficient repeals have a disciplining effect: only common-interest reforms are enacted and they are never repealed. Hence, the repeals are doubly useful: by providing the voter with an option that involves no partisan reform, they incentivize the incumbent to take the partisan reform completely off the table. The voter thus obtains its first best.

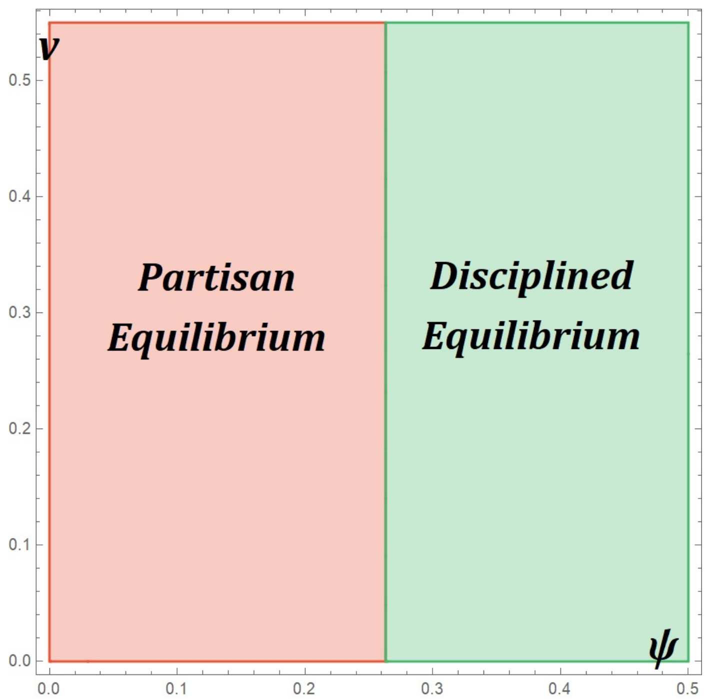

FIGURE 3.1 Equilibria when voter is informed as a function of voter's policy responsiveness, ψ, and the parties' value of the common interest reform, v, plotted for $b = 0.9$.

Figure 3.1 and Condition (3.5.1) imply that the voter benefits in policy terms from being more policy-responsive and from parties' greater office rents, as summarized by the corollary below. This result is in line with the well-established results from the standard models of moral hazard with electoral accountability (see, e.g., Barro (1973), Ferejohn (1986), or Duggan and Martinelli (2017)) and of probabilistic voting with office- and policy-motivated candidates.

Corollary 1. *The voter's expected policy payoff (weakly) increases with voter's policy responsiveness ψ, and/or the office rents b.*

3.6 Uninformed Voter

Consider now the incomplete information game $\hat{\Gamma}$ as defined in Section 3.3. The following proposition describes the equilibria of $\hat{\Gamma}$.

Proposition 21. *There exist an equilibrium of* Γ *and an equilibrium of* $\hat{\Gamma}$ *such that the parties' strategies coincide if and only if*

$$v \geq \min\{\frac{2\psi}{1+2\psi}b, \frac{b}{2+b}\}. \tag{3.6.1}$$

If and only if (3.6.1) fails, any equilibrium of $\hat{\Gamma}$ *involves inefficient repeals, i.e.,* $q_r(C) < 1$.

The first implication of Proposition 21 is that when parties' payoff from the common interest reform v is sufficiently high, parties' equilibrium behavior in the complete information benchmark can still be sustained as an equilibrium of the incomplete information game: all repeals are efficient, and repeals are unambiguously beneficial for the voter. When condition (3.6.1) holds, the voter does not need to be informed about the consequences of various policies in order to make the best electoral decisions. The presence of an opposition who can commit to repeal the incumbent's reform is sufficient.[5]

When parties' payoff from the common-interest reform falls below the threshold of condition (3.6.1), however, all equilibria involve inefficient repeals. The region of inefficient repeals is depicted in Figure 3.2.

The basic intuition for Proposition 21 is as follows. Under incomplete information, the voter's only source of information is the parties' positioning with respect to a reform. Suppose that when the voter's observes the opposition's promise of repeal, she believes the reform is likely partisan. Then, the promise of repeal translates into an electoral advantage for the opposition, creating the temptation of abusing repeals. When parties' payoff from the common-interest reform is sufficiently high relative to their electoral incentives, the opposition is unwilling to sacrifice this reform's payoff for the increase in electoral chances that a repeal will bring. Hence, it repeals only the partisan reforms. As a result, the opposition's strategy perfectly reveals the type of every implemented reform. Thus, the equilibria of the complete information benchmark survive. However, when the parties' payoff from the common-interest reform is lower, the opposition can no longer resist the electoral temptation of repealing the common-interest reform.

The first implication of the analysis is that unlike in the complete information case (see Corollary 1), the voter's policy payoff is non-monotone in the accountability parameters, independently of the equilibrium selection.

[5]When (3.6.1) holds, there may exist other equilibria, but we do not discuss them in the main text of the paper. See the appendix for the complete equilibria characterization.

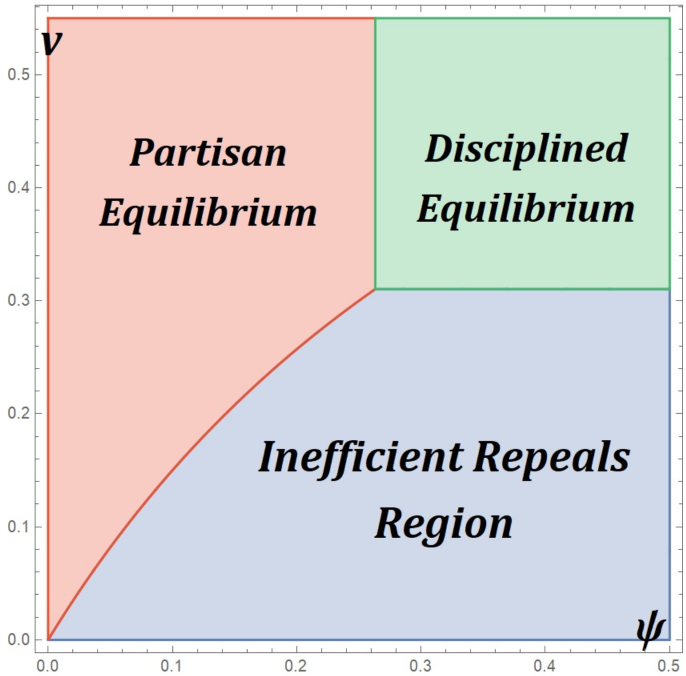

FIGURE 3.2 Equilibria under uformed voters with respect to the accountability parameter, ψ, and the value of the common interest reform, u and $b = 0.9$.

Corollary 2. *The voter's expected policy payoff is monotone neither in voter's policy responsiveness ψ, nor in parties' office rents b.*

To see where the complete-information comparative statics fail, consider the area in which the electoral incentives are weak (see Figure 3.2). Condition (3.6.1) implies that the threshold v delineating the repeals region is increasing in both the voter's policy-responsiveness (ψ) and the parties' office-motivation (b). For small ψ and b, the players play a partisan equilibrium in which the incumbent implements all reforms and the incumbent repeals only the partisan ones. In this equilibrium, the voter believes the reform to be partisan if the opposition repeals it. As we increase ψ, the voter electoral responsiveness after a repeal becomes stronger. As we increase b, the opposition's willingness to surrender policy gains for electoral gains becomes greater. We see hence how both parameters increase the opposition's electoral temptation to repeal common-interest reforms to gain electorally.

This last result and its underlying logic are reminiscent of political pandering (Morris (2001), Canes-Wrone et al. (2001), Heidhues and Lagerlöf (2003), Majumdar and Mukand (2004), Maskin and Tirole (2004), Prat (2005), and Ottaviani and Sørensen (2006), Acemoglu et al. (2013a)). However, a key difference with this literature is that the belief to which the parties pander is endogenous. The model does not assume a priori that repeals signal partisanship, but this follows from the parties' strategic behavior. As we will show later, this has some relevant implications.

In this section, we have characterized the region where inefficient repeals arise in any equilibrium and derive some of its implications for the voter. The question remains, however, whether those repeals lead to any additional inefficiency? To answer these questions, for the remainder of this section, we focus on the parameter region in which inefficient repeals arise in any equilibrium.

3.6.1 Repeals' Region

The opposition's use of inefficient repeals creates two types of incentives for the incumbent to distort its reform decisions. First, since the opposition finds it profitable to promise to repeal a common-interest reform, it must be that it expects to benefit from such a promise electorally. The incumbent foresees this threat and may hence prefer not to pass the common-interest policy in the first place. Second, the opposition's behavior reduces the informativeness of repeals. When the voter observes a repeal promise, she is not certain of the reform she is facing and thus has lesser incentives to trust the party promising the repeal with her vote. As a result, the disciplining force of repeals is blunted, and the incumbent's incentive to introduce the partisan reform increases.

In the following propositions we characterize different equilibria, our propositions characterize the equilibria only in the interior of the regions where they exist; the reader can find in the Appendix an analysis of the equilibria in the frontier. Proposition 22 below shows that an equilibrium with the first effect always exists in the repeals region. In this equilibrium, the incumbent never undertakes common interest reforms.

Proposition 22. *Consider the region with inefficient repeals; i.e., where condition (3.6.1) fails. There always exists an equilibrium in which C is never implemented, i.e., $q_l(C) = 0$. In any such equilibria, $q_r(C) = 0$, and*

(i) if $\psi < \frac{1}{2(1+b)}$ (weak electoral incentives), then $q_l(L) = 1$

(ii) if $\psi > \frac{1}{2(1+b)}$ (strong electoral incentives), then $q_l(L) = 0$.

We call this equilibrium Gridlock. Proposition 22 states that there always exists an equilibrium in which the threat of the inefficient repeal is so high that the incumbent completely forgoes any common-interest reform. Hence, the existence of repeals, which is unambiguously useful under complete information, doubly backfires under incomplete information. Not only does the opposition cry wolf whenever any reform is implemented, but this behavior results in no common-interest reforms being implemented at all.

Proposition 22 states also that in this equilibrium the incumbent's behavior regarding the partisan reform remains the same as in the complete information benchmark. The incumbent initiates partisan reforms when the electoral incentives are low. Then, the voter obtains her worst outcome: only partisan reforms are implemented.

The next proposition states that two other equilibria exist when the prior probability of the reform being common interest is sufficiently high. In these equilibria, the threat of inefficient repeal does not fully discourage the incumbent from implementing the common-interest reform. However, they create a smoke screen for partisan reforms.

Proposition 23. *Consider the region with inefficient repeals, i.e., where condition (3.6.1) fails. There exists an equilibrium in which C is implemented with positive probability if and only if*

$$\frac{P(\theta = L)}{P(\theta = C)} \leq \left(\frac{\frac{b}{v} - 1}{\frac{b}{v}}\right) \frac{\left(\frac{b}{v} - 1\right)\psi u + \frac{1}{2}}{\left(\frac{b}{v} - 1\right)\psi - \frac{1}{2}}. \tag{3.6.2}$$

When (3.6.2) holds, the exist two such equilibria and they have the following properties:

(i) $q_l(L) = 1$ *in both,*

(ii) in one equilibrium, $q_l(C) = 1$ *and* $q_r(C) \in (\frac{v}{b}, 1)$*; and in the other equilibrium* $q_l(C) \in (0, 1)$ *and* $q_r(C) = \frac{v}{b}$*.*

We refer to these equilibria as *Obstructionist* because in some cases the common-interest policy is enacted by the incumbent and repealed by the opposition. In these equilibria, the opposition repeals on the equilibrium path reforms that are partisan and (with some probability) also common interest. The distinctive feature of this equilibrium with respect to the gridlock equilibria is that the threat of a repeal by the opposition does not deter the incumbent from enacting the common-interest policy. Two conditions are needed for this to be an equilibrium behavior. First, the opposition must not repeal the common-interest policy too often. Formally, as shown above, in both equilibria $q_r(C) \geq \frac{v}{b}$. Second, the voter must not punish too harshly the incumbent after a repeal, or equivalently, her updated belief after observing a repeal cannot be too pessimistic. This condition is guaranteed if the voter's prior belief is not too pessimistic, which is implied by Condition (3.6.2).

Importantly, the abuse of repeals reduces their informativeness for the voter, and so the voter's response after observing a repeal becomes ameliorated compared to the complete information equilibria. Foreseeing this, the incumbent also enacts the partisan reforms in both the region of strong and weak electoral incentives. As a result of the opposition's abuse, the promise of repeal loses its deterrence effect.

Let us unpack condition (3.6.2). The right-hand side increases in ψ and b, and decreases in u and v. So the Obstructionist equilibria are more likely to occur when all players attach a greater value to the common-interest reforms and when the electoral incentives are weaker. The intuition for this is as follows. The incumbent understands that a proposal reduces its electoral prospects. But would it prefer to deviate and not propose anything? First and intuitively, the greater v, the more incumbent benefits from proposing the common-interest reform. Second, parameters u and psi affect the incumbent's electoral loss from implementing the common-interest reform. A lower ψ implies that the voter is less responsive to her policy payoff. A greater u makes the voter value more the common-interest policy—so she is less willing to back the opposition's repeal proposal and more inclined to take the risk of implementing a reform of which type she is unsure.

Since when condition (3.6.2) fails, we only have gridlock equilibrium, Propositions 22 and 23 imply that common-interest ideas are abandoned especially in situations in which they are scarce.

We conclude this section with two closing notes. First, a unifying theme in all these equilibria is that the promise of repeal implies an electoral advantage for the opposition. The following Proposition formalizes this notion.

Proposition 24. *In any equilibrium, whenever a repeal (efficient or inefficient) occurs on-path, the opposition enjoys a strict electoral advantage; i.e.,*

$$z(1,0) < \frac{1}{2}.$$

Lastly, we should mention a nuanced result regarding the voter's policy payoff. As Corollary 2 established, under incomplete information, the voter's policy payoff is non-monotone as the parties become more office-motivated. We can observe now how this non-monotonicity also exists within the inefficient repeals region—for example, an increase in b can have a positive effect. Increasing b decreases the right-hand side of strong electoral incentives condition (3.5.1). If the prior probability that the reform is common interest is low, Propositions 22 and 23 imply that gridlock is the only equilibrium and increasing b moves us from the region in which $q_l(L) = 1$ to the region in which $q_l(L) = 0$.

3.7 The Opposition's Initiative

So far we have assumed that the opposition is reactive; that is, it can only commit to repeal or uphold the incumbent's reform, but it cannot run on a platform of a new reform. As argued in Section 3.3.1, we view this assumption as reasonable in some settings but less so in others. If the incumbent forgoes a common-interest reform, the opposition may have the incentive to campaign on the promise to implement it. For example, suppose a right-leaning incumbent fails to raise defense spending in response to the invasion of Ukraine. In that case, the left-leaning opposition may run on such a platform if it is indeed common interest. In this section, we relax the assumption of the opposition's reactiveness. To keep the extension realistic, we additionally assume that the reform may be right-partisan.[6] Hence, when the

[6]Keeping the restriction of the reform type to C and L would only affect condition (3.7.1) below in that the Amendment equilibrium would exist for all parameters in the inefficient repeals region.

incumbent stays inactive and the opposition runs on a promise of reform, the voter still worries that the opposition may be simply trying to pass its own partisan reform.

Formally, the model is as in Section 3.3, but with two changes. First, $\theta \in \{L, C, R\}$, where R is the right-partisan reform that delivers a payoff of 1 to the opposition and payoffs of -1 to the incumbent and the voter. We continue to use P to denote the prior distribution over reform type. Second, we allow the opposition to propose a reform even if the incumbent stays inactive. That is, the opposition chooses $a_r \in \{0, 1\}$ regardless of the incumbent's choice. So r's strategy in this extended model is $q_r(\theta, a_l) \in [0, 1]$ for any $a_l \in \{0, 1\}$, interpreted as the probability of promising a reform when the reform type is θ and the incumbent's choice is a_l. Note that $q_r(\theta, 1)$ corresponds here to $q_r(\theta)$ in the baseline model.

As before, Assumption 3 (ii) implies that the opposition never upholds or proposes the left-partisan reform, i.e., $q_r(L, a_l) = 0$ for any $a_l \in \{0, 1\}$. In the extended model, Assumption 3 (ii) also implies that the incumbent party never implements the right-partisan reform, i.e., $q_l(R) = 0$. These findings imply that conditional on the incumbent implementing a reform, the voter knows it is either L or C, so the incentives for the opposition after $a_l = 1$ remain unchanged. One may conjecture then that much of our previous findings remain unchanged, and in the rest of this section we show that they are indeed so. A new equilibrium, however, arises that is somewhat a mirror image of the Obstructionist equilibrium.

Consider first Proposition 20 for the case when the voter is fully informed. Proposition 25 below establishes that as before, both parties agree on the common-interest reform, and when the electoral incentives are weak, each of them also initiates their partisan reform, while they both refrain from doing so when the electoral incentives are strong.

Proposition 25. ***(Extension of Proposition 20)*** *When the voter is perfectly informed, the equilibria satisfy the same necessary conditions as in Proposition 20 as well as the following one:* $q_r(R, 0) = 1$ *when* $\psi < \frac{1}{2(1+b)}$ *(new* Partisan *equilibrium) and* $q_r(R, 0) = 0$ *when* $\psi > \frac{1}{2(1+b)}$ *(new* Disciplined *equilibrium).*[7]

For the case where the voter is uninformed, Proposition 21 remains unchanged: the parties' on-path behavior in the complete information equilibria ceases to exist under incomplete information exactly for the same set of parameters and when they do, all equilibria feature inefficient repeals.

As before, in the region where all equilibria feature inefficient repeals, there exists a Gridlock equilibrium in which no common-interest reform is passed. Proposition 26 is the equivalent of Proposition 22 for this extension.

Proposition 26. ***(Extension of Proposition 22)*** *Consider the region with inefficient repeals; i.e., where condition (3.6.1) fails. There always exists an equilibrium*

[7] The necessary and sufficient conditions are stated in Proposition 31 in the Appendix.

in which C is never implemented, i.e., such that $q_l(C) = q_r(C, 0) = 0$. In any such equilibrium, $q_r(C, 1) = 0$ and

(i) if $\psi < \frac{1}{2(1+b)}$ (weak electoral incentives), then $q_l(L) = 1$ and $q_r(R, 0) = 1$

(ii) if $\psi > \frac{1}{2(1+b)}$ (strong electoral incentives), then $q_l(L) = 0$ and $q_r(R, 0) = 0$.

The existence of Gridlock equilibria is perhaps more surprising in the extended model. In the main model, the opposition is tempted to promise a repeal of C in order to gain electorally. The threat of repeal can discourage the incumbent from implementing C. But one may expect then that after successfully discouraging the incumbent from proposing C, the opposition has the incentive to turn around and run on the promise of implementing C. It will not do that, however, if the voter believes that a platform $(0, 1)$ signals the right-partisan reform. Such belief is sustained by the opposition's strategy when the reform is indeed right-leaning (which occurs when the electoral incentives are weak) or by the fact that $(0, 1)$ is off the equilibrium path (which occurs when the electoral incentives are strong).

The intuition for the existence of the Gridlock equilibria suggests, however, that there may exist equilibria in which the opposition initiates the common-interest reform. Proposition 27 confirms that. In this new equilibrium, the incumbent refrains from implementing the common-interest reform out of the fear that if proposed, the opposition will promise to repeal it and the incumbent will likely lose the election. The opposition then proposes the common-interest reform— further weakening the incumbent's incentive to initiate such reform in the first place. We call this equilibrium *Amendment*.

Proposition 27. *Consider the region with inefficient repeals; i.e., where condition (3.6.1) fails. If*

$$\frac{P(\theta = R)}{P(\theta = C)} \leq \frac{\left(\frac{b}{v} + 1\right)\psi u + \frac{1}{2}}{\left(\frac{b}{v} + 1\right)\psi - \frac{1}{2}}, \tag{3.7.1}$$

then there exists an equilibrium in which

$$q_l(C) = 0, \;\; q_r(C, 0) > 0 \text{ and } q_r(R, a_l) = 1.$$

This equilibrium fails to exist when condition (3.7.1) fails.

Condition (3.7.1) requires that the policy is relatively more likely to be C than R. Note the parallel between this condition and condition (3.6.2) for the existence of the Obstructionist equilibrium. Fixing the remaining parameters, when the reform is ex-ante very likely to be common interest, both conditions are satisfied, and hence both the Obstructionist and the Amendment equilibria exist. In either equilibrium, parties disagree when there is a common-interest reform: one party proposes the reform and the other objects to it. As a result, the voter cannot infer from observing disagreement that the reform is partisan, which makes her electorally less responsive.

That, in turn, allows the pro-reform party (the incumbent in the Obstructionist equilibrium and the opposition in the Amendment equilibrium) to pass its partisan reform.

Certain reforms seem to have a partisan tint. For example, increasing defense spending may indeed be common interest when international conflict erupts, but if it is not, the rightist party is the most likely beneficiary of the reform. In our model, this would correspond to $P(\theta = L) < P(\theta = R)$. Prevalent wisdom suggests that some reforms are easier to enact if the party proposing them is the one that is ideologically unlikely to benefit from them. Perhaps the most famous example of this is Nixon's 1972 trip to China, but one can also think of the market-oriented reforms in Argentina under Menem, in Peru under Fujimori, and in Bolivia under Paz Estenssoreo (see Rodrik (1993) and Cukierman and Tommasi (1998) for more examples). Below we show that this result arises in our model.

To fix attention, suppose that the electoral incentives are strong. Suppose further that at the beginning of the game, before the reform type is realized, one party is randomly selected to be the incumbent. Once the incumbent is selected, the game proceeds as above. Hence, the propositions above characterize all equilibria in the subgame in which l is selected to be the incumbent, and the equilibria in the other subgame are analogous. We will say that party p *initiates a reform* in equilibrium if it either enacts a reform with positive probability in the subgame in which p is the incumbent, or the platform $(0, 1)$ is played with positive probability in the subgame in which p is the opposition. The following definition will be useful.

Definition 6. *Suppose that $P(R) > P(L)$. We say that the Nixon-goes-to-China result holds if in any equilibrium, r never initiates a reform, but there exists at least an equilibrium in which l initiates a reform with positive probability on the equilibrium path.*

Define X to be the right-hand side of condition (3.6.2) and Y to be the right-hand side of condition (3.7.1).

The proposition below states that in the region with inefficient repeals either no reform is implemented in equilibrium, or the Nixon-goes-to-China result holds for some selection of the equilibria. Besides, the proposition characterizes parameters for which this result holds unconditionally.

Proposition 28. *Consider the region with inefficient repeals; i.e., where condition (3.6.1) fails. Then*

(i) When $\min\{X, Y\} < \frac{P(L)}{P(C)}$ and $\max\{X, Y\} < \frac{P(R)}{P(C)}$, no reform is implemented in equilibrium;

(ii) When $\frac{P(L)}{P(C)} < \min\{X, Y\}$ and $\max\{X, Y\} < \frac{P(R)}{P(C)}$, the Nixon-goes-to-China result holds;

(iii) *For the remaining parameters, the Nixon-goes-to-China result holds for some equilibrium selection.*

When the prior belief that the reform is common interest is sufficiently low, only the gridlock equilibrium survives independently of which party is in power, and hence no reforms are implemented (Part (i)). Hence, when common-interest reforms are scarce, whenever a common-interest reform arrives, it will be abandoned. This finding stands in contrast with Bueno de Mesquita and Dziuda (2023), where both parties take every common-interest opportunity when the voter is extremely pessimistic.

Part (ii) states that the Nixon-goes-to-China result holds when the voter believes, on the one hand, that the policy is sufficiently more likely to be common interest than to be left-partisan, but on the other hand, that it is much more likely to be right-partisan. In that case, the only way that a reform is implemented is when either l enacts it as the incumbent or initiates it as the opposition.

For the remaining conditions, the multiplicity of equilibrium is so vast that one can always find an equilibrium in which r is more likely to initiate the reform and vice versa.

Cukierman and Tommasi (1998) establish a similar finding in a model in which parties are policy specialists, the incumbent commits to a policy, and voters decide whether to reelect the committed incumbent or the uncommitted (passive) opposition. They find that policies perceived ex ante as right-leaning are more likely to be implemented by left-leaning incumbents. In their model, however, right-leaning incumbents are still more likely to propose right-leaning policies, so the entire effect is driven by the voters who do not reelect left-leaning incumbents when they propose left-leaning policies. In that sense, our result is stronger: when reform is ex-ante perceived as right-partisan, the right-leaning incumbent never initiates such reform, while the left-leaning incumbent may do it.

The forces driving the Nixon-goes-to-China effect in Cukierman and Tommasi (1998) and our paper are similar but not identical. In Cukierman and Tommasi (1998), the incumbent commits to a policy, but the opposition has no active role and implements its bliss point if elected. The authors assume that there are party-specific shocks that move the party's bliss point. In that case, when seeing a more leftist proposal than expected, the voter concludes that the incumbent was likely hit by the incumbent-specific left-leaning shock, which makes the incumbent's policy further away from the voter's bliss point in expectation. So the voter tilts her vote in favor of the opposition. When seeing a more rightist proposal than expected, the voter concludes that the incumbent was likely hit by a right-leaning shock, which makes the incumbent's policy closer to the voter's bliss point in expectation. So the voter tilts her vote in favor of the incumbent. Hence like in our model, an ex-ante right-leaning proposal by the left-leaning incumbent signals a larger congruence of the incumbent with the median voter, while an ex-ante left-leaning proposal by the left-leaning incumbent signals a larger congruence of the opposition.

The crucial difference appears due to the role of the opposition. In Cukierman and Tommasi (1998), the opposition cannot commit to a policy, so when the left-leaning reform (i.e., a reform when $P(R) < P(L)$) turns out to be indeed common interest, the incumbent knows that the opposition will enact it, hence losing the election is not very costly in policy terms. In our model, the opposition benefits from signaling further to the voter that the incumbent is not congruent with her interests, and it does so by commiting to repeal the common-interest policy. This makes losing the election less desirable than it would otherwise be, pushing the incumbent to forego reforms that are perceived to be left-leaning.

Appendix 3.A Notations and preliminaries

Let $\hat{\Gamma}^{LCR}$ denote the game analyzed in Section 3.7.[8] Let Γ^{LCR} denotes the game which differs from $\hat{\Gamma}^{LCR}$ only in that the voter observes the policy type θ before the election. In both games $\hat{\Gamma}^{LCR}$ and Γ^{LCR}, a strategy for party l is a triple $(q_l(\theta))_{\theta\in\{L,C,R\}}$ where $q_l(\theta)\in[0,1]$ denotes the probability that l commits to enact policy θ. A strategy for party r is a tuple $(q_r(\theta,0),q_r(\theta,1))_{\theta\in\{L,C,R\}}$ where $q_r(0,\theta)\in[0,1]$ denotes the probability that r commits to enact policy θ in place if $a_l=0$, and $q_r(1,\theta)\in[0,1]$ is the probability that r commits to leave policy θ in place if $a_l=1$. In what follows, we will often represent a strategy profile of $\hat{\Gamma}^{LCR}$ in a matrix form as follows:

$$\begin{array}{cccc} i\backslash\theta & L & C & R \\ l & q_l(L) & q_l(C) & q_l(R) \\ r & q_r(L,0),q_r(L,1) & q_r(C,0),q_r(C,1) & q_r(R,0),q_r(R,1) \end{array}.$$

Let $\hat{\Gamma}$ denotes the game analyzed in Section 3.6, that is, $\hat{\Gamma}$ is the game that differs from $\hat{\Gamma}^{LCR}$ only in that policy R is not available, and the opposition r is only reactive, that is, after $a_l=0$, r can only play $a_r=0$. Finally, let Γ be the game that differs from $\hat{\Gamma}$ only in that the voter observes the policy type θ before the election. In both games $\hat{\Gamma}$ and Γ, a strategy profile for party l can be represented by a pair $(q_l(L),q_l(C))$ where for all $\theta\in\{L,C\}$, $q_l(\theta)\in[0,1]$ is the probability that l commits to enact policy θ as in $\hat{\Gamma}^{LCR}$. A strategy for party r is a pair $(q_r(L),q_r(C))$ where for all $\theta\in\{L,C\}$, $qr(\theta)\in[0,1]$ is the probability that r commits to leave policy θ in place if $a_l=1$.

Remark 2. *The game $\hat{\Gamma}$ can be viewed as a special case of the game $\hat{\Gamma}^{LCR}$ in which policy R never occurs and r is forced to play $a_r=0$ after l has played $a_l=0$. That is, $\hat{\Gamma}$ is strategically equivalent to the game $\hat{\Gamma}^{LCR}$ in which we assume* $\Pr(R)=0$*— so $q_l(R)$, $q_r(R,0)$ and $q_r(R,1)$ are irrelevant—r's strategy space is restricted to strategies such that $q_r(L,0)=q_r(C,0)=0$, and the relevant and unrestricted part of r's strategy $(q_r(L,1),q_r(C,1))$ is then r's strategy profile $(q_r(L),q_r(C))$ in $\hat{\Gamma}$.*

The belief of the voter can be represented by the tuple $(\pi(a_l,a_r))_{a_l,a_r\in\{0,1\}}$, where $\pi(a_l,a_r)\in[0,1]$ is her belief that $\theta=C$ when she observes that parties played (a_l,a_r). This tuple of beliefs pins down the electoral outcome via the function $(z(a_l,a_r,\pi))_{a_l,a_r\in\{0,1\},\pi\in[0,1]}$, where $z(a_l,a_r,\pi)\in[0,1]$ is the probability that the

[8] That is, the timing is as follows: 1) nature first draws a policy $\theta\in\{L,M,R\}$, 2) l observes θ and decides whether to commit to enact the policy ($a_l=1$) or not ($a_l=0$), 3) r observes θ and a_l; if $a_l=1$, r can commit to leave the policy in place ($a_r=1$) or to repeal it ($a_r=0$) and if $a_l=0$, r can commit to enact the policy ($a_r=1$) or not ($a_r=0$), 4) the voter observes (a_l,a_r) but not θ and decides whether to vote for l or r, and 5) the elected party implements its electoral promise and payoff are realized.

incumbent l is reelected when the parties played (a_l, a_r) and the voter's updated belief is that $\Pr(\theta = C) = \pi$. Using the same reasoning as in Section 3.4, we have

$$\begin{cases} z(0,0,\pi) = z(1,1,\pi) = \frac{1}{2} \\ z(1,0,\pi) = \frac{1}{2} + \psi(\pi(1+u) - 1) \\ z(0,1,\pi) = \frac{1}{2} + \psi(1 - \pi(1+u)) \end{cases}. \tag{3.A.1}$$

Throughout the appendix, we assume that $\psi \leq \min\left\{\frac{1}{2}, \frac{1}{2u}\right\}$—see Assumption 3i— to make sure that $z(a_l, a_r) \in [0,1]$ for all $\pi \in [0,1]$ and $a_l, a_r \in \{0,1\}$, and that $0 < v < 1$. To highlight the role of that assumptions, we explicitly state when we assume that $(b+1)u\psi < \frac{1}{2}$ or not—see Assumption 3ii.

In what follows, $\Pi_r(a_r|\theta, a)$ denotes the payoff of r from playing a_r conditional on policy θ and l's action a_l, assuming that the voter best responds to any platform profile $(a_l, a_r) \in \{0,1\}$ according to some arbitrary interim belief $(\pi(a_l, a_r))_{a_l, a_r \in \{0,1\}} \in [0,1]^4$. Likewise, $\Pi_l(a_l|\theta)$ denotes the payoff of l from playing a_l conditional on θ, assuming some arbitrary continuation play $(q_r(\theta,0), q_r(\theta,1))$ of party r and that the voter best responds given some arbitrary interim belief. The following lemmas derive some instrumental results about the relative continuation payoffs $\Pi_l(a_l = 1|\theta) - \Pi_l(a_l = 0|\theta)$ and $\Pi_r(a_r = 1|\theta, a_l) - \Pi_r(a_r = 0|\theta, a_l)$. These lemmas are derived for the game $\hat{\Gamma}^{LCR}$, but they can also be used for the game Γ^{LCR} by assuming that voters' interim belief are correct, and for the game $\hat{\Gamma}$ as explained in Remark 2.

Lemma 9. *For any $a_l \in \{0,1\}$, $\Pi_r(a_r = 1|\theta, a_l) - \Pi_r(a_r = 0|\theta, a_l)$ is strictly greater for $\theta = R$ than for $\theta = C$ than for $\theta = L$.*

Proof. Follows readily from the assumption that $0 < v < 1$. □

Lemma 10 (Parties' continuation payoff from $a_i = 1$ versus $a_i = 0$)**.** *Fix a voter's interim belief $(\pi(a_l, a_r))_{a_l, a_r \in \{0,1\}} \in [0,1]^4$, and assume that the voter best responds to any $(a_l, a_r) \in \{0,1\}^2$ according to this belief. Then for any policy $\theta \in \{L, C, R\}$,*

$$\Pi_r(a_r = 1|\theta, a_l = 0) - \Pi_r(a_r = 0|\theta, a_l = 0) = (b + U_r(\theta))\psi(\pi(0,1)(1+u) - 1) + \frac{1}{2}U_r(\theta), \tag{3.A.2}$$

$$\Pi_r(a_r = 1|\theta, a_l = 1) - \Pi_r(a_r = 0|\theta, a_l = 1) = (b - U_r(\theta))\psi(\pi(1,0)(1+u) - 1) + \frac{1}{2}U_r(\theta), \tag{3.A.3}$$

and for any continuation play $(q_r(\theta,0), q_r(\theta,1))$ or r,

$$\begin{aligned} \Pi_l(a_l = 1|\theta) - \Pi_l(a_l = 0|\theta) &= (1 - q_r(\theta,1))\left[(b + U_l(\theta))\psi(\pi(1,0)(1+u) - 1) - \frac{1}{2}U_l(\theta)\right] \\ & q_r(\theta,0)\left[(b - U_l(\theta))\psi(\pi(0,1)(1+u) - 1) - \frac{1}{2}U_l(\theta)\right] + U_l(\theta). \end{aligned} \tag{3.A.4}$$

Proof. Using (3.A.1), we have

$$\begin{aligned}
& \Pi_r\left(a_r=1|\theta,a_l=0\right)-\Pi_r\left(a_r=0|\theta,a_l=0\right) \\
= & \; b\left[1-z\left(0,1,\pi\left(0,1\right)\right)-\left(1-z\left(0,0\right)\right)\right]+U_r\left(\theta\right)\left[1-z\left(0,1,\pi\left(0,1\right)\right)\right] \\
= & \; b\left[\psi\left(\pi\left(0,1\right)\left(1+u\right)-1\right)\right]+U_r\left(\theta\right)\left[\frac{1}{2}+\psi\left(\pi\left(0,1\right)\left(1+u\right)-1\right)\right].
\end{aligned}$$

Regrouping terms, we obtain (3.A.2). Using (3.A.1) again,

$$\begin{aligned}
& \Pi_r\left(a_r=1|\theta,a_l=1\right)-\Pi_r\left(a_r=0|\theta,a_l=1\right) \\
= & \; b\left[1-z\left(1,1\right)-\left(1-z\left(1,0,\pi\left(1,0\right)\right)\right)\right]+U_r\left(\theta\right)\left[1-z\left(1,0,\pi\left(1,0\right)\right)\right] \\
= & \; b\left[\psi\left(\pi\left(1,0\right)\left(1+u\right)-1\right)\right]+U_r\left(\theta\right)\left[\frac{1}{2}+\psi\left(1-\pi\left(1,0\right)\left(1+u\right)\right)\right].
\end{aligned}$$

Regrouping terms, we obtain (3.A.3). Using (3.A.1) again,

$$\begin{aligned}
& \Pi_l\left(a_l=1|\theta\right)-\Pi_l\left(a_l=0|\theta\right) \\
= & \; b\left[q_r\left(\theta,1\right)z\left(1,1\right)+\left(1-q_r\left(\theta,1\right)\right)z\left(1,0,\pi\left(1,0\right)\right)-q_r\left(\theta,0\right)z\left(0,1,\pi\left(0,1\right)\right)-\left(1-q_r\left(\theta,0\right)\right)z\left(0,0\right)\right] \\
& +U_l\left(\theta\right)\left[q_r\left(\theta,1\right)+\left(1-q_r\left(\theta,1\right)\right)z\left(1,0,\pi\left(1,0\right)\right)-q_r\left(\theta,0\right)\left(1-z\left(0,1,\pi\left(0,1\right)\right)\right)\right] \\
= & \; q_r\left(\theta,0\right)\left[-bz\left(0,1,\pi\left(0,1\right)\right)+bz\left(0,0\right)-U_l\left(\theta\right)\left(1-z\left(0,1,\pi\left(0,1\right)\right)\right)\right] \\
& +q_r\left(\theta,1\right)\left[bz\left(1,1\right)-bz\left(1,0,\pi\left(1,0\right)\right)+U_l\left(\theta\right)-U_l\left(\theta\right)z\left(1,0,\pi\left(1,0\right)\right)\right] \\
& -bz\left(0,0\right)+bz\left(1,0,\pi\left(1,0\right)\right)+U_l\left(\theta\right)z\left(1,0,\pi\left(1,0\right)\right).
\end{aligned}$$

Simple algebraic manipulations yields

$$\begin{aligned}
& \Pi_l\left(a_l=1|\theta\right)-\Pi_l\left(a_l=0|\theta\right) \\
= & \; \left(1-q_r\left(\theta,1\right)\right)\left[bz\left(1,0,\pi\left(1,0\right)\right)-bz\left(1,1\right)-U_l\left(\theta\right)+U_l\left(\theta\right)z\left(1,0,\pi\left(1,0\right)\right)\right] \\
& +q_r\left(\theta,0\right)\left[-bz\left(0,1,\pi\left(0,1\right)\right)+bz\left(0,0\right)-U_l\left(\theta\right)\left(1-z\left(0,1,\pi\left(0,1\right)\right)\right)\right]+U_l\left(\theta\right).
\end{aligned}$$

Substituting the values of $z\left(.,.\right)$, we obtain (3.A.4). □

Lemma 11 (Parties' continuation payoff from $a_i=1$ versus $a_i=0$ when $\theta=R$)**.** *Fix a voter's interim belief $\left(\pi\left(a_l,a_r\right)\right)_{a_l,a_r\in\{0,1\}}\in\left[0,1\right]^4$, and assume that the voter best responds to any $\left(a_l,a_r\right)\in\left\{0,1\right\}^2$ according to this belief.*

1. *The relative payoff gain for r of committing to enact R—i.e., (3.A.2)—has the same sign as*
$$\pi\left(0,1\right)-\frac{\left(b+1\right)\psi-\frac{1}{2}}{\left(b+1\right)\psi\left(1+u\right)}. \tag{3.A.5}$$
For $\pi\left(0,1\right)=1$, (3.A.5) is positive, and for $\pi\left(0,1\right)=0$, (3.A.5) has the same sign as $\frac{1}{2}-\left(b+1\right)\psi$.

2. *The relative payoff gain for r of committing to leaving R in place—i.e., (3.A.3)—has the same sign as*
$$\left(b-1\right)\pi\left(1,0\right)-\frac{\left(b-1\right)\psi-\frac{1}{2}}{\psi\left(1+u\right)}. \tag{3.A.6}$$

If $b \leq 1$ or $\pi(1,0) = 1$, (3.A.6) is positive, and if $\pi(1,0) = 0$, (3.A.6) has the same sign as $\frac{1}{2} - (b-1)\psi$.

3. *If r's continuation play $(q_r(R,0), q_r(R,1))$ is sequentially rational, then the relative payoff gain for l of committing to enact R—i.e., (3.A.4)—is nonpositive if*
$$\pi(0,1) - \frac{(b+1)\psi + \frac{1}{2}}{(b+1)\psi(1+u)} \tag{3.A.7}$$
is nonpositive, and it is negative if (3.A.7) is negative or if $q_r(R,0) < 1$.

4. *If r's continuation play $(q_r(R,0), q_r(R,1))$ is such that $q_r(R,0) = 0$ and $q_r(R,1)$ is sequentially rational, then the relative payoff for l of enacting R is negative.*

Proof. From (3.A.2),
$$\begin{aligned} & \Pi_r(a_r = 1|\theta = R, a_l = 0) - \Pi_r(a_r = 0|\theta = R, a_l = 0) \\ = \; & (b+1)\psi(\pi(0,1)(1+u) - 1) + \frac{1}{2} \qquad (3.A.8) \\ = \; & (b+1)\psi(1+u)\left\{\pi(0,1) - \frac{2(b+1)\psi - 1}{2(b+1)\psi(1+u)}\right\}, \end{aligned}$$
which proves the first claim of Part 1. For $\pi(0,1) = 1$, (3.A.8) is equal to $(b+1)\psi u + \frac{1}{2}$, which is always positive, and for $\pi(0,1) = 0$, (3.A.8) is equal to $\frac{1}{2} - (b+1)\psi$, which proves the second claim of Part 1.

From (3.A.3),
$$\begin{aligned} & \Pi_r(a_r = 1|\theta = R, a_l = 1) - \Pi_r(a_r = 0|\theta = R, a_l = 1) \\ = \; & (b-1)\psi(\pi(1,0)(1+u) - 1) + \frac{1}{2} \qquad (3.A.9) \\ = \; & \psi(1+u)\left\{(b-1)\pi(1,0) - \frac{(b-1)\psi - \frac{1}{2}}{\psi(1+u)}\right\}, \end{aligned}$$
which proves the first claim of Part 2. If $b \leq 1$, (3.A.9) is weakly decreasing in $\pi(1,0)$, and for $\pi(1,0) = 1$, it is equal to $b\psi u - \psi u + \frac{1}{2}$, which is positive under our assumption that $\psi \leq \frac{1}{2u}$. This proves that (3.A.6) is positive if $b \leq 1$ or $\pi(1,0) = 1$. The proof of the case $\pi(1,0) = 0$ is immediate from (3.A.6), which completes the proof of Part 2.

To prove Part 3, suppose $q_r(R,0)$ and $q_r(R,1)$ are sequentially rational. From (3.A.4),
$$\begin{aligned} & \Pi_l(a_l = 1|\theta = R) - \Pi_l(a_l = 0|\theta = R) \qquad (3.A.10) \\ = \; & (1 - q_r(R,1))\left\{(b-1)\psi(\pi(1,0)(1+u) - 1) + \frac{1}{2}\right\} \qquad (3.A.11) \\ & + q_r(R,0)\left\{(b+1)\psi(\pi(0,1)(1+u) - 1) + \frac{1}{2}\right\} - 1. \qquad (3.A.12) \end{aligned}$$

If $q_r(R,1) < 1$, then since $q_r(R,1)$ is sequentially rational, (3.A.9) must be nonpositive, so (3.A.19) is nonpositive, and if $q_r(R,1) = 1$, (3.A.19) is also trivially nonpositive. Since $q_r(R,0)$ is sequentially rational, if $q_r(R,0) < 1$, (3.A.8) is nonpositive, so (3.A.12) is negative and (3.A.10) is negative. If $q_r(R,0) = 1$, then simple algebra shows that (3.A.12) has the same sign as (3.A.7), so (3.A.10) is negative (nonpositive) if (3.A.7) is negative (nonpositive).

To prove Part 4, note that as argued in the proof of Part 3, if $q_r(R,1)$ is sequentially rational. if we substitute $q_r(R,0) = 0$ into (3.A.10), we obtain

$$\Pi_l(a_l = 1|\theta = R) - \Pi_l(a_l = 0|\theta = R) = (1 - q_r(R,1))\left\{(b-1)\psi(\pi(1,0)(1+u) - 1) + \frac{1}{2}\right\} - 1.$$

As argued in the proof of Part 3, if $q_r(R,1)$ is sequentially rational. If $q_r(R,1) < 1$, (3.A.19) is nonpositive, and if we substitute $q_l(R) = 0$ into (3.A.12), we obtain that (3.A.12) is negative so (3.A.10) is negative. □

Lemma 12 (Parties' continuation payoff from $a_i = 1$ versus $a_i = 0$ when $\theta = L$)**.** *Fix a voter's interim belief $(\pi(a_l, a_r))_{a_l, a_r \in \{0,1\}} \in [0,1]^4$, and assume that the voter best responds to any $(a_l, a_r) \in \{0,1\}^2$ according to this belief.*

1. *The relative payoff gain for r of committing to enact L—i.e., (3.A.2)—has the same sign as*
$$(b-1)\pi(0,1) - \frac{(b-1)\psi + \frac{1}{2}}{\psi(1+u)}. \tag{3.A.13}$$

2. *The relative payoff gain for r of committing to leave L in place—i.e., (3.A.3)—has the same sign as*
$$\pi(1,0) - \frac{(b+1)\psi + \frac{1}{2}}{(b+1)\psi(1+u)}. \tag{3.A.14}$$

3. *If r's continuation play $(q_r(L,0), q_r(L,1))$ is sequentially rational, then the relative payoff gain for l of committing to enact L—i.e., (3.A.4)—is nonnegative if*
$$\pi(1,0) - \frac{(b+1)\psi - \frac{1}{2}}{(b+1)\psi(1+u)} \tag{3.A.15}$$
is nonnegative, and it is positive if (3.A.15) is positive or if $q_r(L,1) > 0$.

4. *If r's continuation play $(q_r(L,0), q_r(L,1))$ is such that $q_r(L,0) = 0$ and $q_r(L,1)$ is sequentially rational, then if $q_r(L,1) > 0$, the relative payoff gain for l of committing to enact L is positive, and if $q_r(L,1) = 0$, it has the same sign as (3.A.15).*

Proof. From (3.A.2),

$$\begin{aligned}
& \Pi_r\left(a_r=1|\theta=L,a_l=0\right)-\Pi_r\left(a_r=0|\theta=L,a_l=0\right) \\
= \ & (b-1)\,\psi\left(\pi\left(0,1\right)\left(1+u\right)-1\right)-\frac{1}{2} \qquad (3.A.16) \\
= \ & \psi\left(1+u\right)\left(\left(b-1\right)\pi\left(0,1\right)-\frac{\psi\left(b-1\right)-\frac{1}{2}}{\psi\left(1+u\right)}\right)
\end{aligned}$$

which proves Part 1. To prove Part 2, note that from (3.A.3),

$$\begin{aligned}
& \Pi_r\left(a_r=1|\theta=L,a_l=1\right)-\Pi_r\left(a_r=0|\theta=L,a_l=1\right) \\
= \ & (b+1)\,\psi\left(\pi\left(1,0\right)\left(1+u\right)-1\right)-\frac{1}{2} \qquad (3.A.17) \\
= \ & (b+1)\,\psi\left(1+u\right)\left\{\pi\left(1,0\right)-\frac{2\left(b+1\right)\psi+1}{2\left(b+1\right)\psi\left(1+u\right)}\right\},
\end{aligned}$$

as needed. To show Part 3, suppose $q_r\left(L,0\right)$ and $q_r\left(L,1\right)$ are sequentially rational. From (3.A.4),

$$\begin{aligned}
& \Pi_l\left(a_l=1|\theta=L\right)-\Pi_l\left(a_l=0|\theta=L\right) \qquad (3.A.18) \\
= \ & \left(1-q_r\left(L,1\right)\right)\left\{(b+1)\,\psi\left(\pi\left(1,0\right)\left(1+u\right)-1\right)-\frac{1}{2}\right\}+1 \qquad (3.A.19) \\
& +q_r\left(L,0\right)\left\{(b-1)\,\psi\left(\pi\left(0,1\right)\left(1+u\right)-1\right)-\frac{1}{2}\right\}. \qquad (3.A.20)
\end{aligned}$$

Since $q_r\left(L,0\right)$ is sequentially rational, if $q_r\left(L,0\right)>0$, then (3.A.16) is nonnegative, so for any $q_r\left(L,0\right)\in[0,1]$, (3.A.20) is nonnegative. Since $q_r\left(L,1\right)$ is sequentially rational, if $q_r\left(L,1\right)>0$, then (3.A.17) is nonnegative, so (3.A.19) is positive, and (3.A.18) is also positive. If $q_r\left(L,1\right)=0$, then simple algebra shows that (3.A.19) has the same sign as (3.A.15), so (3.A.18) is nonnegative (positive) if (3.A.15) is nonnegative (positive).

To show Part 4, suppose $q_r\left(L,0\right)=0$ and $q_r\left(L,1\right)$ is sequentially rational. As argued in the proof of Part 3, if $q_r\left(L,1\right)>0$, then (3.A.19) is positive, and since $q_r\left(L,0\right)=0$, (3.A.20) is null, so (3.A.18) is positive. If $q_r\left(L,1\right)=0$, then substituting $q_r\left(L,0\right)=q_r\left(L,1\right)=0$ into (3.A.20) and (3.A.19), we obtain after simplification that (3.A.18) has the same sign as (3.A.15). □

Lemma 13 (Parties' continuation payoff from $a_i=1$ versus $a_i=0$ when $\theta=C$)**.** *Fix a voter's interim belief $\left(\pi\left(a_l,a_r\right)\right)_{a_l,a_r\in\{0,1\}}\in[0,1]^4$, and assume that the voter best responds to any $\left(a_l,a_r\right)\in\{0,1\}^2$ according to this belief.*

1. *The relative payoff gain for r of committing to enact C—i.e., (3.A.2)—has the same sign as*

$$\pi\left(0,1\right)-\frac{\left(\frac{b}{v}+1\right)\psi-\frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi\left(1+u\right)}. \qquad (3.A.21)$$

For $\pi\left(0,1\right)=1$, (3.A.21) is positive and for $\pi\left(0,1\right)=0$ (3.A.21) has the same sign as $\frac{1}{2}-\left(\frac{b}{v}+1\right)\psi$.

2. *The relative payoff gain for* r *of committing to leave* C *in place—i.e., (3.A.3)—has the same sign as*

$$\left(\frac{b}{v}-1\right)\pi\left(1,0\right)-\frac{\left(\frac{b}{v}-1\right)\psi-\frac{1}{2}}{\psi\left(1+u\right)}. \tag{3.A.22}$$

If $v \geq b$ *or* $\pi\left(1,0\right)=1$*, (3.A.22) is positive, and if* $\pi\left(1,0\right)=0$*, (3.A.22) has the same sign as* $\frac{1}{2}-\left(\frac{b}{v}-1\right)\psi$*.*

3. *If* r*'s continuation play* $\left(q_r\left(C,0\right),q_r\left(C,1\right)\right)$ *is such that* $q_r\left(C,0\right)=0$ *and* $q_r\left(C,1\right)$ *is sequentially rational, then the relative payoff for* l *of committing to enact* C*—i.e., (3.A.4)—has the same sign as* $q_r\left(C,1\right)-\frac{v}{b}$ *when* $v<b$ *and it is positive when* $v \geq b$*.*

4. *If* r*'s continuation play* $\left(q_r\left(C,0\right),q_r\left(C,1\right)\right)$ *is such that* $q_r\left(C,1\right)=1$ *and* $q_r\left(C,0\right)$ *is sequentially rational, then the relative payoff for* l *of committing to enact* C *is positive.*

Proof. From (3.A.2),

$$\begin{aligned}
& \Pi_r\left(a_r=1|\theta=C,a_l=0\right)-\Pi_r\left(a_r=0|\theta=C,a_l=0\right) \\
= \ & \left(b+v\right)\psi\left(\pi\left(0,1\right)\left(1+u\right)-1\right)+\frac{v}{2} \qquad (3.A.23) \\
= \ & \left(b+v\right)\psi\left(1+u\right)\left(\pi\left(0,1\right)-\frac{\left(b+v\right)\psi-\frac{v}{2}}{\left(b+v\right)\psi\left(1+u\right)}\right),
\end{aligned}$$

which proves the first claim of Part 1. For $\pi\left(0,1\right)=1$, (3.A.23) is equal to $\left(b+v\right)\psi u+v/2>0$. For $\pi\left(0,1\right)=0$, (3.A.21) is equal to $-\left(b+v\right)\psi+\frac{v}{2}$, which completes the proof of Part 1.

From (3.A.3),

$$\begin{aligned}
& \Pi_r\left(a_r=1|\theta=C,a_l=1\right)-\Pi_r\left(a_r=0|\theta=C,a_l=1\right) \\
= \ & \left(b-v\right)\psi\left(\pi\left(1,0\right)\left(1+u\right)-1\right)+\frac{v}{2} \qquad (3.A.24) \\
= \ & \psi\left(1+u\right)v\left\{\left(\frac{b}{v}-1\right)\pi\left(1,0\right)-\frac{\left(\frac{b}{v}-1\right)\psi-\frac{1}{2}}{\left(1+u\right)\psi}\right\},
\end{aligned}$$

which proves the first claim of Part 2. If $b \leq v$, then (3.A.24) is weakly decreasing in $\pi\left(0,1\right)$, and for $\pi\left(0,1\right)=1$, it is equal to $\left(b-v\right)\psi u+\frac{v}{2}$, which is positive under our assumption that $\psi \leq \frac{1}{2u}$. This proves that (3.A.21) is positive if $b \leq v$ or if $\pi\left(0,1\right)=1$. For $\pi\left(1,0\right)=0$, (3.A.24) is equal to $\frac{v}{2}+v\psi-b\psi$, which completes the proof of Part 2.

From (3.A.4),

$$\begin{aligned}
& \Pi_l\left(a_l=1|\theta=C\right)-\Pi_l\left(a_l=0|\theta=C\right) \qquad (3.A.25) \\
= \ & \left(1-q_r\left(C,1\right)\right)\left[\left(b+v\right)\psi\left(\pi\left(1,0\right)\left(1+u\right)-1\right)-\frac{v}{2}\right] \\
& +q_r\left(C,0\right)\left[\left(b-v\right)\psi\left(\pi\left(0,1\right)\left(1+u\right)-1\right)-\frac{v}{2}\right]+v,
\end{aligned}$$

To prove Part 3, suppose that $q_r(C,0) = 0$ and that $q_r(C,1)$ is sequentially rational. Suppose first that $v \geq b$. Part 2 of the Lemma implies then that $q_r(C,1) = 1$. Substituting $q_r(C,0) = 0$ and $q_r(C,1) = 1$ into (3.A.25), we obtain that (3.A.25) is positive, as needed. Suppose now that $v < b$, and consider first the case $q_r(C,1) = 1$. In this case, $q_r(C,1) - \frac{v}{b}$ is positive, and the same reasoning as in the case $v \geq b$ shows that (3.A.25) is positive, as needed. Consider then the case $q_r(C,1) = 0$. In that case, $q_r(C,1) - \frac{v}{b}$ is negative. Substituting $q_r(C,0) = q_r(C,1) = 0$ into (3.A.25), we obtain after simplification

$$\Pi_l(a_l = 1|\theta = C) - \Pi_l(a_l = 0|\theta = C) = (b+v)\psi(1+u)\left[\pi(1,0) - \frac{\left(\frac{b}{v}+1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi(1+u)}\right]. \tag{3.A.26}$$

Since $q_r(C,1) = 0$, Part 2 of the lemma implies that (3.A.22) is nonpositive, which in turn implies that $b > v$ and

$$\pi(1,0) \leq \frac{\left(\frac{b}{v}-1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}-1\right)\psi(1+u)} < \frac{\left(\frac{b}{v}+1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi(1+u)},$$

where the second inequality follows from straightforward algebra. The above inequality implies that the R.H.S. of (3.A.26) is negative, as needed. Consider finally the case $q_r(C,1) \in (0,1)$. Part 2 of the lemma implies then that $b > v$ and $\pi(1,0) = \frac{\left(\frac{b}{v}-1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}-1\right)\psi(1+u)}$. Substituting the latter equality and $q_r(C,0) = 0$ into (3.A.25), we obtain after simplification

$$\Pi_l(a_l = 1|\theta = C) - \Pi_l(a_l = 0|\theta = C) = \frac{b}{v}\frac{q_r(C,1) - \frac{v}{b}}{b-v},$$

which yields the desired conclusion.

To prove Part 4, suppose that $q_r(C,1) = 1$ and that $q_r(C,0)$ is sequentially rational. Suppose first that $v \geq b$. Substituting $q_r(C,1) = 1$ into (3.A.25), and using successively $v \geq b$, $\pi(0,1) \leq 1$ and our assumption that $\psi u \leq \frac{1}{2}$, we obtain

$$\begin{aligned}
\Pi_l(a_l = 1|\theta = C) - \Pi_l(a_l = 0|\theta = C) &= q_r(C,0)\left[-(v-b)\psi(\pi(0,1)(1+u)-1) - \frac{v}{2}\right] + v \\
&\geq q_r(C,0)\left[-(v-b)\psi u - \frac{v}{2}\right] + v \\
&\geq q_r(C,0)\frac{b}{2} + v(1-q_r(C,0)),
\end{aligned}$$

which is positive. Suppose now that $v < b$. Consider first the case $q_r(C,0) = 0$. In this case, the conclusion follows from Part 3 of the lemma. Consider then the case $q_r(C,0) > 1$. In that case, Part 1 of the lemma implies that $\pi(0,1) \geq \frac{\left(\frac{b}{v}+1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi(1+u)}$. Substituting $q_r(C,1) = 1$ and the latter equality into (3.A.25), we obtain after simplification

$$\begin{aligned}
\Pi_l(a_l = 1|\theta = C) - \Pi_l(a_l = 0|\theta = C) &= q_r(C,0)\left[(b-v)\psi(\pi(0,1)(1+u)-1) - \frac{v}{2}\right] + v \\
&\geq v\frac{b+v-bq_r(C,0)}{b+v},
\end{aligned}$$

which is positive. $\square$

Lemma 14. *Suppose Assumption 3ii holds. For any arbitrary voter's interim belief* $(\pi(a_l, a_r))_{a_l, a_r \in \{0,1\}} \in [0,1]^4$, $q_r(L,0)$ *and* $q_r(L,1) = 0$ *are sequentially rational if and only if* $q_r(L,0) = q_r(L,1) = 0$, *and if* $q_r(R,0) = q_r(R,1)$ *are sequentially rational, then* $q_l(R)$ *is sequentially rational if and only if* $q_l(R) = 0$.

Proof. Note that under our assumption that $\psi \leq \frac{1}{2}$, if $b \leq 1$, (3.A.13) negative. If $b > 1$, (3.A.13) is increasing in $\pi(0,1)$ and for $\pi(0,1) = 1$, it has the same sign as $(b-1)u\psi - \frac{1}{2}$, which is negative under the assumption of the lemma. So Lemma 12 Part 1 implies the desired conclusion for $q_r(L,0)$.

Likewise, (3.A.14) is increasing in $\pi(1,0)$ and for $\pi(1,0) = 1$, it has the same sign as $(b+1)u\psi - \frac{1}{2}$. So Lemma 12 Part 1 implies the desired conclusion for $q_r(L,1)$.

Finally, (3.A.7) is equal to (3.A.14), so it is also negative for any $\pi(1,0)$ when $(b+1)u\psi < \frac{1}{2}$. Lemma 11 Part 3 implies then the desired conclusion for $q_l(R)$. $\square$

Appendix 3.B The complete information game Γ

Proof of Proposition 20 :

Proof. When $\theta = L$, $\pi(1,0) = 0$, so from Lemma 12 Part 2, $q_r(L)$ is sequentially rational if and only if $q_r(L) = 0$. Lemma 12 Part 4 implies then that $q_l(L)$ is sequentially rational if and only if $q_l(L) = 1$ when $\psi(b+1) < \frac{1}{2}$ and $q_l(L) = 0$ when $\psi(b+1) > \frac{1}{2}$.

When $\theta = C$, $\pi(1,0) = 1$, so from Lemma 13 Part 2, $q_r(C)$ is sequentially rational if and only if $q_r(C) = 1$. Since $q_r(C) = 1$, Lemma 13 Part 4 implies that $q_l(C)$ is sequentially rational if and only if $q_l(C) = 1$. $\square$

Appendix 3.C The incomplete information game $\hat{\Gamma}$

The proofs in this section use Lemmas 9, 11, 12, and 13. These lemmas are derived for the game $\hat{\Gamma}^{LCR}$ but as explained in Remark 2, they can be used for the game $\hat{\Gamma}$ by setting $\Pr(R) = 0$, $q_r(\theta, 0) = 0$ for all θ, and r's strategy $(q_r(L), q_r(C))$ in $\hat{\Gamma}$ to correspond to the part $(q_r(L,1), q_r(C,1))$ of r's strategy in $\hat{\Gamma}^{LCR}$.

3.C.1 Ruling out pathological equilibria

The following lemma shows that $\hat{\Gamma}$ may admit a pathological equilibrium in which r does not always repeal L, and it derives the necessary and sufficient condition for such an equilibrium to exist.

Proof of Lemma 14

Proof. If there exists an equilibrium such that $q_r(L) > 0$, then Lemma 14 implies (i.e., Assumption 3ii does not hold). Conversely, suppose Assumption 3ii does not hold, and consider the strategy profile $(q_l(L), q_r(L), q_l(C), q_r(C)) = (1, 1, 1, 1)$. Note that $(a_l, a_r) = (1, 0)$ is off path, so we can set $\pi(1, 0) = 1$. From $(b + 1) u\psi \geq \frac{1}{2}$ and $\pi(1, 0) = 1$, Lemma 12 Part 2 implies that $q_r(L) = 1$ is sequentially rational. Therefore, from Lemma 9, $q_r(C) = 1$ is also sequentially rational. Since $q_r(C) = 1$ is sequentially rational, Lemma 13 Part 3 implies that $q_l(C) = 1$ is also sequentially rational. Finally, since $q_r(L, 1) = 1$ is sequentially rational, Lemma 12 Part 3 implies that $q_l(L) = 1$ is sequentially rational. □

3.C.2 Proof of Proposition 21

When do the complete and incomplete information games have the same equilibrium path?

In this section, we investigate when $\hat{\Gamma}$ admits an equilibrium whose path coincides with the (generically unique) equilibrium of the corresponding complete information game Γ. As shown in Proposition 20, the equilibrium path of Γ is such that C is implemented with probability 1—i.e., $q_l(C) = q_r(C) = 1$—and either L is implemented with probability 0—i.e., $q_l(L) = 0$—or L is implemented with positive probability, but r commits to repeal it w.p. 1—i.e., $q_l(L) > 0 = q_r(L)$. Lemma 15 and 16 characterize the conditions of existence of each of these two equilibrium paths.

Lemma 15. *There exists an equilibrium of $\hat{\Gamma}$ such that $q_l(L) = 0$ and $q_l(C) = q_r(C) = 1$ if and only if*

$$\begin{cases} (i) & (b+1)\psi \geq \frac{1}{2}, \text{ and} \\ (ii) & v \geq \frac{b}{2+b}. \end{cases} \tag{3.C.1}$$

In any such equilibrium, $q_r(L) = 0$.

Proof. Step 1: If there exists an equilibrium $q_l(L) = 0$ and $q_l(C) = q_r(C) = 1$, then (3.C.1) holds and $q_r(R) = 0$:
Suppose that there exists an equilibrium such that $q_l(L) = 0$ and $q_l(C) = q_r(C) =$

1. Since $q_l(L) = 0$, Lemma 12 Part 3 implies $q_r(L) = 0$ and

$$\pi(1,0) \leq \frac{(b+1)\psi - \frac{1}{2}}{(b+1)\psi(1+u)}, \tag{3.C.2}$$

which implies (3.C.1i). To show (3.C.1ii), note first that it is satisfied if $v \geq b$. Suppose $v < b$. Since $q_r(C) = 1$ and $v < b$, Lemma 13 Part 2 implies

$$\pi(1,0) \geq \frac{\left(\frac{b}{v} - 1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v} - 1\right)\psi(1+u)}. \tag{3.C.3}$$

The R.H.S. of (3.C.2) must be weakly greater than the R.H.S. of (3.C.3), which implies (3.C.1ii).

Step 2: If (3.C.1) holds, then the strategy profile $q_l(L) = q_r(L) = 0$ and $q_l(C) = q_r(C) = 1$ is an equilibrium:
Suppose that (3.C.1) is satisfied, and consider the strategy profile $q_l(L) = q_r(L) = 0$ and $q_l(C) = q_r(C) = 1$. Note that $(a_l, a_r) = (1,0)$ is off path, so we can set

$$\pi(1,0) = \frac{(b+1)\psi - \frac{1}{2}}{(b+1)\psi(1+u)}. \tag{3.C.4}$$

The R.H.S. of (3.C.4) is less than 1, and from (3.C.1i), it is nonnegative, so $\pi(1,0) \in [0,1]$. If $v \geq b$, (3.A.22) is nonnegative. If $v < b$, simple algebra shows that (3.E.4ii) implies

$$\frac{\left(\frac{b}{v} - 1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v} - 1\right)\psi(1+u)} \leq \frac{(b+1)\psi - \frac{1}{2}}{(b+1)\psi(1+u)}.$$

The above inequality together with (3.C.4) implies that (3.A.22) is nonnegative, so $q_r(C) = 1$ is sequentially rational. From (3.C.4), (3.A.14) is negative and (3.A.15) is equal to 0, so Lemma 12 Parts 2 and 3 imply that $q_r(L) = q_l(L) = 0$ are sequentially rational. Lastly, since $q_r(C) = 1$, Lemma 13 Part 3 implies that $q_l(C) = 1$ is sequentially rational. □

Lemma 16. *There exists an equilibrium of $\hat{\Gamma}$ such that $q_l(L) > 0 = q_r(L)$ and $q_l(C) = q_r(C) = 1$ if and only if*

$$\begin{cases} (i) \quad (b+1)\psi \leq \frac{1}{2}, \text{ and} \\ (ii) \quad \left(\frac{b}{v} - 1\right)\psi \leq \frac{1}{2}. \end{cases} \tag{3.C.5}$$

In any such equilibrium, if (3.C.5i) holds strictly, $q_l(L) = 1$.

Proof. Step 1: If there exists an equilibrium such that $q_l(L) > 0 = q_r(L)$ and $q_l(C) = q_r(C) = 1$, then (3.C.5) holds, and if furthermore (3.C.5i) holds strictly, $q_l(L) = 1$:
Suppose that there exists an equilibrium $q_l(L) > 0 = q_r(L)$ and $q_l(C) = q_r(C) = 1$. Since $q_l(L) > 0 = q_r(L)$, $(a_l, a_r) = (1,0)$ is on path in state $\theta = L$ and since $q_l(C) = 1$, it is not on path in state $\theta = C$, so Bayes rule implies $\pi(1,0) = 0$. Since

$q_l(L) > 0 = q_r(L)$, Lemma 12 Part 4 implies that (3.A.15) is nonnegative, and since $\pi(1,0) = 0$, this implies (*3.C.5i*). Since $q_r(C) = 1$ and $\pi(1,0) = 0$, Lemma 13 Part 2 implies (*3.C.5ii*).
To conclude the proof, suppose that (*3.C.5i*) holds strictly. Since $\pi(1,0) = 0$, (3.A.15) is positive, so Lemma 12 Part 3 implies $q_l(L) = 1$.

Step 2: If (3.C.5) holds, then the strategy profile $q_r(L) = 0$ *and* $q_l(L) = q_l(C) = q_r(C) = 1$ *is an equilibrium:*
Suppose (3.C.5) holds, and consider the strategy profile $q_r(L) = 0$ *and* $q_l(L) = q_l(C) = q_r(C) = 1$. Note that $(a_l, a_r) = (1,0)$ in on path in state $\theta = L$, but not in state $\theta = C$, so $\pi(1,0) = 0$. Since $\pi(1,0) = 0$, Lemma 12 Part 2 implies that $q_r(L) = 0$ is sequentially rational. From (3.C.5i), (3.A.15) is nonnegative so Lemma 12 Part 3 implies that $q_l(L) = 1$ is sequentially rational. From $\pi(1,0) = 0$ and (3.C.5ii), (3.A.22) is nonnegative, so Lemma 13 Part 2 implies that $q_r(C) = 1$ is sequentially rational. Lemma 13 Part 3 implies then that $q_l(C) = 1$ is also sequentially rational. ☐

Proposition 29. *There exists an equilibrium of* $\hat{\Gamma}$ *and of the corresponding complete information game* Γ *whose paths coincide if and only if*

$$\begin{cases} (i) & v \geq \frac{b}{2+b}, \text{ or} \\ (ii) & \left(\frac{b}{v} - 1\right)\psi \leq \frac{1}{2}. \end{cases} \tag{3.C.6}$$

Proof. Step 1: If (3.C.6) holds, there exists an equilibrium of $\hat{\Gamma}$ *and of* Γ *whose paths coincide:*
Suppose first that (3.C.6ii) holds. If $(b+1)\psi \leq \frac{1}{2}$, then (3.C.5) holds, so from Lemma 16, there exists an equilibrium of $\hat{\Gamma}$ whose path coincides with the equilibrium of Proposition 31. If instead $(b+1)\psi > \frac{1}{2}$, then from (3.C.6ii), $(b+1)\psi > \left(\frac{b}{v} - 1\right)\psi$, or equivalently, $v > \frac{b}{2+b}$. In this case, (3.C.1) holds, so from Lemma 15, there exists an equilibrium of $\hat{\Gamma}$ whose path coincides with the equilibrium of Proposition 20.
Suppose now that (3.C.6i) holds but (3.E.10ii) does not. Then $(b+1)\psi \geq \left(\frac{b}{v} - 1\right)\psi$ and $(b+1)\psi > \frac{1}{2}$. So in that case, (3.C.1) is satisfied, and Lemma 15 implies that there exists an equilibrium whose path coincides with the equilibrium of Proposition 20.

Step 2: If there exists an equilibrium of $\hat{\Gamma}$ *and of* Γ *whose paths coincide, then (3.C.6) holds:*
From Proposition 20, any equilibrium σ of Γ is such that in state $\theta = C$, only $(a_l, a_r) = (1,1)$ is on path, and in state $\theta = L$, only $(a_l, a_r) = (1,0)$ or $a_l = 0$ are on path. Therefore, if the path of an equilibrium $\hat{\sigma}$ of $\hat{\Gamma}$ coincide with the path of σ, $\hat{\sigma}$ must be such that $q_l(C) = q_r(C) = 1$ and either $q_l(L) > 0 = q_r(L)$ or $q_l(L) = 0$. We then prove Step 2 by contraposition. Suppose neither (3.C.6i) nor (3.C.6ii) holds. Since (3.C.6ii) does not hold, Lemma 16 implies that there does not exist

an equilibrium of $\hat{\Gamma}$ such that $q_l(C) = q_r(C) = 1$ and $q_l(L) > 0 = q_r(L)$. Since (3.C.6i) does not hold, Lemma 15 implies that there does not exist an equilibrium of $\hat{\Gamma}$ such that $q_l(C) = q_r(C) = 1$ and $q_l(L) = 0$. □

When do inefficient repeals always occur in equilibrium?

The following proposition provides the necessary and sufficient conditions for all equilibria of $\hat{\Gamma}$ to entail inefficient repeals.

Proposition 30. *All equilibria of $\hat{\Gamma}$ are such that $q_r(C) < 1$ if and only if*

$$\begin{cases} (i) \quad (b+1)\, u\psi < \frac{1}{2}, \ \text{and} \\ (ii) \quad v < \frac{b}{2+b}, \ \text{and} \\ (iii) \quad \left(\frac{b}{v} - 1\right)\psi > \frac{1}{2}. \end{cases} . \tag{3.C.7}$$

Proof. To prove the necessary part, note that if Assumption 3(ii) does not hold, from Lemma **??**, there exists an equilibrium such that $q_r(C) = 1$. If (3.C.7ii) or (3.C.7iii) do not hold, then from Proposition 29, there exists an equilibrium such that $q_r(C) = 1$.

To prove the sufficiency part, suppose that (3.C.7) holds and suppose by contradiction that there exists an equilibrium such that $q_r(C) = 1$. From Lemma 12 Part 2, Assumption 3ii implies $q_r(L) = 0$ and (3.C.7ii) implies $b > v$. Since $q_r(C) = 1$, Lemma 13 Part 2 implies that (3.A.22) is nonnegative, which, together with $b > v$, implies

$$\pi(1,0) \geq \frac{\left(\frac{b}{v} - 1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v} - 1\right)\psi(1+u)}. \tag{3.C.8}$$

From (3.C.7iii) and (3.C.8), $\pi(1,0) > 0$. Since $q_r(C) = 1$, $(a_l, a_r) = (1,0)$ is off path in state $\theta = C$ and since $\pi(1,0) > 0$, $(a_l, a_r) = (1,0)$ must also be off path in state $\theta = L$. Since $q_r(L) = 0$, this means that $q_l(L) = 0$. Lemma 12 Part 1 implies then

$$\pi(1,0) \leq \frac{(b+1)\psi - \frac{1}{2}}{(b+1)\psi(1+u)}. \tag{3.C.9}$$

Since the R.H.S. of (3.C.9) is weakly greater than the R.H.S. of (3.C.8), we have $\left(\frac{b}{v} - 1\right)\psi \leq (b+1)\psi$, or equivalently, $v \geq \frac{b}{2+b}$, a contradiction with (3.C.8ii). □

3.C.3 Characterization of equilibria with inefficient repeals

Proof of Proposition 22. Characterization of the gridlock equilibria

Lemma 17. *Suppose Assumption 3(ii) holds. There exists a gridlock equilibrium of $\hat{\Gamma}$ if and only if*

$$\left(\frac{b}{v} - 1\right)\psi \geq \frac{1}{2}. \tag{3.C.10}$$

When (3.C.10) holds, a strategy profile is a gridlock partisan equilibrium if and only if it satisfies the following properties: $q_r(L) = q_l(C) = 0$*, if* $(b+1)\psi > \frac{1}{2}$ *then* $q_l(L) = 0$ *and if* $(b+1)\psi < \frac{1}{2}$ *then* $q_l(L) = 1$*,* $q_r(C) \leq \frac{v}{b}$*, if (3.C.10) holds strictly then* $q_r(C) = 0$*.*

Proof. Step 1: If there exists a gridlock equilibrium, then $q_r(L) = q_l(C) = 0$*,* $q_r(C) \leq \frac{v}{b}$*, and (3.C.10) holds:*
Suppose there exists a gridlock partisan equilibrium. By assumption $(b+1)\psi u < \frac{1}{2}$, so Lemma 14 implies $q_r(L) = 0$. That $q_l(C) = 0$ follows from the definition of a gridlock equilibrium. Since $q_l(C) = 0$, Lemma 11 Part 3 implies that $q_r(C) \leq \frac{v}{b}$. From Remark **??**, the latter inequality implies $q_r(C) < 1$, which, together with Lemma 13 Part 2, imply that (3.A.22) is nonpositive. Since $b > v$, this implies (3.C.10).

Step 2: If there exists a gridlock equilibrium and $(b+1)\psi < \frac{1}{2}$*, then* $q_l(L) = 1$ *and* $\pi(1,0) = 0$*.*
If $(b+1)\psi < \frac{1}{2}$, (3.A.15) is also positive, and from Step 1, $q_r(L) = 0$, so Lemma 12 Part 4 implies $q_l(L) = 1$. By definition of a gridlock equilibrium, $(a_l, a_r) = (1,0)$ is not on path in state $\theta = C$, but since (from Step 1) $q_r(L) = 0 < q_l(L)$, it is on path in state $\theta = L$, so Bayes rule implies $\pi(1,0) = 0$.

Step 3: If there exists a gridlock equilibrium and $(b+1)\psi > \frac{1}{2}$*, then* $q_l(L) = 0$*.*
Suppose $(b+1)\psi > \frac{1}{2}$. To show $q_l(L) = 0$, suppose by contradiction that $q_l(L) > 0$. Then by definition of a gridlock equilibrium, $(a_l, a_r) = (1,0)$ is not on path in state $\theta = C$, and since (from Step 1) $q_r(L,1) = 0 < q_l(L)$, it is on path in state $\theta = L$, so Bayes rule implies $\pi(1,0) = 0$. Substituting $\pi(1,0) = 0$ and $(b+1)\psi > \frac{1}{2}$ into (3.A.15), we obtain that (3.A.15) is negative. From Step 1, $q_r(L) = 0$, so Lemma 12 Part 4 implies then $q_l(L) = 1$, a contradiction.

Step 4: If (3.C.10) holds, and if the strategy profile $(q_l(L), q_l(C), q_r(L), q_r(C))$ *satisfies the conditions stated in the lemma, then it is a gridlock equilibrium:*
Suppose (3.E.14) holds, let $\sigma = (q_l(L), q_l(C), q_r(L), q_r(C))$ be a strategy profile that satisfies the conditions stated in the lemma. Note that by construction of σ, $(a_l, a_r) = (1,0)$ is not on path in state $\theta = C$, so we can set $\pi(1,0) = 0$. By assumption, $(b+1)\psi u < \frac{1}{2}$, so Lemma 14 implies that $q_r(L) = q_l(R) = 0$ are sequentially rational.
Using $\pi(1,0) = 0$ and (3.C.10), (3.A.22) is nonpositive, so Lemma 13 Part 2 implies that $q_r(C) = 0$ is sequentially rational. If furthermore (3.C.10) holds with equality, (3.A.22) is equal to 0, so any $q_r(C)$ is sequentially rational. Since $q_r(C) \leq \frac{v}{b}$ is sequentially rational, Lemma 13 Part 3 implies that $q_l(C) = 0$ is sequentially rational.
If we substitute $\pi(1,0) = 0$ into (3.A.15), we obtain that (3.A.15) has the same sign as $\left[(b+1)\psi - \frac{1}{2}\right]$. Since $q_r(L) = 0$ is sequentially rational, Lemma 12 Part 4 implies that any $q_l(L)$ that satisfies the conditions of the lemma is sequentially

rational. $\square$

Proof of Proposition 23. Characterization of the obstructionist equilibria

Lemma 18. *Suppose Assumption 3(ii) holds. There exists an obstructionist equilibrium of* $\hat{\Gamma}$ *if and only if*

$$\begin{cases} (i) \quad \left(\frac{b}{v}-1\right)\psi > \frac{1}{2}, \text{ and} \\ (ii) \quad v \leq \frac{b}{b+2}, \text{ and} \\ (iii) \quad v = \frac{b}{b+2} \text{ or } \frac{\Pr(\theta=L)}{\Pr(\theta=C)} \leq \frac{\frac{b}{v}-1}{\frac{b}{v}} \frac{\left(\frac{b}{v}-1\right)\psi u+\frac{1}{2}}{\left(\frac{b}{v}-1\right)\psi-\frac{1}{2}}. \end{cases} \tag{3.C.11}$$

When (3.C.11) holds, a strategy profile is an obstructionist equilibrium if and only if it satisfies the following properties: $q_r(L) = 0$, $q_l(L) > 0$, *if (3.C.11ii) holds strictly then* $q_l(L) = 1$, $\frac{v}{b} \leq q_r(C) < 1$, *if* $q_l(C) < 1$ *then* $q_r(C,1) = v/b$, *and*

$$\frac{q_l(C)(1-q_r(C))}{q_l(L)} = \frac{\left(\frac{b}{v}-1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}-1\right)\psi u + \frac{1}{2}} \frac{\Pr(\theta=L)}{\Pr(\theta=C)}. \tag{3.C.12}$$

When (3.C.11) holds, there exists an obstructionist equilibrium such that $q_l(C) = 1$ *and* $q_l(L) = 1$. *If furthermore the inequality (3.C.11iii) holds strictly, then there also exists an obstructionist equilibrium such that* $q_l(C) < 1$ *and* $q_l(L) = 1$. *If furthermore (3.C.11ii) holds strictly, then these two strategy profiles are the only obstructionist equilibria.*

Proof. Step 1: If an obstructionist equilibrium exists, then $q_r(L) = 0$, *and* $q_l(L) > 0$*:*

Suppose there exists an obstructionist equilibrium. By assumption, $(b+1)\psi u < \frac{1}{2}$, so Lemma 14 implies $q_r(L) = 0$. To prove $q_l(L) > 0$, suppose by contradiction that $q_l(L) = 0$. By definition of an obstructionist equilibrium, $(a_l, a_r) = (1,0)$ is on path in state $\theta = C$, and since $q_l(L) = 0$, it is not on path in state $\theta = L$. Bayes rule implies then $\pi(1,0) = 1$. Substituting $\pi(1,0) = 1$ into (3.A.15), we obtain that (3.A.15) is positive, so Lemma 12 Part 3 implies $q_l(L) = 1$, a contradiction.

Step 2: If an obstructionist equilibrium exists, then $q_l(C) > 0$, $\frac{v}{b} \leq q_r(C) < 1$, *if* $q_l(C) < 1$ *then* $q_r(C) = v/b$, *and (3.E.16i) holds:*

By definition of an obstructionist equilibrium, $(a_l, a_r) = (1,0)$ is on path in state $\theta = C$, so $\pi(1,0) > 0$, $q_l(C) > 0$, and $q_r(C) < 1$. The latter inequality and Lemma 13 Part 2 imply that $b > v$ and

$$\pi(1,0) \leq \frac{\left(\frac{b}{v}-1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}-1\right)\psi(1+u)}. \tag{3.C.13}$$

Since $\pi(1,0) > 0$, the R.H.S. of (3.C.13) is positive, which implies (3.C.11i).
Since $b > v$ and $q_l(C) > 0$, Lemma 13 Part 3 implies that $q_r(C) \geq v/b$, and that $q_r(C) = v/b$ whenever $q_l(C) < 1$.

Step 3: If an obstructionist equilibrium exists, then (3.C.12) holds, (3.C.13) holds with equality, (3.C.11ii) holds, and if it holds strictly, then $q_l(L) = 1$*:*
From Step 1, $q_r(L) = 0$ and $q_l(L) > 0$, so Bayes rule implies

$$\pi(1,0) = \frac{\Pr(\theta = C)\, q_l(C)\,(1 - q_r(C))}{\Pr(\theta = L)\, q_l(L) + \Pr(\theta = C)\, q_l(C)\,(1 - q_r(C))}. \tag{3.C.14}$$

From Step 2, $0 < q_r(C) < 1$, so r is indifferent between repealing and leaving C in place. Lemma 13 Part 2 implies then that (3.C.13) holds with equality. Combining (3.C.14) and (3.C.13) with equality to eliminate $\pi(1,0)$, we obtain (3.C.12).
From Step 1, $q_r(L) = 0$ and $q_l(L) > 0$, so Lemma 12 Part 4 implies that (3.A.15) must be nonnegative. Substituting (3.C.13) with equality into (3.A.15), we obtain that (3.A.15) has the same sign as $\frac{b}{v} - b - 2$. The nonnegativity of the latter quantity implies (3.C.11*ii*). Moreover, if (3.C.11*ii*) holds strictly, that quantity and thus (3.A.15) are strictly positive, so Lemma 12 Part 3 implies that $q_l(L) = 1$.

Step 4: If an obstructionist equilibrium exists, then (3.C.11iii) holds, and if $q_l(C) < 1$ *then (3.C.11iii) holds strictly:*
Substituting (3.C.13) with equality into (3.A.25), and using (3.C.12), we obtain (using the notations of $\hat{\Gamma}$ and the assumption that $q_r(C,0) = 0$)

$$\begin{aligned}
\frac{\Pi_l(a_l = 1|\theta = C) - \Pi_l(a_l = 0|\theta = C)}{v} &= -(1 - q_r(C))\frac{\frac{b}{v}}{\frac{b}{v} - 1} + 1 \\
&= -\frac{1}{q_l(C)}\frac{\left(\frac{b}{v} - 1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v} - 1\right)\psi u + \frac{1}{2}}\frac{\frac{b}{v}}{\frac{b}{v} - 1}\frac{\Pr(\theta = L)}{\Pr(\theta = C)} + 1.
\end{aligned}$$

By assumption, $q_l(C) > 0$, so the R.H.S. of the above inequality must be nonnegative, which implies

$$\frac{q_l(C)}{q_l(L)} \geq \frac{\left(\frac{b}{v} - 1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v} - 1\right)\psi u + \frac{1}{2}}\frac{\frac{b}{v}}{\frac{b}{v} - 1}\frac{\Pr(\theta = L)}{\Pr(\theta = C)}. \tag{3.C.15}$$

To prove (3.C.11*iii*), note first that it is satisfied if (3.C.11*ii*) holds with equality. Suppose then (3.C.11*ii*) holds strictly. From Step 3, $q_l(L) = 1$. Substituting $q_l(L) = 1$ into (3.C.15), we obtain that the R.H.S. of (3.C.15) must be weakly (strictly) lesser than 1 (if $q_l(C) < 1$). Simple algebra shows that this implies that (3.C.11*iii*) holds (strictly if $q_l(C) < 1$).

Step 5: If (3.C.11) holds and if the strategy profile $(q_l(L), q_l(C), q_r(L), q_r(C))$ *satisfies the conditions stated in the lemma, then it is an obstructionist equilibrium:*
Suppose (3.C.11) holds and let $\sigma = (q_l(L), q_l(C), q_r(L), q_r(C))$ be a strategy profile that satisfies the conditions stated in the lemma. By construction of σ, $q_l(L) > 0$ and $q_r(L) = 0$, so Bayes rule implies that $\pi(1,0)$ is given by (3.C.14). By assumption, (3.C.12) is satisfied. Substituting (3.C.12) into (3.C.14) and simplifying, we obtain that (3.C.13) holds with equality.
We now prove that the actions prescribed by σ are sequentially rational for this beliefs. We start with the subgame following for $\theta = L$. By assumption, $(b+1)\psi u < \frac{1}{2}$,

so Lemma 14 implies that $q_r(L) = 0$ is sequentially rational. Substituting (3.C.13) with equality into (3.A.15), we obtain that (3.A.15) has the same sign as $\frac{b}{v} - b - 2$, so (3.C.11ii) implies that (3.A.15) is nonnegative, and Lemma 12 Part 3 implies that $q_l(L) = 1$ is sequentially rational. If furthermore (3.C.11ii) holds with equality, then $\frac{b}{v} - b - 2$ and thus (3.A.15) are equal to zero, and since $q_r(L) = 0$ is sequentially rational, Lemma 12 Part 4 implies that any $q_l(L)$ is sequentially rational.
We then prove that σ is sequentially rational for $\theta = C$. Since (3.E.19) holds with equality, (3.A.21) is equal to 0, so Lemma 13 Part 2 implies that any $q_r(C, 1)$ is sequentially rational. Since $q_r(C) \geq v/b$, Lemma 13 Part 3 implies that $q_l(C) = 1$ is sequentially rational, and if furthermore $q_r(C) = v/b$, any $q_l(C)$ is sequentially rational.

Step 6: If (3.C.11) holds, the strategy profile σ^1 defined by $q_l^1(L) = q_l^1(C) = 1$, $q_r^1(L) = 0$, and $q_r^1(C)$ pinned down by *(3.C.12) is an obstructionist equilibrium:*
Suppose (3.C.11) holds and consider σ^1 as defined above. From Step 5, we only need to prove that σ^1 is a well defined obstructionist strategy profile and that it satisfies the conditions of the lemma. Since $q_l^1(L) = 1$, $q_l^1(L)$ satisfies the conditions of the lemma, and by construction of σ^1, (3.C.12) is satisfied. So the only condition left to prove is $v/b \leq q_r^1(C) < 1$. Note that (3.C.11ii) implies that the R.H.S. of (3.C.12) is positive, so $q_r^1(C, 1) < 1$. Substituting (3.C.11iii) and $q_l^1(C) = 1$ into (3.C.12), we obtain $q_r^1(C) \geq v/b$. Finally, note that since $q_l^1(C) = 1$ and $q_r^1(C) < 1$, σ^1 is obstructionist.

Step 7: If (3.C.11) holds, the strategy profile σ^2 defined by $q_l^2(L) = 1$, $q_r^1(L) = 0$, $q_r^2(C) = \frac{v}{b}$ and $q_l^2(C)$ pinned down by (3.C.12) is an obstructionist equilibrium:
Suppose (3.C.11) holds and consider σ^2 as defined above. From Step 5, we only need to prove that σ^2 is a well defined obstructionist strategy profile and that it satisfies the conditions of the lemma. Since $q_l^2(L) = 1$, $q_l^2(L)$ satisfies the conditions of the lemma. Since $q_r^2(C, 1) = \frac{v}{b}$, the condition $\frac{v}{b} \leq q_r^2(C) < 1$ is also satisfied. By construction of σ^2, (3.C.12) is satisfied. To make sure that σ^2 is well defined and obstructionist, we only need to check $0 < q_l^2(C) \leq 1$. From (3.C.11ii), the R.H.S. of (3.C.12) is positive, so $q_l^2(C) > 0$. Substituting $q_r^2(C) = \frac{v}{b}$ into (3.C.12) and using (3.C.11iii), we obtain $q_l^2(C) \leq 1$. Moreover, when the inequality in (3.C.11iii) holds strictly, the same algebraic manipulations imply $q_l^2(C) < 1$.

*Step 8: If (3.C.11) holds and (*3.C.11ii*) holds strictly, then σ^1 and σ^2 as defined in Steps 6 and 7 are the only obstructionist equilibria.*
Suppose (3.C.11) holds and let $\sigma \equiv (q_l(L), q_l(C), q_r(L), q_r(C))$ be an obstructionist equilibrium. From Steps 1 to 4, σ must satisfy all of the conditions of the lemma. Since (3.E.16i) holds strictly and σ satisfies the conditions of the lemma, $q_l(L) = 1$ so $q_l(L) = q_l^1(L) = q_l^2(L)$. If $q_l(C) = 1 = q_l^1(C)$, then from (3.E.18), $q_r(C) = q_r^1(C)$, so $q = q^1$. If $q_l(C) < 1$, then by assumption, $q_r(C) = \frac{v}{b} = q_r^2(C)$, and from (3.E.18), $q_l(C) = q_l^2(C)$, so $q = q^2$. □

Appendix 3.D The complete information game Γ^{LCR} (Proof of Proposition 25)

Proposition 31. *Consider the complete information game Γ^{LCR}. When $\psi(b+1) < \frac{1}{2}$, the unique equilibrium is*

$$\begin{array}{cccc} i\backslash\theta & L & C & R \\ l & 1 & 1 & 0 \\ r & 0,0 & 1,1 & 1,1 \end{array},$$

when $\psi(b-1) < \frac{1}{2} < \psi(b+1)$, the unique equilibrium is

$$\begin{array}{cccc} i\backslash\theta & L & C & R \\ l & 0 & 1 & 0 \\ r & 0,0 & 1,1 & 0,1 \end{array},$$

and when $\frac{1}{2} < \psi(b-1)$, the unique equilibrium is

$$\begin{array}{cccc} i\backslash\theta & L & C & R \\ l & 0 & 1 & 0 \\ r & 0,0 & 1,1 & 0,0 \end{array},$$

In the nongeneric cases $\psi(b+1) = \frac{1}{2}$ and $\psi(b-1) = \frac{1}{2}$, the set of equilibria is the rectangle whose extreme points are the equilibria of the neighboring generic cases previously described.[9]

Proof. When $\theta = L$, $\pi(0,1) = \pi(1,0) = 0$, so from Lemma 12 Parts 1 and 2, $q_r(L,0)$ and $q_r(L,1)$ are sequentially rational if and only if $q_r(L,0) = q_r(L,1) = 0$. Substituting $q_r(L,0) = q_r(L,1) = 0$ and $\pi(1,0) = 0$ into (3.A.18), we obtain

$$\Pi_l(a_l = 1|\theta = L) - \Pi_l(a_l = 0|\theta = L) = -(b+1)\psi + \frac{1}{2}.$$

So when $\psi(b+1) < \frac{1}{2}$ (when $\psi(b+1) > \frac{1}{2}$), $q_l(L)$ is sequentially rational if and only if $q_l(L) = 1$ (if and only if $q_l(L) = 0$), and when $\psi(b+1) = \frac{1}{2}$, any $q_l(L) \in [0,1]$ is sequentially rational.

When $\theta = R$, $\pi(0,1) = \pi(1,0) = 0$, so from Lemma 11 Part 3, $q_l(R)$ is sequentially rational if and only if $q_l(R) = 0$. Lemma 11 Part 1 implies that when $\psi(b+1) < \frac{1}{2}$ (when $\psi(b+1) > \frac{1}{2}$), $q_r(0,R)$ is sequentially rational if and only if $q_r(0,R) = 1$ (if and only if $q_r(0,R) = 0$) and when $\psi(b+1) = \frac{1}{2}$, any $q_r(0,R) \in$

[9] That is, when $\psi(b+1) = \frac{1}{2}$, the equilibria coincide with the unique equilibrium of the case $\psi(b+1) < \frac{1}{2}$ except that $q_l(L)$ and $q_r(0,L)$ can take any value in $[0,1]$, and when $\psi(b-1) = \frac{1}{2}$, the equilibria coincide with the unique equilibrium of the case $\psi(b-1) < \frac{1}{2}$ except that $q_r(1,L)$ can take any value in $[0,1]$.

$[0,1]$ is sequentially rational. Lemma 11 Part 2 implies that when $\psi(b-1) < \frac{1}{2}$ (when $\psi(b-1) > \frac{1}{2}$), $q_r(R,1)$ is sequentially rational if and only if $q_r(1,R) = 1$ (if and only if $q_r(1,R) = 0$) and when $\psi(b-1) = \frac{1}{2}$, any $q_r(1,R) \in [0,1]$ is sequentially rational.

When $\theta = C$, $\pi(0,1) = \pi(1,0) = 1$, so from Lemma 13 Parts 1 and 2, $q_r(C,0)$ and $q_r(C,1)$ are sequentially rational if and only if $q_r(C,0) = q_r(C,1) = 1$. Substituting $\pi(0,1) = 1$ and $q_r(C,0) = q_r(C,1) = 1$ into (3.A.25), we obtain

$$\Pi_l(a_l = 1|\theta = C) - \Pi_l(a_l = 0|\theta = C) = b\psi u + v\left(\frac{1}{2} - \psi u\right),$$

which is positive under our assumption that $\psi \leq \frac{1}{2u}$, so $q_l(C)$ is sequentially rational if and only if $q_l(C) = 1$. □

Appendix 3.E The incomplete information game $\hat{\Gamma}^{LCR}$

3.E.1 Ruling out pathological equilibria

The following lemma shows that $\hat{\Gamma}^{LCR}$ may admit a pathological equilibrium in which r does not always commit to repeal L, but such equilibria exist if and only if $(b+1)u\psi \geq \frac{1}{2}$. One can show that the same condition is necessary and sufficient for the existence of an equilibrium in which l commits to implement R with positive probability (i.e., $q_l(R) > 0$).[10]

Lemma 19. *There exists an equilibrium of $\hat{\Gamma}^{LCR}$ such that $q_r(L,1) > 0$ if and only if*

$$(b+1)u\psi \geq \frac{1}{2}. \tag{3.E.1}$$

When (3.E.1) holds, the following is an equilibrium:

$$\begin{array}{cccc} i\backslash\theta & L & C & R \\ l & 1 & 1 & 1 \\ r & q_r(L,0), 1 & 1,1 & 1,1 \end{array} \tag{3.E.2}$$

where $q_r(L,0) = 0$ if $(b-1)u\psi < \frac{1}{2}$ and $q_r(L,0) = 1$ if $(b-1)u\psi > \frac{1}{2}$.

Proof. Suppose there exists an equilibrium such that $q_r(L,1) > 0$. Lemma 12 Part 2 implies that (3.E.1) holds.

Conversely, suppose (3.E.1) is satisfied, and consider the strategy profile defined by (3.E.2). Note that both $(a_l, a_r) = (0,1)$ and $(a_l, a_r) = (1,0)$ are off path, so

[10] The proof of this result is omitted for brevity but is available from the authors upon request.

we can set $\pi(1,0) = \pi(0,1) = 1$. From (3.E.1) and $\pi(1,0) = 1$, Lemma 12 Part 2 implies that $q_r(L,1) = 1$ is sequentially rational. Therefore, Lemma 9 implies that $q_r(C,1) = q_r(R,1) = 1$ are also sequentially rational. Since $\pi(0,1) = 1$, Lemma 13 Part 1 implies that $q_r(C,0) = 1$ is sequentially rational, and from Lemma 9, $q_r(R,0) = 1$ is also sequentially rational. Since $q_r(C,1) = 1$ and $q_r(C,0)$ is sequentially rational, Lemma 13 Part 4 implies that $q_l(C) = 1$ is also sequentially rational. Using Lemma 11 Part 3 and $\pi(0,1) = 1$, (3.A.7) has the same sign as $(b+1)u\psi - \frac{1}{2}$, which from (3.E.1) is nonnegative, so Lemma 11 Part 3 implies that $q_l(R) = 1$ is sequentially rational. Since $q_r(L,1) = 1$, Lemma 12 Part 3 implies that $q_l(L) = 1$ is sequentially rational. Finally, the sequential rationality of $q_r(L,0)$ follows then readily from $\pi(0,1) = 1$ and Lemma 12 Part 1. □

The following Lemma shows that when the above pathological equilibrium does not exist, that is, when $(b+1)u\psi < \frac{1}{2}$, then in any equilibrium, r never enacts nor leaves in place L (i.e., $q_r(L,0) = q_r(L,1) = 0$) and l never enacts R (i.e., $q_l(R) = 0$), and conversely, for any beliefs, these actions are sequentially rational.

3.E.2 When do the complete and incomplete information games have the same equilibrium path?

In this section, we investigate when $\hat{\Gamma}^{LCR}$ admits an equilibrium whose path coincides with the (generically unique) equilibrium of the corresponding complete information game Γ^{LCR}. As shown in Proposition 31, the equilibrium paths of Γ^{LCR} are characterized by the following properties. First C is implemented with probability 1—i.e., $q_l(C) = q_r(C) = 1$. Second, if electoral incentives are strong—i.e., $(b+1)\psi \geq \frac{1}{2}$—there exists an equilibrium of Γ^{LCR} such that both L and R are implemented with probability 0. By definition, such equilibria satisfy $q_l(L) = q_r(L,0) = q_l(R) = q_r(R,0) = 0$. Third, if electoral incentives are weak—i.e., $(b+1)\psi \leq \frac{1}{2}$—there exists an equilibrium of Γ^{LCR} such that L or R is implemented with positive probability, but they can only be enacted by the party ideologically aligned with that policy, i.e. party l for policy L or R can only be enacted by party l or r. By definition, such equilibria satisfy $q_l(R) = q_r(L,1) = 0$, and $q_l(L) > 0$ or $q_r(R,0) > 0$. Lemma 20 and Lemma 21 below determine when each of these two equilibrium paths exist in the game $\hat{\Gamma}^{LCR}$.

Lemma 20. *There exists an equilibrium of $\hat{\Gamma}^{LCR}$ that satisfies*

$$\begin{array}{cccc} i\backslash\theta & L & C & R \\ l & 0 & 1 & 0 \\ r & 0, q_r(L,1) & q_r(C,0), 1 & 0, q_r(R,1) \end{array}. \tag{3.E.3}$$

for some (off path) $(q_r(L,1), q_r(C,0), q_r(R,1))$ if and only if

$$\begin{cases} (i) & (b+1)\psi \geq \frac{1}{2}, \text{ and} \\ (ii) & v \geq \frac{b}{2+b}. \end{cases} \tag{3.E.4}$$

In any such equilibrium, $q_r(L,1) = q_r(C,0) = 0$ *and* $q_r(R,1) = 1$.

Proof. Step 1: If there exists an equilibrium that satisfies (3.E.3), then $q_r(L,1) = q_r(C,0) = 0$, $q_r(R,1) = 1$, *and (3.E.4) holds:*
Suppose that there exists an equilibrium that satisfies (3.E.3). Since $q_r(R,0) = 0$ and $q_r(C,1) = 1$, Lemma 9 implies $q_r(C,0) = 0$ and $q_r(R,1) = 1$, respectively. Since $q_l(L) = 0$, Lemma 12 Part 3 implies $q_r(L,1) = 0$ and

$$\pi(1,0) \leq \frac{(b+1)\psi - \frac{1}{2}}{(b+1)\psi(1+u)}, \tag{3.E.5}$$

which implies (3.E.4i). To show (3.E.4ii), note first that it is satisfied if $v \geq b$. Suppose then that $v < b$. Since $q_r(C,1) = 1$ and $v < b$, Lemma 13 Part 2 implies

$$\pi(1,0) \geq \frac{\left(\frac{b}{v} - 1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v} - 1\right)\psi(1+u)}. \tag{3.E.6}$$

The R.H.S. of (3.E.5) must be weakly greater than the R.H.S. of (3.E.6), which implies (3.E.4ii).

Step 2: If (3.E.4) holds, then the strategy profile (3.E.3) with $q_r(L,1) = q_r(C,0) = 0$ *and* $q_r(R,1) = 1$ *is an equilibrium:*
Suppose that (3.E.4) is satisfied, and consider the strategy profile (3.E.3) with $q_r(C,0) = q_r(L,1) = 0$ and $q_r(R,1) = 1$. Note that both $(a_l, a_r) = (0,1)$ and $(a_l, a_r) = (1,0)$ are off path, so we can set $\pi(0,1) = 0$ and

$$\pi(1,0) = \frac{(b+1)\psi - \frac{1}{2}}{(b+1)\psi(1+u)}. \tag{3.E.7}$$

The R.H.S. of (3.E.7) is less than 1, and from (3.E.4i), it is nonnegative, so $\pi(1,0) \in [0,1]$. If $v \geq b$, (3.A.22) is nonnegative. If $v < b$, simple algebra shows that (3.E.4ii) implies

$$\frac{\left(\frac{b}{v} - 1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v} - 1\right)\psi(1+u)} \leq \frac{(b+1)\psi - \frac{1}{2}}{(b+1)\psi(1+u)}.$$

The above inequality together with (3.E.7) imply that (3.A.22) is nonnegative. Therefore $q_r(C,1) = 1$ is sequentially rational, and from Lemma 9, $q_r(R,1) = 1$ is also sequentially rational. Since $\pi(0,1) = 0$, (3.E.4i) implies that (3.A.5) is nonpositive, so $q_r(R,0) = 0$ is sequentially rational. From Lemma 9, this implies that $q_r(L,0) = q_r(C,0) = 0$ are also sequentially rational. From (3.E.7), (3.A.14) is negative and (3.A.15) is equal to 0, so Lemma 12 Parts 2 and 3 imply that $q_r(L,1) = q_l(L) = 0$ are sequentially rational. Since $q_r(R,0) = 0$, Lemma 11 Part 4 implies that $q_l(R) = 0$ is sequentially rational. Lastly, since $q_r(C,1) = 1$ and $q_r(C,0)$ are sequentially rational, Lemma 13 Part 4 implies that $q_l(C) = 1$ is sequentially rational. □

Lemma 21. *There exists an equilibrium of* $\hat{\Gamma}^{LCR}$ *that satisfies*

$$\begin{array}{cccc} i\backslash\theta & L & C & R \\ l & q_l(L) & 1 & 0 \\ r & q_r(L,0),0 & q_r(C,0),1 & q_r(R,0),q_r(R,1) \end{array} \tag{3.E.8}$$

for some (on path) $(q_l(L), q_r(R,0)) \neq (0,0)$*, and some* $(q_r(L,0), q_r(C,0), q_r(R,1))$ *if and only if*

$$\begin{cases} (i) \quad (b+1)\psi \leq \frac{1}{2}, \text{ and} \\ (ii) \quad \left(\frac{b}{v}-1\right)\psi \leq \frac{1}{2}. \end{cases} \tag{3.E.9}$$

In any such equilibrium, $q_r(L,0) = 0$ *and* $q_r(R,1) = 1$*, and if (3.E.9i) holds strictly,* $q_l(L) = q_r(R,0) = 1$.

Whenever (3.E.9) holds, the strategy profile (3.E.8) with $q_r(L,0) = 0$ *and* $q_l(L) = q_r(R,0) = q_r(R,1) = 1$ *is an equilibrium for some* $q_r(C,0) \in [0,1]$.

Proof. Step 1: If there exists an equilibrium that satisfies (3.E.8) for some $(q_l(L), q_r(R,0)) \neq (0,0)$*, then* $q_r(L,0) = 0$*,* $q_r(R,1) = 1$*, (3.E.9i) holds, and* $\pi(1,0) = \pi(0,1) = 0$*:*
Suppose that there exists an equilibrium that satisfies (3.E.8) for some $(q_l(L), q_r(R,0)) \neq (0,0)$. Since $q_r(C,1) = 1$, Lemma 9 implies $q_r(R,1) = 1$.
Consider first the case $q_r(R,0) > 0$. Since $q_l(R) = 0$, $(a_l, a_r) = (0,1)$ is on path in state $\theta = R$ and since $q_l(C) = 1$, it is not on path in state $\theta = C$, so Bayes rule implies $\pi(0,1) = 0$. Since $\pi(0,1) = 0$ and $\psi \leq \frac{1}{2}$, Lemma 11 Part 1 implies $q_r(L,0) = 0$. Since $q_r(R,0) > 0$ and $\pi(0,1) = 0$, Lemma 11 Part 1 implies (3.E.9i). To show $\pi(1,0) = 0$, suppose by contradiction that $\pi(1,0) > 0$. Condition (3.E.9i) implies then that (3.A.15) is positive, so Lemma 12 Part 3 implies $q_l(L) = 1$. Since $q_l(L) > 0$ and $q_r(L,1) = 0$, $(a_l, a_r) = (1,0)$ is on path in state $\theta = L$ and since $q_l(C,1) = 1$, it is not on path in state $\theta = C$, so Bayes rule implies $\pi(0,1) = 0$, a contradiction.
Consider now the case $q_r(R,0) = 0$. By assumption, in that case, $q_l(L) > 0$. Since $q_r(R,0) = 0$, Lemma 9 implies $q_r(L,0) = 0$. Since $q_r(L,1) = 0$, $(a_l, a_r) = (1,0)$ is on path in state $\theta = L$ and since $q_r(C,1) = 1$, it is not on path in state $\theta = C$, so Bayes rule implies $\pi(1,0) = 0$. Since $q_l(L) > 0$ and $q_r(L,0) = q_r(L,1) = 0$, Lemma 12 Part 4 implies that (3.A.15) is nonnegative, and since $\pi(1,0) = 0$, this implies (3.E.9i). We now show that $\pi(0,1) = 0$. Suppose by contradiction that $\pi(0,1) > 0$. Since $q_l(C) = 1$, $(a_l, a_r) = (1,0)$ is not on path in state $\theta = C$, so $\pi(0,1) > 0$ implies that it cannot be on path in state $\theta = R$ either. From $\pi(0,1) > 0$ and (3.E.9i), (3.A.5) is positive, so Lemma 11 Part 1 implies $q_r(R,0) > 0$. Since $q_l(R) = 0$, this implies that $(a_l, a_r) = (1,0)$ is on path in state $\theta = R$, a contradiction.

Step 2: If there exists an equilibrium that satisfies (3.E.8) for some $(q_l(L), q_r(R,0)) \neq (0,0)$*, then (3.E.9ii) holds, and if (3.E.9ii) holds strictly,* $q_l(L) = q_r(R,0) = 1$*:*
From Step 1, $\pi(1,0) = 0$. Since $q_r(C,1) = 1$, Lemma 13 Part 2 implies that (3.A.22) is positive. Together with $\pi(1,0) = 0$, this implies (3.E.9ii). Suppose now

that (3.E.9i) holds strictly. From what precedes $\pi(0,1) = \pi(1,0) = 0$, so (3.A.5) and (3.A.15) are positive, and Lemma 11 Part 1 and Lemma 12 Part 3 imply that $q_l(L) = q_r(R,0) = 1$.

Step 3: If (3.E.9) holds, there exists an equilibrium that satisfies (3.E.8) for $q_l(L) = q_r(R,0) = q_r(R,1) = 1$:
Suppose (3.E.9) holds, and consider the strategy profile (3.E.9) for $q_r(L,0) = 0$, $q_l(L) = q_r(R,0) = q_r(R,1) = 1$, and some $q_r(C,0)$. Note that $(a_l, a_r) = (0,1)$ in on path in state $\theta = R$ and $(a_l, a_r) = (1,0)$ in on path in state $\theta = L$, but neither are on path in state $\theta = C$, so $\pi(0,1) = \pi(1,0) = 0$.
Lemma 11 Part 1 together with (3.E.9i) imply that $q_r(R,0) = 1$ is sequentially rational. Since $\pi(0,1) = 0$, Lemma 12 Part 1 and Lemma 11 Part 3 imply that that $q_r(L,0) = q_l(R) = 0$ are sequentially rational. Since $\pi(1,0) = 0$, Lemma 12 Part 2 imply that $q_r(L,1) = 0$ is sequentially rational. From (3.E.9i), (3.A.15) is nonnegative so Lemma 12 Part 3 implies that $q_l(L) = 1$ is sequentially rational. From $\pi(1,0) = 0$ and (3.E.9ii), (3.A.22) is nonnegative, so Lemma 13 Part 2 implies that $q_r(C,1) = 1$ is sequentially rational, so from Lemma 9, $q_r(R,1) = 1$ is also sequentially rational. We can always find a sequentially rational $q_r(C,0)$, and Lemma 13 Part 4 implies then that $q_l(C) = 1$ is also sequentially rational. □

Proposition 32. *There exists an equilibrium of $\hat{\Gamma}^{LCR}$ and of the corresponding complete information game Γ^{LCR} whose paths coincide if and only if*

$$\begin{cases} (i) & v \geq \frac{b}{2+b}, \ \text{or} \\ (ii) & \left(\frac{b}{v} - 1\right)\psi \leq \frac{1}{2}. \end{cases} \tag{3.E.10}$$

Proof. Step 1: If (3.E.10) holds, there exists an equilibrium of $\hat{\Gamma}^{LCR}$ and of Γ^{LCR} whose paths coincide:
Suppose first that (3.E.10ii) holds. If $(b+1)\psi < \frac{1}{2}$, then (3.E.9) is satisfied and (3.E.9i) holds strictly, so Lemma 21 implies that there exists an equilibrium of $\hat{\Gamma}^{LCR}$ whose path coincides with the equilibrium of Proposition 31 in the case $(b+1)\psi < \frac{1}{2}$.
If instead $(b+1)\psi \geq \frac{1}{2}$, then from (3.E.10$ii$), we must have $(b+1)\psi \geq \left(\frac{b}{v} - 1\right)\psi$, or equivalently, $v \geq \frac{b}{2+b}$. In this case, (3.E.4) holds, so Lemma 20 implies that there exists an equilibrium of $\hat{\Gamma}^{LCR}$ whose path coincides with the equilibrium of Proposition 31 in the case $(b+1)\psi > \frac{1}{2}$ and $(b+1)\psi = \frac{1}{2}$.
Suppose now that (3.E.10i) holds but (3.E.10ii) does not. Then $(b+1)\psi \geq \left(\frac{b}{v} - 1\right)\psi$ and $(b+1)\psi > \frac{1}{2}$, so (3.E.4) holds, and Lemma 20 implies that there exists an equilibrium of $\hat{\Gamma}^{LCR}$ whose path coincides with the equilibrium of Proposition 31 in the case $(b+1)\psi > \frac{1}{2}$.

Step 2: If there exists an equilibrium of $\hat{\Gamma}^{LCR}$ and of Γ^{LCR} whose paths coincide, then (3.E.10) holds:
As argued in the paragraph right before Lemma 20, from Proposition 31, if σ is

an equilibrium of Γ^{LCR}, then in state $\theta = C$, only $(a_l, a_r) = (1, 1)$ is on path—i.e., $q_l(C) = q_r(C, 1) = 1$—and in state $\theta \neq C$, then either only $(a_l, a_r) = (0, 0)$ is on path—i.e., $q_l(L) = q_r(L, 0) = 0$ and $q_l(R) = q_r(R, 0) = 0$—or L or R is implemented with positive probability, but $(a_l, a_r) = (0, 1)$ is never on path in state $\theta = L$ and $(a_l, a_r) = (1, 0)$ is never on path in state $\theta = R$—i.e., $(q_l(L), q_r(R, 0)) \neq (0, 0)$ and $q_l(R) = q_r(L, 0) = 0$. Thus, if the path of $\hat{\sigma}$ coincides with that of σ, $\hat{\sigma}$ must satisfy either (3.E.3) or (3.E.8) for some $(q_l(L), q_r(R, 0)) \neq (0, 0)$.
We then prove Step 2 by contraposition. Suppose neither (3.E.10i) nor (3.E.10ii) holds. Since (3.E.10ii) does not hold, Lemma 21 implies that there does not exist an equilibrium of $\hat{\Gamma}^{LCR}$ that satisfies (3.E.8) for some $(q_l(L), q_r(R, 0)) \neq (0, 0)$. If (3.E.10$i$) does not hold, Lemma 20 implies that there does not exist an equilibrium of $\hat{\Gamma}^{LCR}$ that satisfies (3.E.3). □

3.E.3 When do inefficient repeals never/always occur in equilibrium?

The following proposition provides the necessary and sufficient conditions for all equilibria of $\hat{\Gamma}^{LCR}$ to entail inefficient repeals.

Proposition 33. *All equilibria of* $\hat{\Gamma}^{LCR}$ *are such that* $q_r(C, 1) < 1$ *if and only if*

$$\begin{cases} (i) \quad (b+1)\, u\psi < \frac{1}{2}, \ \textit{and} \\ (ii) \quad v < \frac{b}{2+b}, \ \textit{and} \\ (iii) \quad \left(\frac{b}{v} - 1\right)\psi > \frac{1}{2}. \end{cases} \tag{3.E.11}$$

Proof. To prove the necessary part, note that if (3.E.11i) does not hold, from Lemma 19, there exists an equilibrium such that $q_r(C, 1) = 1$. If (3.E.11ii) or (3.E.11iii) do not hold, then from Proposition 32, there exists an equilibrium such that $q_r(C, 1) = 1$.

To prove the sufficiency part, suppose that (3.E.11) holds and suppose by contradiction that there exists an equilibrium such that $q_r(C, 1) = 1$. From Lemma 12 Part 2, (3.E.11i) implies $q_r(L, 1) = 0$ and (3.E.11ii) implies $b > v$. Since $q_r(C, 1) = 1$, Lemma 13 Part 2 implies that (3.A.22) is nonnegative, which, together with $b > v$, implies

$$\pi(1, 0) \geq \frac{\left(\frac{b}{v} - 1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v} - 1\right)\psi(1+u)}. \tag{3.E.12}$$

From (3.E.11iii) and (3.E.12), $\pi(1, 0) > 0$. Since $q_r(C, 1) = 1$, $(a_l, a_r) = (1, 0)$ is off path in state $\theta = C$ and since $\pi(1, 0) > 0$, $(a_l, a_r) = (1, 0)$ must also be off path in state $\theta = L$. Since $q_r(L, 1) = 0$, this means that $q_l(L) = 0$. Lemma 12 Part 1 implies then

$$\pi(1, 0) \leq \frac{(b+1)\psi - \frac{1}{2}}{(b+1)\psi(1+u)}. \tag{3.E.13}$$

Since the R.H.S. of (3.E.13) is weakly greater than the R.H.S. of (3.E.12), we have $\left(\frac{b}{v}-1\right)\psi \leq (b+1)\psi$, or equivalently, $v \geq \frac{b}{2+b}$, a contradiction with (3.E.11*ii*). □

The following remark provides a sufficient conditions for inefficient repeals never to occur in equilibrium.

Remark 3. *If $v \geq b$, then in any equilibrium of $\hat{\Gamma}^{LCR}$, C is implemented with probability 1.*

Proof. Suppose $v \geq b$. Using successively Lemma 13 Parts 2 and 4, in any equilibrium, $q_r(C,1) = q_l(C) = 1$. □

3.E.4 Characterization of equilibria with inefficient repeals

Definition 7. *A strategy profile is gridlock if on path, C is implemented with probability 0.*

It is obstructionist if in state $\theta = C$, $(a_l, a_r) = (1,0)$ is on path but not $(a_l, a_r) = (0,1)$.

It is amendment if in state $\theta = C$, $(a_l, a_r) = (0,1)$ is on path but not $(a_l, a_r) = (1,0)$.

Gridlock equilibria

Lemma 22. *Suppose $(b+1)\psi u < \frac{1}{2}$. There exists a gridlock equilibrium of $\hat{\Gamma}^{LCR}$ if and only if*

$$\left(\frac{b}{v}-1\right)\psi \geq \frac{1}{2}. \tag{3.E.14}$$

When (3.E.14) holds, a strategy profile is a gridlock partisan equilibrium for some (off path) $q_r(R,1)$ if and only if it satisfies

$$\begin{array}{cccc} i\backslash\theta & L & C & R \\ l & q_l(L) & 0 & 0 \\ r & (0,0) & (0, q_r(C,1)) & (q_r(R,0), q_r(R,1)) \end{array}, \tag{3.E.15}$$

where the tuple $(q_l(L), q_r(C,1), q_r(R,0))$ satisfies the following conditions: if $(b+1)\psi > \frac{1}{2}$ then $q_l(L) = q_r(R,0) = 0$ and if $(b+1)\psi < \frac{1}{2}$ then $q_l(L) = q_r(R,0) = 1$, $q_r(C,1) \leq \frac{v}{b}$, if (3.E.14) holds strictly then $q_r(C,1) = 0$.

Proof. Step 1: If there exists a gridlock partisan equilibrium, then $q_r(L,0) = q_r(L,1) = q_l(R) = q_l(C) = q_r(C,0) = 0$, $q_r(C,1) \leq \frac{v}{b}$, and (3.E.14) holds:
Suppose there exists a gridlock partisan equilibrium. By assumption $(b+1)\psi u < \frac{1}{2}$, so Lemma 14 implies $q_r(L,0) = q_r(L,1) = q_l(R) = 0$. That $q_l(C) = q_r(C,0) = 0$ follows from the definition of a gridlock equilibrium. Since $q_l(C) = q_r(C,0) = 0$,

Lemma 11 Part 3 implies that $q_r(C,1) \leq \frac{v}{b}$. From Remark 3, the latter inequality implies $q_r(C,1) < 1$, which, together with Lemma 13 Part 2, imply that (3.A.22) is nonpositive. Since $b > v$, this implies (3.E.14).

Step 2: If there exists a gridlock partisan equilibrium and $(b+1)\psi < \frac{1}{2}$, *then* $q_r(R,0) = q_l(L) = 1$ *and* $\pi(1,0) = \pi(0,1) = 0$.
If $(b+1)\psi < \frac{1}{2}$, (3.A.5) is positive so Lemma 11 Part 1 implies $q_r(R,0) = 1$, and (3.A.15) is also positive. From Step 1, $q_r(L,0) = q_r(L,1) = 0$, so Lemma 12 Part 4 implies $q_l(L) = 1$. By definition of a gridlock equilibrium, neither $(a_l, a_r) = (1,0)$ not $(a_l, a_r) = (0,1)$ are on path in state $\theta = C$, but since (from Step 1) $q_r(L,1) = 0 < q_l(L)$ and $q_l(R) = 0 < q_r(R,0)$, they are on path in state $\theta = L$ and $\theta = R$, respectively, so Bayes rule implies $\pi(1,0) = \pi(0,1) = 0$.

Step 3: If there exists a gridlock partisan equilibrium and $(b+1)\psi > \frac{1}{2}$, *then* $q_l(L) = q_r(R,0) = 0$.
Suppose $(b+1)\psi > \frac{1}{2}$. To show $q_r(R,0) = 0$, suppose by contradiction that $q_r(R,0) > 0$. Then by definition of a gridlock equilibrium, $(a_l, a_r) = (0,1)$ is not on path in state $\theta = C$, and since (from Step 1) $q_l(R) = 0 < q_r(R,0)$, it is on path in state $\theta = R$, so Bayes rule implies $\pi(0,1) = 0$. Substituting $\pi(0,1) = 0$ and $(b+1)\psi > \frac{1}{2}$ into (3.A.5), we obtain that (3.A.5) is negative, so Lemma 11 Part 1 implies $q_r(R,0) = 1$, a contradiction.
To show $q_l(L) = 0$, suppose by contradiction that $q_l(L) > 0$. Then by definition of a gridlock equilibrium, $(a_l, a_r) = (1,0)$ is not on path in state $\theta = C$, and since (from Step 1) $q_r(L,1) = 0 < q_l(L)$, it is on path in state $\theta = L$, so Bayes rule implies $\pi(1,0) = 0$. Substituting $\pi(1,0) = 0$ and $(b+1)\psi > \frac{1}{2}$ into (3.A.15), we obtain that (3.A.15) is negative. From Step 1, $q_r(L,0) = q_r(L,1) = 0$, so Lemma 12 Part 4 implies then $q_l(L) = 1$, a contradiction.

Step 4: If (3.E.14) holds, and if the triple $(q_l(L), q_r(C,1), q_r(R,0))$ *satisfies the conditions stated in the lemma, then the strategy profile given by this triple and (3.E.15) is an obstructionist partisan equilibrium for some* $q_r(R,1)$*:*
Suppose (3.E.14) holds, let $(q_l(L), q_r(C,1), q_r(R,0))$ be a triple that satisfies the conditions stated in the lemma, and let σ be the strategy profile defined by this triple, by (3.E.15), and by some $q_r(R,1)$ that we will determine latter on. Note that by construction of σ, neither $(a_l, a_r) = (1,0)$ not $(a_l, a_r) = (0,1)$ are on path in state $\theta = C$, so we can set $\pi(1,0) = \pi(0,1) = 0$. By assumption, $(b+1)\psi u < \frac{1}{2}$, so Lemma 14 implies that $q_r(L,0) = q_r(L,1) = q_l(R) = 0$ are sequentially rational.
Using $\pi(1,0) = 0$ and (3.E.14), (3.A.22) is nonpositive, so Lemma 13 Part 2 implies that $q_r(C,1) = 0$ is sequentially rational. If furthermore (3.E.14) holds with equality, (3.A.22) is equal to 0, so any $q_r(C,1)$ is sequentially rational. From (3.E.14), $\left(\frac{b}{v} + 1\right)\psi > \frac{1}{2}$, and since $\pi(0,1) = 0$, (3.A.21) is nonpositive so Lemma 13 Part 1 implies that $q_r(C,0) = 0$ is sequentially rational. Since $q_r(C,0) = 0$ and $q_r(C,1) \leq \frac{v}{b}$ are sequentially rational, Lemma 13 Part 3 implies that $q_l(C) = 0$ is sequentially rational.

If we substitute $\pi(0,1)=0$ into (3.A.5), we obtain that (3.A.5) has the same sign as $\left[(b+1)\psi-\frac{1}{2}\right]$, so Lemma 11 Part 2 implies that any $q_r(R,0)$ that satisfies the conditions of the lemma is sequentially rational.
If we substitute $\pi(1,0)=0$ into (3.A.15), we obtain that (3.A.15) has the same sign as $\left[(b+1)\psi-\frac{1}{2}\right]$. Since $q_r(L,0)=q_r(L,1)=0$ are sequentially rational, Lemma 12 Part 4 implies that any $q_l(L)$ that satisfies the conditions of the lemma is sequentially rational.
To conclude the proof, observe that one can always find a sequentially rational $q_r(R,1)$ as a function of the sign of (3.A.6). $\square$

Obstructionist equilibria

Lemma 23. *Suppose $(b+1)\psi u<\frac{1}{2}$. There exists an obstructionist equilibrium of $\hat{\Gamma}^{LCR}$ if and only if*

$$\begin{cases} (i) \quad \left(\frac{b}{v}-1\right)\psi>\frac{1}{2}, \text{ and} \\ (ii) \quad v\le\frac{b}{b+2}, \text{ and} \\ (iii) \quad v=\frac{b}{b+2} \text{ or } \frac{\Pr(\theta=L)}{\Pr(\theta=C)}\le\frac{\frac{b}{v}-1}{\frac{b}{v}}\frac{\left(\frac{b}{v}-1\right)\psi u+\frac{1}{2}}{\left(\frac{b}{v}-1\right)\psi-\frac{1}{2}}. \end{cases} \tag{3.E.16}$$

When (3.E.16) holds, a strategy profile is an obstructionist equilibrium if and only if it satisfies

$$\begin{array}{cccc} i\backslash\theta & L & C & R \\ l & q_l(L) & q_l(C) & 0 \\ r & (0,0) & (0,q_r(C,1)) & (q_r(R,0),1) \end{array}, \tag{3.E.17}$$

where the tuple $(q_l(L),q_l(C),q_r(C,1),q_r(R,0))$ satisfies the following conditions: $q_l(L)>0$, if (3.E.16ii) holds strictly then $q_l(L)=1$, if $(b+1)\psi<\frac{1}{2}$ then $q_r(R,0)=1$, if $(b+1)\psi>\frac{1}{2}$ then $q_r(R,0)=0$, $q_l(C)>0$, $\frac{v}{b}\le q_r(C,1)<1$, if $q_l(C)<1$ then $q_r(C,1)=v/b$, and

$$\frac{q_l(C)(1-q_r(C,1))}{q_l(L)}=\frac{\left(\frac{b}{v}-1\right)\psi-\frac{1}{2}}{\left(\frac{b}{v}-1\right)\psi u+\frac{1}{2}}\frac{\Pr(\theta=L)}{\Pr(\theta=C)}. \tag{3.E.18}$$

When (3.E.16) holds, there exists an obstructionist equilibrium σ^1 such that $q_l^1(C)=q_l^1(L)=1$ and $q_r^1(C,1)$ is pinned down by (3.E.18), and there also exists an obstructionist equilibrium σ^2 such that $q_l^2(L)=1$, $q_r^2(C,1)=\frac{v}{b}$, and $q_l^2(C)$ is pinned down by (3.E.18). If furthermore (3.E.16ii) holds strictly, then $q_l^2(C)<1$ and $\sigma^1\neq\sigma^2$, and if furthermore $(b+1)\psi\neq\frac{1}{2}$, then σ^1 and σ^2 are the only obstructionist equilibria.

Proof. Step 1: If an obstructionist equilibrium exists, then $q_r(L,0)=q_r(L,1)=q_l(R)=0$, and $q_l(L)>0$:
Suppose there exists an obstructionist equilibrium. By assumption, $(b+1)\psi u<\frac{1}{2}$, so Lemma 14 implies $q_r(L,0)=q_r(L,1)=q_l(R)=0$. To prove $q_l(L)>0$, suppose

by contradiction that $q_l(L) = 0$. By definition of an obstructionist equilibrium, $(a_l, a_r) = (1, 0)$ is on path in state $\theta = C$, and since $q_l(L) = 0$, it is not on path in state $\theta = L$. Bayes rule implies then $\pi(1, 0) = 1$. Substituting $\pi(1, 0) = 1$ into (3.A.15), we obtain that (3.A.15) is positive, so Lemma 12 Part 3 implies $q_l(L) = 1$, a contradiction.

Step 2: If an obstructionist equilibrium exists, then $q_l(C) > 0$, $q_r(C, 0) = 0$, $\frac{v}{b} \leq q_r(C, 1) < 1$, if $q_l(C) < 1$ then $q_r(C, 1) = v/b$, and (3.E.16i) holds:
By definition of an obstructionist equilibrium, $(a_l, a_r) = (1, 0)$ is on path in state $\theta = C$, so $\pi(1, 0) > 0$, $q_l(C) > 0$, and $q_r(C) < 1$. The latter inequality and Lemma 13 Part 2 imply that $b > v$ and

$$\pi(1, 0) \leq \frac{\left(\frac{b}{v} - 1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v} - 1\right)\psi(1 + u)}. \tag{3.E.19}$$

Since $\pi(1, 0) > 0$, the R.H.S. of (3.E.19) is positive, which implies (3.E.16i).
To prove $q_r(C, 0) = 0$, suppose by contradiction that $q_r(C, 0) > 0$. Then Lemma 9 implies $q_r(R, 0) = 1$. By definition of an obstructionist equilibrium, $(a_l, a_r) = (0, 1)$ is not on path in state $\theta = C$, and since (using Step 1) $q_r(R, 0) > 0 = q_l(R)$, it is on path in state $\theta = R$. Bayes rule implies then $\pi(0, 1) = 0$. Substituting $\pi(0, 1) = 0$ into (3.A.21) and using (3.E.16i), we obtain that (3.A.21) is negative, so Lemma 13 Part 1 implies $q_r(C, 0) = 0$, a contradiction.
Since $b > v$, $q_r(C, 0) = 0$ and $q_l(C) > 0$, Lemma 13 Part 3 implies that $q_r(C, 1) \geq v/b$, and that $q_r(C, 1) = v/b$ whenever $q_l(C) < 1$.

Step 3: If an obstructionist equilibrium exists, then (3.E.18) holds, (3.E.19) holds with equality, (3.E.16ii) holds, and if it holds strictly, then $q_l(L) = 1$:
From Step 1, $q_l(R) = q_r(L, 1) = 0$ and $q_l(L) > 0$, so Bayes rule implies

$$\pi(1, 0) = \frac{\Pr(\theta = C)\, q_l(C)(1 - q_r(C, 1))}{\Pr(\theta = L)\, q_l(L) + \Pr(\theta = C)\, q_l(C)(1 - q_r(C, 1))}. \tag{3.E.20}$$

From Step 2, $0 < q_r(C, 1) < 1$, so r is indifferent between repealing and leaving C in place. Lemma 13 Part 2 implies then that (3.E.19) holds with equality. Combining (3.E.20) and (3.E.19) with equality to eliminate $\pi(1, 0)$, we obtain (3.E.18). From Step 1, $q_r(L, 0) = q_r(L, 1) = 0$ and $q_l(L) > 0$, so Lemma 12 Part 4 implies that (3.A.15) must be nonnegative. Substituting (3.E.19) with equality into (3.A.15), we obtain that (3.A.15) has the same sign as $\frac{b}{v} - b - 2$. The nonnegativity of the latter quantity implies (3.E.16ii). Moreover, if (3.E.16ii) holds strictly, that quantity and thus (3.A.15) are strictly positive, so Lemma 12 Part 3 implies that $q_l(L) = 1$.

Step 4: If an obstructionist equilibrium exists, then (3.E.16iii) holds, and if $q_l(C) < 1$ then (3.E.16iii) holds strictly:
Substituting $q_r(C, 0) = 0$ and (3.E.19) with equality into (3.A.25), and using

(3.E.18), we obtain

$$\begin{aligned}\frac{\Pi_l\left(a_l=1|\theta=C\right)-\Pi_l\left(a_l=0|\theta=C\right)}{v} &= -\left(1-q_r\left(C,1\right)\right)\frac{\frac{b}{v}}{\frac{b}{v}-1}+1\\ &= -\frac{1}{q_l\left(C\right)}\frac{\left(\frac{b}{v}-1\right)\psi-\frac{1}{2}}{\left(\frac{b}{v}-1\right)\psi u+\frac{1}{2}}\frac{\frac{b}{v}}{\frac{b}{v}-1}\frac{\Pr\left(\theta=L\right)}{\Pr\left(\theta=C\right)}+1.\end{aligned}$$

By assumption, $q_l\left(C\right)>0$, so the R.H.S. of the above equation must be nonnegative, which implies

$$\frac{q_l\left(C\right)}{q_l\left(L\right)}\geq\frac{\left(\frac{b}{v}-1\right)\psi-\frac{1}{2}}{\left(\frac{b}{v}-1\right)\psi u+\frac{1}{2}}\frac{\frac{b}{v}}{\frac{b}{v}-1}\frac{\Pr\left(\theta=L\right)}{\Pr\left(\theta=C\right)}\tag{3.E.21}$$

To prove (3.E.16iii), note first that it is satisfied if (3.E.16ii) holds with equality. Suppose then (3.E.16ii) holds strictly. From Step 3, $q_l\left(L\right)=1$. Substituting $q_l\left(L\right)=1$ into (3.E.21), we obtain that the R.H.S. of (3.E.21) must be weakly (strictly) lesser than 1 (if $q_l\left(C\right)<1$). Simple algebra shows that this implies that (3.E.16iii) holds (strictly if $q_l\left(C\right)<1$).

Step 5: If an obstructionist equilibrium exists, then $q_r\left(R,1\right)=1$, if $\left(b+1\right)\psi<\frac{1}{2}$ then $q_r\left(R,0\right)=1$ and if $\left(b+1\right)\psi>\frac{1}{2}$ then $q_r\left(R,0\right)=1$:
Since $q_r\left(C,1\right)>0$, Lemma 9 implies $q_r\left(R,1\right)=1$. To prove the claim about $q_r\left(R,0\right)$, suppose first $\left(b+1\right)\psi<\frac{1}{2}$. Then (3.A.5) is positive, so Lemma 13 Part 1 implies $q_r\left(R,0\right)=1$. Suppose now $\left(b+1\right)\psi>\frac{1}{2}$, and assume by contradiction that $q_r\left(R,0\right)>0$. By definition of an obstructionist equilibrium, $\left(a_l,a_r\right)=\left(0,1\right)$ is not on path in state $\theta=C$, and since $q_r\left(R,0\right)>0$ and (from Step 1) $q_l\left(R\right)=0$, $\left(a_l,a_r\right)=\left(0,1\right)$ is on path in state $\theta=R$, so Bayes rule implies $\pi\left(0,1\right)=0$. Substituting $\pi\left(0,1\right)=0$ and $\left(b+1\right)\psi>\frac{1}{2}$ into (3.A.5), we obtain that (3.A.5) is negative, so Lemma 11 Part 1 implies $q_r\left(R,0\right)=0$, a contradiction.

Step 6: If (3.E.16) holds and the tuple $\left(q_l\left(L\right),q_l\left(C\right),q_r\left(C,1\right),q_r\left(R,0\right)\right)$ satisfies the conditions stated in the lemma, then the strategy profile defined by that tuple and by (3.E.17) is an obstructionist equilibrium:
Suppose (3.E.16) holds, let $\left(q_l\left(L\right),q_l\left(C\right),q_r\left(C,1\right),q_r\left(R,0\right)\right)$ be a tuple that satisfies the conditions stated in the lemma, and let σ be the strategy profile defined by this tuple and by (3.E.17). By construction of σ, $q_l\left(L\right)>0$ and $q_l\left(R\right)=q_r\left(L,1\right)=0$, so Bayes rule implies that $\pi\left(1,0\right)$ is given by (3.E.20). By assumption, (3.E.18) is satisfied. Substituting (3.E.18) into (3.E.20) and simplifying, we obtain that (3.E.19) holds with equality. By construction of σ, $\left(a_l,a_r\right)=\left(0,1\right)$ is not on path in state $\theta=R$ so we can set $\pi\left(0,1\right)=0$.
We now prove that the actions prescribed by σ are sequentially rational for this beliefs. We start with the subgame following for $\theta=L$. By assumption, $\left(b+1\right)\psi u<\frac{1}{2}$, so Lemma 14 implies that $q_r\left(L,0\right)=q_r\left(L,1\right)=0$ are sequentially rational. Substituting (3.E.19) with equality into (3.A.15), we obtain that (3.A.15) has the same sign as $\frac{b}{v}-b-2$, so (3.E.16ii) implies that (3.A.15) is nonnegative, and Lemma 12 Part 3 implies that $q_l\left(L\right)=1$ is sequentially rational. If furthermore (3.E.16ii)

holds with equality, then $\frac{b}{v} - b - 2$ and thus (3.A.15) are equal to zero, and since $q_r(L,0) = q_r(L,1) = 0$ are sequentially rational, Lemma 12 Part 4 implies that any $q_l(L)$ is sequentially rational.

We then prove that σ is sequentially rational for $\theta = C$. Substituting $\pi(0,1) = 0$ and (3.E.16i) into (3.A.21), we obtain that (3.A.21) is nonnegative, so Lemma 13 Part 1 implies $q_r(C,0) = 0$ is sequentially rational. As argued before, (3.E.19) holds with equality so (3.A.21) is equal to 0 and Lemma 13 Part 2 implies that any $q_r(C,1)$ is sequentially rational. Since $q_r(C,0) = 0$ is sequentially rational and since by assumption $q_r(C,1) \geq v/b$, Lemma 13 Part 3 implies that $q_l(C) = 1$ is sequentially rational, and if furthermore $q_r(C,1) = v/b$, any $q_l(C)$ is sequentially rational.

We finally prove that σ is sequentially rational for $\theta = R$. Since $q_r(C,1) > 0$ is sequentially rational, Lemma 9 implies that $q_r(R,1) = 1$ is sequentially rational. Substituting $\pi(0,1) = 0$ into (3.A.5), we obtain that (3.A.5) has the same sign as $\left[\frac{1}{2} - (b+1)\psi\right]$, so Lemma 11 Part 1 implies that any $q_r(R,1)$ that satisfies the condition of the Lemma is sequentially rational. By assumption, $(b+1)\psi u < \frac{1}{2}$, so Lemma 14 implies that $q_l(R) = 0$ is sequentially rational.

Step 7: If (3.E.16) holds, the tuple $q^1 \equiv \left(q_l^1(L), q_l^1(C), q_r^1(C,1), q_r^1(R,0)\right)$ *defined by* $q_l^1(L) = q_l^1(C) = 1$, $q_r^1(R,0) = 1$ *if* $(b+1)\psi < \frac{1}{2}$ *and* $q_r^1(R,0) = 0$ *otherwise, and* $q_r^1(C,1)$ *pinned down by (3.E.18) satisfies the conditions stated in the lemma.*

Suppose (3.E.16) holds. By construction of q^1, $q_l^1(L)$ and $q_r^1(R,0)$ satisfy the conditions of the lemma, $q_l^1(C) > 0$ and (3.E.18) is satisfied. So we only need to prove $v/b \leq q_r(C,1) < b$. Note that (3.E.16ii) implies that the R.H.S. of (3.E.18) is positive, so $q_r^1(C,1) < 1$. Substituting (3.E.16iii) and $q_l^1(C) = 1$ into (3.E.18), we obtain $q_r^1(C,1) \geq v/b$.

Step 8: If (3.E.16) holds, the tuple $q^2 \equiv \left(q_l^2(L), q_l^2(C), q_r^2(C,1), q_r^2(R,0)\right)$ *defined by* $q_l^2(L) = 1$, $q_r^2(R,0) = q_r^1(R,0)$, $q_r^2(C,1) = \frac{v}{b}$ *and* $q_l^2(C)$ *pinned down by (3.E.18) satisfies the conditions stated in the lemma, and* $q_l^2(C) < 1$ *if and only if the inequality in (*3.E.16iii*) holds strictly.*

Suppose (3.E.16) holds. By construction of q^2, $q_l^2(L)$ and $q_r^2(R,0)$ satisfy the conditions of the lemma, $q_l^1(C) > 0$, $v/b \leq q_r(C,1) < b$, and (*3.E.18*) is satisfied, so we only need to check $0 < q_l^2(C) \leq 1$. From (3.E.16ii), the R.H.S. of (*3.E.18*) is positive, so $q_l^2(C) > 0$. Substituting $q_r^2(C,1) = \frac{v}{b}$ into (3.E.18) and using (3.E.16iii), we obtain that $q_l^2(C) \leq 1$. Moreover, when the inequality in (3.E.16iii) holds strictly, the same algebraic manipulations imply $q_l^2(C) < 1$.

*Step 9: If (3.E.16) holds, (*3.E.16ii*) holds strictly and* $(b+1)\psi \neq \frac{1}{2}$*, then* q^1 *and* q^2 *as defined in Steps 7 and 8 are the only tuples that satisfy the conditions of the lemma.*

Suppose (3.E.16) holds, (3.E.16i) holds strictly, and $(b+1)\psi \neq \frac{1}{2}$. Let $q \equiv (q_l(L), q_l(C), q_r(C,1), q_r$ be a tuple that satisfies the conditions of the lemma. Since (3.E.16i) holds strictly and q satisfies the conditions of the lemma, $q_l(L) = 1$, so $q_l(L) = q_l^1(L) = q_l^2(L)$. Since $(b+1)\psi \neq \frac{1}{2}$ and since q satisfies the conditions of the lemma, $q_r(R,0) = q_r^1(R,0) = q_r^2(R,0)$. If $q_l(C) = 1 = q_l^1(C)$, then from (3.E.18), $q_r(C,1) = q_r^1(C,1)$, so $q = q^1$. If $q_l(C) < 1$, then by assumption, $q_r(C,1) = \frac{v}{b} = q_r^2(C,1)$, and from (3.E.18), $q_l(C) = q_l^2(C)$, so $q = q^2$. □

Amendment equilibria

Lemma 24. *Suppose Assumption 3 holds. There exists an amendment equilibrium of* $\hat{\Gamma}^{LCR}$ *if and only if*

$$\begin{cases} (i) & \left(\frac{b}{v} - 1\right)\psi \geq \frac{1}{2}, \text{ and} \\ (ii) & \frac{\Pr(\theta=R)}{\Pr(\theta=C)} \leq \frac{\left(\frac{b}{v}+1\right)\psi u + \frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi - \frac{1}{2}}. \end{cases} \tag{3.E.22}$$

If a strategy profile is an amendment equilibrium for some (off-path) $q_r(C,1)$ *and* $q_r(R,1)$ *if and only if it satisfies*

$$\begin{array}{cccc} i\backslash\theta & L & C & R \\ l & q_l(L) & 0 & 0 \\ r & (0,0) & (q_r(C,0), q_r(C,1)) & (1, q_r(R,1)) \end{array} \tag{3.E.23}$$

where the pair $(q_l(L), q_r(C,0))$ *satisfies the following conditions: if* $(b+1)\psi < \frac{1}{2}$ *then* $q_l(L) = 1$, *if* $(b+1)\psi > \frac{1}{2}$ *then* $q_l(L) = 0$, *and* $q_r(C,0)$ *is equal to 1 or to* $\frac{\left(\frac{b}{v}+1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi u + \frac{1}{2}} \frac{\Pr(\theta=R)}{\Pr(\theta=C)}$.

Proof. Step 1: If an amendment equilibrium exists, then $q_r(L,0) = q_r(L,1) = q_l(R) = q_l(C) = 0$, $q_r(C,0) > 0$, $q_r(C,1) < 1$, $q_l(C) < 1$, $q_r(R,0) = 1$, *and (3.E.22i) holds:*

Suppose there exists an amendment equilibrium. By assumption, $(b+1)\psi u < \frac{1}{2}$, so Lemma 14 implies $q_r(L,0) = q_r(L,1) = q_l(R) = 0$. By definition of an amendment equilibrium, $(a_l, a_r) = (0,1)$ is on path in state $\theta = C$, so $q_r(C,0) > 0$ and $q_l(C) < 1$. Since $q_r(C,0) > 0$, Lemma 9 implies $q_r(R,0) = 0$. Since $q_l(C) < 1$, Lemma 13 Part 4 implies $q_r(C,1) < 1$. Since $q_r(C,1) < 1$, Lemma 13 Part 2 implies that (3.A.22) is nonnegative, so $b > v$ and (3.E.22i). By definition of an amendment equilibrium, $(a_l, a_r) = (1,0)$ is not on path in state $\theta = C$. Since $q_r(C,1) < 1$, this implies that $q_l(C) = 0$.

Step 2: If an amendment equilibrium exists, then (3.E.22ii) holds, and $q_r(C,0)$ *is equal to 1 or to* $\frac{\left(\frac{b}{v}+1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi u + \frac{1}{2}} \frac{\Pr(\theta=R)}{\Pr(\theta=C)}$.

From Step 1, $q_r(L,0) = q_l(C) = q_l(R) = 0$ and $q_r(R,0) = 1$, so Bayes rule implies

$$\pi(0,1) = \frac{\Pr(\theta = C)\, q_r(C,0)}{\Pr(\theta = R) + \Pr(\theta = C)\, q_r(C,0)}. \tag{3.E.24}$$

From Step 1, $q_r(C,0) > 0$, so Lemma 13 Part 1 implies

$$\pi(0,1) \geq \frac{\left(\frac{b}{v}+1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi(1+u)}. \tag{3.E.25}$$

Substituting (3.E.24) into (3.E.25), we obtain

$$\frac{\Pr(\theta=R)}{\Pr(\theta=C)} \leq q_r(C,0)\frac{\left(\frac{b}{v}+1\right)\psi u + \frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi - \frac{1}{2}},$$

which implies (3.E.22ii). Suppose $q_r(C,0) < 1$. Then Lemma 13 Part 1 implies that (3.E.25) holds with equality, so the above inequality must also hold with equality. Solving for $q_r(C,0)$, we obtain $q_r(C,0) = \frac{\left(\frac{b}{v}+1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi u + \frac{1}{2}}\frac{\Pr(\theta=R)}{\Pr(\theta=C)}$.

Step 3: if (3.E.22) holds and if the pair $(q_l(L), q_r(C,0))$ satisfies the conditions of the lemma, then the strategy profile given by (3.E.23) for $q_r(C,1) = 0$ is an amendment equilibrium for some $q_r(R,1)$.

Suppose (3.E.22) holds, let $(q_l(L), q_r(C,0))$ be a pair that satisfies the conditions of the lemma and consider the strategy profile σ defined in Step 3. Note first that (3.E.25ii) implies that $\frac{\left(\frac{b}{v}+1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi u + \frac{1}{2}}\frac{\Pr(\theta=R)}{\Pr(\theta=C)} \leq 1$, so $q_r(C,0)$ as defined by the condition of the lemma is admissible.

Since Assumption 3ii holds, Lemma 14 implies that $q_r(L,0) = q_r(L,1) = q_l(R) = 0$ are sequentially rational. Since $q_l(C) = 0$, $(a_l, a_r) = (1,0)$ is not on path in state $\theta = C$ so we can set $\pi(1,0) = 0$. If we substitute $\pi(1,0) = 0$ into (3.A.15), we obtain that (3.A.15) has the same sign as $\left[(b+1)\psi - \frac{1}{2}\right]$. Since $q_r(L,0) = q_r(L,1) = 0$ are sequentially rational, Lemma 12 Part 4 implies then that any $q_l(L)$ that satisfies the conditions of the lemma is sequentially rational. Substituting $\pi(1,0) = 0$ into (3.A.22) and using (3.E.22i), we obtain that (3.A.22) is nonpositive, so Lemma 13 Part 2 implies that $q_r(C,1) = 0$ is sequentially rational.

Since $q_r(L,0) = q_l(C) = q_l(R) = 0$ and $q_r(R,0) = 1$, Bayes rule implies that (3.E.24) is satisfied. Substituting (3.E.24) into (3.A.21), we obtain that (3.A.21) has the same sign as

$$q_r(C,0)\frac{\left(\frac{b}{v}+1\right)\psi u + \frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi - \frac{1}{2}} - \frac{\Pr(\theta=R)}{\Pr(\theta=C)}.$$

If $q_r(C,0) = 1$, then (3.E.22ii) implies that the above quantity, and thus (3.A.21), are nonnegative, so Lemma 13 Part 1 implies that $q_r(C,0) = 1$ is sequentially rational. If $q_r(C,0) = \frac{\left(\frac{b}{v}+1\right)\psi - \frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi u + \frac{1}{2}}\frac{\Pr(\theta=R)}{\Pr(\theta=C)}$, then the above quantity is equal to 0, so Lemma 13 Part 1 implies that any $q_r(C,0)$ is sequentially rational. Since $q_r(C,0) > 0$ is sequentially rational, Lemma 9 implies that $q_r(R,0) = 0$ is sequentially rational, and since the lemma does not impose any condition on $q_r(R,1)$, one can always pick a sequentially rational value for $q_r(R,1)$.

Substituting $q_r(C,1)=0$, $\pi(1,0)=0$ and (3.E.24) into (3.A.25), we obtain

$$\begin{aligned}
&\frac{\Pi_l(a_l=1|\theta=C)-\Pi_l(a_l=0|\theta=C)}{v} \\
&= \frac{1}{2}-\left(\frac{b}{v}+1\right)\psi-q_r(C,0)\left[\frac{1}{2}-\left(\frac{b}{v}-1\right)\psi\frac{\Pr(\theta=C)\,q_r(C,0)\,u-\Pr(\theta=R)}{\Pr(\theta=R)+\Pr(\theta=C)\,q_r(C,0)}\right]
\end{aligned} \tag{3.E.26}$$

Substituting $q_r(C,0)=1$ in (3.E.26), we obtain after simplification

$$\frac{\Pi_l(a_l=1|\theta=C)-\Pi_l(a_l=0|\theta=C)}{\psi}=-\frac{\Pr(\theta=C)\,(b\,(1-u)+v\,(u+1))+\Pr(\theta=R)\,2b}{\Pr(\theta=R)+\Pr(\theta=C)},$$

which is negative under our assumption that $u\leq 1/2$, so $q_l(C)=0$ is sequentially rational. Substituting $q_r(C,0)=\frac{\left(\frac{b}{v}+1\right)\psi-\frac{1}{2}}{\left(\frac{b}{v}+1\right)\psi u+\frac{1}{2}}\frac{\Pr(\theta=R)}{\Pr(\theta=C)}$ in the bracketed term in (3.E.26), we obtain after simplification

$$\frac{\Pi_l(a_l=1|\theta=C)-\Pi_l(a_l=0|\theta=C)}{v}=\frac{1}{2}-\left(\frac{b}{v}+1\right)\psi-q_r(C,0)\left[\frac{b}{b+v}\right].$$

From (3.E.22i), $\psi\left(\frac{b}{v}+1\right)>\frac{1}{2}$ so the above quantity is negative, as needed. Thus for either choice of $q_r(C,0)$, (3.E.26) is negative, so $q_l(C)=0$ is sequentially rational.

$\square$

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