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Article

The Congressional Leadership Dilemma

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ABSTRACT

Previous theories assume that congressional party leaders internalize the welfare of the parties they lead. Accordingly, existing work deemphasizes the role of agency problems in explaining the conditions under which parties grant more political resources to their leaders. To show how agency problems can still arise even when the party leader wants only to maximize collective goods and stay in office, I offer a model that borrows two ideas from models of political accountability: leaders vary in quality and giving the leader more resources makes it more difficult to remove her. The model implies that the party faces a tradeoff between maximizing the leader's capacity to produce collective goods and preserving its ability to remove low-quality leaders from office. This theory offers novel predictions, integrates existing results as implications of a single theory, and explains why the leader's resources sometimes change even as the political context remains the same (*JEL* D72: Political Processes: Rent-Seeking, Lobbying, Elections, Legislatures, and Voting Behavior).

1. INTRODUCTION

Party leaders play a central role in theories of congressional parties (Sinclair 1983; Calvert 1987; Aldrich and Rohde 2000; Cox and McCubbins 2005, 2007; Lee 2016; Koger and Lebo 2017). Parties delegate control over some political resources or procedural rights to their leaders. Those leaders use their rights and resources to solve the party's collective action problems. The level of resources delegated to the party leader determines the leader's capacity to impose party discipline, which in turn influences gridlock, partisan polarization, and a host of other legislative outcomes. Because the rights and resources of party leaders play a key role in these important phenomena, there is a large and active literature that seeks to explain the conditions under which parties give their leaders more resources or take resources away (Dodd 1977; Cooper and Brady 1981; Sinclair 1992; Binder 1996; Dion 1997; Schickler and Rich 1997; Evans and Oleszek 1999; Aldrich and Rohde 2000; Schickler 2000; Cox and McCubbins 2005; Volden and Bergman 2006; Green 2007; Patty 2008; Mann and Ornstein 2010; Richman 2010; Diermeier and Vlaicu 2011; Mooney 2012; Lee 2016; Koger and Lebo 2017).

Despite this sustained investigation, there are still significant gaps in the scholarly understanding of the allocation of rights and resources to leaders. Following Cooper and Brady (1981), the existing studies focus overwhelmingly on the role features of the political context, such as the ideological composition of the parties and their relative sizes, play in this process. Formal models of how congressional parties allocate resources to leaders often do not distinguish between the strategic incentives of the leaders and the parties they represent (Volden and Bergman 2006; Patty 2008; Diermeier and Vlaicu 2011; Diermeier et al. 2020). Instead, they assume that the leader's behavior conforms to the collective choice the party would make if it voted directly on the matter. The formal models that do cast the leader as a strategic player take the leader's resources as exogenously given (Calvert 1987; Bawn 1998; Iaryczower 2008) and therefore do not address the question of why, and under what conditions, the party would give leaders control over resources in the first place. Two puzzles underscore the need for a theory that simultaneously models leaders as strategic actors, distinct from the parties that they lead, and in which parties endogenously determine the amount of resources they will give to their leaders.

First, changes in the political context, which play the dominant role in prior research, do not appear to be necessary for significant changes in the resources controlled by party leaders. Consider the experiences of two successive Republican Speakers: Frederick Gillett (1919–1925) and Nicholas Longworth (1925–1931). Upon Frederick Gillett's (1919–1925) ascension to the speakership, he immediately lost the right to control committee assignments and appoint committee chairmen to James Mann, the rival he had just defeated to become Speaker (Margulies 1996: 97–99). Shortly thereafter, Gillett's influence was eclipsed by Majority Leader's Frank Mondell's (Brown 1922: 201). As soon as Mondell left the House in 1923, Gillett found himself sidelined by an even more capable and powerful floor leader, Nicholas Longworth (Bacon 1998: 133–134). The hapless Gillett eventually left the Speaker's chair to run for the Senate, after which the House Republican Conference formalized Longworth's leading role by electing him Speaker.

The election of 1924, which saw Gillett depart for the Senate and Longworth replace him as Speaker, did not herald any major changes in the political context from the Gillett years. The Republicans won enough seats so that the progressives no longer held the balance of power, but the party held about the same number of seats as when Gillett first took office and fewer seats than they had during his second term. Calvin Coolidge remained the president. Yet Longworth, unlike Gillett, dominated the Steering Committee and Committee on Committees, replaced unreliable members of the Rules Committee with his allies, and eviscerated the discharge petition (Bacon 1998: 132–135).

Behind this unexplained variation lies a more fundamental limitation in the existing accounts. In their seminal account of party leadership, Cox and McCubbins (2005) contend that the institution of party leadership is designed so that it is much better to lead the majority party than the minority party, which causes leaders to internalize the welfare of their parties. Moreover, the leader must be reelected at regular intervals. These two factors combine to ensure that leaders are faithful agents of their parties. Subsequent studies have adopted this conception of leaders as faithful agents of their parties and deemphasized agency problems accordingly. For example, conditional party government predicts that when a party is more heterogeneous and closer to the other party, it could write rules that make its leaders weaker, but conditional party government also predicts that leaders might instead simply decline to use the rights and resources they already possess (Aldrich and Rohde 1998). The theory does not take a clear position on when it expects one versus the other.

This poses a second puzzle. On the one hand, if party leaders are indeed faithful agents of their party, as the existing theories suggest, why would it ever be necessary to take away their

procedural rights and political resources? Why would there be *any* observed variation in control over resources to study if the leader's choices about how and whether to use resources are in general identical to the choices the party would make if it voted directly on the matter? In order to get clear predictions on variation in the rights and resources allocated to leaders under chamber and party rules (as opposed to the variation in how leaders use the rights and resources they possess), party leadership must pose some kind of unresolved moral hazard. On the other hand, given the widely accepted analysis from Cox and McCubbins (2005), how can moral hazard be reconciled with the compelling argument that party leaders have a larger stake in winning a majority of seats in the next election, and thereby internalize the collective welfare of the parties they lead?

I contend that these two puzzles—the empirical puzzle of why features of the political context are not necessary for dramatic changes in the rules surrounding party leadership and the theoretical puzzle of how moral hazard can be consistent with the alignment of interests between leaders and the parties they lead—are in fact inextricably connected. I present a theory that offers a solution to the theoretical puzzle: the very fact that the leadership office is attractive and its occupant wants to retain it creates a principal–agent problem. I encode this theory in a simple model of how parties allocate resources to their leaders. The model draws upon two ideas which are absent from the quantitative literature on party leadership but are common in formal models of political accountability and qualitative studies of congressional leadership. First, leading a party is a difficult task, so some leaders are better at it than others. Second, leaders use the resources at their disposal to perform favors for party members. A leader can draw on the goodwill these favors cultivate to produce collective goods for the party, but she can also draw on this goodwill to prevent her removal. Consequently, the party faces a tradeoff between maximizing short-term collective goods provision and preserving its ability to remove low-quality leaders. Under some conditions, the party provides all leaders control over substantial resources as a right of office (the ex officio *strategy*); otherwise, the party initially withholds resources from its leaders until they have proven to the party that they are high-quality (the *merit strategy*).

This result implies a solution to the empirical puzzle: if the party is playing the merit strategy, then the level of resources controlled by the leader depends on the leader's quality. This means there can be variation in the leader's resources under the rules even in the absence of variation in the political context. The model also describes the conditions under which the party prefers the ex officio to the merit strategy, and shows that predictions about the party's ideological composition and its relationship with the president—both variables that past studies have identified as potentially relevant but treated as competitors—can be cast as implications of this theory.

2. CLUES FROM PRIOR LITERATURE

My theory builds on earlier observations that it may be costly to remove leaders from office, including Calvert (1992) and Cox and McCubbins (2007). However, both of these studies root this cost in the difficulty of coordinating to remove leaders from office. The rules for leadership elections cast doubt on how significant these coordination costs are in practice. Party leadership elections are conducted by secret ballot and the nominee must secure an outright majority rather than a mere plurality. This allows members to costlessly and anonymously signal their discontent with the leader before engaging with the more public task of attempting to coordinate around an alternative candidate. While some parameters of my

formal model could be interpreted as coordination costs, my theory offers an alternative account for why removing leaders is costly.

I also draw on prior models of party leadership that explicitly consider the tradeoff leaders face between securing reelection and providing collective goods. In both Calvert (1987) and Bawn (1998), party leaders face a tradeoff between imposing party discipline and staying in office.[1] One puzzle implicit in both of these theories is why a party would delegate resources to a leader in the first place. On the one hand, if meting out selective punishments or accounting for preference intensity improves collective welfare, why would the leader face an electoral penalty for investing more in collective goods provision? On the other hand, if the collective benefit is outweighed by the policy loss the median party member suffers from the leader's activities, why would the party delegate control over resources to the leader in the first place or tolerate excessive investment in collective goods? I follow these theories by constructing a model in which, under certain circumstances, party leaders face a tradeoff between securing their own reelection and maximizing collective goods provision, but I also expand on their arguments by explaining why a party would delegate resources to the leader in the first place.

Iaryczower (2008) studies how the possibility of removing the leader from office affects party discipline. The value of promises of future rewards depends on party members' beliefs about the likelihood that the leader will remain in office and the leader's capacity to impose party discipline depends on whether the party members coordinate on removing the leader from office. My model abstracts away from the coordination problem that lies at the heart of Iaryczower's analysis, but it adopts his idea that the payoff members derive from some, but not all, of the leader's activities depend on whether she remains in office.

However, my theory borrows most extensively from the qualitative literature on party leadership in the House of Representatives.[2] Peabody (1967) argues that leaders defend their office from challengers by developing relationships with members and Ripley (1967) describes how party leaders sometimes seek to coopt rival power centers inside of Congress. Sinclair (1983) finds that leaders emphasize carrots over sticks, and their power depends in good measure on goodwill and reciprocal obligations that they accrue through their leadership activities. These ideas lie at the heart of my theory.

3. THE ALLOCATION OF RIGHTS TO PARTY LEADERS

Like most theories of legislative leadership, I take Cox and McCubbins (2007) as my starting point. Winning the majority of the seats in the chamber is a collective good for the party, but doing so requires some party members to incur private costs because they must periodically vote in a manner inconsistent with their ideological predispositions or the preferences of their constituents. The institution of party leaders offers a solution to this collective action problem. Insofar as leaders control the distribution of valuable resources, they can selectively disburse these resources to secure compliance with the party agenda and thereby increase

[1] Strahan (2007) develops a related argument that party leaders have multiple goals and may sometimes jeopardize their prospects of retaining office in the pursuit of these goals.

[2] The Senate, like the House, is a self-governing institution in which parties face a collective action problem, so the theory should apply in the Senate as well as it does in the House. However, the secondary literature on the history of parties and leadership is far more extensive for the House than it is for the Senate, notwithstanding the pioneering work of Gamm and Smith (2002). This compounds the inherent difficulties of studying Senate leadership: procedural change generally occurs through precedents rather than rules, the key offices emerged much later in the institution's history, and the people who occupied these key offices have received far less attention from historians and historically minded political scientists. Accordingly, the exposition focuses on the House, and the theory's implications for the Senate must be tested later, once researchers develop a more comprehensive understanding of party leadership there.

the party's chances of securing the collective good. Leaders value the collective good because it is much more attractive to lead the majority party than the minority party. Furthermore, the office is valuable to the leader, so she seeks to retain it in the face of biennial leadership elections and possible motions to vacate the chair.

I add two ideas drawn from the qualitative literature on party leadership and the formal literature on political accountability to this foundation. First, lawmaking and winning a partisan majority in elections are both challenging tasks; as with all challenging tasks, some people are better than others. Accordingly, the party wants to elect a high-quality leader, but the leader's quality is initially hidden from the party. This assumption is common in models of electoral accountability (Ashworth 2012; Duggan and Martinelli 2017), where it creates incentives for politicians to send potentially inefficient signals to voters.[3] This idea that leaders vary in quality is also common in historical accounts of congressional leadership (Peters 1997), but it has been largely absent from more theoretical accounts of Congress, which contend that context matters more for explaining leadership than the leader's individual style (Cooper and Brady 1981).

Second, the more resources the leader controls, the more difficult it is for the party to remove her. A similar assumption is common in models of civil–military relations, in which dictators want a strong military to protect their regime from internal and external threats, but if the military launches a coup, then it is more likely to succeed if the military is strong (Besley and Robinson 2010; Svolik 2012; McMahon and Slantchev 2015). Several mechanisms can justify this assumption in the congressional context. Perhaps, as Calvert (1992) and Cox and McCubbins (2007) contend, coups are difficult to organize, and leaders punish conspirators if they fail to remove the leader from office. The more resources the leader controls, the stronger the deterrent. Alternatively, members may want to show that they repay favors in kind so that the next leader views them as trustworthy. But the possibility most consistent with qualitative studies is that leaders, by disbursing valuable resources to party members, cultivate goodwill toward themselves (Peabody 1967; Ripley 1967; Sinclair 1983). The leader can draw on this goodwill to get party members to vote for the party program, but she can also draw on this goodwill to get the member to vote to keep her in office, even if she is ineffective at converting party resources into collective goods and even if the prospective replacement would in the future lavish favors upon the party member. This assumption can be further justified by the extensive literature on the intrinsic preference for reciprocity in social psychology, neuroscience, and behavioral economics, which shows that people are intrinsically motivated to repay past favors (Trivers 1971; Fehr and Gächter 2000; Cialdini and Goldstein 2004).

These two assumptions create a tension. The party wants to give its leader control over resources so she can produce more collective goods. However, this makes it more difficult to remove her from office if she turns out to be low-quality, which can depress collective goods production over the long run. Preserving the party's ability to remove a low-quality leader requires withholding resources until the party can learn her quality, but that results in lower collective goods production in the short run. At this point, it is helpful to encode these ideas in a simple formal model.

[3] In these models, politicians attempt to signal their hidden quality to voters, and that signaling harms voter welfare either by distorting how the politician allocates effort across tasks (Ashworth 2005; Daley and Snowberg 2011; Buisseret and Prato 2016) or by inducing the politician to ignore their own private information and pander to voters (Canes-Wrone et al. 2001; Maskin and Tirole 2004). In my model, all uncertainty is resolved before the party decides whether to retain the leader, so there is no signaling. However, the entrenchment in my model has consequences which are similar to the signaling in the multitask model presented in Ashworth (2005), which is the most similar to my model.

3.1 Model

Consider an infinitely repeated decision problem in which the party is the sole strategic actor and the leader behaves mechanically. The assumption that the leader is non-strategic is merely a temporary assumption to build intuition. The analysis will soon show that the party's strategic incentives in this simple baseline game carry over to a fuller model in which the leader is a strategic player.

During an arbitrary period, t, the party has a series of decisions to make, as summarized in Figure 1. The decisions the party must make depend on whether the party has an incumbent leader from the previous period.

If the party does not have an incumbent leader (including during the first period of the game, $t = 1$), it starts on the *No Incumbent Track* on the top of Figure 1. The party first writes the rules, which determine the procedural rights available to the leader and hence the resources at her disposal. The party may write rules that give the leader control over substantial $(r_t = 1)$ or few $(r_t = 0)$ resources. Control over committee assignments, access to plenary floor time, campaign funds, office space, junkets, staff, and appointed leadership positions are all examples of the kinds of resources represented by r_t. Empirically, $r_t = 0$ does not correspond to the leader having no resources whatsoever. Rather, $r_t = 0$ means the leader does not have so many resources that she can entrench herself.[4]

After writing the rules, the party elects a new leader. Leaders are characterized by a hidden quality parameter, θ_t. In the model, leaders are drawn without replacement from a countably infinite set of possible leaders, and a proportion p of this set is high-quality such that $\theta_t \sim \text{Bernoulli}(p)$. Of course, parties do not actually elect leaders at random from an infinite set. Rather, they try to select the best leader they can from the pool of available candidates, even though they recognize that the top leadership position presents qualitatively different challenges from lower offices and thus there is always some uncertainty about how a prospective leader will actually perform.[5] Therefore, p should be interpreted as the probability that the party succeeds in selecting a high quality leader.

Once the party has a leader and has allocated resources to her, the leader produces collective goods worth $g(\theta_t, r_t)$. I assume collective goods provision is increasing in both the leader's quality and resources: $g(\theta_t = 0, r_t = 0) < g(\theta_t = 0, r_t = 1) < g(\theta_t = 1, r_t = 1)$ and $g(\theta_t = 0, r_t = 0) < g(\theta_t = 1, r_t = 0) < g(\theta_t = 1, r_t = 1)$.[6] $g(\theta_t = 0, r_t = 0)$ is normalized to 0 and $g(\theta_t = 1, r_t = 1)$ is normalized to 1. The party observes $g(\theta_t, r_t)$, so it learns θ_t by observing the level of collective goods provided by the leader.

After she provides collective goods to the party, the leader retires with probability q. If the leader retires, the party starts the next period on the No Incumbent Track. The assumption that q is exogenous is for simplicity; in practice, leaders might stay longer if they have more resources, or the party may strategically select younger, more electorally secure leaders under

[4] Insofar as there are resources that the party can give the leader that help her produce collective goods but which are not particularly useful for entrenchment, such as the right to preside over the floor, the party gives these leaders to the leader even when it sets $r_t = 0$. Consequently, the theory implies that the party is more likely to give the leader resources that are very useful for collective goods provision compared with how useful they are for entrenchment, such as the right to preside over the floor. The party is least likely to give the leader resources that are very useful for entrenchment in proportion to how useful they are for collective goods provision, such as the right to appoint the party's fundraising chair.

[5] For example, John McCormack skillfully represented House Democrats in floor debates as the House Majority Leader but proved an unpopular and (by many accounts) ineffective Speaker of the House. Newt Gingrich's knack for grabbing media attention and skill at devising messaging votes that distinguished Republicans from Democrats made him an outstanding House Minority Whip, but the intense media scrutiny and responsibility for governing the country that came with being Speaker of the House did not allow him to leverage his strengths as effectively, which led House Republicans to attempt to remove him.

[6] The results are nearly the same if low-quality, resource-rich leaders actually produce fewer collective goods than low-quality, resource-poor leaders, $g(\theta_t = 0, r_t = 1) < g(\theta_t = 0, r_t = 0) < g(\theta_t = 1, r_t = 0) < g(\theta_t = 1, r_t = 1)$.

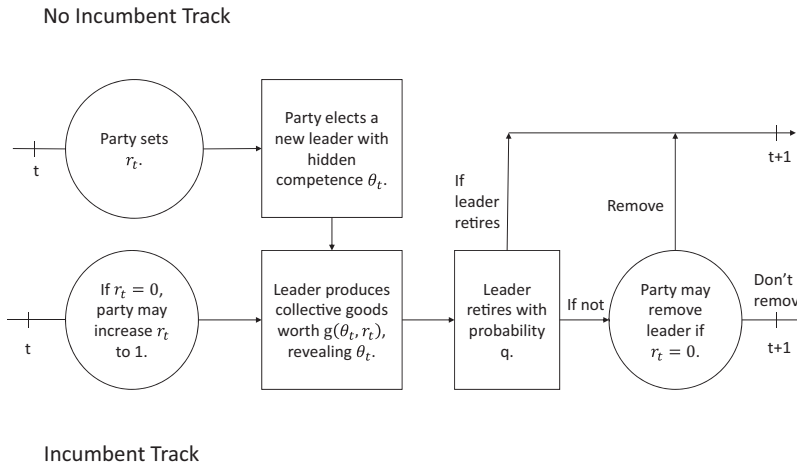

Figure 1. r_t and θ_t are both binary, and, when electing a new leader, $Pr(\theta_t = 1) = p$ for some exogenously given p. If the leader in period t stays in office through the end of t, then $\theta_{t+1} = \theta_t$ and $r_{t+1} = r_t$.

some circumstances but not others. The analysis will soon show that these more complicated extensions would yield substantively similar conclusions to this simpler baseline model.

If the leader does not retire, the party can then depose her and begin the next period on the No Incumbent Track, but only if she is resource-poor $r_t = 0$. Resource-rich leaders are impossible to remove because they entrench themselves by using their resources to perform favors for party members. The more general model will explicitly model how the leader might divert resources from collective goods provision to entrench herself, but this simple baseline model shows that an agency problem arises even if entrenchment does not have any costs aside from keeping a potentially low-quality leader in office.

If the leader does not retire and the party does not depose the leader (either because it cannot or because it chooses to keep the leader), then the party starts the next period on the Incumbent Track. The leader's quality and control over resources carry over from the previous period, $\theta_{t+1} = \theta_t$ and $r_{t+1} = r_t$. However, at the beginning of the period, the party can give the leader control over lots of resources if she does not have them already. That is, if $r_t = 0$ for an incumbent leader, the party can set $r_t = 1$.

The party can only increase an incumbent's resources. That is, if the party has an incumbent leader and $r_t = 1$, it cannot reduce r_t to 0 for as long as that leader is in office. Once an incumbent has control over ample resources, the party cannot take them away until after she has retired or been removed. As will soon become clear, whenever the party wants to reduce the leader's resources, it also wants to remove the leader from office, so the assumption that a resource-rich leader can use the same goodwill that she accrues to protect herself entails that she can also defend the base of resources upon which her survival depends.

Empirically, the assumption that the party cannot reduce the leader's resources (or pays a cost to do so) corresponds to the party leader correctly perceiving dramatic reductions in her resources as a threat to her grip on power and drawing on the goodwill she has cultivated with party members to ward off such attacks. It seems plausible the party leaders jealously guard their prerogatives, and the assumption that members respond to these appeals is not much stronger than the assumptions already used for the earlier stages of the game. Since resources have already been assumed to be fungible across

vastly different kinds of votes—ranging from organizational votes for leadership positions to the substantive and procedural votes that play a central role in collective goods provision—it seems sensible that the leader could also draw on those resources to secure compliance with votes for party and chamber rules.

The party's objective function is the discounted sum of the collective goods produced by party leaders,

$$u_P = \sum_{t=0}^{\infty} \delta^t g(\theta_t, r_t)$$

3.2 Analysis

The party's optimal policy in this decision problem takes one of two forms. Figure 2 presents them graphically, and both can be justified intuitively. The party has two choices when there is no incumbent leader: immediately give its next leader ample resources, $r_t = 1$, or at least temporarily withhold resources from its next leader, $r_t = 0$. Either of these choices can be an equilibrium, depending on the parameters, and all subsequent choices follow immediately from this initial choice.[7]

In the first potentially optimal strategy, the party plays the ex officio strategy, so-called because the party sets $r_t = 1$ before it elects a new leader, which guarantees all leaders control over substantial resources as a right of office. Once the party has set $r_t = 1$, it has no other decisions to make. It can't remove the leader even if she turns out to be low quality, and it can't give her more resources because she already controls the maximal amount.

In the second potentially optimal strategy, the party plays the *merit* strategy, so-called because the party sets $r_t = 0$ before it elects a new leader. This allows it to remove the new leader at the end of her first period in office. Since collective goods are increasing in the leader's quality, the party retains high-quality leaders and removes low-quality leaders. Therefore, only high-quality leaders survive to serve for a second period. At the beginning of the second period a leader is in office, the party gives them resources (increases r_t from 0 to 1), because it knows it will not want to remove the high-quality leader and can increase its payoff each period by giving the high-quality leader more resources with which to produce collective goods. Therefore, in the merit strategy, leaders do not get ample resources until they have proven they are high quality.

The ex officio strategy guarantees that high-quality leaders can produce the maximum amount of collective goods right away, and it allows the party to at least get something out of its low-quality leaders. However, the party gets stuck with low-quality leaders until they retire. The merit strategy maximizes the proportion of the time the party has a high-quality leader at the helm, but it undermines collective goods provision in the short-run by depriving first-period leaders of resources. Proposition 1 states the conditions under which the party plays the ex officio strategy in equilibrium.

Proposition 1. The party's optimal strategy is the ex officio strategy if $\frac{p+(1-p)g(\theta_t=0,r_t=1)}{1-\delta} \geq \frac{pg(\theta_t=1,r_t=0)+\delta p(1-q)[1-g(\theta_t=1,r_t=0)]}{(1-\delta)[1-\delta(1-p)(1-q)]}$ and the merit strategy otherwise.

[7] Strictly speaking, since this is a decision problem, it would be more precise to talk about optimal policies than strategies and equilibria. However, casting policies as strategies and optimal politics as equilibria keeps the language consistent with the extended version of the model in which the leader is a strategic player.

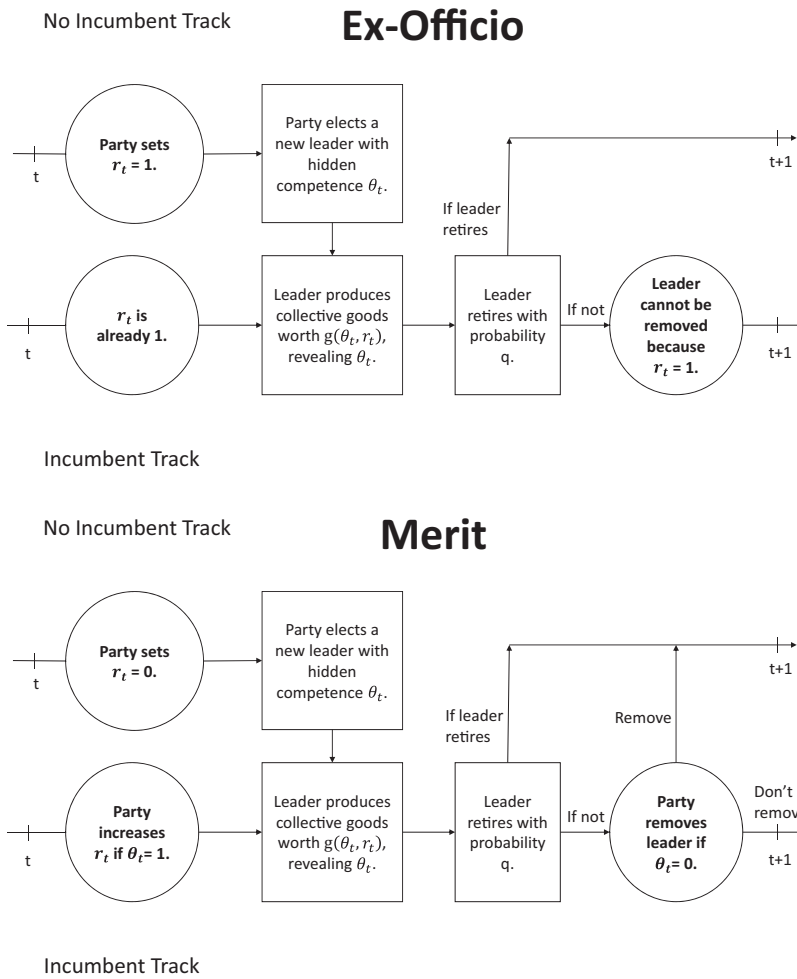

Figure 2. Depending on the parameters, one of two strategies is optimal. In the exofficio strategy (top), all leaders get substantial resources as a right of office, but this means they cannot be removed. In the merit strategy (bottom), leaders do not get substantial resources during their first period in office. This allows parties to remove low-quality leaders, and the party can give high-quality leaders resources at the beginning of the next period.

The term on the left-hand side is the continuation value of starting a period with no incumbent if the party plays the ex officio strategy and the term on the right-hand side is the same quantity for the merit strategy. Appendix A proves this proposition.

Appendix B derives the comparative statics associated with Proposition 1 and Table 1 summarizes the results. As $g(\theta_t = 0, r_t = 1)$ grows, high quality contributes less to collective goods provision for resource-rich leaders, which reduces the opportunity cost the party incurs if it gets stuck with a low-quality, resource-rich leader, which in turn makes the ex officio strategy more attractive. As $g(\theta_t = 1, r_t = 0)$ grows, resources contribute less to goodwill production for high-quality leaders, which reduces the loss the party incurs by waiting one period before giving resources to a high-quality leader, which makes the merit strategy more attractive. As q grows, the merit strategy becomes less attractive, because it increases the

Table 1. Comparative statics

x	Interpretation	Increasing x increases preference for
$g(\theta_t = 0, r_t = 1)$	Goodwill produced by untalented leader with substantial resources	Ex officio
$g(\theta_t = 1, r_t = 0)$	Goodwill produced by talented leader with meager resources	Merit
q	Leader retirement rate	Ex officio
p	Probability of drawing high-quality leader	Non-monotonic: intermediate values best for merit

chance that a high-quality leader will retire before the party can give her more resources. The probability of electing a high-quality leader, p, has a more subtle effect. If the party is likely to get a high-quality leader (p is close to 1), it can give that leader substantial resources right away and face an acceptably small risk of getting stuck with a low-quality leader. If the party is unlikely to get a high-quality leader (p is close to 0), the party might as well give the presumptive low-quality leader resources so that she can produce some collective goods rather than wait for a high-quality leader while getting nothing in the meantime. Given the values of the other parameters besides p, if the party ever prefers the merit strategy, it is for intermediate values of p.

3.3 Robustness to alternative modeling assumptions

The baseline model makes many simplifying assumptions, but it helpfully focuses attention on the tradeoff between giving the leader resources immediately to get more collective goods and temporarily withholding resources to remove low-quality leaders. This basic dilemma persists in a much wider class of models. For example, suppose instead of $r_t \in \{0, 1\}$, r_t could be chosen from a bounded set. If the collective goods the leader produces is strictly increasing in her resources, then there are two relevant levels of resources for equilibrium analysis: the maximum amount of resources, which corresponds to $r_t = 1$ in this baseline model, and the maximum amount of resources that still precludes low-quality incumbents from entrenching themselves, which corresponds to $r_t = 0$ in this baseline model. Similarly, the assumption that the party *cannot* remove low-quality, resource-rich leaders from office is stronger than necessary. If resource-rich leaders were merely more difficult to remove than resource-poor leaders (for instance, if attempts to remove the leader succeeded or failed probabilistically and the probability of failure was higher when the leader is resource-rich), the ex officio strategy would be more attractive than in the baseline model, because the party would have a chance to get rid of low-quality, resource-rich leaders, but the basic choice between the ex officio and merit strategies remains the same.

Or suppose that the probability of electing a high quality leader, p, and the leader's retirement rate, q, depended on whether new leaders get ample resources or not (i.e., whether the party plays the ex officio or merit strategy). This might arise if the party deliberately sought out young, electorally safe leaders who were likely to stay in office for a long time when it played the merit strategy or if low-quality leaders were more likely to run if they could entrench themselves. These would affect the relative payoffs of the merit and ex officio strategies (both benefit from a higher probability of electing a high-quality leader and the merit strategy benefits from a lower retirement rate), but the party would still compare the payoffs of these two strategies and pick whichever one had a higher payoff.

Instead of a unitary party, the model could have a collection of party members who collectively decide how to allocate resources and whether to depose the leader by majority rule, and each party member i can have their own δ_i and $g_i(\theta_t, r_t)$. As Appendix C shows, this extension is virtually identical to the baseline model. The unitary party can be interpreted as the party median.[8]

Finally, the baseline model assumes the party learns the leader's quality without error during the first period she is in office. However, collective goods provision could be an imperfect signal of the leader's quality. In this case, the party may want to spend more than one period learning about the leader's quality, but the basic tradeoff between giving resources early at the risk of getting stuck with a low-quality leader and waiting to make sure the leader is high quality before giving her resources remains. The noise in collective goods provision has countervailing effects on the attractiveness of the merit strategy; on the one hand, it means the party must wait longer to be sure, but on the other hand, it could decrease the cost of waiting if low-quality leaders sometimes produced as many collective goods as high-quality leaders. Appendix D formalizes this extension.

3.4 Extension to a strategic leader

The baseline model, with its mechanical leader, only obliquely addresses the core theoretical puzzle of congressional party leadership: how can moral hazard arise even if the leader internalizes the collective welfare of the party? It hints that the answer has something to do with the fact that leaders vary in quality, and low-quality leaders cannot produce as many collective goods as high-quality leaders. However, an extension to the model that makes the leader a strategic player offers a more complete answer to this question.

This extended model is significantly more complicated to analyze, but fortunately the baseline model gives almost all of the intuition needed to understand this more complicated model. Appendix E presents the full model, formally derives the equilibrium, shows that the party plays either the ex officio or merit strategy, and then proves the comparative statics are the same as in the baseline model. To clarify how moral hazard can arise in party leadership, it is sufficient to present a brief outline of the model.

In the baseline model, $g(\theta_t, r_t)$ was the level of collective goods produced by the party leader. Suppose now that $g(\theta_t, r_t)$ is a budget of goodwill that a strategic leader allocates between collective goods provision and entrenchment. In this extension, the party always has the option to remove the leader if it wants, but if it does, it incurs a cost proportional to how much the leader spent on entrenchment.

The leader wants to produce as many collective goods as possible. However, she also wants to stay in office. She gets no direct payoff from diverting goods to entrenchment; it can only affect her payoff indirectly by enticing the party to allow her to stay in office when it would otherwise remove her.

This introduces a limited form of moral hazard. The leader wants to allocate all of her resources to collective goods provision, which is exactly what the party wants as well. However, low-quality leaders cannot do so without getting removed from office. If holding office is important enough, low-quality, resource-rich leaders divert just enough resources to entrenchment to ensure they can stay. Moral hazard arises because the party wants a high-quality leader and the low-quality leaders don't want to surrender office.

This is consistent with previous conceptions of leaders, which emphasize how the leader internalizes the collective welfare of her party because it is better to be the leader of a

[8] Appendix C also considers the conditions under which it would be appropriate to interpret the unitary party as the chamber median. This possibility is more complicated, but might also be more empirically relevant.

majority party than of a minority party. So long as she'd rather be the leader of the minority party than not leader at all, she will devote as many resources as she can to collective goods provision, but she will divert as many resources to entrenchment as she needs to stay in office.

Appendix E proves that, if the leader values holding the office enough and low-quality leaders can spend enough to stay in office when they are resource-rich but not when they are resource-poor, the party plays either the ex officio or merit strategy in the Markov perfect equilibrium of this game. The logic is intuitive because the leader's behavior is so simple. Low-quality, resource-poor leaders divert just enough to collective goods provision to ensure they stay in office. All other types spend their entire budgets on collective goods provision. This makes the party's problem virtually identical to the simpler baseline model (albeit much more cumbersome to analyze).

From this perspective, withholding resources from the leader until she has proven she is high-quality (the merit strategy) offers a solution to the leader's moral hazard. The party only gives resources to the kinds of leaders who have no incentive to divert them to entrenchment. However, under certain conditions, the cure is worse than the disease, and the party is better off giving resources to all leaders and allowing the low-quality ones to entrench themselves (the ex officio strategy). As in the baseline model, the ex officio strategy is relatively attractive when low-quality, resource-rich leaders get a large budget of goodwill ($g(\theta_t = 0, r_t = 1)$ is large) when high-quality, resource-poor leaders get a small budget of goodwill ($g(\theta_t = 1, r_t = 0)$ is small) and when the retirement rate, q, is high. The intuition is the same as in the baseline model, except that increasing the retirement rate now actively improves the payoff of the ex officio strategy rather than just degrading the payoff of the merit strategy. The higher the retirement rate, the less getting stuck with a low-quality leader hurts the party, which reduces the amount of goodwill a low-quality, resource-rich leader needs to spend to successfully entrench herself, which increases the party's payoff.[9]

4. DISCUSSION

This theory offers a solution to the theoretical puzzle of why parties find it necessary to tune the resources available to their leaders, even though those leaders internalize the welfare of the party and must regularly stand for reelection. Leaders can use their resources to entrench themselves. The possibility of entrenchment does not matter for high-quality leaders. They face no threat of removal, so they happily devote all goodwill they generate to collective goods provision, just as the party wants them to. Low-quality leaders, on the other hand, face a more difficult situation. Much as they would like to devote the goodwill they generate to collective goods provision, they also want to stay in office, and they recognize that the party would like to remove them so it can try for a high-quality leader. Accordingly, low-quality, resource-rich leaders devote some goodwill to securing their positions in office. The only way the party can avoid getting stuck with a low-quality leader is to avoid giving that leader too many resources in the first place. All of the many simplifying assumptions of this model serve to focus attention on this tradeoff.

This result relies on both variation in the quality of leaders and the possibility of using resources for entrenchment. If there were no variation in the quality of leaders, the party

[9] This implies that a party playing the ex officio strategy would like to maximize q by enacting term limits. House Republicans tried this as part of their package of rule changes in 1995 in which they transitioned from the merit strategy to the ex officio strategy. Unfortunately for them, they were unable to commit to following the term limits, and the term limit for the Speaker of the House was abolished before it removed any leaders from office.

could safely give the leader as many resources as it liked. She would spend all of the goodwill she generates on collective goods provision, which would maximize her utility and the party's utility in the present period. The party would have no reason to replace her, so she would remain in office until she retired. If entrenchment were impossible, the party could also safely give the leader as many resources as it liked. Both low-quality and high-quality leaders would maximize collective goods provision, and the leader would remove low-quality leaders and retain high-quality leaders.

4.1 Illustrations of the mechanism

While the assumption that leaders vary in quality is probably uncontroversial, the assumption that resource-rich leaders can entrench themselves may invite skepticism. However, the experiences of many Speakers of the House show that this assumption is at least plausible. Joe Cannon, Newt Gingrich, and Nancy Pelosi all provoked sustained, intense discontent from significant factions within their party, presided over outcomes that make it plausible that their parties viewed them as low-quality leaders, and were able to fend off attempts to remove them from office.[10] John Boehner (2007–2015) provides an especially clear example of the interplay between resources, quality, and entrenchment.

From the time Boehner ascended to the speakership in 2011 to his resignation in 2015, his party lurched from one crisis to another, largely but not exclusively in the realm of fiscal policy. Repeatedly, Boehner squandered months negotiating with the Senate and the White House to arrive at a bargain only to find that it was unacceptable to his own conference. Discontent with Boehner's leadership was most intense in the Tea Party faction, where it started almost as soon as Boehner became Speaker. The number of legislators who voted against his reelection on the floor was never even close to half of the conference, but the number of dissidents was large enough to nearly cause the election to go to a second ballot in 2013. By the end of 2013, the string of frustrations had grown so long that even his allies conceded that the party would not be an effective lawmaking coalition so long as Boehner remained at the helm (Bresnahan and Harris 2013; Bresnahan et al. 2015).

However, Boehner's procedural rights and control over resources cemented his place in office. Although many of Boehner's most vehement critics came from the class of 2010, he won over many members of that class by bringing them into the leadership organization and appointing others to prestigious committees. Even more importantly, Boehner systematically pacified everyone who could have been a credible alternative Speaker. The elected Republican leadership team was stacked with Boehner loyalists. Furthermore, Boehner played a significant role in selecting the committee chairmen, and further cultivated goodwill by giving each a meaningful share in the setting the party's agenda. These choices did not unify the Republican Party behind a common program to retain its majority, but they did ensure that efforts to remove Boehner from office were starved of experienced leadership and could not present a credible alternative candidate. This difficulty was epitomized by an episode from the 2013 Speaker election—the challenge that came closest to depriving Boehner of a majority. Majority Leader Eric Cantor, who supported Boehner, attracted the plurality of the anti-Boehner votes. Cantor was described as shaking his head in exasperation when dissidents voted for him.

Boehner's eventual resignation cannot be described as voluntary. Certainly, the intransigence of the vocal minority that opposed him motivated his decision to leave. However, his

[10] Cannon and Gingrich were both ultimately removed, but both were also able to delay their removal by a full election cycle after large factions of their parties turned against them, and both promptly led their parties to disastrous performances in that extra term.

resignation cannot be described as motivated by the expectation of defeat either. No alternative candidate who could have credibly challenged Boehner ever emerged. Majority Leader Kevin McCarthy, who ran to replace Boehner (although he eventually withdrew), and Ways and Means Chairman Paul Ryan, who was eventually drafted, were both staunch Boehner supporters. Thanks to impressive array of resources at his disposal as a result of chamber and conference rules and the goodwill built through the disbursal of these resources, Boehner was able to leave at a time of his choosing.

Resource-poor leaders who served from 1911 to 1974 were not as lucky as Boehner. For example, Champ Clark (1911–1919) was in short order sidelined by the capable Oscar Underwood, the nominally subordinate Chairman of the House Ways and Means Committee. After Underwood's departure for the Senate, Claude Kitchin assumed the leading role in the caucus, and once Claude Kitchin alienated himself from President Woodrow Wilson by opposing American entry into World War One, Jack Garner became the de facto leader of House Democrats. All of this occurred without formally removing Champ Clark from office, but achieved much the same effect as if he had been removed. Republicans were content to leave alone Minority Leader Charles Halleck (1959–1965), who had himself come to power in a successful coup against the incumbent House Minority Leader Joseph Martin, for the first few years he was in office, when the party performed reasonably well in elections. However, as soon as he led the Republicans to a defeat in 1964, he was promptly deposed by Gerald Ford.

The preceding anecdotes are not a test of the theory. Such an enterprise would require a careful, thorough analysis of the history of congressional leadership and scholarly debates of contentious questions about where exactly power resided during various periods of congressional history, how parties felt about their leaders, and why specific leaders left office when they did. Rather, they are intended to illustrate that a core assumption of the theory—that it is easier to remove or displace low-quality leaders when they control few resources and hard when they control many, and that there is therefore a tradeoff between giving the leader resources to produce collective goods and being able to remove low-quality leaders—is at least plausible under a defensible, if contentious, reading of congressional history.[11]

4.2 The relationship between quality and resources

The theory also offers a solution to the empirical puzzle of why changes in the political context are not necessary for substantial changes in the resources available to leaders. Since Cooper and Brady (1981), quantitative and game theoretic research on the allocation of resources to party leaders has eschewed characteristics of the leaders themselves and focused instead on properties of the parties they lead, such as the size of the party, its ideological composition, and whether the president is from that party. The theory shows that it is sometimes, but not always, important to account for the leader's quality. The party *always* gives high-quality leaders control over substantial resources, at least eventually. The party gives low-quality leaders control over resources only if it is following the ex officio strategy, and it gives high-quality leaders control over resources right away only if it is following the ex officio strategy.

Returning to the concrete question of why House Republicans gave Frederick Gillett fewer resources than they gave Nicholas Longworth even though they inhabited similar contexts, the theory offers a simple answer: the House Republicans were following the merit strategy, and Longworth was a high-quality Speaker while Gillett was a low-quality Speaker.

[11] Recall that for the theory's key predictions to hold, it is sufficient if resource-rich leaders can merely hold onto office longer than resource-poor leaders. They need not be able to entrench themselves indefinitely.

Notably, Longworth did not gain control over resources immediately. He became the de facto leader of the House Republican Conference in 1923, after the departure of House Majority Leader Frank Mondell. He promptly defused a brewing progressive revolt against Gillett and received credit for ensuring that President Calvin Coolidge's tax cuts passed the House. It was not until after these victories, which demonstrated to the conference that Longworth was a high-quality party leader, that the party began lavishing additional resources on him.

The theory also explains why Newt Gingrich (1995–1999) and Dennis Hastert (1999–2007) had comparable levels of resources, even though House Republicans were largely content with Hastert but were so dissatisfied with Gingrich that he eventually had to resign. The election of a Republican majority in the House and concomitant rise of Newt Gingrich as Speaker inaugurated an era in which House Republicans followed the ex officio strategy. House Republicans wrote conference and chamber rules that gave the Speaker control over substantial resources, most importantly committee assignments, the selection of committee chairs, and control over access to the agenda, as a right of office. When a party is following the ex officio strategy, quality bears no relationship to the resources its leader controls.

To recast the prior literature in the terms of the model, previous studies have focused overwhelmingly on the role of the political context—on changes to $g(\theta_t = 1, r_t = 0)$ and $g(\theta_t = 0, r_t = 1)$—in their attempts to explain variation in the leader's resources. These changes influence whether the party plays the ex officio or merit strategy, which is indeed important in explaining variation in the leader's resources. They explain why leaders in the 1990s and 2000s, such as Gingrich and Hastert, got more resources on average than leaders in the 1920s, such as Gillett and Longworth. But they ignore how the leader's quality, θ_t, and the party's initial uncertainty about it influence the leader's resources when the party is playing the merit strategy, even in an unchanging political context. These explain why Longworth got more resources than Gillett and why Longworth got fewer resources at the beginning of his tenure than later on.

4.3 Political context and the party's strategy

Although a focus on features of the political context misses important variation in the allocation of resources to leaders, the empirical literature in both Congress (Binder 1996; Schickler 2000; Rohde 2010) and state legislatures (Clucas 2001; Richman 2010; Mooney 2012) leaves little doubt that factors like the ideological composition of the parties are important. In the model, the political context enters not through the decisions about the allocation of resources to individual leaders, but instead through the decision of whether to play the ex officio or merit strategy. Two parameters capture the essential role of the political context: the value of having a high-quality, resource-poor leader, $g(\theta_t = 1, r_t = 0)$, and the value of having a low-quality, resource-rich leader, $g(\theta_t = 0, r_t = 1)$.

The model is agnostic as to how the leader transforms her talent and resources into collective goods, so providing empirical referents for $g(\theta_t = 0, r_t = 1)$ and $g(\theta_t = 1, r_t = 0)$ requires taking a stronger position on how leaders use their quality and resources to produce collective goods. Existing research on party discipline identifies vote-buying as a likely mechanism by which leaders transform resources into collective goods (Cox and McCubbins 2007; Iaryczower 2008).[12] However, since previous studies have not explicitly considered the

[12] Several other studies consider punishing those who fail to support the party program (Calvert 1987; Volden and Bergman 2006; Patty 2008), which is a special case of vote-buying in which parties cannot price discriminate (Patty 2008). Some studies focus on the specific case of agenda control (Cox and McCubbins 2005; Diermeier and Vlaicu 2011), but these accounts do not address why parties might find it worthwhile to give the leader other kinds of resources.

leader's quality, they offer little guidance on how high-quality leaders enhance collective goods provision.

There are two main possibilities. First, high-quality leaders might more efficiently target favors and thereby generate a larger goodwill budget to spend on collective goods provision. Second, high-quality leaders might increase the collective benefit associated with a given expenditure of goodwill by making wise choices about which proposals to include in the party program, effectively representing the party's program in the mass media, or identifying compromises that allow the party's program to pass when it would have otherwise failed. This second possibility yields an intriguing result.

Assuming that resources are for vote-buying to pass the party program and quality helps increase the collective good associated with passing the party program, it is possible to connect the model to two important classes of prior findings which have more straightforward interpretations even without an elaborate formalization. First, holding the importance of passing legislation constant, high-quality leaders have a comparative advantage in leading heterogeneous parties in which moderates hold the balance of power, and resource-rich leaders have a comparative advantage in leading homogeneous parties in which party regulars have nearly enough votes to pass legislation. Formally, as a party becomes more homogeneous, $g(\theta_t = 0, r_t = 1)$ gets larger and $g(\theta_t = 1, r_t = 0)$ gets smaller.

To see why, consider two hypothetical Democratic parties from in the mid-20th century. Both have 250 members. In Party A, there are 200 Northern Democrats and 50 Southern Democrats. In Party B, there are 150 Northern Democrats and 100 Southern Democrats. Suppose the party will win virtually all seats in the South whether it passes its program or not (although individual members may lose their seats in primaries), so the collective good is passing legislation that will appeal to Northern liberals.

In Party A, the leader needs to buy 18 votes from Southern Democrats to pass legislation. In Party B, the leader needs to buy 68 votes from Southern Democrats. If the leader can identify a better party program, such that the party has a better chance of winning a majority if it passes the leader's bills, that makes *all* Southern Democrats more inclined to vote for the bill. This is a good thing for Party A and Party B, but it is especially good for Party B, because it makes 68 votes cheaper to buy rather than just 18. Thus, high-quality leaders have a comparative advantage in heterogeneous parties in which moderates hold the balance of power, which makes the merit strategy more attractive for heterogeneous parties and the ex officio strategy more attractive for homogeneous parties.

This mirrors predictions from theories that focus on ideological heterogeneity (Cooper and Brady 1981; Sinclair 1992; Aldrich and Rohde 2000; Cox and McCubbins 2005; Volden and Bergman 2006; Diermeier and Vlaicu 2011) and, more precisely, theories which emphasize the distance between the median voter and the bulk of the party (Schickler and Rich 1997; Schickler 2000). It also conforms with a rough sketch of the history of the House of Representatives. The revolt against Speaker Joe Cannon inaugurated a series of reforms that eviscerated the institutional prerogatives of the Speaker of the House. These reforms were consistent with a transition from the ex officio to the merit strategy, and they coincided with a period in which both parties were heterogeneous. The centralizing reforms of the 1970s and 1990s were consistent with a transition back to the ex officio strategy, and they coincided with a period in which both parties became markedly more homogeneous.

Second, Lebo and O'Geen (2011) argue that the public is only dimly aware of what happens in Congress but is much more attuned to the fortunes of the president. They find that as the president gets a larger share of his agenda signed into law, the share of seats his party captures in the next election grows. To maximize their chances of winning a majority of seats

in the next election, the president's party must try to pass as much of his agenda as it can and the opposition party must block as much as possible.

This mode of partisan competition dramatically simplifies the task of party leaders. They do not need to design an attractive agenda and effectively market it to the mass public, both tasks that depend far more on the leader's quality than the leader's resources. In the terms of the model, as the president plays a larger role in setting the political agenda, $g(\theta_t = 1, r_t = 0)$ shrinks. This decreases the premium the party places on getting a high-quality leader and makes the ex officio strategy more attractive. This prediction is consistent with Dodd (1977) and Green (2007), which contend that the growing power of the presidency has led to stronger congressional leaders. Lebo and O'Geen (2011) do not test variation in the role of presidential success in congressional election outcomes over time, but if they did, the theory would predict that congressional parties are more likely to follow the merit strategy during the troughs of the this relationship and to follow the ex officio strategy during the peaks.[13]

5. CONCLUSION

This theory shows how agency problems can arise in congressional party leadership even if the leader internalizes the party's collective welfare and the leader must regularly stand for reelection. Starting from the uncontroversial assumption that leaders want to retain office, I add two novel assumptions that have been used elsewhere in models of political accountability and are rooted in the qualitative literature on party leadership: leaders vary in quality and can use the resources at their disposal to entrench themselves. Party leaders want to maximize collective goods provision, but they also want to stay in office. A low-quality leader is able to stay in office only if she diverts some of her resources (and the goodwill disbursing them creates) away from collective goods provision and toward entrenching herself. This presents the party with a dilemma. If the party gives resources to its leader quickly, it increases that leader's capacity to produce collective goods but forfeits the option to remove that leader from office.

However, this article's primary contribution is not merely to characterize the agency problem posed by congressional party leadership, but rather to characterize the consequences of this agency problem. Contrary to the literature that has followed Cooper and Brady (1981), it implies that the characteristics of leaders play an important role in determining the resources parties put at their disposal, but only during periods in which the party is following the merit strategy. The theory suggests it is more appropriate to characterize the conditions under which parties give resources to all of their leaders as a right of office versus those in which they give resources only to their most talented leaders, rather than attempting to characterize the conditions under which individual leaders get more or fewer resources, as much previous work has. It clarifies the crucial role that two parameters—the level of collective goods provided by low-quality, resource-rich leaders and the level of collective goods provided by high-quality, resource-poor leaders—play in determining the party's equilibrium strategy and explores how these are connected to the contextual factors studied by prior research.

[13] Without making strong assumptions, it is difficult to say how some other variables which figure prominently in prior research affect incentives to pursue the ex officio strategy. Take, for example, the competitiveness of majority status. On the one hand, this could increase the attractiveness of the ex officio strategy because it makes spending on collective goods more efficient (which is tantamount to reducing ψ in the full model from Appendix E). On the other hand, it could make it more important to ensure that the whole party votes together for messaging purposes (Lee 2016), which makes it as if the party has to buy more votes. Per the argument from the previous paragraph, this would increase the attractiveness of the merit strategy.

The theory also provides a framework for further investigation of the agency problems associated with congressional leadership by clarifying the importance of studying how leaders transform resources and their individual talents (or lack thereof) into collective goods for the party. The resource side of the question is already well studied, especially with regards to vote-buying and agenda control, but the quality side of the question is relatively underexplored. What makes the best leaders so effective, and why do some leaders underperform? What other features of the political context make having a skilled leader more important for collective goods provision? More qualitative studies of how particular leaders attempt to provide for their parties, along the lines of Sinclair (1983), would provide useful guidance.

Even without further theoretical development, the theory offers empirical implications that are plausible and amenable to systematic empirical tests, although good tests would require collecting more data. First, it predicts that at any given time, each party will follow one of two characteristic patterns: either all leaders get control over substantial resources as a right of office (the ex officio strategy) or all leaders start out with few resources and high-quality leaders eventually get more (the merit strategy). These patterns should be discernible from the rules, but it is critical to study both chamber rules, as in Schickler (2000), and party rules, because both play a crucial role in determining the overall level of resources controlled by the leader. Such a test would require assembling comprehensive data on party rules across a wide swath of congressional history. Second, low-quality leaders are more likely to be removed (or can at least be removed more quickly) under the merit strategy than the ex officio strategy. Such a test would require careful attention to historical detail, especially for the obscure party leaders of the early 20th century, because as the experiences of Champ Clark and Frederick Gillett demonstrate, removal can sometimes be a subtle affair in which the deposed leader remains the nominal leader of the party but a competitor seizes de facto control. Third, it predicts that parties are more likely to play the ex officio strategy when most legislators pay minimal costs to vote for the party program and when the president plays a major role in the legislative process. These predictions already find support in existing work, including Schickler and Rich (1997), Schickler (2000), and Green (2007), which look at the closely related dependent variable of chamber rule changes that strengthen party leaders (a manifestation of moving toward the ex officio strategy), but these studies could be expanded by incorporating party rules. Replication studies in state legislatures would produce an even stronger case.

APPENDIX A: PROOF OF PROPOSITION 1

The party has two options if it does not have an incumbent leader: preemptively set $r_t = 1$ or set $r_t = 0$. If it sets $r_t = 1$, it has no other decisions to make. Call this the ex officio strategy. If it sets $r_t = 0$ and elects a high-quality leader, it should keep that leader and give them resources at the beginning of the next period, because that will guarantee them the highest possible payoff for as long as that leader remains in office. If it sets $r_t = 0$ and elects a low-quality leader, it should depose that leader, because it is always better off with a chance of getting a high-quality leader than with a low-quality leader for sure. Call this the merit strategy.

For the ex officio strategy, there are three states in which a party can find itself at the beginning of a period: one in which it starts with no incumbent leader, one in which it starts with a high-quality, resource-rich leader, and one in which it starts with a low-quality, resourced rich leader. Call the continuation values for starting a period in each of these states v^e, v_1^e, and v_0^e, respectively.

$$\begin{aligned} v^e &= p + (1-p)g(0,1) + \delta q v^e + \delta p(1-q)v_1^e + \delta(1-p)(1-q)v_0^e \\ v_1^e &= 1 + \delta q v^e + \delta(1-q)v_1^e \\ v_0^e &= g(0,1) + \delta q v^e + \delta(1-q)v_0^e \end{aligned}.$$

Solving this system of equations,

$$v^e = \frac{p + (1-p)g(0,1)}{1-\delta}.$$

For the merit strategy, there are two states in which the party can find itself at the beginning of a period: one in which the party starts the period with no incumbent leader and another in which the party starts the period with a high-quality incumbent. The party never starts a period with a low-quality incumbent because it always removes them at the end of the first period they are in office. Call the continuation value for starting a period with no incumbent v^m and call the continuation value for starting a period with a high-quality incumbent v_1^m

$$\begin{aligned} v^m &= pg(1,0) + \delta q v^m + \delta p(1-q)v_1^m + \delta(1-p)(1-q)v^m \\ v_1^m &= 1 + \delta q v^m + \delta(1-q)v_{1,1}^m \end{aligned}.$$

Solving this system of equations,

$$v^m = \frac{pg(1,0) + \delta p(1-q)[1-g(1,0)]}{(1-\delta)[1-\delta(1-p)(1-q)]}.$$

Therefore, the party gets a higher payoff for following the ex officio strategy if $\Delta = v^e - v^m = \frac{p+(1-p)g(0,1)}{1-\delta} - \frac{pg(1,0)+\delta p(1-q)[1-g(1,0)]}{(1-\delta)[1-\delta(1-p)(1-q)]} > 0$ and gets a higher payoff from following the merit strategy if $\Delta < 0$, just as Proposition 1 states.

APPENDIX B: COMPARATIVE STATICS

$$\begin{aligned} \frac{\partial \Delta}{\partial g(0,1)} &= \frac{1-p}{1-\delta} \\ \frac{\partial \Delta}{\partial g(1,0)} &= -\frac{p[1-\delta(1-q)]}{(1-\delta)[1-\delta(1-p)(1-q)]} < 0 \\ \frac{d\Delta}{dq} &= \frac{\delta p[1-pg(1,0)]}{(1-\delta)[1-\delta(1-p)(1-q)]^2} > 0 \\ \frac{\partial \Delta}{\partial p} &= \frac{1-g(0,1)}{1-\delta} - \frac{[1-\delta(1-q)][g(1,0)+\delta(1-q)(1-g(1,0))]}{(1-\delta)[1-\delta(1-p)(1-q)]^2} \end{aligned}.$$

The numerator of $\frac{\partial \Delta}{\partial p}$ is quadratic in p. $\Delta > 0$ at $p = 0$ and $\Delta > 0$ at $p = 1$, so if $\Delta < 0$, it must be for intermediate values of p. Additionally, the derivative of the numerator of $\frac{\partial \Delta}{\partial p}$ with respect to p is positive, so $\frac{\partial \Delta}{\partial p}$ may either be negative for all p, positive for all p, or negative for small p and positive for sufficiently large p. It cannot be positive for small p and negative for sufficiently large p.

Therefore, the party's preference for the ex officio strategy is increasing in $g(0, 1)$, decreasing in $g(1, 0)$, increasing in q, and possibly non-monotonic in p.

APPENDIX C: DISAGGREGATING THE PARTY

The baseline model treats the party as a unitary actor, but real parties consist of many individuals with potentially divergent interests. Fortunately, the unitary party from the baseline model can be interpreted as the party median for an appropriate ordering.

To see how, consider an extension of the game where the party consists of n members (where n is odd) and decisions are made via majority rule. Suppose each party member i has her own δ_i and $g_i(\theta_t, r_t)$. Since p and q are properties of the leader, they are constant across legislators. As in the baseline model, normalize $g_i(0,0) = 0$ and $g_i(1,1) = 1$ and assume $0 < g_i(0,1) < 1$ and $0 < g_i(1,0) < 1$ for each party member.

To remove tiresome off-the-equilibrium path considerations, it is helpful to slightly modify the timing of the game. In the baseline game, the party first decides whether to depose the leader and then decides whether to give that leader more resources. For this extensions, collapse those two decisions into a single decision. That is, the party members simultaneously vote on whether to depose the leader or give her more resources.

It would be tedious to derive the full Markov perfect equilibrium in weakly undominated strategies for this game, where the state consists of whether the party has an incumbent and, if applicable, the incumbent's quality and resources. Fortunately, it is straightforward to show that the party's collective behavior on the equilibrium path is consistent with either the ex officio or the merit strategy.

If the party has a high-quality, resource-poor leader, keeping her and giving her more resources dominate both removing her for every party member, because 1 is the maximum payoff each party member can achieve. Thus, whenever the party has a high-quality, resource-poor leader at the end of the period, every member votes to keep her and increase her resources.

If the party has a low-quality, resource-poor leader on the equilibrium path, it does not keep her and give her more resources. If it does, then in equilibrium, the party elects a new leader, does not give her resources for her first period in office, and then gives her resources at the end of her first period in office no matter what. But then every party member would have preferred to give her ample resources to begin with (each party member would have weakly preferred to vote to set $r_t = 1$), in which case the party would never have reached the state of having a low-quality, resource-poor leader on the equilibrium path in the first place.

Therefore, if the party has a low-quality, resource-poor leader on the equilibrium path, its collective choice must be to depose her.

Thus, when the party does not have an incumbent, each party member chooses between setting the party on a course that will lead its collective behavior to conform to the ex officio strategy or setting the party on a course that will lead its collective behavior to conform to the merit strategy. By the same derivation as in the baseline model, party member i gets an expected payoff of $v_i^e = \frac{p+(1-p)g_i(0,1)}{1-\delta_i}$ if the party's collective choice conforms to the ex officio strategy and $v_i^m = \frac{pg(1,0)+\delta p(1-q)[1-g(1,0)]}{(1-\delta)[1-\delta(1-p)(1-q)]}$ if it conforms to the merit strategy. It need not consider the possibility that it will deviate from the merit strategy and keep low-quality leaders, because if the merit strategy is more attractive than the ex officio strategy for a majority of party members, following through with it ex post is also more attractive to a majority of party members than deviating would be (since every party member prefers to empower high-quality leaders and at least many will prefer to depose underperforming leaders as prefer to play the merit strategy in the first place).

Voting sincerely is a weakly dominant strategy for each legislator. Therefore, if we assume without loss of generality that the party members are ordered by Δ_i, then the collective choice in equilibrium follows the preference of the median party member.

Note that this is not necessarily the ideological median of the party; it is the median of the Δ_i's, which roughly translates to "the median with respect to how much the legislator likes low-

quality, resource-rich leaders compared with high-quality, resource-poor leaders." Little more can be said without further assumptions.

However, supposing low-quality, resource-rich leaders simply buy off ideological moderates to get them to go along with the party program while high-quality, resource-poor leaders design policy proposals that improve the payoff of passing the party program for all party members, as the main text suggests, yields a more concrete interpretation. With that assumption, moderates tend to prefer high-quality, resource-poor leaders more and extremists tend to prefer low-quality, resource-rich leaders more, and the median with respect to the Δ_i's is the ideological median.

So far, the model has assumed the party can implement any allocation of resources it likes. Because many of the rules that affect the majority party leader's resources, like the role of the House Rules Committee in setting the legislative agenda, are determined by floor votes rather than party votes, some political scientists believe that the strength of party leaders (and especially the majority party leader) is really determined by the floor rather than by the party. The baseline model includes only one party and does not explicitly address majority status, so it would be difficult to rigorously extend the model to the case where the whole chamber votes on the resources that would be available to each party. However, the analysis above suggests this more elaborate extension would introduce a kind of time inconsistency in which the unitary party acts like the chamber median when it is in the majority and like the party median when it is in the minority, and it must account for this time inconsistency when it plots its strategy. This poses no problem for the ex officio strategy, but the merit strategy may be less attractive if the party's time inconsistency sometimes prevents it from correctly following it.

APPENDIX D: DELAYED REVEAL OF TYPE

In the baseline model, the party learns whether the leader is high quality or low quality during the first period the leader is in office. This may be unrealistic for two reasons. First, the leader's output might be stochastic, in which case it would sometimes be difficult to distinguish between low-quality and high-quality leaders. Second, through extraordinary effort, low-quality leaders may be able to produce as much as high-quality leaders in an attempt to signal a better type and secure control over resources. So far, the model has eschewed considerations of signaling, in part because previous work has persuasively argued that leaders internalize the welfare of the parties they lead and in part because the historical record offers little evidence that leaders vary in terms of how much effort they put forth on behalf of the party. Virtually all appear to do their best, within the constraints the environment places on them. Even so, this extension also speaks to how the model might change if low-quality leaders could attempt to misrepresent themselves as high-quality leaders.

Suppose it were difficult for the party to distinguish the performance of high-quality and low-quality leaders if the leader does not have ample resources. In particular, suppose $g(0,0) = g(1,0)$ for the first period a leader is in office and $g(0,0) = 0$ every period thereafter. In other words, if the leader does not have resources, it takes two periods for the party to figure out whether she is high quality or low quality. Low-quality, resource-rich leaders produce $g(0,1)$ every period, as in the baseline mode. This is simpler than stochastic output, but it nevertheless raises the considerations that would be relevant in a more complicated model.

This extension does not change the payoff of the ex officio strategy, so $v^e = \frac{p+(1-p)g(0,1)}{1-\delta}$, just like in the baseline model.

However, there are now three alternatives to the ex officio strategy. Call one the delay strategy. In the delay strategy, the party waits one period and then gives the leader resources. Ideally, the party would like to depose low-quality leaders and only keep high-quality leaders, but it can't tell the difference in just one period, so it's forced to keep everyone. The delay strategy is similar to the ex officio strategy, except the party delays giving the leader resources by one period.

Let v^d, v_1^d, and v_0^d be the continuation values of starting a period with no incumbent, a high-quality incumbent, and a low-quality incumbent, respectively, under the delay strategy. Then, v^d solves the following system of equations:

$$\begin{aligned} v^d &= g(1,0) + \delta q v^d + \delta p(1-q) v_1^d + \delta(1-p)(1-q) v_0^d \\ v_1^d &= 1 + \delta q v^d + \delta(1-q) v_1^d \\ v_0^d &= g(0,1) + \delta q v^d + \delta(1-q) v_0^d \end{aligned}.$$

Solving,

$$v^d = \frac{g(1,0) + \delta(1-q)[p + (1-p)g(0,1) - g(1,0)]}{1-\delta}.$$

Call the next strategy the firing strategy. In the firing strategy, the party elects a new leader and then fires them at the end of the period no matter what. It would like to depose just the low-quality leaders and keep the high-quality ones, but it can't, so it just gets rid of everyone. $v^f = \frac{g(1,0)}{1-\delta}$. This strategy is unrealistic, because it leans heavily on the convenience-based assumptions that low-quality leaders always perform well in the first period k, but it is technically one possible equilibrium.

Note that the delay strategy is weakly dominated by the ex officio and firing strategies. If $p + (1-p)g(0,1) > g(1,0)$, then the ex officio strategy is better than the delay strategy. If $p + (1-p)g(0,1) < g(1,0)$, then the firing strategy is better than the delay strategy. Thus, the party never strictly prefers the delay strategy.

Finally, the merit strategy is still potentially optimal, but it takes a different form. The party must elect a new leader and wait two periods. At the end of the second period, it deposes leaders who have finally revealed themselves as low quality, and it keeps and empowers the leaders who have proven themselves high quality. The continuation values are now

$$\begin{aligned} v^m &= g(1,0) + \delta q v^m + \delta(1-q)p[g(1,0) + \delta q v^m + \delta(1-q)v_1^m] + \delta^2(1-p)(1-q)v^m \\ v_1^m &= 1 + \delta q v^m + \delta(1-q)v^m \end{aligned}.$$

Solving this yields

$$v^m = \frac{[1-\delta(1-p)(1-q)]g(1,0) + \delta^2 p(1-q)^2[1-g(1,0)]}{1-\delta+\delta^3(1-p)(1-q)^2}.$$

The two most substantively important comparative statics are the same as in the baseline model. Increasing $g(0, 1)$ still helps the ex officio strategy and increasing $g(1, 0)$ still helps the merit strategy.

However, the comparative statics for p and q are much more complicated. It is no longer the case that the party only likes the merit strategy for intermediate levels of p. The party still prefers the ex officio strategy for high levels of p, but it may prefer the merit strategy for low levels of p if $g(1,0) > g(0,1)$. Likewise, if $g(1, 0)$ is large enough, increasing q may help the merit strategy by helping it get $g(1, 0)$ more often.

This simple extension reveals two forces that would obtain in more realistic extensions. First, the introduction of uncertainty about the incumbent's type forces the party to wait if it wants to gather better information about the incumbent's type. The longer it waits, the more confident it becomes. Indeed, the ex officio and merit strategies are not two totally different strategies; they are variations that differ in how long they wait before giving the leader resources. The ex officio waits zero periods and merit waits one; in a more general model, the party might

wait two, or three, or longer. The party is inclined to wait longer if it gets a high payoff while it waits ($g(1, 0)$ is large) and if it pays a high cost for giving resources to a low-quality leader ($g(0, 1)$ is small).

A noisier signal of the leader's quality forces the party to either wait longer or accept more uncertainty when it gives the leader resources, which makes the party less inclined to wait in the first place, but there is a second, countervailing force suggested by the extension above. The reason the signal is noisy is that low-quality leaders produce more collective goods, which reduces the cost of waiting. This offset, and potentially reverses, the loss associated with waiting longer.

APPENDIX E: MODEL WITH A STRATEGIC LEADER

In the baseline model, the leader is not a strategic actor. She automatically produces collective goods for the party based on her quality and resources. Additionally, the party cannot remove the leader if she posses ample resources. This extension relaxes both assumptions by adding the leader as a player. She strategically divides her resources between collective goods provision, which both she and the party value, and entrenchment. The party always has the option to remove the leader from office, but it pays a cost proportional to how much she spent on entrenchment. Under the simple and relatively uncontroversial assumptions that the leader wants to stay in office and that low-quality leaders can entrench themselves if they have enough resources, this extension produces substantively similar conclusions to the baseline model.

Sequence and payoffs

Figure E1 summarizes the sequence. The first two steps are just like the baseline model. The party sets $r_t \in \{0, 1\}$ and then elects a leader with a hidden competence, θ_t.

The next step is different. The leader gets a budget of goodwill, $g(\theta_t, r_t)$, which she strategically divides between collective goods, x_t, and entrenchment, y_t. The more she spends on entrenchment, the less she has leftover for collective goods provision.

Then, as in the baseline model, the leader retires with exogenous probability q. Retirement is not a strategic decision; rather, it probabilistically strikes the leader.

Finally, the party simultaneously decides whether to retain the leader and increase her resources. These were separate steps in the baseline model, but combining them into a one decision simplifies the analysis by eliminating some off-the-equilibrium-path considerations.

The party's payoff for each period is $x_t + \psi y_t$ if the leader stays in office or retires and $x_t + (\psi - \kappa)y_t$ if the party removes the leader from office. $\psi \geq 0$ reflects the value the party gets from entrenchment; the leader entrenches herself by providing favors, and even if those favors are less valuable than collective goods, they are still worth something. $\kappa > 0$ parameterizes the effectiveness for entrenchment. The more the leader entrenches herself, the more costly she is to remove. This could arise if, for example, party members felt guilty for removing a leader who had done many favors for them. The more guilty they feel, the larger κ grows.

The leader's payoff for each period she is in office is $x_t + \phi$, where ϕ is a parameter that reflects the value of the office above and beyond anything the leader might do with it. The leader gets x_t for each period she is not in office.

Both players use a common discount rate δ (the fact that the leader may retire will be reflected in her strategic calculations as well).

Assume the leader values staying in office, $\phi > \frac{1}{\delta(1-q)}$. Furthermore, assume entrenchment is affordable for low-quality, resource-poor leaders, $\kappa > \frac{\delta p\left(\frac{1}{g(0,1)} - \psi\right)}{1-\delta(1-q)}$. These two assumptions are sufficient to ensure an equilibrium that is similar to the baseline model, namely one in which the party plays either the ex officio or the merit strategy.

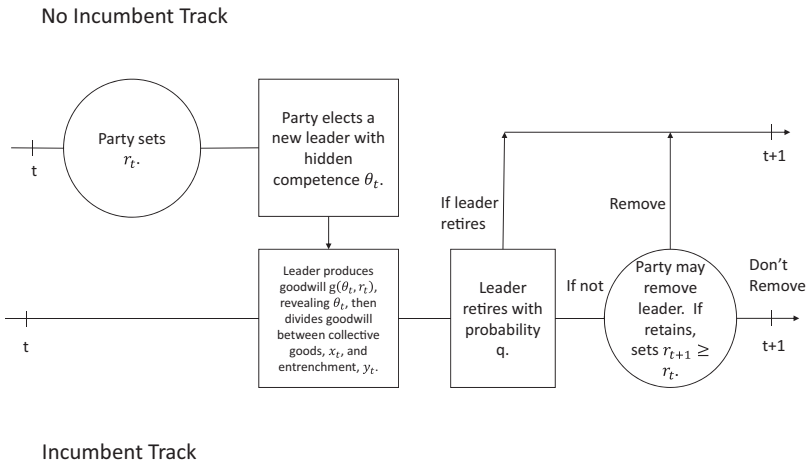

Figure E1. As in the baseline game, r_t and θ_t are both binary, and, when electing a new leader, $\Pr(\theta_t = 1) = p$ for some exogenously given p. If the leader in period t stays in office through the end of t, then $\theta_{t+1} = \theta_t$ and $r_{t+1} = r_t$.

Solution

I search for a Markov perfect equilibrium, which is a subgame perfect equilibrium in which the players' strategies depend only on payoff-relevant state variables rather than the entire history of the game. Here, the state variable consists of the incumbent leader's quality (if there is an incumbent), the resources available to that incumbent (if they have already been determined), and the amount of goodwill that the incumbent devoted toward entrenchment (if the incumbent has already decided). As applied to this game, the definition of Markov perfect equilibrium is as follows:

Definition 1. A strategy profile is a Markov perfect equilibrium if it is a subgame perfect equilibrium and

- Whenever there is no incumbent, the party's choice of r_t does not depend on the history of the game.
- y_t depends on the history of the game only through θ_t and r_t.
- Whether the party removes the incumbent, retains the incumbent with $r_{t+1} = r_t$, or retains the incumbent with $r_{t+1} = 1$ depends on the history of the game only through θ_t, r_t, and y_t.

Before proving the proposition, it is helpful to state the equilibrium strategies explicitly. The proposition is as follows:

Proposition 2. Let $v^e = \frac{p+(1-p)\left[g(0,1)-(1-\psi)\frac{\delta p[1-g(0,1)]}{\kappa[1-\delta(1-q)-\delta p(1-\psi)]}\right]}{1-\delta}$ and let $v^m = \frac{p[g(1,0)+\delta(1-q)(1-g(1,0))]}{(1-\delta)[1-\delta(1-p)(1-q)]}$. In Markov perfect equilibrium,

1) If $v^e \geq v^m$, the party sets $r_t = 1$ if there is no incumbent. Otherwise, the party sets $r_t = 0$ if there is no incumbent.

2) If $v^e \geq v^m$, $\theta_t = 0$, and $r_t = 1$, the leader sets $x_t = g(0,1) - y_t$ and $y_t = \frac{\delta p[1-g(0,1)]}{\kappa[1-\delta(1-q)]-\delta p(1-\psi)}$. If $v^e \geq v^m$ and either $\theta_t = 1$ or $r_t = 0$, the leader sets $x_t = g(\theta_t, r_t)$ and $y_t = 0$.
3) If $v^e < v^m$, $\frac{\delta[(1-\delta)v^m - g(0,1)]}{\kappa[1-\delta(1-q)]-\delta(1-\psi)} \leq g(0,1)$, $\theta_t = 0$, and $r_t = 1$, the leader sets $x_t = g(0,1) - y_t$ and $y_t = \frac{\delta[(1-\delta)v^m - g(0,1)]}{\kappa[1-\delta(1-q)]-\delta(1-\psi)}$. Otherwise, if $v^e < v^m$ and any of these conditions is not met, the leader sets $x_t = g(\theta_t, r_t)$ and $y_t = 0$.
4) If $\theta_t = 1$ and $r_t = 1$, the party retains the incumbent. If $\theta_t = 1$ and $r_t = 0$, the party retains the incumbent and sets $r_{t+1} = 1$. If $\theta_t = 0$ and $r_t = 0$, the party removes the incumbent.
5) If $\theta_t = 0$, $r_t = 1$, and $v^e \geq v^m$, the party retains the incumbent if $y_t \geq \frac{\delta p[1-g(0,1)]}{\kappa[1-\delta(1-q)]-\delta p(1-\psi)}$ and removes the incumbent otherwise.
6) If $\theta_t = 0$, $r_t = 1$, and $v^e < v^m$, the party retains the incumbent if $y_t \geq \frac{\delta[(1-\delta)v^m - g(0,1)]}{\kappa[1-\delta(1-q)]-\delta(1-\psi)}$ and removes the incumbent otherwise.

The Markov perfect equilibrium can be obtained via backward induction. Markov perfection permits defining continuation values as a function of the payoff-relevant state variables: (1) whether there is an incumbent leader in office, (2) the quality of that incumbent leader (if there is one), and (3) the resources available to that incumbent leader (if there is one).

Outline of the proof

Let v be the party's continuation value starting from a period with no incumbent. Let $v_{\theta,r}$ be the party's expected utility starting from a period with an incumbent and $\theta_t = \theta$ and $r_t = r$.

Solve for the minimum level of entrenchment that allows the leader to remain in office as a function of $v_{\theta,r}$. Then, show that the leader is willing to spend enough on entrenchment to stay in office if it is feasible to do so. These two facts establish four lemmas that characterize the behavior of the party and the leader under all possible combinations of quality and resources.

First, the party retains high-quality, resource-rich leaders in equilibrium and those leaders spend all of their resources on collective goods provisions. Such leaders have the largest possible budget, so if they spend all of their resources on collective goods provision, the party can't get a higher payoff, so it has no reason to replace them. Since high-quality, resource-rich leaders can stay in office even if they spend their entire budget on collective goods provision, they happily spend all of their resources on collective goods provision and nothing on entrenchment. This is the best-case scenario for the party.

Second, high-quality, resource-poor leaders also spend their entire budgets on collective goods provision. The party has no reason to replace them. To the contrary, it turns them into high-quality, resource-rich leaders at the end of the period and then enjoys the highest possible payoff for as long as they remain in office.

Third, the party removes low-quality, resource poor leaders. These leaders would like to entrench themselves, but their budgets are too small to do so.

Fourth, the party removes low-quality, resource-rich leaders if those leaders do not spend enough on entrenchment. Since these leaders want to stay in office, they spend just enough on entrenchment to avoid removal and spend the rest on collective goods provision.

So far, the solution contains everything except the party's initial choice of whether to give a new leader ample or few resources. We can first suppose the party sets $r_t = 1$ and solve for v and $v_{\theta,r}$. Then, we can suppose the party sets $r_t = 0$ and solve for v and $v_{\theta,r}$. Finally, we can compare v when the party sets $r_t = 1$ to v when the party sets $r_t = 0$; if the former is larger, the

party sets $r_t = 1$ in equilibrium, and it sets $r_t = 0$ in equilibrium otherwise. All that remains is to solve off-the-equilibrium path behavior under the merit strategy, namely to show that low-quality, resource-rich leaders entrench themselves.

The party's treatment of incumbents

The final decision the party makes in a period is what to do with its incumbent leader. The party has three options: remove the leader, retain the leader with $r_{t+1} = r_t$, and retain the leader with $r_{t+1} = 1$. Note that if $r_t = 1$, the second and third options are identical. The party chooses whichever option has the highest payoff.

Lemma 1. The party deposes the leader if $\delta v - \kappa y_t \geq \max\{\delta v_{\theta_t,r_t}, \delta v_{\theta_t,1}\}$, retains the leader with her current level of resources if $v_{\theta_t,r_t} \geq \max\{\delta v - \kappa y_t, v_{\theta_t,1}\}$, and retains the leader with a higher level of resources if $v_{\theta_t,1} \geq \max\{\delta v - \kappa y_t, v_{\theta_t,r_t}\}$.

The leader's division between goodwill and entrenchment

Next, consider how the leader allocates goodwill between collective goods and private favors.

Lemma 2. If $0 < \frac{\delta}{\kappa}\max\{v - v_{\theta_t,r_t}, v - v_{\theta_t,1}\} < g(\theta_t, r_t)$ (i.e., if it is feasible for the leader to entrench herself and she will get removed if she spends nothing on entrenchment), then the leader spends just enough on entrenchment to stay in office and spends the rest of her budget on collective goods provision, $x_t^*(\theta_t, r_t) = g(\theta_t, r_t) - \frac{\delta}{\kappa}\max\{v - v_{\theta_t,r_t}, v - v_{\theta_t,1}\}$ and $y_t^*(\theta_t, r_t) = \frac{\delta}{\kappa}\max\{v - v_{\theta_t,r_t}, v - v_{\theta_t,1}\}$. Otherwise, the leader spends everything on collective goods provision: $x_t^*(\theta_t, r_t) = g(\theta_t, r_t)$ and $y_t^*(\theta_t, r_t) = 0$.

Proof. The leader's utility depends on whether she retains office and the level of collective goods she produces in this period. By Lemma 1, the party prefers to retain the leader if $y_t \geq \frac{\delta}{\kappa}\max\{v - v_{\theta_t,r_t}, v - v_{\theta_t,1}\}$.

Therefore, if $\frac{\delta}{\kappa}\max\{v - v_{\theta_t,r_t}, v - v_{\theta_t,1}\} \leq 0$, the leader is ensured reelection even if she reserves nothing for entrenchment, so she maximizes her payoff by setting $x_t = g(\theta_t, r_t)$. If $\frac{\delta}{\kappa}\max\{v - v_{\theta_t,r_t}, v - v_{\theta_t,1}\} > g(\theta_t, r_t)$, the leader cannot provide enough favors to retain office and therefore maximizes her payoff by setting $x_t = g(\theta_t, r_t)$. If $0 < \frac{\delta}{\kappa}\max\{v - v_{\theta_t,r_t}, v - v_{\theta_t,1}\} \leq g(\theta_t, r_t)$, it is feasible for the leader to spend enough goodwill on entrenchment to stay in office.

If the leader is not guaranteed to be reelected without entrenchment and it is feasible for the leader to spend enough goodwill on entrenchment to stay in office, it is worthwhile for her to do so by the assumption stated in the explication of the model, $\phi > \frac{1}{\delta(1-q)}$. Staying in office for another period gives the leader at least $\delta\phi$, because even if she loses office at the end of the next period and spends nothing on collective goods during that period, she still gets the benefit of holding office, ϕ. Accounting for the probability she will retire at the end of the current period even if the party wants her to stay, $1 - q$, the expected payoff from spending enough resources to stay in office is at least $\delta(1 - q)\phi$. Since $g(\theta_t, r_t) \leq 1$, the amount of collective goods in the current period she is giving up to entrench herself in any period is bounded above by 1, so by $\phi > \frac{1}{\delta(1-q)}$, she gets a higher payoff from entrenching herself (even if it costs all of her resources) than she would get by sacrificing office and maximizing her payoff from the current period. □

The behavior of leaders and the party's response

This leaves only the party's choice of r_t in the initial node. There are only two possibilities for this node: $r_t = 1$ or $r_t = 0$, so deriving the equilibrium merely requires plugging these values in and deriving what follows. However, to simplify the analysis, it is helpful to characterize how parties and leaders interact for every possible combination of θ_t and r_t.

Lemma 3. The party retains high-quality, resource-rich leaders in equilibrium and those leaders spend all of their resources on collective goods provision.

Proof. Suppose the party deposes high-quality, resource-rich leaders in equilibrium if the leader does not entrench herself. Then the resource-rich, high-quality leader must spend all of her goodwill on collective goods provision, because Lemma 2 shows a leader only spends goodwill on entrenchment if it will prevent her from being deposed. Therefore, $v_{1,1} = 1 + \delta v$. But by Lemma 1, the party only deposes the leader if $\delta v > \delta v_{1,1} + \kappa \times 0 = \delta(1 + \delta v)$, which is only true if $v > \frac{1}{1-\delta}$. But the highest possible payoff that the party can get in a period is 1 (and they get strictly less in expectation, because 1 is only feasible if $\theta_t = 1$), so $v < \frac{1}{1-\delta}$. If the party does not remove high-quality, resource-rich leaders who spend all of their goodwill on collective goods, the high-quality leader has no reason to divert goodwill toward entrenchment, and high-quality, resource-rich leaders are never removed in equilibrium. □

Lemma 4. If the party has a high-quality, resource-poor leader, it retains her and sets $r_{t+1} = 1$. Additionally, high-quality, resource-poor leaders spend all of their goodwill on collective goods.

Proof. By the argument for Lemma 3, high-quality, resource-rich leaders provide the highest possible payoff every period they are in office. The party therefore maximizes its payoff by keeping a high-quality, resource-poor leader and giving her more resources. Since high-quality, resource-poor leaders anticipate they will not be removed, Lemma 2 implies that they maximize their utilities by spending all of their goodwill on collective goods provision. □

Lemma 5. The party removes low-quality, resource-poor leaders in equilibrium.

Proof. Since $g(0,0) = 0$, the leader spends nothing on entrenchment. If the party retains that leader and leaves her resources low, it gets $\delta v_{0,0} = \frac{\delta^2 qv}{1-\delta(1-q)}$. If it removes the leader, it gets δv. $\delta v \geq \delta v_{0,0}$ by $v \geq \frac{\delta qv}{1-\delta(1-q)}$, so the party prefers to remove the leader rather than retain her and keep her resources low. The party also prefers to remove her rather than retain her and give her more resources, because if it removes her, it can always give the new leader ample resources. The party might get its low-quality, resource-rich leader, just as it would by keeping this low-quality leader, but it also might get a high-quality, resource-rich leader, and a lottery over two options must be better than getting the worse option for sure. □

Observe that Lemmas 3–5 together give Point 4 of Proposition 2.

Lemma 6. Low-quality, resource-rich leaders are removed if they do not spend enough on entrenchment, and it is feasible for low-quality, resource-rich leaders to spend enough on entrenchment to stay in office.

Proof. For the first part, suppose $\frac{\delta(v-v_{0,1})}{\kappa} < 0$ such that the party retains a low-quality, resource-rich leader even if she spends nothing on entrenchment. Then such a leader spends all of her goodwill on collective goods and $v_{0,1} = \frac{g(0,1)+\delta qv}{1-\delta(1-q)}$. If the leader set $r_t = 1$ for non-

incumbents, this would imply $v = \frac{p+(1-p)g(0,1)}{1-\delta}$ because all leaders would stay in office spending their whole budgets on collective goods until they retired. However, this would imply $v - v_{0,1} = \frac{p[1-g(0,1)]}{1-\delta(1-q)} > 0$, which means the party could profitably deviate by removing a low-quality, resource-rich leader. Therefore, in equilibrium, the party must remove low-quality, resource-rich leaders unless they spend enough on entrenchment to stay in office, $y_t \geq \frac{\delta(v-v_{0,1})}{\kappa}$.

For the second part, suppose it is infeasible for the leader to entrench herself if she is low quality but resource rich, $\frac{\delta(v-v_{0,1})}{\kappa} > g(0,1)$. Then plainly the party's strategy should be to set $r_t = 1$ if there is no incumbent. High-quality leaders would devote their entire budget to collective goods provision since they were in no danger of losing office, so the party would get 1 for each period a high-quality leader is in office. Additionally, low-quality leaders would produce $g(0, 1)$ their first period in office (because they will be removed no matter how much they spend on entrenchment), and the party will remove them at the end of their first period. Thus,

$$\begin{aligned} v &= p + (1-p)g(0,1) + \delta p(1-q)v_{1,1} + \delta[q + (1-p)(1-q)]v \\ v_{1,1} &= \frac{1+\delta q v}{1-\delta(1-q)} \\ v &= \frac{p[1-g(0,1)] + [1-\delta(1-p)(1-q)]g(0,1)}{(1-\delta)[1-\delta(1-p)(1-q)]} \\ v_{0,1} &= g(0,1) + \delta v \end{aligned}.$$

Therefore, entrenchment is infeasible if

$$\begin{aligned} &\frac{\delta(v-v_{0,1})}{\kappa} > g(0,1) \\ &\delta[(1-\delta)v - g(0,1)] > \kappa g(0,1) \\ &\frac{\delta p\left[\frac{1}{g(0,1)} - 1\right]}{1-\delta(1-p)(1-q)} > \kappa \end{aligned}.$$

This is false by $\kappa \geq \frac{\delta p\left(\frac{1}{g(0,1)} - \psi\right)}{1-\delta(1-q)}$ because

$$\begin{aligned} \frac{\delta p\left[\frac{1}{g(0,1)} - 1\right]}{1-\delta(1-p)(1-q)} &\leq \frac{\delta p\left(\frac{1}{g(0,1)} - \psi\right)}{1-\delta(1-q)} \\ [1-\delta(1-q)](\psi - 1) &\leq \delta p(1-q)\left(\frac{1}{g(0,1)} - \psi\right) \end{aligned}.$$

The left-hand side is negative by $\psi < 1$ and the right-hand side is positive by $g(0,1) < 1$ and $\psi < 1$. □

Ex officio strategy

With these lemmas, it is possible to analyze whether the party wants to give resources to new leaders in equilibrium. Suppose the party sets $r_t = 1$ when there is no incumbent. Let v^e be the continuation value associated with this strategy starting the next period with no incumbent and $v^e_{\theta_t, r_t}$ be the continuation values associated with this strategy when there is an incumbent with quality θ_t who has resources r_t.

Lemma 7.

$$v^e = \frac{p + (1-p)\left[g(0,1) - (1-\psi)\frac{\delta p[1-g(0,1)]}{\kappa[1-\delta(1-q)]-\delta p(1-\psi)}\right]}{1-\delta}.$$

Additionally, to stay in office under the ex officio strategy, low-quality, resource-rich leaders set $y_t = \frac{\delta p[1-g(0,1)]}{\kappa[1-\delta(1-q)]-\delta p(1-\psi)}$.

Proof. By Lemma 3, the party will retain high-resource leaders until they retire and those leaders will set $x_t = 1$ for every period they are in office. By Lemma 6, the party will remove low-quality, resource-rich leaders from office unless $\kappa y_t \geq \delta(v^e - v^e_{0,1})$.

Let $\overline{y}^e_{0,1}$ be the level of favors a low-quality, resource-rich leader must provide to stay in office, where the 0 and 1 indicate the leader's quality and resources, respectively, and e indicates that this is the threshold associated with the ex officio strategy rather than the merit strategy. $\overline{y}^e_{0,1}$ solves the following system of equations:

$$\begin{aligned}
v^e &= p[1 + \delta q v^e + \delta(1-q)v^e_{1,1}] + (1-p)[1 + \delta q v^e + \delta(1-q)v^e_{0,1}] \\
v^e_{1,1} &= 1 + \delta q v^e + \delta(1-q)v^e_{1,1} \\
&= \frac{1 + \delta q v^e}{1-\delta(1-q)} \\
v^e_{0,1} &= g(0,1) - (1-\psi)\overline{y}^e_{0,1} + \delta q v^e + \delta(1-q)v^e_{0,1} \\
&= \frac{g(0,1) - (1-\psi)\overline{y}^e_{0,1} + \delta q v^e}{1-\delta(1-q)} \\
\kappa\overline{y}^e_{0,1} &= \delta(v^e - v^e_{0,1})
\end{aligned}.$$

Solving first for v^e in terms of $\overline{y}^e_{0,1}$ gives

$$v^e = \frac{p + (1-p)[g(0,1) - (1-\psi)y^e_{0,1}]}{1-\delta}.$$

This expression is intuitive; whether the leader is high quality or low quality, the party will be stuck with her until she retires. The ex ante probability that a leader is high quality for any given period is p, so the party gets a payoff of 1 proportion p of the time and a payoff of $g(0,1) - (1-\psi)y^e_{0,1}$ proportion $1-p$ of the time. Getting v^e in this form makes it simple to solve for $\overline{y}^e_{0,1}$:

$$\begin{aligned}
[1-\delta(1-q)]\kappa\overline{y}^e_{0,1} &= \delta[p[1-g(0,1)] + p(1-\psi)\overline{y}^e_{0,1}] \\
\overline{y}^e_{0,1} &= \frac{\delta p[1-g(0,1)]}{\kappa[1-\delta(1-q)] - \delta p(1-\psi)}
\end{aligned}.$$

At this point, is important to double-check that it is indeed feasible for low-quality leaders to entrench themselves enough to stay in office. It is feasible for the leader to stay in office if $g(0,1) \geq \overline{y}^e_{0,1}$, which is equivalent to

$$\kappa \geq \frac{\delta p\left(\frac{1}{g(0,1)} - \psi\right)}{1 - \delta(1-q)}.$$

This is true by assumption.

Therefore, if the leader sets $r_t = 1$ when there is no incumbent, the continuation value associated with this strategy starting from a period with no incumbent must be

$$v^e = \frac{p + (1-p)\left[g(0,1) - (1-\psi)\frac{\delta p[1-g(0,1)]}{\kappa[1-\delta(1-q)]-\delta p(1-\psi)}\right]}{1-\delta}.$$

The first part of Lemma 7, coupled with Lemmas 3, 4, and 6, gives Point 2 of Proposition 2. The second part of Lemma 7 gives Point 5.

Merit strategy

Suppose that, in equilibrium, the party sets $r_t = 0$ when there is no incumbent. Let v^m be the continuation value associated with strategy starting from a period in which there is no incumbent.

Lemma 8.

$$v^m = \frac{p[g(1,0) + \delta(1-q)(1-g(1,0))]}{(1-\delta)[1-\delta(1-p)(1-q)]}.$$

Proof. By Lemma 3, the party retains high-quality incumbents and gives them more resources, and those high-quality incumbents spend their entire goodwill budgets on collective good provisions regardless of how many resources they have. By Lemma 5, the party removes low-quality, resource-poor leaders from office. This implies

$$\begin{aligned} v^m &= p[g(1,0) + \delta q v^m + \delta(1-q)v_m^{1,1}] + (1-p)[0 + \delta v^m] \\ v_{1,1}^m &= 1 + \delta q v^m + \delta(1-q)v_{1,1}^m \\ &= \frac{1 + \delta q v^m}{1-\delta(1-q)} \end{aligned}.$$

Solving for v^m,

$$\begin{aligned} v^m &= pg(1,0) + \delta p(1-q)\frac{1+\delta q v^m}{1-\delta(1-q)} + \delta[q + (1-p)(1-q)]v^m \\ &= \frac{p[g(1,0) + \delta(1-q)(1-g(1,0))]}{(1-\delta)[1-\delta(1-p)(1-q)]}. \end{aligned}$$

□

Ex officio versus merit

Lemma 9. The party prefers to set $r_t = 1$ without an incumbent rather than $r_t = 0$ if $v^e \geq v^m$, which, by Lemmas 7 and 8 is true if

$$\frac{p + (1-p)\left[g(0,1) - (1-\psi)\frac{\delta p[1-g(0,1)]}{\kappa[1-\delta(1-q)]-\delta p(1-\psi)}\right]}{1-\delta} \geq \frac{p[g(1,0) + \delta(1-q)(1-g(1,0))]}{(1-\delta)[1-\delta(1-p)(1-q)]}.$$

This gives the Point 1 of Proposition 2.

Off-the-equilibrium path: merit

As shown in Lemma 6, if the party plays the merit strategy and there is, off the equilibrium path, a low-quality, resource-rich leader, that leader will attempt to entrench herself if it is feasible to do so. Let $\bar{y}^m_{0,1}$ be the level of entrenchment required for a low-quality, resource-poor leader to stay in office under the merit strategy. $\bar{y}^m_{0,1}$ must satisfy the following system of equations:

$$\begin{aligned} v^m &= \frac{p[g(1,0) + \delta(1-q)(1-g(1,0))]}{(1-\delta)[1-\delta(1-p)(1-q)]} \\ v^m_{0,1} &= \frac{g(0,1) - (1-\psi)\bar{y}^m_{0,1} + \delta q v^m}{1-\delta(1-q)} \\ \kappa\bar{y}^m_{0,1} &= \delta(v^m - v^m_{0,1}) \end{aligned}.$$

Lemma 10. $y^m_{0,1} = \frac{\delta[(1-\delta)v^m - g(0,1)]}{\kappa[1-\delta(1-q)]-\delta(1-\psi)}$. If this is feasible, a low-quality, resource-rich leader sets $x_t = g(0,1) - \bar{y}^m_{0,1}$ every period she is in office and stays in office until she retires. Otherwise, a low-quality, resource-rich leader sets $x_t = g(0,1)$ every period she is in office and is immediately removed.

This gives Point 6 of Proposition 2. Together with Lemma 3, 5, 6, and 9, it also gives Point 3 and completes the proof.

Comparative statics

Comparative statics can be obtained by comparing partial derivatives of v^e with partial derivatives of v^m. Let $\Delta = v^e - v^m$. If $\frac{\partial \Delta}{\partial z} > 0$, then z makes the ex officio strategy more attractive compared with the merit strategy.

Before taking these derivatives, it is helpful to put v^e in a more computationally convenient (but less legible) form:

$$\begin{aligned} v^e &= \frac{p + (1-p)\left[g(0,1) - (1-\psi)\dfrac{\delta p[1-g(0,1)]}{\kappa[1-\delta(1-q)] - \delta p(1-\psi)}\right]}{1-\delta} \\ &= \frac{\kappa p[1-\delta(1-q)] - \delta p^2(1-\psi) + (1-p)[\kappa[1-\delta(1-q)]g(0,1) - \delta p(1-\psi)]}{(1-\delta)[\kappa[1-\delta(1-q)] - \delta p(1-\psi)]}. \\ &= \frac{\kappa[1-\delta(1-q)][p + (1-p)g(0,1)] - \delta p(1-\psi)}{(1-\delta)[\kappa[1-\delta(1-q)] - \delta p(1-\psi)]} \end{aligned}$$

The simplest are variables that appear in only one of the continuation values. Trivially, $\frac{\partial v^e}{\partial g(0,1)} > 0$ and $\frac{\partial v^m}{\partial g(0,1)} = 0$, so $\frac{\partial \Delta}{\partial g(0,1)} > 0$ and the ex officio strategy becomes relatively more attractive as $g(0,\ 1)$ grows. Likewise, $\frac{\partial v^e}{\partial g(1,0)} = 0$ and $\frac{\partial v^m}{\partial g(1,0)} > 0$, so $\frac{\partial \Delta}{\partial g(1,0)} < 0$ and the merit strategy becomes relatively more attractive as $g(1,\ 0)$ grows.

The derivatives for κ and ψ are easy to see with a change of variables. Note that neither appears in v^m. Let $\alpha = \kappa[1-\delta(1-q)]$, $\beta = \delta p(1-\psi)$, and $\gamma = [p + (1-p)g(0,1)]$. Note that $\gamma < 1$. Therefore,

$$\begin{aligned} v^e &= \frac{1}{1-\delta}\frac{\alpha\gamma - \beta}{\alpha - \beta} \\ \frac{\partial v^e}{\partial \kappa} &= \frac{\partial v^e}{\partial \alpha}\frac{\partial \alpha}{\partial \kappa} \\ &= \frac{1}{1-\delta}\frac{\beta(1-\gamma)}{(\alpha-\beta)^2}[1-\delta(1-q)] > 0. \\ \frac{\partial v^e}{\partial \psi} &= \frac{\partial v^e}{\partial \beta}\frac{\partial \beta}{\partial \psi} \\ &= \frac{\delta p}{1-\delta}\frac{\alpha(1-\gamma)}{(\alpha-\beta)^2} > 0 \end{aligned}$$

These imply that $\frac{\partial \Delta}{\partial \kappa} > 0$ and $\frac{\partial \Delta}{\partial \psi} > 0$, so the ex officio strategy becomes relatively more attractive as κ increases and as ψ increases.

$$\begin{aligned} \frac{\partial v^e}{\partial q} &= \frac{\delta\kappa}{(1-\delta)}\frac{\beta(1-\gamma)}{(\alpha-\beta)^2} > 0 \\ \frac{\partial v^m}{\partial q} &= \frac{-\delta p[1-pg(1,0)]}{(1-\delta)[1-\delta(1-p)(1-q)]^2} < 0 \end{aligned}.$$

Therefore, $\frac{\partial \Delta}{\partial q} > 0$ and ex officio becomes more attractive as the retirement rate increases.

$$\begin{aligned} \frac{\partial v^e}{\partial p} &= \frac{[1-g(1,0)]\kappa[1-\delta(1-q)]\{\kappa[1-\delta(1-q)] - 1 + \psi\}}{(1-\delta)\{\kappa[1-\delta(1-q)] - p(1-\psi)\}^2} \\ \frac{\partial v^m}{\partial p} &= \frac{[1-\delta(1-q)][g(1,0) + \delta(1-q)(1-g(1,0))]}{(1-\delta)[1-\delta(1-p)(1-q)]^2} > 0 \end{aligned}.$$

If $p = 1$ or $p = 0$, $\Delta > 0$. The numerator of $\frac{\partial \Delta}{\partial p}$ is quadratic in p. Therefore, if Δ is ever negative, it is for some intermediate range of p's.

For δ, first factor out $\frac{1}{1-\delta}$ and then apply the product rule:

$$\frac{\partial \Delta}{\partial \delta} = \frac{1}{(1-\delta)^2}[(1-\delta)(v^e - v^m)] + \frac{1}{1-\delta}\frac{\partial}{\partial \delta}(1-\delta)(v^e - v^m)$$
$$= \frac{v^e - v^m}{1-\delta} - \frac{p}{1-\delta}\left\{\frac{\kappa(1-p)[1-g(0,1)](1-\psi)}{[\kappa(1-\delta(1-q)) - \delta p(1-\psi)]^2} + \frac{p(1-q)[1-pg(1,0)]}{[1-\delta(1-p)(1-q)]^2}\right\}.$$

The term inside the braces is positive, which implies $\frac{\partial \Delta}{\partial \delta} < 0$ whenever $v^m \geq v^e$. However, if $v^e > v^m$, the sign is ambiguous. If p is close enough to 0 and $v^e > v^m$, then $\frac{\partial \Delta}{\partial \delta} > 0$. However, if $p > 0$ and $v^e = v^m + \epsilon$ for a sufficiently small ϵ, then $\frac{\partial \Delta}{\partial \delta} < 0$.

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