A Political Economy of the Separation of Electoral Origin

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Abstract

Political constitutions frequently separate the roles of *proposer* and *veto player* in policy-making processes. A fundamental distinction lies in whether both offices are subject to direct and separate election, or whether the voter instead may directly elect the holder of only one office. In the latter case, the voter constitutionally forfeits a degree of ex-post electoral control. Why should she benefit from such a relatively coarse electoral instrument? When politicians' abilities are private information, actions taken by one agent provide information to the voter about both agents' types. A system in which the electoral fate of these agents is institutionally fused reduces the incentives of the veto player to build reputation through the specious rejection of the proposer's policy initiatives. This can improve the voter's inference about the types of politicians and her welfare, relative to a system in which the survival of the veto player is institutionally separated from that of the proposer.

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1. Introduction

The allocation of policy-making responsibilities across multiple elected bodies is a fundamental aspect of modern democratic government. One particularly prominent substantiation of this phenomenon is the division of responsibilities between a body that is charged with *proposing* policy initiatives, and a body that is charged with *scrutinizing* these initiatives and either implementing or rejecting them. In parliamentary and presidential systems, for example, these responsibilities are apportioned between an executive authority and a legislative authority. In the United States, the Constitution explicitly stipulates that all legislative proposals must originate within Congress, but gives the President the opportunity to veto these proposals. In the United Kingdom, the vast majority of legislative initiatives originate from within the Executive but must be approved as Acts of Parliament. In federal systems, regional and state governments generally feature a legislative assembly and a governor and within cities and towns, a similar apportionment of responsibility frequently exists between mayors and local councils.

In this paper, I study the implications of a fundamental distinction between these forms of government: the degree to which the election of the body which proposes policies is institutionally tethered to that of the body which is charged with scrutinizing them and either implementing or rejecting them. Specifically, I distinguish between a system of *shared electoral origin* and a system of *separate electoral origin*. In a system of shared origin, the voter's electoral instrument comprises a single ballot which determines both the composition of the body that proposes policies and that which is in charge of their scrutiny. This holds in every parliamentary system of government: elections simultaneously determine the composition of the legislature and the executive. As a consequence, "...there is no way for a citizen to vote for a party's prime ministerial candidate without also endorsing the party's legislative candidate or slate" (Samuels and Shugart, 2010, 197).

In a system of separate origin, by contrast, the voter has two distinct ballots with which to determine the composition of these bodies. This arrangement is a defining feature of presidential government, in which the voter may separately choose the executive and the majority tendency in the legislature.

The distinction between separate and shared electoral origin can also be observed in local politics: in the United Kingdom, the Local Government Act 2000 first introduced the option of directly elected mayors for local authorities in England and Wales, of which there are presently sixteen, including the Mayor of London. These systems of direct election, in which the mayor and local council are separately chosen by voters, is an alternative to the still predominant 'leader and cabinet' model in the UK, by which councilors are first elected by voters and subsequently nominate a leader from amongst themselves. Separately elected mayors are prominent in a number of major US cities, such as Boston, Chicago and Washington D.C. In Germany, only in the city-states of Berlin, Hamburg and Bremen are mayors elected by their city-state parliaments: in all other cases, they are directly elected. In many other European countries, such as Denmark, Finland and Spain, however, mayors are subject to indirect election by their councils. In the Netherlands, an attempt to introduce the possibility of directly elected mayors failed to pass the Senate in 2005. Thus, there is significant variety in the arrangements that have been adopted across countries at both the national and local level, with respect to shared and separate origin. The aim of this paper is to analyze the consequences of such a distinction for the quality of governance and the selection of able politicians.

An initial puzzle which motivates this analysis is the following: in all of these examples, the voter acts as a *principal* and delegates potentially competing responsibilities to two agents. One agent serves as a *proposer*, tasked with designing and proposing policy initiatives; the other serves as a *veto player*, tasked with scrutinizing the quality of these initiatives and either passing or rejecting them. Under a system of *separate electoral origin*, the voter may separately appoint the proposer and the veto player; under a system of *shared electoral origin*, the voter directly appoints only the veto player, thereby forfeiting a degree of ex-post control in the selection and retention of her agents. Why should she benefit from tying her hands in this way?

To answer this question, I consider a model with a proposer, a veto player and a voter. Each of the proposer and veto player is either *high ability* or *low ability*. The proposer submits a policy initiative for the consideration of the veto player and proposals are distinguished by their probability of success, conditional on being implemented. High ability proposers, on average, have better prospects for designing successful policies than low ability types. The role of the veto player is to learn about the quality of the proposal and either implement or reject it; her learning is facilitated by the receipt of a private signal about the proposal's merits, which is more reliable for high ability veto players. If the veto player passes the policy, the voter observes its success or failure; if it is rejected, the voter observes no further information other than that it was rejected. After this process is completed, the voter updates her beliefs about the types of politicians and chooses a retention strategy, which depends on the constitutional setting:

(i) under *separate electoral origin*, the voter may choose from four possible actions: replacing both politicians, retaining both politicians, or replacing either politican and retaining the other;

(ii) under *shared electoral origin*, the voter may choose only from two possible actions: replacing both politicians or retaining both politicians.

Thus, the voter may choose any strategy under separate origin that she might wish to choose under shared origin, but the reverse is not true. In order to ensure that all incentives arise solely from the distinction between systems, I assume that politicians hold preferences only over their own re-election: they are not endowed with an intrinsic preference over the survival of the other.[2]

I show that shared origin provides the veto player with significantly more potent incentives to implement the proposer's programme than does a system of separate origin. Even when a veto indicates that the veto player is very likely to be high ability, this leads the voter to downgrade her assessment of the proposer to the point where she may prefer to remove them both, rather than retain them both. This greatly attenuates the benefit to the low ability type from rejecting policies solely in an attempt convey favorable information about herself to the voter. Under separate origin, the veto player's ability to survive independently of the proposer leads her to veto policies with much greater frequency, since she does so without internalizing the reputational consequences of her actions for the proposer's reputation, and survival. I compare the quality of the voter's retrospective inferences about the types of politicians in office under the equilibria of each system, her prospects for recruiting and retaining high ability proposers and compare her welfare under each system. Contrary to a benchmark case of complete information in which separate origin is *always* preferred by the voter, I show that tying her hands may generate sufficiently better incentives for the low ability veto player to ensure that shared origin is superior, under incomplete information. I then endogenize the proposer's policy choice and show how the relative distortions in the veto player's behavior under each system may induce additional distortions in the proposer's strategy.

The possibility of specious obstruction of a policy agenda in order to build reputation is forcefully articulated by Walter Bagehot in the context of executive-legislative politics. In

[2]Introducing such motives only strengthens my results, but leaving them out sharpens the analysis by ensuring that all distinctions in behavior arise solely from the institutional distinction.

his landmark 1867 treatise, *The English Constitution*, he notes: "The natural tendency of the members of every legislature is to make themselves conspicuous... they wish to make their *will* felt in great affairs... They are embodying the purposes of others if they aid; they are advancing their own opinions if they defeat: they are first if they vanquish; they are auxiliaries if they support" (Bagehot (1889)). In his study of the American presidency, Harold Laski similarly argues: "Each house of Congress has a separate prestige; their common prestige is, by their nature, inherently anti-presidential in character. To be something, Congress is forced to take a stand against the President; it cannot be anything if it merely follows his lead... The result of the system, normally, is to dissipate strength rather than to integrate it" (Laski (1940)). On the other hand, a pathology of pusillanimity may arise when the survival of the veto player depends on that of the proposer. This claim has arisen in the context of mayoral control of school boards in American cities. In the past twenty years, Boston, New York, Chicago and Washington D.C. have moved from locally elected school boards to those that are wholly or largely appointed by mayors. In Chicago, the Board has recently unanimously approved a controversial school closing initiative championed by the Mayor, despite widespread popular opposition, fueling an ongoing debate about executive overreach in the politics of urban education.

To my knowledge, the distinction between shared and separate electoral origin has not received any formal or even informal treatment, in its own right. It is closely related to, but distinct from, the principle of the separation of powers, which determines the exclusivity of the right to propose policies and the right to reject them across different bodies, but not how these bodies' compositions are determined. The implications for separation of powers in both parliamentary and presidential systems are analyzed by Persson et al. (1997) in a model of moral hazard in which executive and legislative politicians may divert resources from the public budget. They show that creating a conflict of interest between the branches through a system of checks and balances is beneficial to the voter because it leads each branch to more effectively police any attempted malfeasance by the other. It also facilitates retrospective learning by the voter about the private information of politicians. My model provides a complementary but strikingly different set of conclusions. In particular, I find that the quality of the voter's retrospective inference about the types of politicians in office is generally much worse under a system in which electoral origin is separated, than one in which it is shared. This is because the relatively high frequency of vetoes by the low ability veto player under the former censors the voter's observation of whether the policy would have been successful and renders the veto less informative in its own right about the ability of each politician.

My argument also relates to formal-theoretic treatments of the veto under presidential and parliamentary systems.[3] One notable work in this vein is Huber (1996), which considers the consequences of the prime ministerial right to attach a motion of confidence to a policy initiative. Huber shows that this institutional procedure may endow the prime minister with significant agenda-setting powers, since it effectively permits her to make the final take-or-leave offer to the legislature. My model provides a complementary explanation for the agenda-setting powers enjoyed by prime ministers. A veto may be a potent means for generating a favorable posterior assessment in the eyes of the voter about the discerning qualities of the veto player. However, in a system where electoral fates are fused, this may constitute a pyrrhic achievement if it simultaneously leads to a sufficiently unfavorable assessment of the proposer that the voter prefers to remove both players, rather than retain them. The informational content of a veto is also explored in Groseclose and McCarty (2001).

[3]Many such models study the role of vetoes in Baron-Ferejohn bargaining settings, in which the (distributive) policy context is quite different from the one considered in this paper; recent work includes Diermeier and Vlaicu (2011).

My approach connects with a number of models of signaling in office by a single, privately informed party - notably, Prat (2005), Levy (2004) and Canes-Wrone et al. (2001). These authors show that when an agent's actions can convey information about the quality of her private information to an evaluator, that agent may have incentives to disregard that information either by excessively following or contradicting the common prior. My model considers two agents with distinct policy-making responsibilities. It illustrates how the institutionally defined relationship between the electoral survival of each agent may compound, or ameliorate, the incentives of either agent to contradict her private information. Another related study is Fox and Van Weelden (2010), who show that when the veto player holds a primitive preference over the proposer's reputation for competence, the voter may do better than she would with a neutral veto player, who cares only for her own reputation. In contrast with their approach, I contrast alternative constitutional settings and derive endogenously the value that the veto player holds over the reputation of the proposer without imposing a direct assumption on the former's preferences.

The remainder of the paper is organized as follows: Section II introduces the model. Section III produces a crucial benchmark result, which is that under complete information the voter always strictly prefers a system of separate electoral origin. Section IV introduces incomplete information and studies the equilibria under shared origin, while Section V studies separate origin. Section VI compares the systems according to a number of criteria, and Section VII extends the model to introduce a strategic proposer, in order to study the effect of the inefficiencies in the behavior of the veto player on the policy choice of the proposer. Section VIII discusses empirical implications of the model, and Section IX concludes.

2. Model

The players are a *proposer* (p), a *veto player* (s) and an *voter* (v). The proposer is either *high ability* or *low ability* $p \in \{p_L, p_H\}$, with $\Pr(p_H) = \alpha \in (0, 1)$. Likewise, the veto player is is either *high ability* or *low ability* $s \in \{s_L, s_H\}$, with $\Pr(s_H) = \beta \in (0, 1)$. Each player knows the realization of her type, but not that of the player, at the start of the game.

The sequence of play begins with a policy being submitted by the proposer, which is either high or low quality. High ability proposers submit high quality policies with probability 1, low ability proposers do so with probability $\frac{1}{2}$. Initially, I focus on the strategic behavior of the veto player and render the proposer a passive actor; later, I will endow the proposer with a strategic decision regarding her policy submission which will endogenize these probabilities. After the policy is submitted, the veto player receives a private signal, $q \in \{q_G, q_B\}$. Conditional on the policy being high quality (low quality), the signal takes the value q_G (q_B) with probability 1 if the veto player is high ability, and with probability $\frac{1}{2}$, otherwise. After observing her signal, the veto player chooses whether or not to implement the policy. If she implements it, a public signal is realized which reveals the quality of the policy to all players. If she vetoes the policy, however, no public signal accrues. This assumption captures the idea that there is a crucial disjuncture between what can be learned from direct observation of the consequences of a policy initiative which has been given its chance, compared to an initiative which was not implemented. In the latter case, the voter learns about policy quality only through her inference about the ability of the veto player, and the strategy profile. Such an extreme informational asymmetry is not necessary to obtain the results, however.

After the voter observes the interaction between the proposer and veto player, including any publicly observable information about policy quality that may have accrued, she makes a decision about whether to retain each politician, or replace her with another politician whose type is drawn from the same prior distribution. The constitutional alternatives are distinguished by the set of replacement actions with which the voter is endowed. Define the following set of actions for the voter:

$$V = \{(1_p, 1_s), (0_p, 0_s), (1_p, 0_s), (0_p, 1_s)\}$$

where 1_j for $j \in \{p, s\}$ denotes the retention of politician j, 0_j denotes the replacement of politician j. So, for example, the action $(1_p, 0_s)$ denotes the retention of the proposer and the replacement of the veto player. I define two regimes:

(i) under *separate electoral origin*, the voter may choose from any of the four actions in the set V. That is, she may replace either, both or neither politician.

(ii) under *shared electoral origin*, the voter may only select from the first two actions in V. That is, she may only select from *joint* retention, or *joint* replacement.

Thus, an important initial observation is that the voter can choose any strategy under separate origin that she could choose under shared origin, *but the reverse is not true.* To summarize, the timing of the interaction is as follows:

(1) The proposer type $p \in \{p_L, p_H\}$ submits a policy;

(2) The veto player type $s \in \{s_L, s_H\}$ observes her private signal $q \in \{q_B, q_G\}$ and selects $\tau(s, q)$, the probability of passing the policy based on her type and her private signal:

(2a) if the veto player passes the policy, a public signal reveals its quality to all agents and the game proceeds to step (3);

(2b) if the veto player vetoes the policy, the quality of the policy remains unobserved by the agents who are initially uninformed beyond the prior, and the game proceeds to step (3);

(3) the voter updates her beliefs about both politicians and chooses whether to replace either one or both according to the constitutional setting;

(4) Steps (1) and (2) are repeated, payoffs are collected and the game ends.

The set of outcomes that can be observed by the voter is:

$$Z = \{z_G, z_B, z_R\}$$

where z_G is an outcome in which the policy is passed by the veto player and revealed to be high quality, z_B is the case in which the policy is passed and revealed to be low quality and z_R is the case in which the policy is vetoed by the veto player and the quality is not revealed. Formally, the voter's strategy is a probability distribution $\eta(k|z)$ over each action $k \in V$ for each outcome $z \in Z$, where under shared electoral origin the constraint $\eta((1_p, 0_s)|z) = \eta((0_p, 1_s)|z) = 0$ for all $z \in Z$ is imposed.

The voter receives a payoff of 1 whenever a high quality policy is implemented, a payoff of -1 whenever a low quality policy is implemented, and a payoff of 0 when a policy is vetoed. All payoffs are collected at the end of the game. The payoff the politician i is

$$\mathbf{1}[i \text{ re-appointed}] + \epsilon \sum_{t \in \{t_0, t_1\}} (\text{Voter's payoff in period } t \text{ if } i \text{ in office})$$

where, throughout, $\epsilon > 0$ is taken to be arbitrarily small. The addition of a degree of policy motivation is useful as a means to break players' indifference and it is solely in this capacity that it plays a role. Having the politician collect the payoff only when in office partially simplifies the algebra in the Appendix, but is not necessary. A consequence of some degree of policy motivation is that the voter's value over politician types in the second period is unique. This value is implemented by the following strategy profile: high ability veto players implement a policy if and only if they receive a favorable signal, and low ability veto players implement all policies.[4] A type profile is

$$(p, s, q) \in \{p_L, p_H\} \times \{s_L, s_H\} \times \{q_L, q_H\} \tag{1}$$

which summarizes the ability type of each of the proposer and the veto player, and the private signal received by the latter. Let T denote the set of all type profiles; the voter's belief that the realized joint type profile is $t \in T$ conditioned on the outcome $z \in Z$ is $\pi(t|z)$. Where there is no possibility of confusion, I sometimes refer simply to the voter's belief over the type of the proposer and the veto player, minus the signal she received, i.e. I let $\pi(p, s|z) = \sum_{q \in \{q_B, q_G\}} \pi(p, s, q|z)$. I study sequential equilibria of this model.

Signaling models with a single privately informed sender in an environment with no aggregate uncertainty typically generate a multiplicity of equilibria. The present model features two different senders, and aggregate uncertainty in that the quality of some policies may not be known for sure by any player when the veto player chooses whether or not to implement them; it is thus a non-standard signaling game for which the problem of multiplicity is compounded and for which standard belief-based refinements are not defined. To deal with the problem of multiplicity that arises from the flexibility of specifying beliefs off the path, I use a generalized form of D2, which is defined in the Appendix. Intuitively, the refinement requires that if the voter observes an out-of-equilibrium action, she must believe that it was taken by the veto player type (s, q) who benefits for the largest possible set of mixed responses by the voter.

[4]If the low ability veto player believes that the proposer is a low ability type with probability 1, she is indifferent between passing and rejecting a policy. Regardless of her strategy, however, the voter's expected payoff with a low ability veto player and a low ability proposer is 0; this why I say that her equilibrium *value* over types is unique, even though the strategies that generate this value may not be.

Comment on the Assumptions of the Model

Before proceeding to the main analysis, I briefly comment on some features of the model setup. The assumption that players do not know each other's type is not necessary to deliver the main results. As will become clear, what drives the analysis is that actions by the veto player which provide the voter with favorable information about her type (e.g. a veto) also provide the voter with unfavorable information about the proposer. In a model where the veto player knows the proposer's type, this phenomenon appears even more strongly than in the present setting, since only low ability proposers have their policies rejected and thus the voter's inference about the proposer after a veto is even worse than in the present setting. What is crucial for the model, however, is that the veto player knows the realization of her type, which is a common assumption, and one that is used in Levy (2004) and Canes-Wrone et al. (2001) amongst many others.

In systems of shared origin, the proposer is usually nominated by the veto player. For example, in parliamentary democracies, the executive is drawn from the majority tendency in the legislature, i.e. from within a dominant political party or coalition of parties within the legislature. This raises the question of why a veto player might select a low quality proposer, or otherwise be uncertain of her ability. There are many possible explanations: the proposer may be particularly desirable with respect to non-policy attributes that are beyond the scope of the present paper. For example, John Major was chosen largely because he was seen as a force for compromise in the wake of Margaret Thatcher's premiership. However, it is equally plausible that a politician was successful in a different capacity, such as enforcer of party discipline in the legislature, or in a cabinet post, but subsequently is found to lack the unique set of skills required of a chief executive. For example, Gordon Brown was widely considered to be an extremely effective Chancellor of the Exchequer, but proved relatively ineffective in the capacity of Prime Minister. Moreover, his accession to that office was allegedly the result of a gentlemen's agreement between himself and Tony Blair in exchange for Brown's support of Blair's leadership bid.

3. Benchmark: Complete Information

In order to motivate the setting of incomplete information, I begin by examining the case in which the voter holds complete information about both types of politician. This benchmark yields a strong conclusion: there are no trade-offs between systems, and separate electoral origin is unambiguously preferred by the voter.

Proposition 1. If the voter holds complete information about politicians' types, she strictly prefers *separate* electoral origin over *shared* electoral origin.

The reasoning for this result is the following: since the strategies of each politician type in the second period do not depend on the system of government, the voter's payoff in that period depends only on the probability distribution over types beginning in that period. Since actions do not affect probabilities of re-election when the voter has complete information, the strictly optimal first-period strategy of each politician type is the same under either system and is the same as the second-period strategy: the high ability veto player implements a policy if and only if she receives a favorable signal, and the low ability veto player implements all policies. If the voter obtains a high ability proposer, or two low ability politicians, her optimal strategy is the same under either system. Thus, her payoffs under each system vary only through the constraints on her re-election strategy and thus her continuation payoffs in the event that the remaining joint type profile is realized. If indeed the voter obtains a high ability veto player and a low ability proposer, her expected payoff from joint retention is $\frac{1}{2}$; if she replaces both politicians, her expected payoff is

$$\alpha + \frac{1}{2}(1-\alpha)\beta$$

and if she retains the veto player and removes the proposer, her expected payoff is

$$\frac{1+\alpha}{2}$$

The last of these actions yields the strictly highest expected payoff, and is only available to the voter under a system of separate electoral origin. Thus, with complete information, the voter strictly prefers to empower herself with the right to separate the replacement decisions with respect to the proposer and veto player. I now explore how these conclusions are modified in an environment of incomplete information.

4. Shared Electoral Origin

I begin by studying the case in which the electoral survival of the proposer and the veto player are institutionally fused together. In order to understand the incentives at play, let us ask whether an equilibrium can be sustained in which the high ability proposer implements a policy if and only if she receives a favorable signal, and the low ability veto player implements every policy that is submitted to her. Under this strategy profile, when the voter observes a veto, she believes that she faces a high ability veto player, and a low ability proposer. Since she is restricted to joint retention or joint replacement, she faces a choice between the gamble of throwing out both politicians in order to try and get a weakly better draw in the second period, or sticking with her current drawn in order that she at the very least benefit from the high ability veto player's protection in the second period. She will prefer to replace both politicians so long as $\frac{1}{2} \leq \alpha + \frac{1}{2}(1-\alpha)\beta$, or

$$\begin{aligned} \alpha &\geq \frac{1-\beta}{2-\beta} \\ &\equiv \bar{\alpha}(\beta) \end{aligned} \tag{2}$$

i.e., when the probability of drawing a high ability proposer is sufficiently large. When this condition is satisfied, it is optimal for the voter to remove both politicians after she observes a veto, *despite the fact that she holds the most favorable possible assessment of the veto player*. I summarize this result:

Proposition 2. Under *shared electoral origin*, if $\alpha \geq \bar{\alpha}(\beta)$, an equilibrium exists in which the high ability veto player implements a policy if and only if she receives a favorable signal, and the low ability veto player implements all policies. Both politicians are retained when a policy is successful; after a policy either fails, or is vetoed, both politician are removed. If $\alpha > \bar{\alpha}(\beta)$, this equilibrium is unique.

After receiving a signal which indicates that the policy is likely to fail, the high ability veto player can do no better than reject the policy, even though it causes her downfall. However, the low ability veto player, who on average believes that a policy submitted to her is strictly more likely to succeed than it is to fail, has no incentive to obstruct proposals in order to convey favorable information to the voter about her type, since to do so would also convey unfavorable information about the proposer. Even though the veto player holds no direct preference over the retention of the proposer, or indeed the implementation of her policy proposals, a system of shared origin effectively forces her to fully internalize both of these imperatives in order to guarantee her own retention.

Suppose, instead, $\alpha < \bar{\alpha}(\beta)$, i.e. the probability of drawing a high ability proposer is relatively low. In that case, by our earlier reasoning, the voter would strictly prefer to retain the proposer and veto player rather than replace them both, if she were sure that the latter were high ability, even if she believed that the former were surely of low ability. Can we still support an equilibrium in which the low ability veto player implements all policies? The answer is no: she would now profit from being able to convince the voter that she is high ability, even if she does so at the expense of the executive's reputation. Define the quantity:

$$\bar{\tau}(\alpha) = \frac{1+\alpha}{2}$$

Under a strategy profile in which the high ability veto player implements a policy if she receives a favorable signal, and vetoes it otherwise, $\bar{\tau}(\alpha)$ is a probability with which the low ability veto player rejects a bill, such that after a veto the posterior reputation of the veto player, from the perspective of the voter, is equal to the prior - β. That is,

$$\begin{aligned}\sum_{p \in \{p_L, p_H\}} \pi(p, s_H | z_R) &= \frac{\beta(1-\alpha)}{\beta(1-\alpha) + 2(1-\beta)(1-\bar{\tau}(\alpha))} \\ &= \beta \end{aligned} \tag{3}$$

Under a strategy profile in which the high ability veto player vetoes policies if and only if she receives an unfavorable signal,for $\alpha < \bar{\alpha}(\beta)$, the voter's benefit from joint retention of the proposer and veto player after a veto takes place is equal to:

$$\sum_{s \in \{s_L, s_H\}} \pi(p_H, s | z_R) + \frac{1}{2}\pi(p_L, s_H | z_R)$$

which is strictly increasing in $\tau(s_L, q)$, since relatively less frequent vetoing by the low ability veto player increases the likelihood that a veto comes from a high ability veto player. When $\tau(s_L, q) = 1$, since $\alpha < \bar{\alpha}(\beta)$, the voter strictly prefers retention to replacement. This is inconsistent with the incentives of the veto player, who would strictly prefer to veto a policy in order to guarantee her retention. On the other hand, consider $\tau(s_L, q) \leq \bar{\tau}(\alpha)$; in that case, the voter's marginal assessment of both the proposer and the veto player are worse than the prior, and the voter strictly prefers joint replacement to joint retention. So, there exists $\hat{\tau} \in (\bar{\tau}(\alpha), 1)$ for which the voter is indifferent between joint retention and joint replacement, after a veto.[5] I summarize these observations, then make some additional comments about properties of the equilibrium.

[5]It is straightforward to characterize the mixture, directly, however the expression is unedifying: what is important is that it strictly exceeds $\bar{\tau}(\alpha)$.

Proposition 3. If $\alpha \leq \bar{\alpha}(\beta)$, under shared electoral origin, there exists an equilibrium in which the high ability veto player implements the policy of the proposer after a favorable signal, otherwise she rejects it. The low ability veto player implements a proposal with probability $\hat{\tau} \in (\bar{\tau}(\alpha), 1)$. After a policy is rejected, both politicians are retained by the voter with positive probability.

In the Appendix, I show that the only other possible equilibrium is a 'mirror' equilibrium in which the strategy of the high ability veto player is reversed. This can be sustained even when there is a positive degree of policy motivation, but I do not consider it since it is always welfare-dominated by the above equilibrium and seems extremely uncompelling on intuitive grounds. A sufficient condition for it not to exist is $\beta \geq \frac{1}{2}$.

In the equilibrium characterized in Proposition 3, the high ability veto player has appropriate incentives to reject policies that she believes are likely to fail. On the other hand, this provides unwholesome incentives to the low ability type to engage in a spurious obstruction of the proposer's program, even though she believes that it is strictly more likely to succeed than it is to fail, since $\alpha > 0$. Nonetheless, a system of shared origin imposes constraints on the extent of her attempts to pool with the high ability type. To see why, note that for any strategy she may employ, given the high ability veto player's strategy, the voter's posterior assessment of the proposer is always strictly worse than the prior. That is, regardless of what the low ability veto player is doing, a veto always conveys unfavorable information about the proposer's type:

$$\begin{aligned} \sum_{s \in \{s_L, s_H\}} \pi(p_H, s|z_R) &= \frac{2\alpha(1-\beta)(1-\tau(s_L,q))}{\beta(1-\alpha)+2(1-\beta)(1-\tau(s_L,q))} \\ &< \alpha \end{aligned}$$

If the low ability veto player were to pick $\tau(s_L, q) \leq \bar{\tau}(\alpha)$, this would imply that the voter's assessment of the proposer is strictly worse than the prior, and her assessment of the veto player weakly worse, which would yield a strict preference for joint replacement. Moreover, in equilibrium:

$$\sum_{p \in \{p_L, p_H\}} \pi(p, s_H | z_R) = \beta \frac{1-\alpha}{1-2\alpha}$$
$$> \beta$$

i.e. a choice of $\hat{\tau} > \bar{\tau}(\alpha)$ implies that the voter's assessment of the veto player's type is strictly more favorable than the prior belief, β, after she observes a veto. But this is a necessity when her veto leads the voter to hold an especially unfavorable inference about the proposer. In essence, the veto player must look exceptionally good in the eyes of the voter to make up for the loss of reputation of the proposer, after a veto.

To summarize the results for the case of shared electoral origin: when the probability of drawing a high ability proposer ($\alpha \geq \bar{\alpha}(\beta)$) is sufficiently high, there is a unique equilibrium in which the low ability veto player implements all policies. The incentive not to mimic a high ability veto player ensures that the low ability type does not speciously reject policies when the voter would want her to implement them. On the other hand, when the probability of drawing a high quality proposer is sufficiently low ($\alpha < \bar{\alpha}(\beta)$) both veto player types are more willing to attack the proposer in order to improve the voter's assessment of her ability, but this propensity is still moderate by the imperative for joint survival.

5. Separate Electoral Origin

I begin the case of separate electoral origin by considering the strategic difference between systems, from the perspective of the low ability veto player. With fused electoral origin, a condition for her to exercize her veto is that the voter weakly prefers joint retention of both politicians to joint replacement, after a veto is observed. Under separate origin, however, the veto player may be retained independently of the proposer. So, she may be retained in either of two ways - with the proposer, or without her. Thus, a necessary condition for the veto player's survival, after a veto, is the following: from the voter's perspective, the best payoff from one of her two available actions in which the veto player is retained should be weakly better than her best payoff from taking one of her two possible actions in which she is replaced. Alternatively stated, a necessary condition for the voter to hold a weak preference for the retention of the veto player after a veto is:

$$\max\left\{\underbrace{\sum_{s\in\{s_L,s_H\}}\pi(p_H,s|z_R)+\frac{1}{2}\pi(p_L,s_H|z_R)}_{\text{retain proposer, retain veto player}},\underbrace{\alpha+(1-\alpha)\frac{1}{2}\sum_{p\in\{p_L,p_H\}}\pi(p,s_H|z_R)}_{\text{remove proposer, retain veto player}}\right\} \tag{4}$$

$$\geq\max\left\{\underbrace{\sum_{s\in\{s_L,s_H\}}\pi(p_H,s|z_R)+\frac{1}{2}\sum_{s\in\{s_L,s_H\}}\pi(p_L,s|z_R)\beta}_{\text{retain proposer, remove veto player}},\quad\underbrace{\alpha+\frac{1}{2}(1-\alpha)\beta}_{\text{remove proposer, remove veto player}}\right\} \tag{5}$$

Consider a strategy profile in which the high ability veto player rejects a policy when her signal about its prospects is unfavorable, and implements it otherwise. Suppose, first, that after a veto, the voter's assessment of the veto player is strictly worse than the prior, i.e. $\sum_{p\in\{p_H,p_L\}}\pi(p,s_H|z_R)<\beta$. This implies $\tau(s_L,q)<\bar{\tau}(\alpha)$. I have already noted that given the high ability veto player's strategy, the voter's posterior belief about the proposer is strictly worse than the prior, for any strategy of the low type. This implies that the second expression in (4) is strictly smaller than the second expression of (5). Moreover, since $\bar{\tau}(\alpha)<\hat{\tau}$, we already know from the case of shared origin that the first expression in (4) is strictly smaller than the second expression of (5). Thus, such a strategy could not be used in an equilibrium, since the veto player would always be replaced after a veto, and so the low ability type would never make use of it.

Consider, alternatively, the possibility that after a veto, the voter's posterior belief about the veto player is strictly more favorable than the prior, i.e. $\sum_{p\in\{p_H,p_L\}}\pi(p,s_H|z_R)>\beta$.

In that case, the second expression in (4) strictly exceeds the second expression in (5). Moreover, the first expression in (4) strictly exceeds the first expression in (5), so long as

$$\pi(p_L, s_H|z_R) > \beta \sum_{s \in \{s_L, s_H\}} \pi(p_L, s|z_R) \tag{6}$$

which is equivalent to $\tau(s_L, q) > \frac{1}{2}$, which is true since by our conjecture that the voter's posterior assessment of the veto player after a veto is strictly more favorable than the prior, $\tau(s_L, q) > \bar{\tau}(\alpha)$ and $\bar{\tau}(\alpha) = \frac{1+\alpha}{2}$. But this implies that the veto player is retained for sure after a veto, which would yield a strict preference on the part of the low ability veto player to reject policies, which is inconsistent with the strategy. So, the only remaining possibility is that the voter's assessment of the veto player be equal to the prior, after observing a veto. Suppose that this is true, i.e. $\tau(s_L, q) = \bar{\tau}(\alpha)$. Then, the second expression of (4) is equal to the second expression of (5), and is strictly greater than the first expression of (4). Moreover, substituting $\tau(s_L, q) = \bar{\tau}(\alpha)$ into the first expression in (5) establishes that it is strictly lower than the second, since the voter's belief that the executive is a high type given these strategies is $\alpha(1 - \beta)$. So, the only actions that are weakly optimal for the voter are either to remove the proposer and retain the veto player, or remove both politicians.

Thus, in contrast with the case of shared origin, *the proposer is always removed after a veto*. Moreover, a veto conveys no information to the voter about the veto player's ability to the voter. Crucially, the propensity of the low ability veto player to reject proposer policies is greater under separate electoral origin than shared electoral origin, since she is retained solely on the basis of her own reputation, rather than the voter's joint assessment of herself and the proposer. I summarize these points in the next Proposition.

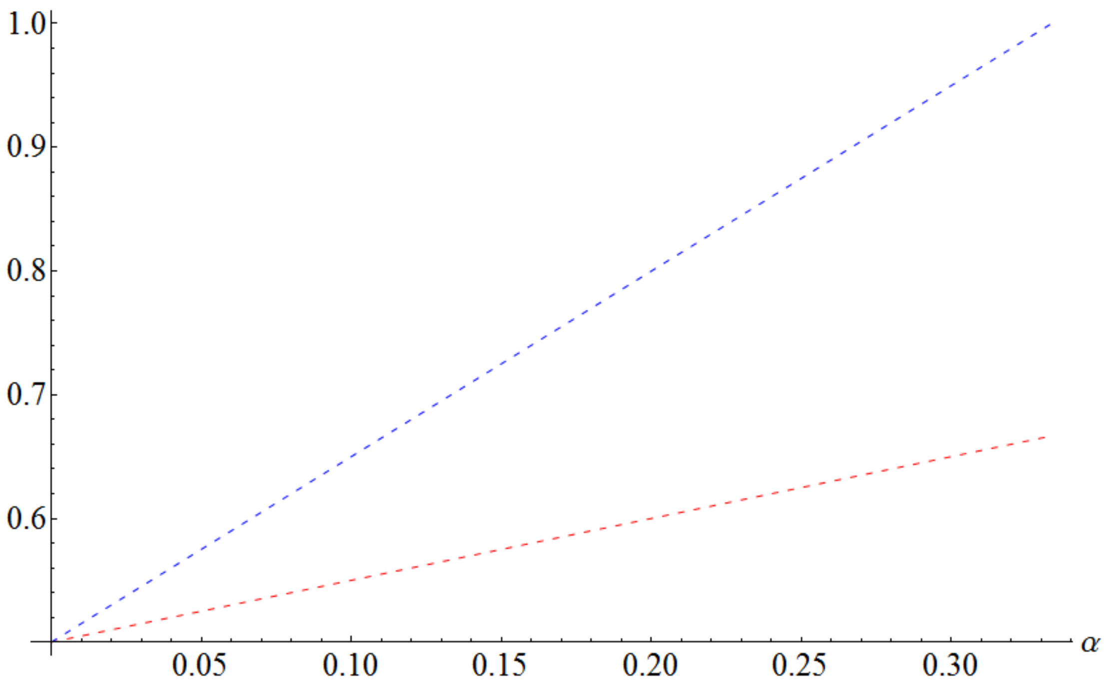

Figure 1: The probability that a bill is implemented by the low ability veto player under shared origin (blue) and separate origin (red), on the interval $\alpha \in [0, \bar{\alpha}(\beta)]$, for $\beta = \frac{1}{2}$.

Proposition 4. Under separate electoral origin, there exists an equilibrium in which the high ability veto player implements the policy of the proposer after a favorable signal, otherwise she rejects it. The low ability veto player implements a proposal with probability $\bar{\tau}(\alpha)$. After a policy is rejected, the voter always replaces the executive, and retains the veto player with positive probability.

Note that, as with the case of shared origin for $\alpha \leq \bar{\alpha}$, it is also possible to support a 'mirror' equilibrium, in which the strategy of the high ability player is reversed - as before, I ignore it both on the grounds of plausibility and also because it is clearly welfare dominated by the equilibrium characterized in the proposition. No other equilibrium exists.

To illustrate the differences in the pooling behavior of the low ability veto player under each system, **Figure 1** plots the probability that she implements a policy submitted to her under each system. The proposer's reputation after a veto is strictly worse than the

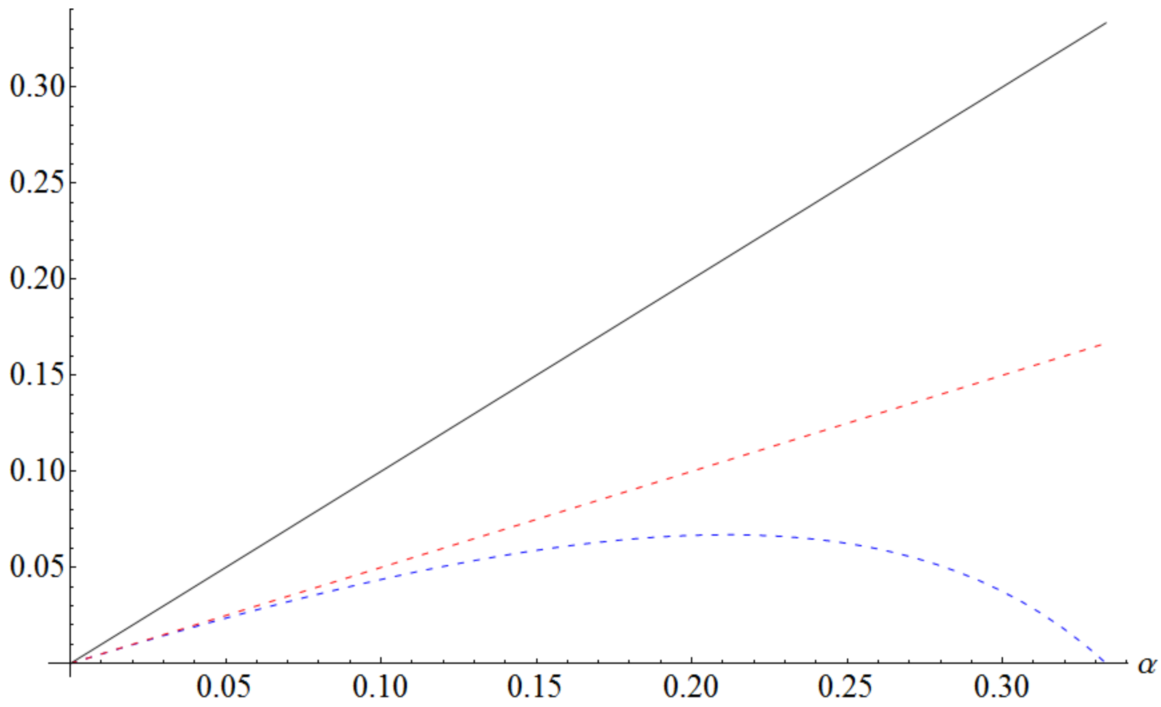

Figure 2: The voter's posterior belief that the proposer is high ability after a veto under shared (blue) and separate (red) origin, on the interval $\alpha \in [0, \bar{\alpha}(\beta)]$, for $\beta = \frac{1}{2}$. The black line indicates that in both cases, the proposer's reputation falls below the prior.

prior under both shared origin for $\alpha < \bar{\alpha}(\beta)$ and for separate origin, its deterioration is significantly greater in the former case. This is because the mixture of the low ability veto player shared origin places significantly more mass on passing bills (recall $\hat{\tau} > \bar{\tau}(\alpha)$), which means that when a veto is observed, it is relatively likely to come from a high ability veto player whose veto conveys more information about the proposer's ability. I illustrate this point in **Figure 2**, which shows the posterior reputation of the proposer after a veto, under each system, on the interval $[0, \bar{\alpha}(\beta)]$.

Under separate origin, the voter's assessment of the proposer is closer to the prior than under shared origin, yet it is in the former case that she is removed with probability 1. This figure illustrates an important trade-off, for the voter: though the responsiveness of her beliefs to a veto is significantly lower, her ability to act upon them is greater. Of course, these beliefs need not be correct: there is a significant risk that the voter removes a high ability proposer.

Therefore, we may summarize the main results under separate origin as follows: the low ability veto player rejects policies with a frequency that is larger than under shared origin, and which severely limits the informational content of a veto about either player's type to the voter. Nonetheless, in contrast with shared origin, the voter always removes the proposer whenever a veto is observed.

6. Comparing Constitutions

In this section, I compare shared and separate origin constitutions with respect to a number of criteria, taking the limit case in which politicians are wholly office-motivated, i.e. $\epsilon = 0$. My first point of comparison concerns the quality of the voter's retrospective inferences about the kinds of politician in office, under either system. I define the *informativeness* of an equilibrium about the proposer to be the probability that the voter's belief about her realized type, after the first period, is correct. Informativeness therefore constitutes a measure of the quality of the voter's retrospective learning about the kind of proposer under each constitution.

Proposition 5. An equilibrium under shared origin is always more informative about the proposer than an equilibrium under separate origin.

Shared origin is more informative about the proposer for two reasons. First, the voter observes better data on first period outcomes, since she is relatively more likely to see the outcome of an implemented policy. When a policy is implemented and fails, it constitutes a 'smoking gun' from the voter's perspective. Though outcomes which fail to match the state have negative payoff consequences, they also constitute the most potent information for the voter. A second reason applies on the interval $[0, \bar{\alpha}(\beta)]$: under shared origin, vetoes are more informative about the type of proposer in office, since they are relatively more likely to arise from a high ability proposer who uses it correctly. Under separate origin, a veto is relatively more likely to have come from a low ability veto player, whose information about the quality of the proposal, and thus the proposer, is much worse. This feeds directly into the voter's ability to make inferences about the proposer solely on the basis of a veto.

A second point of comparison between systems is the probability with which the voter obtains a high ability proposer in the second period. This may occur either because a high ability proposer survived the replacement decision of the voter, or because a low ability proposer was successfully replaced with a high ability type. Whilst I showed that the quality of the voter's inference about the proposer is higher under shared origin, we have:

Proposition 6. The voter is more likely to face a high ability proposer in the second period under separate origin than shared origin.

Under separate origin, the sure replacement of the proposer after a veto is an effective means to remove low ability proposers, even though it also means a higher risk of removing high ability proposers. Nonetheless, it is the first effect which dominates. So, even though the voter's belief about the proposer under shared origin is more accurate, the addition of an electoral instrument which allows her to separate her retention decision nonetheless renders a system of separate origin more effective for obtaining a high quality proposer as a result of the voter's action.

Finally, I compare the voter's welfare under each system. Recall that in the benchmark setting of complete information, *there is no trade-off in the choice of system*: that is, separate origin is unambiguously preferred to shared origin by the voter. So, the primary purpose of this section is to illustrate how the introduction of incomplete information can starkly undermine this conclusion. Indeed, we have:

Proposition 7. If $\alpha \geq \bar{\alpha}(\beta)$, the voter's expected payoff is maximized under shared origin. If $\alpha < \bar{\alpha}(\beta)$, the voter's expected payoff is maximized under shared origin if and only if β is sufficiently small.

Specifically, on $\alpha < \bar{\alpha}(\beta)$ separate origin dominates shared origin if and only if the prior that the veto player is a high ability type - β - strictly exceeds the probability that the proposer is high ability, conditional on her policy being of high quality. Thus, in an environment of incomplete information, the benefit that accrues to the voter from providing the low ability veto player with incentives not to obstruct the proposer's program under shared origin can render it preferable to separate origin. One might suspect that the superiority of shared origin for $\alpha > \bar{\alpha}(\beta)$ hinges on the fact that the high ability veto player can do no better than reject a policy which she is sure will fail; if there were any positive probability that the policy quality is not revealed after a bill is passed, or if the signal strength of the high ability proposer were strictly less than 1, a sufficiently office-motivated (i.e., vanishing ϵ) high ability proposer would then implement the bill to have some positive probability of retention. To see that this is not crucial, however, suppose that we set $\epsilon = 0$ and specify that the high ability proposer implements the policy when she receives an unfavorable signal. Then, it is straightforward to show that there exists $\bar{\beta}$ such that if and only if $\beta < \bar{\beta}$, shared origin continues to strictly dominated separate origin on the interval $[\bar{\alpha}(\beta), 1]$.

7. A Strategic Proposer

To this point, I have abstracted from any strategic calculations on the part of the proposer. I have done this in order to focus the analysis clearly on the implications of a reputation-oriented veto player for the performance of each system. In this section, I relax the assumption that the proposer is a passive player, and show that the inefficiencies associated with the behavior of the veto player may further generate inefficiencies in the choice of proposer about the kinds of policy to submit. A robust finding of the literature on career-concerned agents with private information (e.g. Prat (2005), Levy (2004) and Canes-Wrone et al. (2001)) is that even in the absence of an additional reputation-oriented player, a single agent may have incentives to distort her policy submission in order to improve the evaluator's posterior assessment of the player's type. Thus, it is important to understand how the addition of a veto player may improve or worsen these incentives.

To that end, I modify the game to endow the proposer with the decision to submit one of two potential policies, x or y, for consideration by the veto player. After the choice of policy submission is made, the game proceeds to step (2), as before. To fit into the framework of the previous section, suppose that there is a binary state space, $\Omega = \{X, Y\}$, with $\Pr(X) = \frac{1}{2}$. If either policy is vetoed, the voter receives the payoff $u(z_R) = 0$. If a policy is implemented, however, the voter receives a payoff of $u(z_G) = 1$ if it corresponds to the state, otherwise she receives the payoff $u(z_B) = -1$.

At the start of the game, the proposer receives a private signal, $w \in \{w_X, w_Y\}$ where $\Pr(w = w_X|\omega = X, p) = \Pr(w = w_Y|\omega = Y, p)$ and this quantity is equal to 1 if the proposer is high ability, and probability $\frac{1}{2}$ if she is low ability. The veto player receives a private signal $q \in \{q_X, q_Y\}$ which matches the state with probability 1 if she is a high ability type, and probability $\frac{1}{2}$, otherwise. All other aspects of the game remain the same. Note that this fits into the earlier section: so long as the high ability proposer submits the policy which corresponds to her belief, it is correct with probability 1, whilst the probability with which the low ability proposer's policy correctly matches the state is $\frac{1}{2}$.

Let $\sigma(p, w)$ denote the probability with which the proposer type submits the policy x, conditional on her type and private signal $w \in \{w_X, w_Y\}$. Let $\tau(s, q, x)$ and $\tau(s, q, y)$ denote the probability that the veto player type s implements the policy x or y given signal $q \in \{q_X, q_Y\}$, respectively. To ensure robustness, I study equilibria in which the signal strength of the high ability proposer is $\gamma = 1$ and whose properties are continuous in γ at this value. I refer to these as *continuous equilibria*.[6] To simplify algebra, I consider $\epsilon = 0$. For expositional clarity, I compare shared origin for $\alpha \geq \bar{\alpha}(\beta)$ with separate origin.

I begin with the case of shared origin. First, we cannot have an equilibrium in which the low ability proposer submits either policy with probability 1, for any $\gamma < 1$, since by deviating, the voter believes that she is high ability with probability 1, and she could guarantee her retention. Consider the following strategy profile:

(i) $\tau(s, q, x) = 1$ if $(s, q) \neq (s_H, q_Y)$, and $\tau(s_H, q_Y, x) = 0$.;

(ii) $\tau(s, q, y) = 1$ if $(s, q) \neq (s_H, q_X)$, and $\tau(s_H, q_X, y) = 0$.

(iii) $\sigma(p_H, w_X) = 1$, $\sigma(p_H, w_Y) = 0$, $\sigma(p_L, w) = 1$.

(iv) $\eta(1_p, 1_s|k) = 1$ if $k \in \{x_G, y_G\}$, $\eta(1_p, 1_s|k) = 0$ if $k \in \{x_R, x_B, y_R, y_B\}$

I show that such an equilibrium exists and is continuous at $\gamma = 1$. Notice that under this strategy profile, the low ability proposer submits a policy with probability 0; in a sequential equilibrium, the voter assigns probability 1 to the proposer being a low ability type, when she observes that y is implemented but fails to match the state.

When the policy y is submitted and rejected, the voter assigns probability 1 to the veto player being high ability; for $\gamma < 1$, she is therefore indifferent between joint removal and joint retention so long as $\sigma(p_L, w)$ satisfies:

$$\frac{1}{2} + \frac{\alpha(1-\gamma)}{\alpha(1-\gamma) + (1-\alpha)(1-\sigma(p_L, w))}\left(\gamma - \frac{1}{2}\right) = \alpha\beta\gamma + \alpha(1-\beta)(2\gamma - 1) + \frac{1}{2}(1-\alpha)\beta$$

or $\sigma(p_L, w) = \sigma_1(\alpha, \beta, \gamma)$, satisfying $\lim_{\gamma \to 1} \sigma_1(\alpha, \beta, \gamma) = 1$, and $\sigma_1(\alpha, \beta, 1) = 1$. That is, the low ability proposer must place sufficiently small mass on the policy y that a veto

[6] This is important, because strategy profiles can be constructed in which an outcome z_B occurs only off the equilibrium path when $\gamma = 1$, but for any $\gamma < 1$ this would not be the case.

by the high ability veto player is compensated for by the fact that the policy was relatively likely to come from a high ability proposer. The low type is indifferent between proposals for $\eta(1_p, 1_s|y_R) = 0$, and the high ability proposer holds a strict preference for submitting the policy which matches the state, whilst the low ability veto player strictly prefers to implement both policies, given that they succeed with positive probability and a veto surely induces joint replacement. Finally, one easily obtains the threshold greater than which this strategy profile can be supported as an equilibrium to be $\alpha \geq \bar{\alpha}(\beta, \gamma) \equiv \frac{1-\beta}{(2-\beta)(2\gamma-1)}$, which converges to the cut-off that was derived earlier as γ tends to one. Thus, we have:

Proposition 8. Under shared origin for $\alpha \geq \bar{\alpha}(\beta)$, a continuous equilibrium exists in which the low ability proposer submits either policy with probability 1.

This establishes that, in the absence of any veto activity by the low ability veto player, it is possible to support an equilibrium in which the tendency of the low ability proposer to alternate between policies in an attempt to pool with the high type disappears in the limit.

I now provide intuition as to why this result cannot be obtained in the case of separate origin. In this section, I focus on equilibria in which the high ability proposer follows her signal, and the high ability proposer passes a policy if and only if she receives a favorable signal (recall that the only other equilibrium strategy would have her reverse these actions). Suppose, to the contrary, that an equilibrium exists in which the low ability proposer submits the policy x with probability 1. Recall that, in an equilibrium in which the high ability veto player implements a policy if and only it matches her belief about the state, the low ability veto player rejects a policy with such frequency as to ensure that the voter's posterior belief about her type is equal to the prior, after a veto.[7] The low ability proposer weakly prefers to submit the policy x only if the probability with which x is implemented, multiplied by

[7] This is not always true in this more general setting, as I show in the proof of the following Proposition. Regardless, however, randomization by the low ability proposer is *still* necessitated.

the probability that it succeeds conditional on being implemented, is weakly greater than the corresponding quantity for y. Suppose that, as in the previous analysis, the proposer is always replaced after a veto. Then, a weak preference on the part of the low ability proposer for submitting policy x is equivalent to the requirement $\tau(s_L, q, x) \geq \tau(s_L, q, y)$. But the probability with which the low ability veto player passes either policy is strictly decreasing in the probability with which it is submitted by the low ability proposer. In particular, the supposition $\sigma(p_L, w) = 1$ implies $\tau(s_L, q, x) < \tau(s_L, q, y)$, thus such an equilibrium cannot be sustained.

Why is not possible to support an equilibrium under separate which, in the limit case of $\gamma = 1$, yields the same absence of pooling as in the case of shared origin? The reason is that there are two distinct forms of pooling behavior by the proposer: one which is directly intended to generate a favorable inference on the part of the voter, and another which is designed to circumvent the veto player. When the low ability veto player obstructs the policy submissions of the proposer, as is the case under separate origin, the low ability proposer cares both about the probability of success conditional on implementation, but also the probability with which the policy is actually given a chance to succeed. Since this latter quantity is affected by the low ability veto player's belief that it will succeed, the low ability proposer must randomize in order to equalize the probability of a veto across the two policies. A more general form of this logic ensures in any continuous equilibrium, the low ability proposer randomizes with a choice of $\sigma(p_L, w) \in (0, 1)$. In fact, when $\beta \geq \frac{1}{2}$, the only strategy of the low type that can be supported in an equilibrium is uniform randomization over policies.

Proposition 9. Under separate origin, there exists no continuous equilibrium in which the low ability proposer plays a pure strategy. Moreover, if $\beta \geq \bar{\beta}(\alpha)$, where $\bar{\beta}(\alpha) \leq \frac{1}{2}$, there exists a unique continuous equilibrium in which the low ability proposer randomizes uniformly over policies, i.e. $\sigma(p_L, w) = \frac{1}{2}$.

Thus, distortions in the strategy of the low ability veto player may also foment distortions in the strategy of the low ability proposer.

8. Empirical Implications

The primary purpose of this paper is to contribute a positive and normative theory of delegation and political agency under separate and shared origin. Nonetheless, the model also produces empirical implications which can be tested, and a subset of these implications are unique to the present model. Here, I focus on two.

First, the model predicts that under separate origin, proposers should be subject to a greater degree of opposition from the veto player than their counterparts under shared origin. In the parliamentary versus presidential setting, scholars have constructed measures of "executive legislative success", typically taken to be the proportion of executive sponsored or supported policy initiatives that were subsequently enacted by the lower chamber of the legislature (see, for example, Saiegh (2011)). And it is a robust finding that presidents enjoy significantly lower levels of legislative success than do prime ministers. This phenomenon is reported, for example, in Diermeier and Vlaicu (2011), Shugart and Carey (1992), Mainwaring and Shugart (1997), and Cheibub et al. (2004)) In spite of consensus on this stylized fact, there is disagreement as to its cause. Some scholars emphasize variation in party control over the legislature in presidential systems as a crucial determinant (for example, see Aleman and Calvo (2009) regarding Chile and Schwindt-Bayer (2010) regarding Costa Rica) where others have found this not to be significant (for example, Calvo (2011) in the case of Argentina). A prominent explanation also lies in the different agenda-setting powers enjoyed by presidents and prime ministers (Shugart and Carey (1992), Mainwaring and Shugart (1997), Huber (1996)), though contrary evidence is offered by Figueiredo et al.

(2009) and Diermeier and Vlaicu (2011). Moreover, in a comprehensive study of almost every democracy that existed between 1946 and 1999, Cheibub et al. (2004) find that the marked disparity in executive-legislative success enjoyed by presidents and prime ministers survives even after one controls for whether the government is formed by a single party with a legislative majority, a legislative minority, or even a coalition government with either a majority or minority of seats in the legislature. These facts suggest that there exists room for an alternative approach which does not rely on partisan composition or other more subtle forms of institutional variation across these regimes.

Of course, there are many theories that would predict such an empirical pattern. But one unique prediction of my model concerns the way in which voters' beliefs about politicians respond to observed policy conflicts between the executive and proposer. Recall that after a veto under shared origin, the voter's belief that the proposer is high ability is 0 when $\alpha \geq \bar{\alpha}(\beta)$, and strictly below α otherwise (recall Figure 2), and her belief that the veto player is high ability is one in the first case and zero in the second. Under a veto under separate origin, by contrast, the voter's belief that the proposer is high ability is $\alpha(1-\beta)$, and her belief about the veto is equal to the prior. Thus, the voter's beliefs about the players are much more sensitive under shared, than separate origin. This is very difficult to cleanly examine with observational data, however the game form is sufficiently simple that, in principle, it would be amenable to experimental assessment.

9. Conclusion

This paper analyzes alternative patterns of delegation from voter to policy-making agents, conceived as a proposer and a veto player. It focuses on differences in the incentives given to the veto player - cast here as an *information intermediary* - to fulfill its constitutional responsibility of scrutinizing proposals, passing those which it believes to be merited and otherwise rejecting them. The formal argument explains why the voter should wish to commit herself to the relatively coarse electoral instrument reified in a system of shared origin by considering the information externalities that arise between the executive and legislative agent when players' competences are privately known. It shows that the voter's gain in ex-post control under separate origin may be outweighed by costs in the incentives this gives the veto player to intervene excessively in the proposer's policymaking. Such costs arise both in terms of the opportunity cost of good policies being vetoed, but also through the indirect cost of providing the voter with worse information about the proposer's type and distorting the latter's policy submission.

Whilst I have attempted to render the analysis as transparent as possible by focusing on one crucial source of variation between these arrangements, in practice, policy-making institutions vary with respect to other important details, from which the model necessarily abstracts. Incorporating these subtleties into the analysis is an important challenge for future theoretical and empirical work.

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10. Appendix: Additional Definition and Proofs of Propositions

Definition of Equilibrium Refinement

The action set of the veto player is denoted A, with a generic action denoted $a \in A$. Fix a sequential equilibrium, and let $T(a, z)$ denote the set of types $t \in T = P \times S \times Q$ such that when the voter observes $(a, z) \in A \times Z$ in that sequential equilibrium, she does not place probability 0 on type t. Let $\Psi(T(a, z))$ denote the set of all mixed strategies for the voter such that for each $(a, z) \in A \times Z$, $\psi \in \Psi(T(a, z))$ is weakly optimal for the voter for some belief with support in $T(a, z)$. Let Ψ^* denote the set of mixed strategies of the voter such that for each $(a, z) \in A \times Z$, $\psi \in \Psi(T(a, z))$.

Fix a sequential equilibrium in which an action a occurs with probability 0 by any veto player type. Let $u^*(s, q)$ denote the expected equilibrium payoff to the veto player type (s, q), in this equilibrium. Let $\mathbb{E}_z u(s, q, a, z, \psi)$ denote the expected equilibrium payoff to the veto player type (s, q) when she takes the action a inducing a probability distribution over outcomes $z \in Z$, and where the voter responds with mixture $\psi \in \Psi(T(a, z))$. Define:

$$D(s, q, a) = \{\psi \in \Psi^* : u^*(s, q) < \mathbb{E}_z(s, q, a, z, \psi)\} \tag{7}$$

and

$$D^0(s, q, a) = \{\psi \in \Psi^* : u^*(s, q) = \mathbb{E}_z(s, q, a, z, \psi)\} \tag{8}$$

A type is deleted for (a, z) under criterion D2 if

$$\{D^0(s, q, a) \cup D(s, q, a)\} \subset \bigcup_{(s', q') \neq (s, q)} D(s', q', a) \tag{9}$$

An equilibrium satisfies D2 only if for every pair (a, z) which occurs with probability 0, $\pi(t|a, z) > 0$ if and only if type t is not deleted under criterion D2.

Proof of Proposition 1

This follows directly from the argument in the main text.

Proof of Proposition 2

I claim that there exists a unique equilibrium under shared origin, for $\alpha \geq \bar{\alpha}(\beta)$:

(i) $\tau(s, q) = 1$ if $(s, q) \neq (s_H, q_B)$, and $\tau(s_H, q_B) = 0$.

(ii) $\eta(1_p, 1_s|k) = 0$ if $k \in \{z_R, z_B\}$ and $\eta(1_p, 1_s|z_G) = 1$.

and where all beliefs are formed by Bayes' Rule. The proof of existence is straightforward, so I focus on uniqueness. To do so, I make a sequence of claims, some of which are used in the proof of later results.

Claim 1. A sequential equilibrium under shared origin in which $\tau(s, y) = 1$ for all $(s, y) \in S \times Y$ is consistent with D2 if and only if $\pi(p_L, s_H|z_R) = 1$ when $\alpha \geq \bar{\alpha}(\beta)$, and

$$\sum_{s \in \{p_L, p_H\}} \pi(p, s_H|z_R) = 1 \tag{10}$$

if $\alpha < \bar{\alpha}(\beta)$.

Proof. Fix a strategy profile in which $\tau(s, q) = 1$ for $(s, q) \in S \times Q$. For any $\eta(1_p, 1_s|z_R) \in [0, 1]$, the value to the type (s_H, q_G) from rejecting a policy is greater than passing it if:

$$\eta(1_p, 1_s|z_R)\left(1 + \epsilon\left(\frac{2\alpha}{1+\alpha} + \frac{1-\alpha}{2(1+\alpha)}\right)\right) \geq \epsilon + \eta(1_p, 1_s|z_G)\left(1 + \epsilon\left(\frac{2\alpha}{1+\alpha} + \frac{1-\alpha}{2(1+\alpha)}\right)\right) \tag{11}$$

Call:

$$\varphi(s_H, q_G) \equiv \frac{2\alpha}{1+\alpha} + \frac{1-\alpha}{2(1+\alpha)} \tag{12}$$

For a type (s_H, q_B), rejecting a policy yields an expected payoff that is weakly higher than passing it if:

$$\eta(1_p, 1_s|z_R)\left(1 + \frac{\epsilon}{2}\right) \geq -\epsilon + \eta(1_p, 1_s|z_B)\left(1 + \frac{\epsilon}{2}\right) \tag{13}$$

and for the type (s_L, q), the corresponding inequality is:

$$\eta(1_p, 1_s|z_R)(1 + \epsilon\alpha) \geq \alpha(\epsilon + \eta(1_p, 1_s|z_G)(1 + \epsilon)) + (1-\alpha)\frac{1}{2}\sum_{z \in \{z_G, z_B\}} \eta(1_p, 1_s|z) \tag{14}$$

I now want to show that for any equilibrium mixtures $\eta(1_p, 1_s|z_G)$ and $\eta(1_p, 1_s|z_B)$: first, any choice $\eta(1_p, 1_s|z_R)$ which makes type (s_L, q) or (s_H, q_B) weakly better off by rejecting the bill makes (s_H, q_G) strictly better off when $\alpha \geq \bar{\alpha}(\beta)$; second, any choice $\eta(1_p, 1_s|z_R)$ which makes type (s_L, q) weakly better off by rejecting the bill makes at least one of (s_H, q_G) or (s_H, q_B) strictly better off when $\alpha < \bar{\alpha}(\beta)$.

From the previous expressions, whenever (s_L, q) weakly prefers to veto the bill, (s_H, q_B) strictly prefers to do so if:

$$\begin{aligned}&\eta(1_p, 1_s|z_R)\epsilon\left(\alpha - \frac{1}{2}\right) - \epsilon(1+\alpha) - (\eta(1_p, 1_s|z_G) - \eta(1_p, 1_s|z_B))\left(\frac{1+\alpha}{2}\right)\\ &-\epsilon\left(\eta(1_p, 1_s|z_G)\alpha - \eta(1_p, 1_s|z_B)\frac{1}{2}\right) < 0\end{aligned} \tag{15}$$

Moreover, if (s_H, q_G) weakly prefers to veto the bill, (s_H, q_B) strictly prefers to do so if:

$$\begin{aligned}&\epsilon\eta(1_p, 1_s|z_R)\left(\varphi - \frac{1}{2}\right) - 2\epsilon - (\eta_G - \eta_B)\\ &+\epsilon\left(\eta(1_p, 1_s|z_B)\frac{1}{2} - \eta(1_p, 1_s|z_G)\varphi(s_H, q_G)\right) < 0\end{aligned} \tag{16}$$

Finally, if (s_L, q) weakly prefers to veto the bill, (s_H, q_G) strictly prefers to do so if:

$$\begin{aligned}&\eta(1_p, 1_s|z_R)\epsilon(\alpha - \varphi(s_H, q_G)) + \epsilon(1-\alpha)\\ &+(\eta(1_p, 1_s|z_G) - \eta(1_p, 1_s|z_B))\frac{1-\alpha}{2} + \eta(1_p, 1_s|z_G)\epsilon(\varphi - \alpha) < 0\end{aligned} \tag{17}$$

Suppose $\eta(1_p, 1_s|z_G) \geq \eta(1_p, 1_s|z_B)$. Then, (15) and (16) are satisfied, implying that the only belief that is consistent with D2 is $\pi(s_H, q_B|z_R) = 1$. Note that in any sequential equilibrium, the voter assigns probability 0 to the proposer being high ability after the outcome z_B. When $\alpha \geq \bar{\alpha}(\beta)$, this implies $\eta(1_p, 1_s|z_B) = 0$, since she strictly prefers to remove both politicians when she assigns probability 1 to the proposer being a low ability type, for any belief she may hold about the veto player. This implies $\eta(1_p, 1_s|z_B) = 0$ in a sequential equilibrium, for $\alpha \geq \bar{\alpha}(\beta)$, so I have shown that when $\alpha \geq \bar{\alpha}(\beta)$, the only belief consistent with D2 after a bill is vetoed places probability 1 on the veto player type (s_H, q_B), as was to be shown.

Suppose, instead, $\alpha < \bar{\alpha}(\beta)$, so that we cannot rule out that in a sequential equilibrium, the voter's strategy satisfies $\eta(1_p, 1_s|z_G) < \eta(1_p, 1_s|z_B)$. Suppose that the voter uses a mixture satisfying this property. The inequality (15) continues to be satisfied so long as:

$$\eta(1_p, 1_s|z_B) < \frac{2}{1+\alpha+\epsilon}\left(\epsilon\eta(1_p, 1_s|z_R)\left(\frac{1}{2}-\alpha\right)+\epsilon(1+\alpha)+\eta(1_p, 1_s|z_G)\frac{1+\alpha}{2}+\epsilon\eta(1_p, 1_s|z_G)\alpha\right)$$
$$= \hat{\eta}(1_p, 1_s|z_B) \tag{18}$$

Suppose, instead, (18) is violated. The LHS of (17) is strictly decreasing in $\eta(1_p, 1_s|z_B)$. Thus, it is sufficient to show that the inequality is satisfied so long as it holds for any $\eta(1_p, 1_s|z_B) \geq \hat{\eta}(1_p, 1_s|z_B)$. Substituting in $\hat{\eta}(1_p, 1_s|z_B)$, (17) becomes:

$$\eta(1_p, 1_s|z_R)\epsilon\left(\alpha-\varphi(s_H, q_G)-\frac{1-\alpha}{1+\alpha+\epsilon}\left(\frac{1}{2}-\alpha\right)\right)+\epsilon(1-\alpha)\frac{\epsilon}{1+\alpha+\epsilon}$$
$$+\eta(1_p, 1_s|z_G)\frac{1-\alpha}{2}\frac{\epsilon}{1+\alpha+\epsilon}+\epsilon\eta(1_p, 1_s|z_G)\left(\varphi(s_H, q_G)-\alpha-\frac{\alpha(1-\alpha)}{1+\alpha+\epsilon}\right) \tag{19}$$

Divide by ϵ, then take $\epsilon = 0$. The resulting expression is:

$$\frac{1}{1+\alpha}\left(\eta(1_p, 1_s|z_G)-\eta(1_p, 1_s|z_R)\right) \tag{20}$$

Then, we need only establish $\eta(1_p, 1_s|z_G) < \eta(1_p, 1_s|z_R)$. Suppose not. Recall that we are supposing that (s_L, q) weakly prefers to veto the bill, or:

$$\eta(1_p, 1_s|z_R)\left(1+\epsilon\alpha\right) \geq \alpha\left(\epsilon+\eta(1_p, 1_s|z_G)(1+\epsilon)\right)+(1-\alpha)\frac{1}{2}\sum_{z\in\{z_B, z_B\}}\eta(1_p, 1_s|z) \tag{21}$$

Recall further that we are considering a mixture by the voter satisfying $\eta(1_p, 1_s|z_B) > \eta(1_p, 1_s|z_G)$. But $\eta(1_p, 1_s|z_B) > \eta(1_p, 1_s|z_G) \geq \eta(1_p, 1_s|z_R)$ implies that type (s_L, q) strictly prefers to implement the policy, contradicting our supposition that she weakly prefers to reject it. □

Claim 2. Under shared origin, for any $\alpha \in [0, 1]$, there exists no equilibrium in which $\tau(s, q) = 0$ for all pairs $(s, q) \in S \times Q$.

Proof. A similar argument to the proof of Claim 1 establishes that under such a strategy, the voter's belief after observing outcome z_G must place probability 1 on the type (s_H, q_G).

Moreover, the voter's belief about the proposer's type after observing the event z_G is $\frac{2\alpha}{1+\alpha} > \alpha$, which implies that she strictly prefers the action $(1_p, 1_s)$ after this event. Then, the type (s_H, q_G) strictly prefers this deviation, which is inconsistent with the strategy profile. $\square$

Claim 3. In an equilibrium under shared origin, for $\alpha \geq \bar{\alpha}(\beta)$, $\eta(0_p, 0_s | z_B) = 1$.

Proof. In a sequential equilibrium,:

$$\sum_{s \in \{s_L, s_H\}} \pi(p_H, s | z_B) = 0 \tag{22}$$

so that $\alpha \geq \bar{\alpha}(\beta)$ implies that the voter strictly prefers the action $(0_p, 0_s)$ after outcome z_B. $\square$

Claim 4. In an equilibrium under shared origin, for $\alpha \geq \bar{\alpha}(\beta)$, $\tau(s_H, q_B) = 0$.

Proof. Since $\eta(1_p, 1_s | z_B) = 0$, the claim follows if $-\epsilon < \eta(1_p, 1_s | z_R) \left(1 + \frac{\epsilon}{2}\right)$ which is true. $\square$

Claim 5. In an equilibrium under shared origin, for $\alpha \geq \bar{\alpha}(\beta)$, $\eta(1_p, 1_s | z_R) = 0$.

Proof. Recall $\tau(s_H, q_B) = 0$ and $\eta(1_p, 1_s | z_B) = 0$. Suppose, first of all, $\tau(s_L, q) > 0$. This implies

$$\epsilon\alpha + \alpha\eta(1_p, 1_s | z_G)(1 + \epsilon) + \frac{1 - \alpha}{2}\eta(1_p, 1_s | z_G) \geq \eta(1_p, 1_s | z_R)(1 + \epsilon\alpha) \tag{23}$$

Moreover, $\tau(s_H, q_G) = 1$ is true if

$$\epsilon + \eta(1_p, 1_s | z_G)(1 + \epsilon\varphi(s_H, q_G)) > \eta(1_p, 1_s | z_R)(1 + \epsilon\varphi(s_H, q_G)) \tag{24}$$

The first inequality implies the second so long as

$$\epsilon(1 - \alpha) + \eta(1_p, 1_s | z_G)\frac{1 - \alpha}{2} + \epsilon\eta(1_p, 1_s | z_G)(\varphi(s_H, q_G) - \alpha) - \epsilon\eta(1_p, 1_s | z_R)(\varphi(s_H, q) - \alpha) > 0 \tag{25}$$

which is always satisfied for any $\eta(1_p, 1_s|z_G)$ and $\eta(1_p, 1_s|z_R)$. Thus, $\eta(1_p, 1_s|z_G) = 1$, and $\tau(s_H, q_G) = 1$. So:

$$\sum_{s \in \{s_L, s_H\}} \pi(p_H, s|z_R) = \frac{\alpha(1-\beta)(1-\tau(s_L, q))}{(1-\alpha)\beta\frac{1}{2} + (1-\beta)(1-\tau(s_L, q))}$$
$$= \pi(p_H, s_L|z_R) \tag{26}$$

and the voter's payoff from joint retention after a veto is therefore:

$$\pi(p_H, s_L|z_R) + \frac{1}{2}\pi(p_L, s_H|z_R) \tag{27}$$

which is monotonic in $\tau(s_L, q)$, and strictly lower than the value of joint replacement for all $\tau(s_L, q) \in (0, 1]$ for $\alpha > \bar{\alpha}(\beta)$. Suppose, instead, $\tau(s_L, q) = 0$. We have also shown $\tau(s_H, q_B) = 0$. If the voter observes the outcome z_G, her belief about the proposer is $\sum_{s \in \{p_L, p_H\}} = \frac{2\alpha}{1+\alpha}$. Moreover, the veto player type (s_H, q_G) is the only type that is not deleted by D2 if

$$\epsilon(1-\alpha) - \epsilon\eta(1_p, 1_s|z_R)(\varphi - \alpha) + \eta(1_p, 1_s|z_G)\frac{\alpha(1-\alpha)}{2(1+\alpha)} > 0 \tag{28}$$

which is always true. This implies that we must have $\tau(s_H, q_G) = 1$. But this implies that the voter strictly prefers the action $(0_p, 0_s)$ after z_R, since under this strategy profile

$$\sum_{s \in \{s_L, s_H\}} \pi(p_H, s|z_R) = \frac{\alpha(1-\beta)}{1-\beta+\beta(1-\alpha)\frac{1}{2}}$$
$$< \alpha \tag{29}$$

and

$$\pi(p_L, s_H|z_R) = \frac{\beta(1-\alpha)\frac{1}{2}}{1-\beta+\beta(1-\alpha)\frac{1}{2}}$$
$$< \beta \tag{30}$$

and therefore

$$\sum_{s\in\{s_L,s_H\}} \pi(p_H,s|z_R)\pi(p_H,s_L|z_R)+\frac{1}{2}\pi(p_L,s_H|z_R)<\alpha+\frac{1}{2}(1-\alpha)\beta \tag{31}$$

□

Claim 6. In an equilibrium under shared origin for $\alpha \geq \bar{\alpha}(\beta)$, $\tau(s_L,q)=1$ and $\eta(1_p,1_s|z_G)=1$.

Proof. Since the value to each politician of a veto is 0, the value to the veto player types (s_G,q_G) and (s_L,q) from passing a policy is strictly positive for any $\eta(1_s,1_p|z_G)\in[0,1]$ and $\epsilon>0$, so we have $\tau(s_H,q_G)=1$ and $\tau(s_L,q)=1$; since $\sum_{s\in\{s_L,s_H\}}\pi(p_H,s|z_G)>\alpha$ and for $\tau(s_L,q)=1$:

$$\sum_{p\in\{p_L,p_H\}} \pi(p,s_H|z_G)=\beta \tag{32}$$

the voter strictly prefers to retain, rather than replace both politicians. This implies $\eta(1_p,1_s|z_G)=1$. □

This establishes that in an equilibrium, we must have $\tau(s_L,q)=1$, $\tau(s_H,q_H)=1$, $\tau(s_H,q_B)=0$, $\eta(1_p,1_s|z_G)=1$, $\eta(1_p,1_s|z_B)=0$. The only beliefs that are not pinned down in a sequential equilibrium are those which are formed after event z_R, and I have established the unique set of beliefs for $\alpha\geq\bar{\alpha}(\beta)$ which are consistent with D2. This establishes uniqueness of the equilibrium on the interval $[\bar{\alpha}(\beta),1]$.

Proof of Proposition 3

I claim existence of an equilibrium in which:

(i) $\tau(s_H,q_G)=1$, $\tau(s_H,q_B)=0$, $\tau(s_L,q)=\hat{\tau}$, where $\hat{\tau}$ is defined in the text;

(ii) $\eta(1_p,1_s|z_G)=1$, $\eta(1_p,1_s|z_B)=0$, $\eta(1_p,1_s|z_R)=\hat{\eta}(\epsilon)$ solving:

$$\alpha\,(1+2\epsilon)+\frac{1}{2}(1-\alpha)=\hat{\eta}(\epsilon)\,(1+\epsilon\alpha) \tag{33}$$

Existence is immediate from the text, so I prove that there are at most two equilibria, on this region: the one stated in the proposition, and an equilibrium in which the strategies of the types (s_H, q_G) and (s_H, q_B) are reversed. Claim 2 of the proof of Proposition 2 implies that $\tau(s, y) > 0$ for at least one $(s, y) \in S \times Y$.

Claim 7. For $\alpha < \bar{\alpha}(\beta)$, there exists no equilibrium in which $\tau(s, y) = 1$ for all $(s, y) \in S \times Y$, under shared origin.

Proof. In the proof of Proposition 2, I showed that under this strategy profile, for $\alpha < \bar{\alpha}(\beta)$, the voter's belief after a veto must place probability 1 over the union of types (s_H, q_G) and (s_H, q_B); since $\alpha < \bar{\alpha}(\beta)$, her payoff from joint retention is weakly greater than $\frac{1}{2}$, which strictly exceeds the expected benefit of joint removal. Thus, the veto player type (s_H, y_B) strictly prefers to veto the bill, which is inconsistent with a strategy profile in which $\tau(s, q) = 1$ for all $(s, y) \in S \times Q$. $\square$

Claim 8. In an equilibrium under shared origin for $\alpha < \bar{\alpha}(\beta)$, $\tau(s_L, q) < 1$.

Proof. Suppose not. If $\tau(s_H, q_G) = 1$, the previous claim implies $\tau(s_H, q_B) < 1$ and $\eta(1_p, 1_s|z_R) = 1$. But this implies that type (s_L, q) strictly prefers a veto for ϵ sufficiently small. If $\tau(s_H, q_B) = 1$, the previous claim implies $\tau(s_H, q_G) < 1$, and thus $\eta(1_p, 1_s|z_R) = 1$, so for $\epsilon > 0$ sufficiently small, the type (s_L, q) strictly prefers to veto the policy. $\square$

Claim 9. In an equilibrium under shared origin, $\tau(s_L, q) < 1$ implies either $\tau(s_H, q_G) = 0$ or $\tau(s_H, q_B) = 0$.

Proof. Follows from the proof of Claim 1, which shows that whenever a type (s_L, q) weakly prefers to veto a bill, at least one type (s_H, q_G) or (s_H, q_B) strictly prefers to do so, for any strategy of the voter. $\square$

Claim 10. In an equilibrium under shared origin, for $\alpha < \bar{\alpha}(\beta)$, $\tau(s_L, q) > 0$.

Proof. Suppose $\tau(s_L, q) = 0$. Then, Claim 2 implies $\max\{\tau(s_H, q_G), \tau(s_H, q_B)\} > 0$. This implies on the equilibrium path that the voter's expected payoff from joint retention after either z_G or z_B is weakly higher than $\frac{1}{2}$, which for $\alpha < \bar{\alpha}(\beta)$ yields a strict preference for joint retention. Then, veto player type (s_L, q) prefers to implement the bill, strictly, since $\alpha\epsilon > 0$. □

We have therefore established $\tau(s_L, q) \in (0, 1)$ in an equilibrium on the interval $[0, \bar{\alpha}(\beta)]$.

Claim 11. In an equilibrium under shared origin, for $\alpha < \bar{\alpha}(\beta)$, $\tau(s_L, q) > 0$ implies either $\tau(s_H, q_G) = 1$ or $\tau(s_H, q_B) = 1$.

Proof. The argument is a straightforward extension of the proof of Claim 1. □

These results imply that under shared origin, for $\alpha < \bar{\alpha}(\beta)$, there are at most two strategy profiles for the veto player types (s_H, q_G) and (s_H, q_B) which are consistent with equilibrium. First: $\tau(s_H, q_G) = 1$, $\tau(s_H, q_B) = 0$ and second: $\tau(s_H, q_G) = 0$, $\tau(s_H, q_B) = 1$. If the first applies, we have $\eta(1_p, 1_s|z_G) = 1$ and $\eta(1_p, 1_s|z_B) = 0$. Moreover, we have already established that the unique $\tau(s_L, q) \in [0, 1]$ which is consistent with the remaining equilibrium strategies is $\tau(s_L, q) = \hat{\tau}$. Suppose, instead, we have an equilibrium with $\tau(s_H, q_B) = 1$ and $\tau(s_H, q_G) = 0$. The value to the voter of joint retention after outcome z_B is weakly positive if and only if:

$$\frac{1}{2}\frac{\beta}{\beta + (1-\beta)\tau(s_L, q)} \geq \alpha + \frac{1}{2}(1-\alpha)\beta \tag{34}$$

or

$$\tau(s_L, q) \leq \frac{(1 + \alpha(\beta - 2) - \beta)\beta}{\alpha(\beta - 2) - \beta)(\beta - 1)} \tag{35}$$

and the benefit of joint retention after a veto is weakly positive if

$$\tau(s_L, q) \geq \frac{(1-\alpha)(2-\beta)}{2(1-\beta)} \tag{36}$$

which is strictly greater than unity so long as

$$\beta \geq \frac{2\alpha}{1+\alpha} \tag{37}$$

Since we are considering $\alpha \leq \bar{\alpha}(\beta) = \frac{1-\beta}{2-\beta}$, a sufficient condition for this equilibrium not to exist is $\beta \geq \frac{1}{2}$.

Proof of Proposition 4

I claim existence of an equilibrium in which:

(i) $\tau(s_H, q_G) = 1$, $\tau(s_H, q_B) = 0$, $\tau(s_L, q) = \bar{\tau}(\alpha)$;

(ii) $\eta(1_p, 1_s|z_G) = 1$, $\eta(0_p, 0_s|z_B) = 1$, $\eta(0_p, 1_s|z_R) = \hat{\eta}(\epsilon)$ solving:

$$\alpha\,(1+2\epsilon) + \frac{1}{2}(1-\alpha) = \hat{\eta}(\epsilon)\,(1+\epsilon\alpha) \tag{38}$$

and $\eta(0_p, 0_s|z_R) = 1 - \hat{\eta}(\epsilon)$. Existence is immediate, so I now examine other possible equilibria, showing that there is at most one, in which $\tau(s_H, q_G) = 0$ and $\tau(s_H, q_B) = 1$.

Claim 12. In an equilibrium under separate origin, $\tau(s, q) > 0$ for at least one pair $(s, q) \in S \times Q$, and $\tau(s, q) < 1$ for at least one pair $(s, q) \in S \times Q$. In an equilibrium, $\tau(s_L, q) < 1$ implies $\tau(s_H, q_G) = 0$ or $\tau(s_H, q_B) = 0$. Similarly, $\tau(s_L, q) > 0$ implies $\tau(s_H, q_G) = 1$ or $\tau(s_H, q_B) = 1$.

Proof. These are direct extensions of the proof of Claim 1. □

Claim 13. In an equilibrium under separate origin, $\tau(s_L, q) < 1$.

Proof. If $\tau(s_L, q) = 1$, $\min\{\tau(s_H, q_G), \tau(s_H, q_B)\} = 0$, which implies that the voter assigns probability 1 to the union of (s_H, q_G) and (s_H, q_B) after a veto, on the equilibrium path. This implies that she strictly prefers to retain the veto player after a bill is vetoed. This implies $\tau(s_H, q_B) = 0$, and thus $\pi(p_L, s_L|z_B) = 1$ and $\eta(1_p, 1_s|z_B) + \eta(0_p, 1_s|z_B) = 0$. Thus, the type (s_L, q) may profitable deviate by vetoing the bill if

$$\alpha\left(\eta(1_p, 1_s|z_G)(1+2\epsilon) + \eta(0_p, 1_s|z_G)(1+\alpha\epsilon)\right) + \frac{1}{2}(1-\alpha)\left(\eta(1_p, 1_s|z_G) + \eta(0_p, 1_s|z_G)(1+\alpha\epsilon)\right)$$
$$<1+\epsilon\alpha \tag{39}$$

When $\epsilon = 0$, the LHS is weakly smaller than $\frac{1+\alpha}{2}$, which is strictly smaller than the RHS. So, for $\epsilon > 0$ sufficiently small, the claim is true. □

Claim 14. In an equilibrium under separate origin, in which $\tau(s_H, q_G) > 0$:

$$\sum_{p \in \{p_L, p_H\}} \pi(p, s_H|z_R) \leq \beta \tag{40}$$

Proof. Suppose, to the contrary, $\sum_{p \in \{p_L, p_H\}} \pi(p, s_H|z_R) > \beta$. From the previous Claims, $\tau(s_L, q) < 1$ and $\min\{\tau(s_H, q_G), \tau(s_H, q_B)\} = 0$, so $\tau(s_H, q_G) > 0$ implies $\tau(s_H, q_B) = 0$. Since $\sum_{p \in \{p_L, p_H\}} \pi(p, s_H|z_G) = 1$ under this strategy, the voter strictly prefers an action in which the veto player is retained to every one in which she is removed, after the outcome z_G, so $\eta(1_p, 1_s|z_G) + \eta(0_p, 1_s|z_G) = 1$, and thus $\tau(s_H, q_G) = 1$.

The voter then strictly prefers an action in which the veto player is replaced to one in which she is retained if

$$\max\left\{\underbrace{\sum_{s\in\{s_L,s_H\}}\pi(p_H,s|z_R)+\frac{1}{2}\pi(p_L,s_H|z_R)}_{\text{retain proposer, retain veto player}}\right. \tag{41}$$

$$\left.\underbrace{\alpha+(1-\alpha)\frac{1}{2}\sum_{p\in\{p_L,p_H\}}\pi(p,s_H|z_R)}_{\text{remove proposer, retain veto player}}\right\} \tag{42}$$

$$\geq\max\left\{\underbrace{\sum_{s\in\{s_L,s_H\}}\pi(p_H,s|z_R)+\frac{1}{2}\sum_{s\in\{s_L,s_H\}}\pi(p_L,s|z_R)\beta}_{\text{retain proposer, remove veto player}}\right. \tag{43}$$

$$\left.\underbrace{\alpha+\frac{1}{2}(1-\alpha)\beta}_{\text{remove proposer, remove veto player}}\right\} \tag{44}$$

If $\sum_{p\in\{p_L,p_H\}}\pi(p,s_H|z_R)>\beta$, (42) strictly exceeds (44). Note, under the strategy profile, $\pi(p_H,s_H|z_R)=0$. I show that (41) strictly exceeds (43) so long as $\sum_{p\in\{p_L,p_H\}}\pi(p,s_H|z_R)>\beta$. Indeed, (41) exceeds (43) so long as

$$\tau(s_L,q)>\frac{1}{2} \tag{45}$$

To check that this indeed the case, note that under the strategy profile:

$$\sum_{p\in\{p_L,p_H\}}\pi(p,s_H|z_R)=\frac{\beta(1-\alpha)\frac{1}{2}}{\beta(1-\alpha)\frac{1}{2}+(1-\beta)(1-\tau(s_L,q))} \tag{46}$$

which strictly exceeds β only if $\tau(s_L,q)>\frac{1+\alpha}{2}$. Since $\pi(p_L,s_L|z_B)=1$, the voter strictly prefers joint removal to any action in which the veto player is retained, after the outcome z_B. So, when the type (s_L,q) implements a policy, the inequality (39) is satisfied for $\epsilon>0$ sufficiently small, and we cannot have an equilibrium. $\square$

Claim 15. In every equilibrium under separate origin $\sum_{p\in\{p_L,p_H\}}\pi(p,s_H|z_R)\geq\beta$.

Proof. Suppose, to the contrary, we have an equilibrium in which $\sum_{p\in\{p_L,p_H\}}\pi(p,s_H|z_R)<\beta$. Then, (42) is strictly less than (44). $\sum_{p\in\{p_L,p_H\}}\pi(p,s_H|z_R)<\beta$ implies $\max\{\tau(s_H,q_G),\tau(s_H,q_B)\}>0$, and $\tau(s_L,q)<1$ implies $\min\{\tau(s_H,q_G),\tau(s_H,q_B)\}=0$. Suppose, first, $\tau(s_H,q_B)=0$. If $\tau(s_L,q)=0$, then $\tau(s_H,q_G)>0$, by Claim 12, and since $\sum_{p\in\{p_L,p_H\}}\pi(p,s_H|z_G)=1$, $\eta(1_p,1_s|z_G)+\eta(0_p,1_s|z_G)=1$, so $\tau(s_H,q_G)=1$. Alternatively, $\tau(s_L,q)>0$ and $\tau(s_H,q_B)=0$ implies $\tau(s_H,q_G)=1$ by Claim 12. So, $\tau(s_H,q_B)=0$, $\tau(s_L,q)\in[0,1]$ and $\tau(s_H,q_G)=1$. Then, (41) is strictly less than (42) if

$$\pi(p_H,s_L|z_R)+\frac{1}{2}\pi(p_L,s_H|z_R)<\alpha+\frac{1}{2}(1-\alpha)\pi(p_L,s_H|z_R) \tag{47}$$

which can be written:

$$\alpha\frac{2(1-\beta)(1-\tau(s_L,q))}{2(1-\beta)(1-\tau(s_L,q))+(1-\alpha)\beta\frac{1}{2}}<\alpha \tag{48}$$

which is true. This implies that the veto player type (s_L,q) is retained with probability 0 after a veto and probability 1 after the outcome z_G, which implies that she strictly prefers to pass the bill, which is inconsistent with the strategy profile.

Suppose, instead, $\tau(s_H,q_B)>0$. Then, by Claims 12 and 13, $\tau(s_L,q)<1$ and $\tau(s_H,q_G)=0$. Since $\sum_{p\in\{p_L,p_H\}}\pi(p,s_H|z_R)=1$, $\eta(1_p,1_s|z_B)+\eta(0_p,1_s|z_B)=1$. $\sum_{p\in\{p_L,p_H\}}\pi(p,s_H|z_R)<\beta$ implies (42) is strictly less than (44). Moreover, (41) is strictly less than (43) so long as $\tau(s_L,q)<\frac{\tau(s_H,q_B)}{2}$. But for any $\tau(s_H,q_B)$, $\sum_{p\in\{p_L,p_H\}}\pi(p,s_H|z_R)<\beta$ implies $\tau(s_L,q)<\frac{1-\alpha}{2}\tau(s_H,q_B)$. Thus, after a veto, the veto player is removed with probability 1. But this implies that the type (s_H,q_G) strictly prefers to pass a bill for any $\epsilon>0$, which is inconsistent with the strategy profile. $\square$

Claim 16. In an equilibrium under separate origin in which $\tau(s_H,q_G)>0$, the following is true: $\tau(s_H,q_G)=1$, and $\tau(s_H,q_B)=0$ and $\tau(s_L,q)=\bar{\tau}(\alpha)$ and $\tau(s_L,q)=\frac{1}{2}$.

Proof. $\tau(s_H, q_G) > 0$ and $\tau(s_L, q) < 1$ implies $\tau(s_H, q_B) = 0$, and by the previous claims, $\sum_{p\in\{p_L,p_H\}} \pi(p, s_H|z_R) = \beta$, which implies $\tau(s_L, q) = \bar{\tau}(\alpha)$. □

Claim 17. In an equilibrium under separate origin in which $\tau(s_H, q_G) = 0$, $\tau(s_H, q_B) = 1$.

Proof. If $\tau(s_H, q_G) = 0$ and $\tau(s_L, q) = 0$, $\tau(s_H, q_B) > 0$, and $\sum_{p\in\{p_L,p_H\}} \pi(p, s_H|z_R)] \geq \beta$. This implies $\tau(s_L, q) > 0$, which from Claim 12 implies $\tau(s_H, q_B) = 1$. Then, the voter strictly prefers joint retention to any other action, after a veto, unless $\tau(s_L, q) \leq \frac{1}{2}$. If the inequality is strict, the low ability veto player strictly prefers to pass the bill, so we must have $\tau(s_L, q) = \frac{1}{2}$. □

Proof of Proposition 5

Under shared origin, proposer informativeness is

$$\frac{1-\alpha+2\alpha^2}{1+\alpha} \tag{49}$$

if $\alpha \geq \bar{\alpha}(\beta)$, otherwise it is

$$\frac{-1+3\alpha-\alpha^5(-2+\beta)^2-\alpha^2\left(3+\beta^2\right)+\alpha^4\left(8-6\beta+\beta^2\right)+\alpha^3\left(-1+2\beta+\beta^2\right)}{-1+\alpha+2\alpha^2} \tag{50}$$

Under separate origin, it is

$$-\frac{-1+\alpha+2\alpha^3(-1+\beta)+\alpha^4(-1+\beta)^2-\alpha^2\left(1+\beta^2\right)}{1+\alpha} \tag{51}$$

The difference of the first and the third expressions is strictly positive so long as

$$(1-\alpha)\alpha^2(1-\beta)(1-\alpha(1-\beta)+\beta) > 0 \tag{52}$$

which is true. The difference of the second and third expressions is positive so long as $\alpha < \frac{1}{2}$, which is true since $\alpha \leq \frac{1-\beta}{2-\beta}$.

Proof of Proposition 6

Under shared origin, for $\alpha < \bar{\alpha}(\beta)$, the probability of a high ability politician in the second period is:

$$\frac{1}{4}\left(-\alpha(-4+\beta) - 2\alpha^2(-1+\beta) + 2\beta + \alpha^3\beta\right) \tag{53}$$

For $\alpha \geq \bar{\alpha}(\beta)$, it is

$$\alpha(3-\alpha)\frac{1}{2} \tag{54}$$

Under separate origin, it is

$$\frac{1}{4}\left(1 + 4\alpha + \beta - \alpha^2(1+\beta)\right) \tag{55}$$

The difference of the third and the second is strictly positive so long as $\beta \geq \frac{\alpha-1}{1+\alpha}$, which is true. The difference of the third and the first is strictly positive so long as $\alpha \leq \frac{1}{\sqrt{3}}$, which follows from $\alpha < \frac{1}{2}$.

Proof of Proposition 7

Under shared origin, for $\alpha > \bar{\alpha}$, the voter's payoff is:

$$\frac{1}{4}\left(-5\alpha(-2+\beta) + \alpha^2(-2+\beta) + 4\beta\right) \tag{56}$$

Under shared origin, for $\alpha \leq \bar{\alpha}$, the voter's payoff is

$$-\frac{1}{2}\alpha(-3+\beta) - \frac{1}{2}\alpha^2(-2+\beta) + \beta \tag{57}$$

Under separate origin, it is:

$$\frac{1}{4}\left(\alpha^2(2-3\beta) - \alpha(-6+\beta) + 4\beta\right) \tag{58}$$

The difference of the first and the third has roots at $\alpha = 0$ and at $\alpha = 1$ and is strictly positive on the interior. The difference of the second and the third is positive if and only if $\alpha \leq \frac{\beta}{2+\beta}$.

Proof of Proposition 8

For γ close to 1, it is easy to verify that the following is an equilibrium for $\alpha \geq \frac{1-\alpha}{(1-\beta)(2\gamma-1)}$:

(i) $\tau(s, q, x) = 1$ for all $(s, q) \in S \times Q$;

(ii) $\tau(s, q, y) = 1$ if $(s, q) \neq (s_H, q_X)$, and $\tau(s_H, q_X, y) = 0$.

(iii) $\sigma(p_H, w_X) = 1$, $\sigma(p_H, w_Y) = 0$, $\sigma(p_L, w) = \sigma_1(\alpha, \beta, \gamma)$, characterized below.

(iv) $\eta(1_p, 1_s|k) = 1$ if $k \in \{x_G, y_G\}$, $\eta(1_p, 1_s|k) = 0$ if $k \in \{x_R, y_R, x_B, y_B\}$.

To obtain $\sigma_1(\alpha, \beta, \gamma)$, we solve:

$$\frac{1}{2} + \frac{\alpha(1-\gamma)}{\alpha(1-\gamma) + (1-\alpha)(1-\sigma(p_L, w)}\left(\gamma - \frac{1}{2}\right) = \alpha\beta\gamma + \alpha(1-\beta)(2\gamma-1) + \frac{1}{2}(1-\alpha)\beta \tag{59}$$

which can be re-written:

$$\sigma_1(\alpha, \beta, \gamma) = \frac{-1 + \beta + \alpha^2(-2+\beta)\gamma(-1+2\gamma) + \alpha\left(-1 + \beta + 2\gamma - 3\beta\gamma + 2\gamma^2\right)}{(-1+\alpha)(1-\beta+\alpha(-2+\beta)(-1+2\gamma))} \tag{60}$$

which is continuous in γ at $\gamma = 1$ and satisfies $\sigma_1(\alpha, \beta, 1) = 1$.

Proof of Proposition 9

In an equilibrium in which $\tau(s_H, q_X, x) = 1$ and $\tau(s_H, q_Y, y) = 1$, arguments that are similar to those used in the proof of Proposition 4 establish that we must have $\tau(s_H, q_Y, x) = 0$, $\tau(s_H, q_X, y) = 0$; the analogue of $\bar{\tau}(\alpha)$ is

$$\bar{\tau}(\alpha, \gamma, \sigma, x) = \frac{\alpha\gamma + \sigma(p_L, w)(1-\alpha)}{\alpha + 2\sigma(p_L, w)(1-\alpha)} \tag{61}$$

and

$$\bar{\tau}(\alpha, \gamma, \sigma, y) = \frac{\alpha\gamma + (1-\sigma(p_L, w))(1-\alpha)}{\alpha + 2(1-\sigma(p_L, w))(1-\alpha)} \tag{62}$$

and $\tau(s_L, q, x) = \bar{\tau}(\alpha, \gamma, \sigma, x)$ and $\tau(s_L, q, y) = \bar{\tau}(\alpha, \gamma, \sigma, y)$ in an equilibrium.

Claim 18. In an equilibrium, if the voter weakly prefers to retain the proposer after policy x, $\sigma(p_L, w) \leq \bar{\sigma}(\alpha, \beta, \gamma)$, having the property that $\bar{\sigma}(\alpha, \beta, \gamma) < 1$ for all $\gamma \leq 1$ and $\alpha \in (0, 1)$, $\beta \in (0, 1)$.

Proof. A necessary condition for the voter to weakly prefer the retention of the proposer after the policy x is rejected is:

$$\sum_{s \in \{s_L, s_H\}} \pi(p_H, s | x_R) \geq \alpha \tag{63}$$

This implies

$$\begin{aligned} \sigma(p_L, w) &\leq \frac{2(1-\alpha) - \alpha\beta - 2\beta\gamma + 2\alpha\beta\gamma + \sqrt{(-2 + 2\alpha + \alpha\beta + 2\beta\gamma - 2\alpha\beta\gamma)^2 - 4(2-2\alpha)(-\alpha\beta + \alpha\beta\gamma)}}{4(1-\alpha)} \\ &\equiv \bar{\sigma}(\alpha, \beta, \gamma) \end{aligned} \tag{64}$$

which is continuous and monotonically decreasing in γ and satisfies $\bar{\sigma}(\alpha, \beta, \frac{1}{2}) < 1$. □

Claim 19. In an equilibrium, if the voter weakly prefers to retain the proposer after policy y, $\sigma(p_L, w) \geq \underline{\sigma}(\alpha, \beta, \gamma)$, having the property that $\underline{\sigma}(\alpha, \beta, \gamma) < 1$ for all $\gamma \leq 1$ and $\alpha \in (0, 1)$, $\beta \in (0, 1)$.

Proof. Follows the same argument as the previous step. □

Claim 20. There exists $\hat{\beta}(\alpha, \gamma) \in [0, 1]$, such that $\beta > \hat{\beta}(\alpha, \gamma)$ implies $\underline{\sigma} > \bar{\sigma}$. The threshold $\hat{\beta}(\alpha, \gamma)$ is continuous at $\gamma = 1$, and satisfies $\hat{\beta}(\alpha, 1) \leq \frac{1}{2}$.

Proof. Equating each threshold and solving for the interior root yields the threshold $\hat{\beta}$, which is a polynomial in γ; setting $\gamma = 1$ yields a cut-off that is strictly decreasing in α: at $\alpha = 1$, this cut-off equals $\frac{1}{2}$. □

We can now proceed through the cases. Suppose the voter weakly prefers to retain the proposer after the bill x is vetoed. Then, $\sigma \leq \bar{\sigma}(\alpha, \beta, \gamma)$. If the voter also prefers to retain the proposer after y is vetoed, we have $\sigma \geq \underline{\sigma}(\alpha, \beta, \gamma)$, so $\sigma(p_L, w) \in (0, 1)$ for all $\gamma \leq 1$. Suppose, instead, she strictly prefers to remove the proposer after y is vetoed. Then, $\sigma(p_L, w) < \frac{1}{2}$, and $\bar{\tau}(\alpha, \beta, x) > \bar{\tau}(\alpha, \beta, y)$. Then, the low ability proposer strictly prefers to submit the policy x, since is implemented with strictly greater probability and she is retained with weakly positive probability when it is vetoed. This contradicts $\sigma(p_L, w) < 1$. The same argument can be made for the case in which the voter weakly prefers to retain the proposer after y is vetoed.

Finally, suppose that the voter strictly prefers to remove the proposer after either bill is vetoed. Then, the mixed strategy of the low ability proposer must satisfy:

$$\frac{1}{2}\left(\beta + (1-\beta)\tau(s_L, q, x)\right) = \frac{1}{2}\left(\beta + (1-\beta)\tau(s_L, q, y)\right) \tag{65}$$

or $\tau(s_L, q, x) = \tau(s_L, q, y)$, yielding $\sigma(p_L, w) = \frac{1}{2}$. This implies that when $\beta \geq \hat{\beta}(\alpha, \gamma)$, in every equilibrium in which $\tau(s_H, q_X, x) = \tau(s_H, q_Y, y) = 1$ and $\sigma(p_H, X) = 1$, $\sigma(p_L, w) = \frac{1}{2}$ in a continuous equilibrium.