A Political Economy of the Separation of Electoral Origin

Peter Buisseret

No 1021

WARWICK ECONOMIC RESEARCH PAPERS

DEPARTMENT OF ECONOMICS

THE UNIVERSITY OF WARWICK

A POLITICAL ECONOMY OF THE SEPARATION OF ELECTORAL ORIGIN[1]

Peter Buisseret

Warwick University

August 2013

Abstract

In democratic politics, voters delegate competing policy-making responsibilities to multiple elected agents: one agent is frequently tasked with initiating policies (the *proposer*) whilst the other is charged with scrutinizing and either passing or rejecting these policies (the *veto player*). A fundamental distinction lies in whether both offices are subject to direct and separate election, or whether the voter instead may directly elect only one office. Why should the voter benefit from a relatively coarse electoral instrument? When politicians' abilities are private information, actions taken by one agent provide information about both agents' types. A system in which their electoral fates are 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 welfare, relative to a system in which the survival of the veto player is institutionally separated from that of the proposer.

[1] *Author affiliation and address*: Department of Economics, Warwick University, Coventry, CV4 7AL, UK. *Email*: P.Buisseret@Warwick.ac.uk. *Telephone*: +44 (0)24 7652 8248. *Fax*: +44(0)2476 523032.

1. Introduction

The allocation of policy-making responsibilities across multiple elected bodies is a cornerstone of democratic government. The rich variety of constitutional forms across the world's democracies at both the national and local level yields many practical examples of this principle and its virtues have served as both the premise (Locke (1988), Hamilton et al. (1996), Montesquieu (1949)) and the conclusion (Persson et al. (1997)) of some of the most influential studies in the political economy of democratic politics.

The most enduring division of policy-making responsibilities between elected institutions can be found in the distinction between the body that is charged with *proposing* policy initiatives, and that which is charged with *scrutinizing* these initiatives and either implementing or rejecting them. In the United States, the Constitution explicitly stipulates that all legislative proposals must originate within Congress, but assigns to the President the right 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. A similar apportionment of responsibility frequently exists at the local level between mayors and councils (Mouritzen and Svara (2002), Dahl (2005)).

I analyze the consequences of a fundamental distinction in the organization of 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. There are two possibilities: 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 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 throughout the world: a single election decision by the voter jointly determines 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 every system of presidential government, which allows the voter formally to separate her choice of executive and legislative candidates.

The distinction between separate and shared electoral origin is also prominent in subnational politics and in a number of countries it has recently been a locus of constitutional reform: 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 can be found 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.

This paper offers the first analysis of the consequences of such a distinction for the quality of governance and political selection. An initial puzzle serves as a starting point for this analysis: 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.[2] Under a

[2]In the United States, Congress is formally the *proposer* and the President the *veto player*. Nonetheless,

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 simple 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.[3] 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

in many policy areas it may be informally accurate to conceive of the latter as the proposer. For example, as noted by Fox and Van Weelden (2010), No Child Left Behind, social security reform, Wall Street bailouts and Obamacare are prominent examples of policy initiatives that began within the executive.

[3]In a subsequent part of the paper, the quality of the proposer's policy is endogenized.

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.[4]

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 veto player from rejecting policies solely in an attempt convey favorable information about herself to the voter. Under separate origin, by contrast, 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 her welfare. 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 his landmark 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

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

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, 69). 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, 1980, 159).

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 institutional 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, rather than adverse selection. They show that creating a conflict of interest between the executive and legislative 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 conclusions are strikingly different. 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 (presidentialism), than one in which it is shared (parliamentarism). 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 proposer's policy would have been successful and renders the veto less informative in its own right about the ability of each politician.

My approach connects with a number of models of signaling in office by a single, privately informed party - notably, Prat (2005), Maskin and Tirole (2004), 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 career incentives of either agent which lead her 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 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. In the Appendix, I analyze a variant of the benchmark model in order to show that it is robust to changes in assumptions regarding the informational environment.

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* $p \in \{p_H, p_L\}$, with $\Pr(p_H) = \alpha \in (0, 1)$. Likewise, the veto player is is either *high ability* or *low ability* $s \in \{s_H, s_L\}$, with $\Pr(s_H) = \beta \in (0, 1)$. Each of the proposer and veto player knows the realization of her own type, but not that of the other 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 constitutional alternatives:

(i) under *separate electoral origin*, the voter may choose a probability distribution over 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 choose a probability distribution only over 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. 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 of 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 algebra, but is not necessary. A consequence of some degree of policy motivation is that the voter's equilibrium 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.[5] A type profile is

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

[5] 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.

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 $\pi(t|z)$. I study sequential equilibria of this model.

Signalling 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 privately informed senders with different private information, 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. To deal with the problem of multiplicity that arises from the flexibility of specifying beliefs off the path, I use the D2 refinement (Cho and Kreps (1987)), 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. All references to an equilibrium are to a sequential equilibrium satisfying the D2 refinement.

Comment on the Assumptions of the Model

Before proceeding to the main analysis, I briefly comment on some features of the model. The assumption that the proposer and veto player do not know each other's type is not necessary to deliver the main results, and I show this formally in the Appendix by analysing the model under the assumption that players know each other's realized types. What drives the analysis is that actions by the veto player which provide the voter with favourable information about her type (e.g. a veto) also provide the voter with unfavourable 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.[6] What is crucial for the model, however, is that the veto player knows the realization of her own type, which is a common assumption, and one that is used in Levy (2004) and Canes-Wrone et al. (2001) amongst many others.

I have fixed the probability of submitting a high quality policy on the part of the proposer and the signal strength of the high ability veto player to be the same, and have done the same for the the low ability proposer and veto player, respectively. The reason is that, with different signal strengths, the analysis of second period strategies becomes very case-ridden, since the optimal behavior of the low ability veto player in the absence of any career concerns will then depend crucially on her signal strength, the probability that each of the high and low ability proposers submit good policies, and her own beliefs about whether the proposer is a high ability type that are possibly inherited from the first period. Subject to this, however, the choice of signal strengths of unity and one half, respectively, simplify the analysis considerably but can be relaxed whilst maintaining the insights of the model.

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 whose basis is beyond the scope of the present paper. For example, John Major may have been favored by his party because he was seen as a force for compromise in the wake of Margaret Thatcher's divisive 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 rather less effective in the capacity of Prime Minister. Moreover, his

[6] This is formally established, in the Appendix.

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, lending further justification to the idea that even when the veto player may formally nominate the proposer, the basis for such an appointment may lie in other factors than the presumed leadership capacity of the candidate.

3. Benchmark: Superiority of Separate Origin Under 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 in the first period, 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. Incomplete Information: 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 veto player 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 better draw in the second period, or sticking with her current draw in order that, at the very least, she benefits 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. This is because the voter would believe that the veto had come from a high ability veto player, indicating the the proposal was sent from a low ability proposer. When α is large, improving her own reputation is a pyrrhic achievement since it necessarily comes at the expense of the proposer's assessment. So, 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 behave as if she did, since it requires that she 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,

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

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:

$$\sum_{q\in\{q_B,q_G\}} \pi(p_H, s_L, q|z_R) + \frac{1}{2}\pi(p_L, s_H, q_B|z_R) \tag{4}$$

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 after a veto occurs. This is inconsistent with the incentives of the low ability 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, the former strictly, and so the voter strictly prefers joint replacement to joint retention. So, there exists a unique mixture, $\hat{\tau} \in (\bar{\tau}(\alpha), 1)$, for which the voter is indifferent between joint retention and joint replacement, after a veto.

I summarize these observations, then make some additional comments about properties of the equilibrium.

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. Both politicians are retained after a policy is implemented and succeeds, and removed when it fails.

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. A sufficient condition for it not to exist is $\alpha > \frac{1}{3}$.

When $\alpha \leq \bar{\alpha}(\beta)$, the high ability veto player has re-election 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, a veto always conveys unfavorable information about the proposer's type - for any $\tau(s_L, q) \in [0, 1]$:

$$\sum_{s \in \{s_L, s_H\}} \sum_{q \in \{q_B, q_G\}} \pi(p_H, s, q | z_R) < \alpha$$

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, where $\tau(s_L, q) = \hat{\tau}$ is chosen:

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

$$> \beta$$

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, however this propensity is still moderated by the imperative for joint survival.

5. Incomplete Information: 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 shared 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:

$$\max \left\{ \underbrace{\sum_{s\in\{s_L,s_H\}} \sum_{q\in\{q_B,q_G\}} \pi(p_H, s, q|z_R) + \frac{1}{2} \sum_{q\in\{q_B,q_G\}} \pi(p_L, s_H, q|z_R)}_{\text{retain proposer, retain veto player}} , \right. \tag{5}$$

$$\left. \underbrace{\alpha + \frac{1}{2}(1-\alpha) \sum_{p\in\{p_L,p_H\}} \sum_{q\in\{q_B,q_G\}} \pi(p, s_H, q|z_R)}_{\text{remove proposer, retain veto player}} \right\} \tag{6}$$

$$\geq \max \left\{ \underbrace{\sum_{s\in\{s_L,s_H\}} \sum_{q\in\{q_B,q_G\}} \pi(p_H, s, q|z_R) + \frac{\beta}{2} \sum_{s\in\{s_L,s_H\}} \sum_{q\in\{q_B,q_G\}} \pi(p_L, s, q|z_R)}_{\text{retain proposer, remove veto player}} , \right. \tag{7}$$

$$\left. \underbrace{\alpha + \frac{1}{2}(1-\alpha)\beta}_{\text{remove proposer, remove veto player}} \right\} \tag{8}$$

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 the low ability veto player uses a mixture $\tau(s_L, q)$ such that the voter's assessment of the veto player is strictly worse than the prior, after a veto, i.e. $\pi(p_L, s_H, q_B|z_R) < \beta$. This implies $\tau(s_L, q) < \bar{\tau}(\alpha)$. This implies that (6) is strictly smaller than (8). Moreover, since $\bar{\tau}(\alpha) < \hat{\tau}$, we already know from the case of shared origin that (5) is strictly smaller than (8). Thus, such a strategy could not be used by the low ability veto player in an equilibrium, since she would always be replaced after a veto. Consider, alternatively, the possibility that the low ability veto player uses $\tau(s_L, q)$ such that the voter's assessment of the veto player is strictly better than the prior, after a veto, i.e. $\pi(p_L, s_H, q_B|z_R) > \beta$. This implies $\tau(s_L, q) > \bar{\tau}(\alpha)$. In that case, (6) strictly exceeds (8). Moreover, (5) strictly exceeds (7), so long as

$$\pi(p_L, s_H, q_B|z_R) > \beta \sum_{s\in\{s_L,s_H\}} \sum_{q\in\{q_B,q_G\}} \pi(p_L, s, q|z_R) \tag{9}$$

which is equivalent to $\tau(s_L, q) > \frac{1}{2}$, which is true by our supposition $\tau(s_L, q) > \bar{\tau}(\alpha)$ 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, (6) is equal to (8). Moreover, substituting $\tau(s_L, q) = \bar{\tau}(\alpha)$ into the voter's posterior yields $\sum_{q\in\{q_G,q_B\}} \pi(p_H, s_B, q) = \alpha(1-\beta)$. Thus, the expression (5) is equal to $\alpha(1-\beta) + \frac{1}{2}\beta$ which is strictly less than (8). Finally, (8) is strictly greater than (7) since the posterior regarding the proposer is strictly worse than the prior, after a veto. This implies that the voter strictly prefers at least one of the actions yielding payoffs (6) or (8) to every other possible action, after a veto occurs.

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. 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.

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.

[FIGURE 1 ABOUT HERE]

Note that, as with the case of shared origin for $\alpha \leq \bar{\alpha}$, it may also be possible to support a 'mirror' equilibrium, in which the strategy of the high ability player is reversed - as before, I ignore it on the grounds of plausibility and also because it is 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.

Observe that whilst the proposer's reputation after a veto is strictly worse than the 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 $[0, \bar{\alpha}(\beta)]$.

[FIGURE 2 ABOUT HERE]

Under separate origin, the voter's posterior assessment of the proposer after a veto 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.

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. 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 indirectly 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 - satisfies:

$$\beta \geq \frac{2\alpha}{1+\alpha} \tag{10}$$

where the RHS is equal to the probability that the proposer is high ability, conditional on her submitting a policy which is 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 probability of a high quality proposal from the high ability proposer were strictly less than 1, a sufficiently office-motivated (i.e., small enough ϵ) high ability proposer would then implement the bill to have some positive probability of retention. Suppose, however, 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. Distorted Policy Submissions With 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 action 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 $p = p_H$, and probability $\frac{1}{2}$ if $p = p_L$. The veto player receives a private signal $q \in \{q_X, q_Y\}$ which, in the same way, 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.

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. The set of outcomes on which the voter may condition her strategy is expanded:

$$Z = \{x_G, x_B, x_R, y_G, y_B, y_R\} \tag{11}$$

where the subscript G means that that corresponding policy is submitted by the proposer, passed by the veto player and matches the state, and the remaining definitions are extended, similarly.

To ensure robustness, I study equilibria in which the signal strength of the high ability proposer is $\gamma = 1$ and where equilibrium beliefs and strategies are continuous in γ at $\gamma = 1$. I refer to these as *continuous equilibria*.[7] To simplify algebra, I consider $\epsilon = 0$. For expositional clarity, I focus in this section on comparing shared origin for $\alpha \geq \bar{\alpha}(\beta)$ with separate origin.

I begin with the case of shared origin. Consider the following strategy profile:

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

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

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

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

(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 $\lim_{\gamma\to 1}\sigma_1(\alpha,\beta,\gamma)=\sigma_1(\alpha,\beta,1)=1$. That is, the low ability proposer uses a mixed proposal strategy which must place sufficiently small mass on the policy y that a veto 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. As the signal strength of the high ability proposer tends to one, this mixture converges to a degenerate strategy which places probability one on submitting the policy x. The low type proposer 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; 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, the threshold greater than which this strategy profile can be supported as an equilibrium is $\alpha\geq\bar{\alpha}(\beta,\gamma)$, which satisfies $\lim_{\gamma\to 1}\bar{\alpha}(\beta,\gamma)=\bar{\alpha}(\beta,1)=\frac{1-\beta}{2-\beta}$. 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 a policy with probability 1.

This establishes that, in the absence of any specious intermediation 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.

Now consider the case of separate origin. Suppose that the high ability veto player passes either policy if she believes that it matches the state and that the high ability proposer submits the policy which corresponds to her belief about the state. The proposal strategy of the low ability proposer is $\sigma(p_L, w)$. I will show that in every continuous equilibrium having this form, we must have $\sigma(p_L, w) = \frac{1}{2}$; that is, the low ability proposer randomizes uniformly over policies. This necessity stems from the following lemma.

Lemma 1. Under separate origin, fix the following strategies: $\sigma(p_H, w_X) = 1$, $\sigma(p_H, w_Y) = 0$, $\tau(s_H, q_X, x) = 1$, $\tau(s_H, q_Y, y) = 1$. Then, for any pair of strategies by the low ability veto player:

(i) there exists a threshold, $\underline{\sigma}(\alpha, \beta, \gamma) \in (0, 1)$, such that if $\sigma(p_L, w) > \underline{\sigma}(\alpha, \beta, \gamma)$, the proposer is removed with probability 1 after the policy x is vetoed; and,

(ii) there exists a threshold, $\bar{\sigma}(\alpha, \beta, \gamma) \in (0, 1)$, such that if $\sigma(p_L, w) < \bar{\sigma}(\alpha, \beta, \gamma)$, the proposer is removed with probability 1 after the policy y is vetoed.

Moreover, $\underline{\sigma}(\alpha, \beta, \gamma) < \bar{\sigma}(\alpha, \beta, \gamma)$.

Intuitively, if the low ability proposer places too much mass on either policy, a veto is sufficiently bad news about her type as to induce her sure removal, regardless of the strategy of the low ability veto player. Since $\underline{\sigma}(\alpha, \beta, \gamma) < \bar{\sigma}(\alpha, \beta, \gamma)$, the Lemma implies that the proposer is always removed after at least one policy is rejected. In fact, she must be removed after *either* policy is rejected, since otherwise she would strictly prefer to submit one policy over the other and this would violate Lemma 1. To obtain her strategy, let the low ability veto player choose a probability of rejecting either policy such that the voter's posterior belief about her own type is equal to the prior - β. From the low ability proposer's perspective, there are two necessary conditions which must be satisfied in order for her to be retained after she submits a policy: the policy must not be vetoed, and it must succeed conditional on being implemented. Note that the first condition is not necessary under shared origin. As such, the equilibrium mixture of the low ability proposer must equalize the probability with which the low ability veto player passes either policy, which implies that she must submit either policy with equal probability.

Proposition 9. Under separate origin, there exists a unique continuous equilibrium in which the high ability proposer submits the policy corresponding to her beliefs about the state and the high ability veto player passes a policy if it matches the state. In this equilibrium, the low ability proposer randomizes uniformly over policies, i.e. $\sigma(p_L, w) = \frac{1}{2}$.

Unlike in the case of shared origin, the low ability proposer is forced to randomize her policy submission in an attempt to circumvent the more aggressive veto player, which was not a concern for her in the case of shared origin. Thus, distortions in the latter's strategy induce additional distortions in the proposer's strategy.

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)), 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. Finally, a prominent explanation for the greater legislative success of chief executives under parliamentary, rather than presidential, systems lies in the motion of confidence that can be deployed by the former. Simply put, the confidence motion raises the cost of voting against one's leadership since doing so may trigger the collapse of the government and an early election. This mechanism is examined in Huber (1996), Cox (1987), Diermeier and Feddersen (1998). Nonetheless, as Carey (2007) points out, the confidence vote is not restricted to pure parliamentary systems. For example, a confidence vote provision for the cabinet is combined with an active presidency in the French Fifth Republic and this phenomenon is becoming increasingly common in hybrid systems (Frye (1997)). These facts suggest that there exists room for an alternative approach which does not rely on partisan composition or other 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 the present 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 to inter-branch conflict under shared, than separate origin. This would be very challenging to examine with observational data, however the game form is sufficiently simple that 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 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 re-election 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. Amongst its empirical implications, the model provides a novel explanation for increased conflict between the executive and legislature under presidential, relative to parliamentary, regimes. I have shown that such an explanation need not rely on partisanship or confidence procedures, but may be obtained from an even more fundamental distinction in the organization of these systems, coupled with the presence of career-concerned politicians.

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.

Acknowledgements

For invaluable support and advice throughout the project, I thank Adam Meirowitz, John Londregan, Matias Iaryczower, Kris Ramsay and Leonard Wantchekon. I extend particular thanks also to Daniel Diermeier and Guido Tabellini, who helped me to clarify the substantive scope of the project. I also thank Scott Ashworth, Brandice Canes-Wrone, Ernesto Dal Bo, Navin Kartik, Massimo Morelli, Gabriel Negretto, Andrea Prat and Kenneth Shotts, in addition to seminar participants at Harvard, Columbia, Chicago (Harris), Warwick, and MPSA, EPSA and SAET meetings. The usual disclaimer applies.

References

Aleman, E., Calvo, E., 2009. Institutions and the legislative success of 'strong' presidents: An analysis of government bills in chile.". Journal of Legislative Studies 15 (4), 401–19.

Bagehot, W., 1889. The English constitution: and other political essays. D. Appleton.

Calvo, E., 2011. Legislator success in fragmented congresses: Plurality cartels, minority presidents, and lawmaking in argentina, unpublished manuscript.

Canes-Wrone, B., Herron, M., Shotts, K., 2001. Leadership and pandering: A theory of executive policy-making. American Journal of Political Science, 532–550.

Carey, J., 2007. Competing principals, political institutions, and party unity in legislative voting. American Journal of Political Science 51 (92-107), 1.

Cheibub, J., Przeworski, A., Saiegh, S., 2004. Government coalitions and legislative success under presidentialism and parliamentarism. British Journal of Political Science 34 (04), 565–587.

Cho, I., Kreps, D., 1987. Signaling games and stable equilibria. The Quarterly Journal of Economics 102 (2), 179.

Cox, G., 1987. The Efficient Secret. Cambridge University Press.

Dahl, R. A., 2005. Who governs?: Democracy and power in an American city. Yale University Press.

Diermeier, D., Feddersen, T., 1998. Cohesion in legislatures and the vote of confidence procedure. American Politial Science Review 92 (3), 611–622.

Diermeier, D., Vlaicu, R., 2011. Executive control and legislative success. The Review of Economic Studies 78 (3), 846.

Figueiredo, A. C., Salles, D. L., Vieira, M. M., 2009. Political and institutional determinants of the executive's legislative success in latin america. Brazilian Political Science Review 3 (2), 155–171.

Fox, J., Van Weelden, R., 2010. Partisanship and the effectiveness of oversight. Journal of Public Economics 94 (9-10), 674–687.

Frye, T., 1997. A politics of institutional choice: Post-communist presidencies. Comparative Political Studies 30 (5), 523–552.

Hamilton, A., Madison, J., Jay, J., 1996. The Federalist Papers. Hayes Barton Press.

Huber, J., 1996. The vote of confidence in parliamentary democracies. American Political Science Review, 269–282.

Laski, H., 1980. The American presidency: an interpretation. Transaction, Inc.,.

Levy, G., 2004. Anti-herding and strategic consultation. European Economic Review 48 (3), 503–525.

Locke, J., 1988. Locke: Two Treatises of Government Student Edition. Cambridge University Press.

Mainwaring, S., Shugart, M. (Eds.), 1997. Presidentialism and Democracy in Latin America. Cambridge Univ Pr, Ch. Conclusion: Presidentialism and the Party System, pp. 394–439.

Maskin, E., Tirole, J., 2004. The politician and the judge: Accountability in government. The American Economic Review 94 (4), 1034–1054.

Montesquieu, B. d., 1949. The spirit of the laws, trans. Thomas Nugent (2 vols, New York: Hafner Press, 1949).

Mouritzen, P. E., Svara, J. H., 2002. Leadership at the apex: politicians and administrators in Western local governments. University of Pittsburgh Pre.

Persson, T., Roland, G., Tabellini, G., 1997. Separation of powers and political accountability. The Quarterly Journal of Economics 112 (4), 1163–1202.

Prat, A., 2005. The wrong kind of transparency. American Economics Review 95 (03), 862–877.

Saiegh, S., 2011. Ruling by Statute: How Uncertainty and Vote Buying Shape Lawmaking. Cambridge Univ Pr.

Samuels, D., Shugart, M., 2010. Presidents, Parties and Prime Ministers. Cambridge Univ Press.

Schwindt-Bayer, L., July 2010. How presidents legislate: Agenda control and policy success in costa rica, working Paper 369, Kellogg Institute for International Studies, Notre Dame University.

Shugart, M., Carey, J., 1992. Presidents and Assemblies: Constitutional Design and Electoral Dynamics. Cambridge Univ Press.

10. Appendix 1: What if Politicians Know Each Others' Types?

In the benchmark presentation, I assume that politicians know the realization of their own type, but not that of the other politician. Here I show that the qualitative findings of the model can be obtained under the assumption that politicians know the realization of each other's type: the voter's information is assumed to be the same as in the benchmark case. I set $\epsilon = 0$, for simplicity.

The strategy of veto player is now $\tau(p, s, q)$: the probability of passing a policy submitted by proposer type $p \in \{p_L, p_H\}$ by veto player type (s, q) for $s \in \{s_L, s_H\}$ and $q \in \{q_L, q_H\}$. It is easy to verify the following:

Proposition 10. Under shared origin, for $\alpha \geq \bar{\alpha}(\beta)$, an equilibrium exists in which:

(i) $\tau(p, s_H, q_L) = 0$, $\tau(p, s_H, q_H) = 1$ for $p \in \{p_L, p_H\}$, $\tau(p, s_L, q) = 1$ for $p \in \{p_L, p_H\}$ and $q \in \{q_L, q_H\}$.

(ii) $\eta(1_p, 1_s|z_G) = 1$, $\eta(1_p, 1_s|z_B) = \eta(1_p, 1_s|z_R) = 0$.

Under shared origin, for $\alpha < \bar{\alpha}(\beta)$, an equilibrium exists in which:

(i) $\tau(p, s_H, q_L) = 0$, $\tau(p, s_H, q_H) = 1$ for $p \in \{p_L, p_H\}$, $\tau(p_H, s_L, q) = 1$ for $q \in \{q_L, q_H\}$, $\tau(p_L, s_L, q) = \frac{\alpha(2-\beta)^2+\beta(1-\beta)}{2(\beta+\alpha(2-\beta)(1-\beta)}$ for $q \in \{q_L, q_H\}$.

(ii) $\eta(1_p, 1_s|z_G) = 1$, $\eta(1_p, 1_s|z_B) = 0$, $\eta(1_p, 1_s|z_R) = \frac{1}{2}$.

Under separate origin, for $\alpha \in (0, 1)$, an equilibrium exists in which:

(i) $\tau(p, s_H, q_L) = 0$, $\tau(p, s_H, q_H) = 1$ for $p \in \{p_L, p_H\}$, $\tau(p_H, s_L, q) = 1$ for $q \in \{q_L, q_H\}$, $\tau(p_L, s_L, q) = \frac{1}{2}$ for $q \in \{q_L, q_H\}$

(ii) $\eta(1_p, 1_s|z_G) = 1$, $\eta(0_p, 0_s|z_B) = 1$, $\eta(0_p, 1_s|z_R) = \frac{1}{2}$, $\eta(0_p, 0_s|z_R) = \frac{1}{2}$

Thus, as with the benchmark presentation in which politicians do not know each other's type, we have:

(i) Under shared origin, if $\alpha \geq \bar{\alpha}(\beta)$, an equilibrium exists in which the low ability veto player implements all policies;

(ii) The low ability veto player's mixture $\tau(s_L, q)$ under shared origin for $\alpha \leq \bar{\alpha}(\beta)$ is larger than the corresponding case under separate origin, and for the same reasons as before;

(iii) The proposer is retained with positive probability after a veto under shared origin for $\alpha \leq \bar{\alpha}(\beta)$, but removed with probability 1 after a veto under separate origin.

The reason that equilibrium behavior does not vary significantly across information structures is simple: in both cases, a veto conveys information to the voter about the proposer's type. When politicians do not know each other's type, the fact that the high ability player vetoes bad policies ensures that for any mixture of the low ability type, the proposer's reputation is worse than the prior. When politicians know each other's types, in equilibrium, only low ability proposers have their policies vetoed: thus, the veto leads to an even worse deterioration in the proposer's reputation: it is equal to zero. In both cases, however, the voter's preferences over types are the same.

The only significant difference generated by this alternative information structure is to tilt the results of Section 6 in favor of separate origin. For example, when the low ability veto player only rejects a policy from a low ability proposer, the informative qualities of separate origin greatly improve, relative to a situation in which both high and low ability proposers have their policies rejected. This also improves the relative performance of separate origin with respect to the welfare analysis. Nonetheless, there are still cases in which shared origin dominates separate origin, under incomplete information.

11. Appendix 2: Additional Definition and Proofs of Propositions

Definition of Equilibrium Refinement

The set of type profiles of this game is $T = P \times S \times Q$. Call the *subtype* of (p, s, q) the restriction of (p, s, q) to (s, q), i.e. $(s, q) = \cup_{p \in P}(p, s, q)$. Let Ψ denote the set of all probability distributions over $K = \{(1_p, 1_s), (0_p, 0_s), (1_p, 0_s), (0_p, 1_s)\}$, with element $\psi \in \Psi$; $\psi(k)$ denotes the probability that the voter selects action $k \in K$. The action set of the veto player is denoted A, with element $a \in A$. Suppose that in a sequential equilibrium, an action a is selected with probability 0 by all subtypes $(s, q) \in S \times Q$. Let $u^*(s, q)$ denote the expected pay-off to the subtype (s, q), in this equilibrium. Let $u(s, q, a, k)$ denote the expected payoff to (s, q) when she takes the action a, and the voter takes the action $k \in K$. Define:

$$D(s, q, a) = \{\psi \in \Psi : u^*(s, q) < \sum_{k \in K} u(s, q, a, k)\psi(k)\} \tag{12}$$

and

$$D^0(s, q, a) = \{\psi \in \Psi : u^*(s, q) = \sum_{k \in K} u(s, q, a, k)\psi(k)\} \tag{13}$$

Under D2, the voter's belief places probability zero on $t = (p, s, q)$ after observing action $a \in A$ if for the subtype of t, (s, q), the following is true:

$$\{D^0(s, q, a) \cup D(s, q, a)\} \subset \bigcup_{(s', q') \in S \times Q, (s', q') \neq (s, q)} D(s', q', a) \tag{14}$$

Proof of Proposition 1

This argument is made directly, in the 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 $(s, y) \in S \times Y$ satisfies D2 if and only if $\pi(s_H, q_B|z_R) = 1$ when $\alpha \geq \bar{\alpha}(\beta)$, and

$$\sum_{p \in \{p_L, p_H\}} \sum_{q \in \{q_B, q_G\}} \pi(p, s_H, q|z_R) = 1 \tag{15}$$

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

Proof. I prove a stronger claim: under shared origin, in an equilibrium, whenever (s_L, q) weakly prefers to reject a policy, at least one of (s_H, q_G) or (s_H, q_B) strictly prefers to reject a policy, for any mixture used by the voter. For any $\eta(1_p, 1_s|z_R) \in [0, 1]$, the value to (s_H, q_G) from rejecting a policy is greater than passing it if:

$$\eta(1_p, 1_s|z_R) \left(1 + \epsilon \left(\frac{2\alpha}{1+\alpha} + \frac{1-\alpha}{2(1+\alpha)}\right)\right) \geq \epsilon + \eta(1_p, 1_s|z_G) \left(1 + \epsilon \left(\frac{2\alpha}{1+\alpha} + \frac{1-\alpha}{2(1+\alpha)}\right)\right) \tag{16}$$

Define:

$$\varphi(s_H, q_G) \equiv \frac{2\alpha}{1+\alpha} + \frac{1-\alpha}{2(1+\alpha)} \tag{17}$$

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

$$\eta(1_p, 1_s|z_R) \left(1 + \frac{\epsilon}{2}\right) \geq -\epsilon + \eta(1_p, 1_s|z_B) \left(1 + \frac{\epsilon}{2}\right) \tag{18}$$

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

$$\eta(1_p, 1_s|z_R)\left(1 + \epsilon\alpha\right) \geq \alpha\left(\epsilon + \eta(1_p, 1_s|z_G)(1+\epsilon)\right) + (1-\alpha)\frac{1}{2}\sum_{z\in\{z_G, z_B\}} \eta(1_p, 1_s|z) \qquad (19)$$

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 (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 (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:

$$\begin{aligned}
&\eta(1_p, 1_s|z_R)\epsilon\left(\alpha - \frac{1}{2}\right) - \epsilon(1+\alpha) - \left(\eta(1_p, 1_s|z_G) - \eta(1_p, 1_s|z_B)\right)\left(\frac{1+\alpha}{2}\right) \\
&-\epsilon\left(\eta(1_p, 1_s|z_G)\alpha - \eta(1_p, 1_s|z_B)\frac{1}{2}\right) < 0 \qquad (20)
\end{aligned}$$

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

$$\begin{aligned}
&\epsilon\eta(1_p, 1_s|z_R)\left(\varphi - \frac{1}{2}\right) - 2\epsilon - \left(\eta(1_p, 1_s|z_G) - \eta(1_p, 1_s|z_B)\right) \\
&+\epsilon\left(\eta(1_p, 1_s|z_B)\frac{1}{2} - \eta(1_p, 1_s|z_G)\varphi(s_H, q_G)\right) < 0 \qquad (21)
\end{aligned}$$

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

$$\begin{aligned}
&\eta(1_p, 1_s|z_R)\epsilon(\alpha - \varphi(s_H, q_G)) + \epsilon(1-\alpha) \\
&+\left(\eta(1_p, 1_s|z_G) - \eta(1_p, 1_s|z_B)\right)\frac{1-\alpha}{2} + \eta(1_p, 1_s|z_G)\epsilon(\varphi - \alpha) < 0 \qquad (22)
\end{aligned}$$

Suppose $\eta(1_p, 1_s|z_G) \geq \eta(1_p, 1_s|z_B)$. Then, (20) and (21) are satisfied, implying that the only belief that is consistent with D2 is $\sum_{p\in\{p_L, p_H\}} \pi(p, s_H, q_B|z_R) = 1$. 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 $\alpha \geq \bar{\alpha}(\beta)$. Thus, $\eta(1_p, 1_s|z_G) \geq 0$ implies that 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. This completes the argument for $\alpha \geq \bar{\alpha}(\beta)$.

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 (20) continues to be satisfied so long as:

$$\begin{aligned}\eta(1_p, 1_s|z_B) &< \frac{2}{1+\alpha+\epsilon}\left(\epsilon\eta(1_p, 1_s|z_R)\left(\frac{1}{2}-\alpha\right) + \epsilon(1+\alpha) + \eta(1_p, 1_s|z_G)\frac{1+\alpha}{2} + \epsilon\eta(1_p, 1_s|z_G)\alpha\right) \\ &= \hat{\eta}(1_p, 1_s|z_B) \qquad (23)\end{aligned}$$

Suppose, instead, (23) is violated. The LHS of (22) 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 $\hat{\eta}(1_p, 1_s|z_B)$, (22) becomes:

$$\begin{aligned}&\eta(1_p, 1_s|z_R)\epsilon\left(\alpha - \varphi(s_H, q_G) - \frac{1-\alpha}{1+\alpha+\epsilon}\left(\frac{1}{2}-\alpha\right)\right) + \epsilon(1-\alpha)\frac{\epsilon}{1+\alpha+\epsilon} \\ &+\eta(1_p, 1_s|z_G)\frac{1-\alpha}{2}\frac{\epsilon}{1+\alpha+\epsilon} + \epsilon\eta(1_p, 1_s|z_G)\left(\varphi(s_H, q_G) - \alpha - \frac{\alpha(1-\alpha)}{1+\alpha+\epsilon}\right) \qquad (24)\end{aligned}$$

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

$$\frac{1-\alpha}{1+\alpha}(\eta(1_p, 1_s|z_G) - \eta(1_p, 1_s|z_R)) \qquad (25)$$

which is strictly negative so long as $\eta(1_p, 1_s|z_G) < \eta(1_p, 1_s|z_R)$. Suppose not. Recall that we are supposing that (s_L, q) weakly prefers to veto the bill, or:

$$\eta(1_p, 1_s|z_R)(1+\epsilon\alpha) \geq \alpha(\epsilon + \eta(1_p, 1_s|z_G)(1+\epsilon)) + (1-\alpha)\frac{1}{2}\sum_{z\in\{z_B, z_B\}}\eta(1_p, 1_s|z) \qquad (26)$$

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 (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 symmetric argument to the proof of Claim 1 shows that for any mixture of the voter, when (s_L, q) weakly prefers to pass a policy, at least one of (s_H, q_G) or (s_H, q_B) strictly prefers to do so. This implies that under a strategy profile in which no veto occurs on the equilibrium path, the voter's belief after observing outcome z_G must place probability 1 on the union of (s_H, q_G) and (s_H, q_B) in a D2 equilibrium. Moreover, the voter's belief about the proposer's type after observing the event z_G in a sequential equilibrium is $\frac{2\alpha}{1+\alpha} > \alpha$, which implies that she strictly prefers the action $(1_p, 1_s)$ after this event. Then, (s_H, q_G) strictly prefers this deviation, which is inconsistent with the strategy profile. □

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,:

$$\sum_{s \in \{s_L, s_H\}} \sum_{q \in \{q_B, q_G\}} \pi(p_L, s, q|z_B) = 1 \tag{27}$$

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

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. □

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

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

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

$$\epsilon + \eta(1_p, 1_s|z_G)(1 + \epsilon\varphi(s_H, q_G)) > \eta(1_p, 1_s|z_R)(1 + \epsilon\varphi(s_H, q_G)) \tag{29}$$

The first inequality implies the second so long as

$$\epsilon(1-\alpha) + \eta(1_p, 1_s|z_G)\frac{1-\alpha}{2} + \epsilon\eta(1_p, 1_s|z_G)(\varphi(s_H, q_G) - \alpha) - \epsilon\eta(1_p, 1_s|z_R)(\varphi(s_H, q) - \alpha) > 0 \tag{30}$$

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

$$\begin{aligned}\sum_{s\in\{s_L,s_H\}}\sum_{q\in\{q_B,q_G\}} \pi(p_H, s, q|z_R) &= \frac{\alpha(1-\beta)(1-\tau(s_L,q))}{(1-\alpha)\beta\frac{1}{2} + (1-\beta)(1-\tau(s_L,q))} \\ &= \sum_{q\in\{q_B,q_G\}} \pi(p_H, s_L, q|z_R) \\ &< \alpha \end{aligned} \tag{31}$$

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

$$\sum_{q\in\{q_B,q_G\}} \pi(p_H, s_L, q|z_R) + \frac{1}{2}\pi(p_L, s_H, q_B|z_R) \tag{32}$$

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 $\sum_{s\in\{s_L,s_H\}}\sum_{q\in\{q_B,q_G\}} \pi(p_H, s, q|z_G) = \frac{2\alpha}{1+\alpha}$. Moreover, since $\tau(s_H, q_G) > 0$ by the previous Claim, $\sum_{p\in\{p_L,p_H\}}\sum_{q\in\{q_B,q_G\}} \pi(p, s_H, q|z_G) = 1$ and so $\tau(s_H, q_G) = 1$. But this implies that the voter strictly prefers the action $(0_p, 0_s)$ after z_R, since under this strategy profile:

$$\sum_{q\in\{q_B,q_G\}} \pi(p_H, s_L, q|z_R) + \frac{1}{2}\pi(p_L, s_H, q_B|z_R) < \alpha + \frac{1}{2}(1-\alpha)\beta \tag{33}$$

and so joint removal is strictly preferred by the voter. □

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 $\sum_{s \in \{s_L, s_H\}} \sum_{q \in \{q_B, q_G\}} \pi(p_H, s, q|z_G) > \alpha$ and for $\tau(s_L, q) = 1$:

$$\sum_{p \in \{p_L, p_H\}} \sum_{q \in \{q_B, q_G\}} \pi(p, s_H, q|z_G) = \beta \tag{34}$$

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, the following is true: $\tau(s_L, q) = 1$, $\tau(s_H, q_H) = 1$, $\tau(s_H, q_B) = 0$, $\eta(1_p, 1_s|z_G) = 1$, $\eta(1_p, 1_s|z_B) = 0$. All beliefs are formed using Bayes' rule. 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, for $\epsilon > 0$ sufficiently small:

(i) $\tau(s_H, q_G) = 1$, $\tau(s_H, q_B) = 0$, $\tau(s_L, q) = \frac{\alpha(2-\beta)+1-\beta}{2(1-\beta)}$;

(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:

$$\alpha\,(1 + 2\epsilon) + \frac{1}{2}(1 - \alpha) = \hat{\eta}(\epsilon)\,(1 + \epsilon\alpha) \tag{35}$$

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 (s_H, q_G) and (s_H, q_B) are reversed. Claim 2 of the proof of Proposition 2 implies that $\tau(s, q) > 0$ for at least one $(s, q) \in S \times Q$.

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. From the proof of Claim 1, under this strategy profile, for $\alpha < \bar{\alpha}(\beta)$, the voter's belief after a veto must place probability 1 over the union of subtypes (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. On the other hand, the voter's belief about the veto player is equal to the prior after events z_G and z_B and her belief about the proposer is that she is low ability with probability 1 after event z_B. Thus, the voter removes both politicians after event z_B, which occurs with probability 1 for (s_H, q_B). Thus, (s_H, q_B) strictly prefers to veto the bill, which is inconsistent with a strategy profile in which $\tau(s, q) = 1$ for all $(s, q) \in S \times Q$. □

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

Proof. Suppose not. Then either $\tau(s_H, q_H) < 1$ or $\tau(s_H, q_B) < 1$, by the previous claim. But then $\eta(1_p, 1_s | z_R) = 1$ and since $\eta(1_p, 1_s | z_B) = 0$, the low ability veto player strictly prefers to veto a policy, which is inconsistent with the supposition $\tau(s_L, q) = 1$. □

Claim 9. In an equilibrium under shared origin for $\alpha < \bar{\alpha}(\beta)$, $\tau(s_L, q) < 1$ 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 (s_L, q) weakly prefers to veto a bill, at least one of (s_H, q_G) or (s_H, q_B) strictly prefers to do so, for any strategy of the voter. □

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, (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 $\alpha < \bar{\alpha}(\beta)$, and $\epsilon > 0$ sufficiently small, either $\tau(s_H, q_G) = 1$ or $\tau(s_H, q_B) = 1$.

Proof. The claim is correct if:

$$\max\left\{\frac{\epsilon}{1+\epsilon\varphi} + \eta(1_p, 1_s|z_G), -\frac{\epsilon}{1+\frac{\epsilon}{2}} + \eta(1_p, 1_s|z_B)\right\} \tag{36}$$

$$> \frac{1}{1+\epsilon\alpha}\left(\alpha(\epsilon + \eta(1_p, 1_s|z_G)(1+\epsilon)) + \frac{1-\alpha}{2}\left(\eta(1_p, 1_s|z_G) + \eta(1_p, 1_s|z_B)\right)\right) \tag{37}$$

which is true for any pair $(\eta(1_p, 1_s|z_G), \eta(1_p, 1_s|z_B))$. □

These results imply that under shared origin, for $\alpha < \bar{\alpha}(\beta)$, there are at most two strategy profiles for (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:

$$\frac{1}{2}\frac{\beta}{\beta + (1-\beta)\tau(s_L, q)} \geq \alpha + \frac{1}{2}(1-\alpha)\beta \tag{38}$$

or

$$\tau(s_L, q) \leq \frac{(1 + \alpha(\beta - 2) - \beta)\beta}{(\alpha(\beta - 2) - \beta)(\beta - 1)} \tag{39}$$

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

$$\frac{\beta\left(\alpha + (1-\alpha)\frac{1}{2}\frac{1}{2}\right) + (1-\beta)(1-\tau(s_L, q)\alpha}{\beta(\alpha + (1-\alpha)\frac{1}{2}) + (1-\beta)(1-\tau(s_L, q))} \geq \alpha + \frac{1}{2}(1-\alpha)\beta \tag{40}$$

or

$$\tau(s_L, q) \geq \frac{\alpha\beta - 2\alpha - \beta + 1}{2 - 2\beta} \tag{41}$$

and these requirements are consistent and feasible only if $\alpha \leq \frac{1}{3}$.

Proof of Proposition 4

I claim existence of an equilibrium in which, for $\epsilon > 0$ sufficiently small:

(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:

$$\alpha (1 + 2\epsilon) + \frac{1}{2}(1 - \alpha) = \hat{\eta}(\epsilon) (1 + \epsilon\alpha) \tag{42}$$

and $\eta(0_p, 0_s|z_R) = 1 - \hat{\eta}(\epsilon)$. Existence is immediate from arguments in the main text, so I 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 satisfying D2, $\tau(s_L, q) < 1$ 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 $\tau(s_H, q_B) = 1$. Finally, $\tau(s, q) > 0$ for at least one pair $(s, q) \in S \times Q$, and $\tau(s, q) < 1$ for at least one pair $(s, q) \in S \times Q$.

Proof. Follows from a straightforward extension of the proof of Claim 1. □

Claim 13. In an equilibrium under separate origin, $\tau(s_L, q) < 1$, for $\epsilon > 0$ sufficiently small.

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 subtypes (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, (s_L, q) may profitable deviate by vetoing the bill if

$$\begin{aligned}&\alpha (\eta(1_p, 1_s|z_G)(1 + 2\epsilon) + \eta(0_p, 1_s|z_G)(1 + \alpha\epsilon)) + \frac{1}{2}(1 - \alpha) (\eta(1_p, 1_s|z_G) + \eta(0_p, 1_s|z_G)(1 + \alpha\epsilon)) \\ &< 1 + \epsilon\alpha\end{aligned} \tag{43}$$

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 $\tau(s_H, q_G) > 0$:

$$\sum_{p\in\{p_L,p_H\}} \sum_{q\in\{q_G,q_B\}} \pi(p, s_H, q|z_R) \leq \beta \tag{44}$$

Proof. Suppose, to the contrary, $\sum_{p\in\{p_L,p_H\}} \sum_{q\in\{q_G,q_B\}} \pi(p, s_H, q|z_R) > \beta$. 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 $\sum_{p\in\{p_L,p_H\}} \sum_{q\in\{q_G,q_B\}} \pi(p, s_H, q|z_G) > \beta$ 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 retained to one in which she is replaced, after a veto, if:

$$\max\left\{\underbrace{\sum_{s\in\{s_L,s_H\}} \sum_{q\in\{q_B,q_G\}} \pi(p_H, s, q|z_R) + \frac{1}{2} \sum_{q\in\{q_G,q_B\}} \pi(p_L, s_H, q_B|z_R)}_{\text{retain proposer, retain veto player}}\right. \tag{45}$$

$$\left.\underbrace{\alpha + (1-\alpha)\frac{1}{2} \sum_{p\in\{p_L,p_H\}} \sum_{q\in\{q_B,q_G\}} \pi(p, s_H, q|z_R)}_{\text{remove proposer, retain veto player}}\right\} \tag{46}$$

$$> \max\left\{\underbrace{\sum_{s\in\{s_L,s_H\}} \sum_{q\in\{q_B,q_G\}} \pi(p_H, s, q|z_R) + \frac{1}{2} \sum_{s\in\{s_L,s_H\}} \sum_{q\in\{q_B,q_G\}} \pi(p_L, s, q|z_R)\beta}_{\text{retain proposer, remove veto player}}\right. \tag{47}$$

$$\left.\underbrace{\alpha + \frac{1}{2}(1-\alpha)\beta}_{\text{remove proposer, remove veto player}}\right\} \tag{48}$$

If $\sum_{p\in\{p_L,p_H\}} \sum_{q\in\{q_B,q_G\}} \pi(p, s_H, q|z_R) > \beta$, (46) strictly exceeds (48). Note, under the strategy profile, $\pi(p_H, s_H|z_R) = 0$. I show that (45) strictly exceeds (47) so long as

$\sum_{p\in\{p_L,p_H\}}\sum_{q\in\{q_B,q_G\}}\pi(p,s_H,q|z_R)>\beta$. Indeed, (45) exceeds (47) so long as

$$\tau(s_L,q)>\frac{1}{2} \tag{49}$$

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

$$\sum_{p\in\{p_L,p_H\}}\sum_{q\in\{q_B,q_G\}}\pi(p,s_H,q|z_R)=\frac{\beta(1-\alpha)\frac{1}{2}}{\beta(1-\alpha)\frac{1}{2}+(1-\beta)(1-\tau(s_L,q))} \tag{50}$$

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, she is removed with strictly positive probability, but by rejecting a policy she is retained with probability 1. For $\epsilon>0$ sufficiently small, this violates the incentive compatibility of her strategy $\tau(s_L,q)>0$. □

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

Proof. Suppose, to the contrary, that the opposite obtains. Then, (46) is strictly less than (48). $\sum_{p\in\{p_L,p_H\}}\sum_{q\in\{q_G,q_B\}}\pi(p,s_H,q|z_R)<\beta$ 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 $\sum_{p\in\{p_L,p_H\}}\sum_{q\in\{q_G,q_B\}}\pi(p,s_H,q|z_G)=1$, $\eta(1_p,1_s|z_G)+\eta(0_p,1_s|z_G)=1$, so $\tau(s_H,q_G)=1$. If instead $\tau(s_L,q)>0$ and $\tau(s_H,q_B)=0$, we have $\tau(s_H,q_G)=1$ 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, (45) is strictly less than (46) if

$$\sum_{q\in\{q_G,q_B\}}\pi(p_H,s_L,q|z_R)+\frac{1}{2}\pi(p_L,s_H,q_B|z_R)<\alpha+\frac{1}{2}(1-\alpha)\pi(p_L,s_H|z_R) \tag{51}$$

which is easily verified by substituting in strategies and parameters. 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 $\tau(s_H, q_G) = 0$. That $\sum_{p\in\{p_L,p_H\}}\sum_{q\in\{q_G,q_B\}}\pi(p, s_H, q|z_R) < \beta$ implies (46) is strictly less than (48). Moreover, (45) is strictly less than (47) so long as $\tau(s_L, q) < \frac{\tau(s_H,q_B)}{2}$. But for any $\tau(s_H, q_B)$, $\sum_{p\in\{p_L,p_H\}}\sum_{q\in\{q_G,q_B\}}\pi(p, s_H, q|z_R) < \beta$ 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 $\epsilon > 0$, since she is removed with probability 1 regardless of her action, but receives an additional payoff $\epsilon > 0$ when she passes the policy. This is inconsistent with the strategy profile. □

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 $\tau(s_L, q) = \bar{\tau}(\alpha)$.

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

Proof of Proposition 5

Under shared origin, proposer informativeness is

$$\frac{1-\alpha+2\alpha^2}{1+\alpha} \tag{52}$$

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

$$\frac{-1+3\alpha-\alpha^5(-2+\beta)^2-\alpha^2\left(3+\beta^2\right)+\alpha^4\left(8-6\beta+\beta^2\right)+\alpha^3\left(-1+2\beta+\beta^2\right)}{-1+\alpha+2\alpha^2} \tag{53}$$

Under separate origin, it is

$$-\frac{-1+\alpha+2\alpha^3(-1+\beta)+\alpha^4(-1+\beta)^2-\alpha^2\left(1+\beta^2\right)}{1+\alpha} \tag{54}$$

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

$$(1-\alpha)\alpha^2(1-\beta)(1-\alpha(1-\beta)+\beta) > 0 \tag{55}$$

which is true. The difference of the second and third expressions is positive so long as $\alpha < \frac{1}{2}$, which is true since $\alpha \leq \frac{1-\beta}{2-\beta}$ and $\beta > 0$.

Proof of Proposition 6

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

$$\frac{1}{4}\left(-\alpha(-4+\beta) - 2\alpha^2(-1+\beta) + 2\beta + \alpha^3\beta\right) \tag{56}$$

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

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

Under separate origin, it is

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

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:

$$\frac{1}{4}\left(-5\alpha(-2+\beta) + \alpha^2(-2+\beta) + 4\beta\right) \tag{59}$$

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

$$-\frac{1}{2}\alpha(-3+\beta) - \frac{1}{2}\alpha^2(-2+\beta) + \beta \tag{60}$$

Under separate origin, it is:

$$\frac{1}{4}\left(\alpha^2(2-3\beta) - \alpha(-6+\beta) + 4\beta\right) \tag{61}$$

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 $\beta \leq \frac{2\alpha}{1+\alpha}$.

Proof of Proposition 8

Consider the following strategy profile:

(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:

$$\frac{1}{2} + \frac{\alpha(1-\gamma)}{\alpha(1-\gamma)+(1-\alpha)(1-\sigma(p_L,w))}\left(\gamma - \frac{1}{2}\right) = \alpha\beta\gamma + \alpha(1-\beta)(2\gamma-1) + \frac{1}{2}(1-\alpha)\beta \tag{62}$$

which yields the mixture:

$$\sigma_1(\alpha,\beta,\gamma) = \frac{-1+\beta+\alpha^2(-2+\beta)\gamma(-1+2\gamma)+\alpha\left(-1+\beta+2\gamma-3\beta\gamma+2\gamma^2\right)}{(-1+\alpha)(1-\beta+\alpha(-2+\beta)(-1+2\gamma))} \tag{63}$$

satisfying $\sigma_1(\alpha,\beta,\gamma) \geq 0$ if and only if

$$\alpha \geq \frac{\sqrt{\beta^2(\gamma-1)^2 - 2\beta\left(6\gamma^3-8\gamma^2+\gamma+1\right)+4\gamma^4+8\gamma^3-16\gamma^2+4\gamma+1}+\beta(3\gamma-1)-2\gamma^2-2\gamma+1}{2(\beta-2)\gamma(2\gamma-1)}$$
$$= \bar{\alpha}(\beta,\gamma) \tag{64}$$

It is easy to verify incentive compatibility for all players, and all beliefs are updated on the equilibrium path. Finally, $\lim_{\gamma\to 1}\sigma_1(\alpha,\beta,\gamma) = \sigma(\alpha,\beta,1) = 1$ and $\lim_{\gamma\to 1}\bar{\alpha}(\beta,\gamma) = \bar{\alpha}(\beta,1) = \frac{1-\beta}{2-\beta}$.

Proof of Proposition 9

In an equilibrium in which $\tau(s_H, q_X, x) = 1$ and $\tau(s_H, q_Y, y) = 1$ and $\sigma(p_H, w_X) = 1 - \sigma(p_H, w_Y) = 1$, arguments that are similar to those used in the proof of Proposition

4 establish that we must have $\tau(s_H, q_Y, x) = 0$, $\tau(s_H, q_X, y) = 0$, and after a veto the reputation of the veto player must be equal to the prior, or:

$$\tau(s_L, q, x) = \frac{\alpha\gamma + \sigma(p_L, w)(1-\alpha)}{\alpha + 2\sigma(p_L, w)(1-\alpha)} \tag{65}$$

and

$$\tau(s_L, q, y) = \frac{\alpha\gamma + (1-\sigma(p_L, w))(1-\alpha)}{\alpha + 2(1-\sigma(p_L, w))(1-\alpha)} \tag{66}$$

I first prove Lemma 1, in two separate Claims.

Claim 17. There exists $\underline{\sigma}(\alpha, \beta, \gamma)$ such that in an equilibrium, if the voter weakly prefers to retain the proposer after policy x, $\sigma(p_L, w) \leq \underline{\sigma}(\alpha, \beta, \gamma)$, for any $\tau(s_L, q, x)$.

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

$$\sum_{s \in \{s_L, s_H\}} \sum_{q \in \{q_G, q_B\}} \pi(p_H, s, q | x_R) \geq \alpha \tag{67}$$

This implies

$$\begin{aligned} \sigma(p_L, w) &\leq \frac{-\beta\gamma + \beta\tau(s_L, q, x) - \tau(s_L, q, x) + 1}{2\beta\tau(s_L, q, x) - \beta - 2\tau(s_L, q, x) + 2} \\ &\equiv \underline{\sigma}(\alpha, \beta, \gamma) \end{aligned} \tag{68}$$

□

Claim 18. There exists $\bar{\sigma}(\alpha, \beta, \gamma)$ such that in an equilibrium, if the voter weakly prefers to retain the proposer after policy y is vetoed, $\sigma(p_L, w) \geq \bar{\sigma}(\alpha, \beta, \gamma)$, for any $\tau(s_L, q, y)$.

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

$$\sum_{s \in \{s_L, s_H\}} \sum_{q \in \{q_G, q_B\}} \pi(p_H, s, q | y_R) \geq \alpha \tag{69}$$

This implies

$$\sigma(p_L, w) \geq \frac{\beta\gamma + \beta\tau(s_L, q, y) - \beta - \tau(s_L, q, y) + 1}{2\beta\tau(s_L, q, y) - \beta - 2\tau(s_L, q, y) + 2}$$
$$\equiv \bar{\sigma}(\alpha, \beta\gamma) \tag{70}$$

□

Claim 19. $\bar{\sigma}(\alpha, \beta, \gamma) > \underline{\sigma}(\alpha, \beta, \gamma)$ for $\gamma > \frac{1}{2}$.

Proof. $\bar{\sigma}(\alpha, \beta, \gamma)$ is strictly increasing in γ, $\underline{\sigma}(\alpha, \beta, \gamma)$ is strictly decreasing in γ: $\underline{\sigma}\left(\alpha, \beta, \frac{1}{2}\right) = \bar{\sigma}\left(\alpha, \beta, \frac{1}{2}\right) = \frac{1}{2}$. □

This implies that in an equilibrium in which $\tau(s_H, q_x, x) = 1$, $\tau(s_H, q_Y, y) = 1$ and $\sigma(p_H, w_X) = 1$ and $\sigma(p_H, w_Y) = 0$, the proposer is removed with probability 1 after at least one policy is vetoed.

We can now proceed through the set of possible cases.

Case 1: $\sum_{k \in \{(1_p, 1_s), (1_p, 0_s)\}} \eta(k|x_R) > 0$

This implies $\sigma(p_L, w) \leq \underline{\sigma}(\alpha, \beta, \gamma)$. The payoff to the low ability proposer from submitting x is:

$$\frac{1}{2}\left(\beta + (1-\beta)\tau(s_L, q, x)\right) + \left((1-\beta)(1-\tau(s_L, q, x)) + \frac{\beta}{2}\right) \sum_{k \in \{(1_p, 1_s), (1_p, 0_s)\}} \eta(k|x_R) \tag{71}$$

whereas the payoff to submitting the policy y is:

$$\frac{1}{2}\left(\beta + (1-\beta)\tau(s_L, q, y)\right) \tag{72}$$

Note that we have $\tau(s_L, q, y) < \tau(s_L, q, x)$ if $\sigma(p_L, w) < \frac{1}{2}$. But the supposition $\sigma(p_L, w) \leq \underline{\sigma}(\alpha, \beta, \gamma)$ implies this, so the low ability proposer strictly prefers to submit the policy x, yielding a contradiction.

Case 2: $\sum_{k \in \{(1_p, 1_s), (1_p, 0_s)\}} \eta(k|y_R) > 0$

This possibility is ruled out by following the same reasoning as Case 1.

Case 3: $\sum_{k\in\{(1_p,1_s),(1_p,0_s)\}} \eta(k|x_R) = \sum_{k\in\{(1_p,1_s),(1_p,0_s)\}} \eta(k|y_R) = 0$

Then, the low ability proposer must play a mixed strategy, satisfying:

$$\frac{\alpha\gamma + \sigma(p_L, w)(1-\alpha)}{\alpha + 2\sigma(p_L, w)(1-\alpha)} = \frac{\alpha\gamma + (1-\sigma(p_L, w))(1-\alpha)}{\alpha + 2(1-\sigma(p_L, w))(1-\alpha)} \tag{73}$$

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

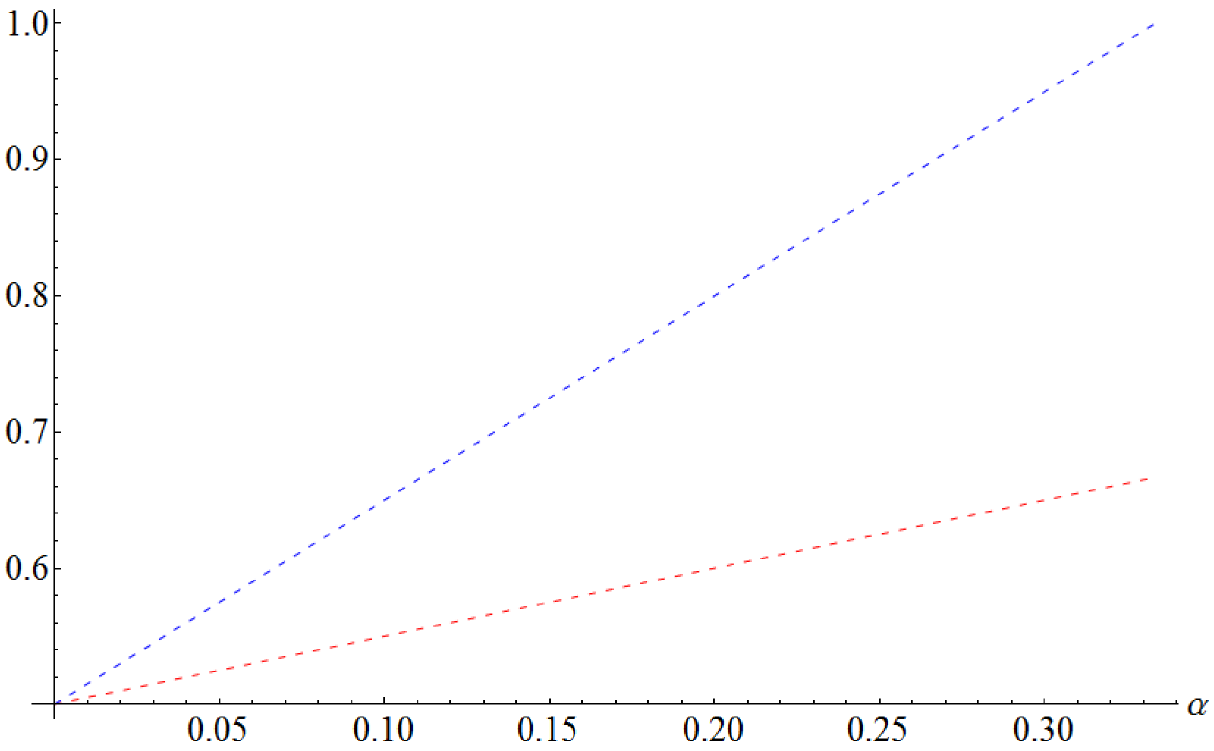

Figure 1: The probability that a bill is implemented by the low ability veto player under shared origin (blue) and separate origin (red), on the interval $\alpha \in [0, \bar{\alpha}(\beta)]$, for $\beta = \frac{1}{2}$.

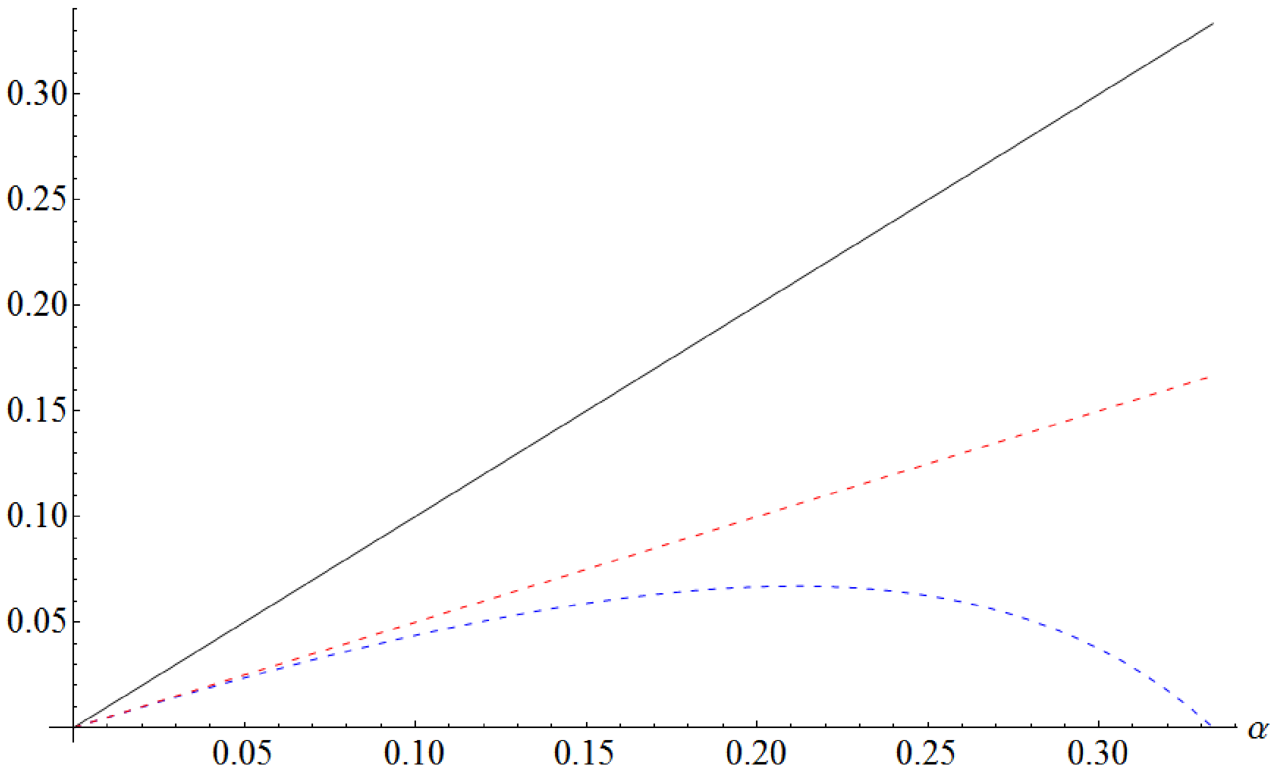

Figure 2: The voter's posterior belief that the proposer is high ability after a veto under shared (blue) and separate (red) origin, on the interval $\alpha \in [0, \bar{\alpha}(\beta)]$, for $\beta = \frac{1}{2}$. The black line indicates that in both cases, the proposer's reputation falls below the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