Parliamentary or Presidential Government?

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Preliminary and Incomplete: Please do not circulate beyond internal seminars.

Abstract

I compare parliamentary and presidential government in a model with an executive and a decisive parliamentarian, whose ability to submit bills of high quality, or learn their quality, respectively, is private information. After observing the actions of each politician, the voter chooses whether to retain each politician or replace them with a randomly drawn alternative. Under presidential government, the voter is allowed to choose distinct replacement strategies for each politician, whereas under parliamentary government, the voter is committed to using the same replacement strategy for both politicians. Whilst the richer set of strategies available to the voter under presidential government makes it a superior choice for the voter in an environment of complete information, in the case of private information and re-election motives the parliamentarian in a presidential system establishes a reputation for competence at the expense of the executive, by vetoing executive bills. In turn, this leads the executive to distort her choice of policy initiatives in order to conform to the prior belief of the voter, even when she has private information that contradicts the prior. Under parliamentary government, by contrast, the parliamentarian is effectively absent, unwilling to obstruct the executive’s program for fear of inducing their joint removal, but this provides the executive with stronger incentives to follow her private information. I compare the ability of the voter to learn about the quality of politicians under each system and her ability to remove politicians that she would wish to remove if she were perfectly informed about their types. I also consider the possibility of institutionalized cooperation between the executive and legislative branches under each system.
1. Introduction

What are the consequences of parliamentary and presidential government for transparency, accountability, and the quality of legislative output? In this paper, I construct a novel framework with which to elaborate the systematic trade-offs between each system of government in respect of these desiderata. These trade-offs emerge from institutional arrangements which separate more or less formally the electoral fortunes of executive and parliamentary political actors. In order to explore these issues, I compare the implications of a system in which voters may separate their decision to re-elect the executive and parliamentary bodies from those in which these decisions are institutionally conjoined. I show that institutional independence of electoral fates does not imply their strategic independence, and that variation in formal independence has striking consequences for the strategic interdependence of executive and legislative actors, with commensurate implications for the comparative performance of each system, and in turn, the welfare of the voter.

The object of principal concern in my argument is information, and in particular, I ask the following questions:

(1) which system provides the voter with the greatest opportunity to acquire information about qualities of her elected representatives?

(2) Which system provides the voter with the greatest opportunity to use their information to remove politicians of low quality?

(3) Which system provides parliamentary and executive actors with incentives to use their information to best serve the interests of the voter? In particular, is the welfare of the voter best served by setting ambition against ambition?

A distinguished body of positive and normative democratic theory affords primacy to elections as a mechanism to select politicians of high quality, and remove those who have proven themselves otherwise ineffective. For example, Fearon (1999) argues that the principal problem for a voter is to make an inference about the qualities of the politician from observed outcomes and that the purpose of elections is to provide the former with an instrument for the removal of politicians who she believes to be worse than the expected quality of an
untested alternative. William Riker, in the light of impossibility theorems due to Arrow, Gibbard-Satterthwaite and McKelvey, argues that elections can have only limited success in aggregating preferences, and instead may best be conceived as an instrument “for the rejection of the offending” (Riker 1982, 242). Even Madison identifies the selection of high quality politicians as the primary necessity of elections, arguing that “The aim of every political constitution is, or ought to be, first to obtain for rulers men who possess most wisdom to discern, and most virtue to pursue, the common good of the society; and in the next place, to take the most effectual precautions for keeping them virtuous whilst they continue to hold their public trust” (Hamilton et al. (1996)). The supposition that a voter should use observed political outcomes to learn about politicians and make this the basis for their prospective retention must confront a difficulty, however. In an environment where the voter is able to make inferences about the politician that would be decisive in her decision to retain or remove her, the latter has an incentive to manipulate that information. Alternatively stated, the greater the scope the voter has to learn about the politician from her observed actions, the greater the propensity of the latter to distort those actions in order to convey favorable information, and the less the voter can in fact learn as a consequence. Though a simple observation, it is a tension that lies at the heart of the present paper.

To ease the reader into the analytical framework that will follow, consider a stylized legislative process in which the role of the executive is propose a bill, and the role of a parliamentarian is to serve as a veto player, in the language of Tsebelis (2002), either passing the bill or rejecting it. Suppose that each of the executive and parliamentarian may be a good or a bad type, as suggested by Fearon (1999). The distinction between types is the comparative ability of each type to learn about an underlying state of the world, and thus identify which policy measure would be most appropriate: suppose that high types always identify the most appropriate policy response to the state, whereas low types do so only with some probability strictly less than one. The voter would prefer to have good types in office, and will learn about each type from her observation either of the outcomes associated

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1There is no reason why these roles could not be reversed, either at this stage or in the formal exposition that follows.
with implemented bills, or of a veto of the bill by the parliamentarian. How, in this setting, can the parliamentarian attempt to convince the voter of her discerning abilities? When the voter observes the implementation of a bill, she can learn its payoff consequences; when a bill is rejected, the voter learns nothing more than that the bill was rejected. Suppose that the voter believes that the rejection of the bill indicates that the parliamentarian must be a good type who learned that the bill would have yielded adverse consequences for the voter were it to be implemented. This has two implications: first, it induces the voter to hold a favorable view of the parliamentarian in the event that she vetoes the bill. Second, it indirectly leads the voter to form a negative perception of the executive, since conditional on the bill having had adverse consequences for the voter, it is relatively more likely to have been sent by an executive that incorrectly discerned the state. In a system of government which separates the electoral fate of the parliamentarian and the executive, this may provide unwholesome incentives to the parliamentarian to obstruct the executive’s program in order to appear as if she were a good type, indirectly hurting the executive even in the absence of an explicit desire to do so. That such an incentive may exist is argued fervently by Walter Bagehot. He writes: “The natural tendency of the members of every legislature is to make themselves conspicuous... they wish to make their will felt in great affairs. All these mixed motives urge them to oppose the executive. 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, 91). In respect of US presidentialism, Laski similarly argues: “Each house of Congress has a separate prestige; their common prestige is, by their nature, inherently anti-presidential in character. To be something, Congress is forced to take a stand against the President; it cannot be anything if it merely follows his lead... The result of the system, normally, is to dissipate strength rather than to integrate it” (Laski 1940, 159).

If a presidential system may have a tendency to generate excessive parliamentary obstruction, what should we expect of parliamentary government? Consider a setting in which the parliamentarian’s fate is entirely attached to the fate of the executive. If the benefit to the parliamentarian’s reputation after a veto is outweighed by the loss in reputation of the executive, the former may not be sufficient for the voter to prefer the retention of both
politicians. In that case, we might expect to see precisely the opposite pathology: a parliamentarian who affords no protection to the voter since to provide such protection is to undermine her own political survival.

A preliminary objective of this paper is to explore how differences in the institutional conjoining of electoral interests between the executive and legislature might generate these different patterns of executive and legislative relations, as reified in the legislative process. By far the more important component, however, is to address the consequences of these patterns for the welfare of the voter, and a set of criteria which constitutes a part of that welfare analysis. The first question I ask is: can the voter be reliably better informed under parliamentarism or presidentialism about the types of politicians she faces, given the incentives of these individuals to manipulate that information? This question relates to a broader interest in the comparative politics literature on the tendency of different political systems to generate ‘clarity of responsibility’ in the perceptions of the voter. This literature focuses on the ability of voters to attribute economic outcomes to the actions of political actors, and, broadly speaking, suggests that systems in which executive and legislative control is vested in a single agent, such as a political party, the ability of the voter to make such attributions is greatest. What is often missing from these arguments is a consideration of whether transparent political institutions should be desired for their own sake, and if not, how the prospective benefits to the voter from more transparent institutions should be weighed against potential opportunity costs in other dimensions of institutional design. For example, consider Westminster-style parliamentarism, in which the empirical success rate of executive-sponsored legislation is virtually one hundred percent. In this case, the voter is able to obtain very good information about the type of executive in the sense that she observes the payoff consequences of every bill. If the result is a sequence of bad bills, however, is the cost of learning too high? Would the voter prefer to have a more active parliamentarian who occasionally censored the voter’s observation of the policy outcome if this provided her with less potent information about the executive, but inoculated her against bad policy initiatives? The analytical framework I construct will allow me to address this and related

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2Canonical references in this area include Powell Jr and Whitten (1993) and Lewis-Beck (1990).
Having considered which of presidentialism and parliamentarism might provide the voter with the best information about the types of politicians she faces, I next ask the following complementary question: conditioning on the voter’s information, does one or other system provide her with a more effective set of tools to remove politicians that she believes to be low types? As Anderson (2007) points out, accountability consists both of learning about politicians and being able to use that information at the polls, and there may be trade-offs between these objectives. Presidential government, for example, provides the voter with a rich set of tools for choosing the composition of her government: if she likes the incumbent president, but dislikes the majority tendency in the legislature, she may retain the former but remove the latter, and the reverse is of course also true. Under parliamentary government, the voter loses direct control of the composition of the executive. On the one hand, this disparity in replacement instruments favors presidentialism, since conditional on the quality of the voter’s information, she can apply it more directly to replace or remove the executive and parliamentarian in this system. On the other hand, if a by-product of this separation is to give the parliamentarian an incentive to obstruct the passage of bills, therefore obscuring the voter’s ability to learn about the ability of the executive to deliver favorable outcomes, her ability to make better use of her information may be outweighed by a deterioration in its quality. This is one of the trade-offs that I explore in the formal argument.

In addition to studying the provision of information to the voter under alternative institutions, and the comparative ability of the voter to act on said information, I also study the trade-offs that exist in providing incentives to the executive and parliamentary branches simultaneously to act on their own information. To understand this trade-off, consider a system of Westminster-style parliamentarism, in which executive bills are generally passed without any significant revision or modification in the legislature. One cost of such a system is the revealed unwillingness or inability of the legislature to perform its proper function of legislative scrutiny. In such a setting, however, the executive’s decision as to what kinds of policies to submit are not influenced by considerations of which kinds of bills are most likely to succeed in the legislative process, since such success is almost always a foregone conclusion. In that sense, the strategic calculus of the executive is ‘uncontaminated’ by concerns about
the behavior of the parliamentarian. Consider, alternatively, a presidential system such as that of the United States, in which the legislature is far more engaged in its function of scrutinizing, modifying and throwing out executive sponsored legislation. Suppose that the executive may submit one of two policies, $x$ and $y$, and knows that public opinion strongly favors $x$. Now, consider the possibility that the executive comes to believe through its investigations and consultation that in fact policy $y$ would best serve the interests of the voter. In a system with no effective legislative opposition, the executive should submit that policy, since if she believes that its success is more likely and that her return to office is conditioned on the success of her program, it is in her interests to submit that bill. A ‘bad’ parliamentarian, however, recognizes that her obstruction of the executive’s policy is relatively more credible in the eyes of the uninformed public the more the executive’s original submission contradicted the public’s prior conviction that $x$ was the more appropriate policy, and may respond all the more aggressively to the submission of $y$ as a result. At the margin, this may induce the executive to submit the bill $x$ instead of the bill $y$, if the relative likelihood of $y$ succeeding conditional on being implemented, versus $x$, is outweighed by the increased likelihood that that the latter survives the legislative process. In this case, we have the problem that the greater willingness of the parliamentarian to make use of her information in deciding whether to pass or reject the policy indirectly pollutes the executive’s incentives to follow her own beliefs. This is often referred to in the economics literature as ‘herding’, since the executive contradicts his private information in favor of actions that are ex ante favored by the uninformed observer. In the US phenomenon, it is explored by Canes-Wrone et al. (2001), who show that presidents may ‘pander’ to public opinion by implementing policies that conform to the public’s prior beliefs about which policy was most appropriate. In their model, this propensity is not an inherently presidential one, since it is driven purely by a decision-maker’s incentives to cultivate a favorable reputation in her bilateral relationship with the voter. In my model, by contrast, this propensity is inherently tied to presidentialism because it arises through the mediation of the president’s relationship with the voter by a legislature which has institutional incentives to obstruct her bills. In particular, I find that parliamentarism provides maximal incentives to the executive to act on her information, but that presidentialism provides maximal incentives to the parliamentarian to
make use of hers.

My analytical framework for comparing presidentialism and parliamentarism makes a significant point of departure with existing formal comparative work, which focuses on the Lasswellian conception of politics as ‘who gets what when, where and how’. The formal distinction between each system of government is made with respect to the comparative agenda-setting or proposal powers enjoyed by the executive (for example, Robinson and Torvik [2008]), or the vote of no confidence procedure in parliamentary government, which ties the fortunes of the executive and a subset of legislators on whose support the former relies (Huber [1996], Diermeier and Vlaicu [2011]). These institutional features privilege some politicians or their districts more than others, and can be used to explain differences both in patterns of overall government spending (Persson and Tabellini [2005]). Whilst these are surely important mechanisms, the present paper attempts to fill an important gap in our understanding of the comparative function of these two systems of government with respect to problems of selecting high quality politicians, and the effects of this voter objective on the relationship between the executive and legislative branches. In this regard, the paper explores ideas that are related to those considered by Strom in his work on accountability and delegation in parliamentary and presidential democracies, (Strom [2003]). He argues that each system of government may usefully be defined as providing different ‘chains’ of delegation between voters, elected representatives, and bureaucracies. Parliamentary democracy focuses on a single, direct chain from voters to politicians to bureaucrats, none of whom are placed in direct competition with one another for the principals favor. Presidentialism, by contrast, contains multiple such chains, whereby the voter simultaneously delegates responsibilities to more than actor in a manner that encourages competition between them. Strom considers alternative agency problems, including both adverse selection and moral hazard, concluding that each system may perform more successfully in mitigating one or other contracting environment. The present model takes these ideas seriously, and provides an analytical framework not only with which to pose these and other questions, but to characterize sharply the mechanisms that may generate such trade-offs.

In addition to providing answers to the above questions, I consider a number of extensions to the baseline model. First, I show that parliamentary systems provide incentives
for the formation of organized cooperation between politicians to fully capture the positive externalities in the career prospects of each branch of government, but that such a motive is absent in the model under presidentialism. Second, I show that parliamentary government provides incentives to executives to undertake costly investments in the quality of the information to a greater extent than does presidentialism. Finally, I consider parliamentary government in which the survival of the parliamentarian is less tightly connected to the survival of the executive than is assumed in the baseline. The idea is designed to capture non-majoritarian parliamentary systems in which the vicissitudes of coalition government only imperfectly tie together the fate of the parliamentary and executive branches, and show that this generates a result that may lie somewhere between the benchmark results for presidential and parliamentary systems.

2. Model

The set of players is \( N = \{e, m, v\} \), an executive (e), a decisive parliamentarian (m) and a voter (v), and the game lasts two periods. The set of states is \( \Omega = \{X, Y\} \), with \( \Pr(X) = \theta \geq \frac{1}{2} \). In each period, the executive moves first, selecting from a set of possible actions \( A_e = \{x, y\} \), interpreted as policy alternatives. An executive is either a high or low type, denoted \( e_h \) and \( e_l \), respectively. The distinction between high and low types is with respect to their comparative abilities to identify the appropriate policy. Each executive type receives a private signal \( \phi \in \{\phi_x, \phi_y\} \); the probability that the signal matches the successful policy is 1 for the high type, and \( \gamma \geq \theta \) for the low type. The commonly held prior belief that the executive is a high type is \( \Pr(e^h) = \alpha \).

After the submission of a bill \( i \in \{x, y\} \), the parliamentarian observes a private signal drawn from \( \Psi = \{\psi_x, \psi_y\} \) and chooses an action \( a_m \in \{p_i, r_i\} \), interpreted as passing or rejecting the bill. The parliamentarian may be either a high or low type, denoted \( m_h \) or \( m_l \). If the parliamentarian is a high type, with probability 1 he receives the signal which matches the state. To minimize algebraic complications and subcases, I fix the signal strength of the low type at \( \frac{1}{2} \). The commonly held prior belief that the parliamentarian is a high type is \( \Pr(m^h) = \beta \). Throughout the paper, I assume \( \alpha \geq \frac{1-\beta}{2-\beta} \). In the Appendix, I show that this
assumption is not necessary for the main results of the paper, and it is employed only to make the presentation more concise.

The problem faced by the voter is to draw an inference about the type of each politician, and choose a retention strategy from a constitutionally set of possible actions, in order to maximize her expected utility. Let the action set of the voter be denoted

\[ A_v = \{ (1_e, 1_m), (0_e, 0_m), (1_e, 0_m), (0_e, 1_m) \} \]

where 1_i for i \in \{e, m\} denotes the retention of politician i, and 0_i denotes the replacement of politician i; if a politician is replaced, the voter draws a new politician with the same prior probabilities over types. The fundamental distinction between systems of governments which solely drives all of the results in the model is the set of possible actions from which the voter may choose:

(i) under \textit{presidential government}, I assume that the voter may that the voter may separate the decision to retain or replace the majority parliamentarian and the executive. That is, I assume that she may select any action from the set \( A_v \).

(ii) under \textit{parliamentary government}, I assume that the voter cannot separate the retention and replacement decision of the executive and parliamentarian. That is, I assume that the voter may only select an action from the first two elements of \( A_v \).

I assume that each agent i \in \{m, e\} knows his own type, but not that of the other agent, and of course that the voter knows only the common prior on types. The timing of the game is as follows:

(1) Nature draws the pair of politicians, the state and a private signal for the executive.

(2) The executive chooses \( a_e \in \{x, y\} \).

(3) Nature draws a private signal for the parliamentarian. The parliamentarian chooses whether to pass \( (a_m = p_i) \) or reject \( (a_m = r_i) \) the bill \( i \in \{x, y\} \):

(3iia) if \( a_m = p_i \), the quality of the bill is observed by all agents, and the game proceeds to step (4).
(3iiib) if \( a_m = r_i \), the quality of the bill is not observed by agents, and the game proceeds to step (4).

(4) the voter updates her beliefs about both agents and chooses whether to replace either one or both actors according to the constitution;

(5) Steps (1) through (3) are repeated, after which all payoffs are collected and the game ends.

The set of all first period outcomes is

\[ R = \{r_x, r_y, x_g, y_g, x_b, y_b\} \]

where, for \( i \in \{x, y\} \), \( r_i \) means that the bill \( i \) was submitted to the parliamentarian and vetoed, \( i_g \) means that the bill \( i \) was submitted to the parliamentarian, passed and matches the state, and \( i_b \) means that a bill was submitted to the parliamentarian, passed and does not match the state. The payoffs of the players are as follows. For the voter, the per-period payoff as a function of \( z \in R \) is

\[
u_v(z) = \begin{cases} 
1 & \text{if } z \in \{x_g, y_g\} \\
0 & \text{if } z \in \{r_x, r_y\} \\
-1 & \text{if } z \in \{x_b, y_b\}
\end{cases}
\]

Politicians are solely office-motivated, and receive a payoff of 1 if they are re-elected, and zero otherwise. In the second round I since there is no re-election motive, I assume that they maximize the welfare of the voter at that stage. This is equivalent to assuming that in both periods politicians maximize a weighted sum of the voter’s payoff (weighted by, say, \( \rho > 0 \)) and their probability of re-election, and preceding all results in the paper with the phrase “for \( \rho \) sufficiently small”. There is no discounting and since the model takes place in two periods, we observe that in the continuation game beginning in the second period, there is no re-election motive, and so each politician type will act solely to maximize the payoff of the voter.

Whilst there are two nominal types of each player, the set of possible player types is four for each player, since each of the high type or low type player may also receive a high or a low signal, and the reader will recall that a ‘type’ is a specification of all the information.
that a player has, which also includes the signal she received. Furthermore, the types are correlated; to see this, suppose that the executive is a high type and the parliamentarian is a high type. Conditional on the executive submitting the bill which matches her signal, the high type parliamentarian’s signal matches the bill with probability 1. Furthermore, it is both an important technical and substantive implication of the game form that the action taken by one player conveys information to the voter about the other player’s type. As such, the game form suggests the imposition of some additional sensible restrictions to impose on the definition of a perfect bayesian equilibrium, in order to generate a unique equilibrium prediction.

Therefore, the solution concept is perfect extended-Bayesian equilibrium (Fudenberg and Tirole (1991)). This definition places additional structure on beliefs off the equilibrium path in addition to the usual requirement of weak consistency. The most relevant component of the definition for the present case is a requirement that players not be able to convey information to the voter through their actions that these players do not themselves possess. To see why this is important, suppose that we have an equilibrium in which each parliamentarian type passes a bill with probability 1, regardless of her signal. Then, suppose that the voter were to observe a veto by the parliamentarian, which occurs with probability 0 in equilibrium. Weak consistency of beliefs permits the voter to believe that the parliamentarian is a low type who received an unfavorable signal with probability 1, and that the executive is a low type with probability 1. This is problematic because if indeed the voter believes that the parliamentarian is a low type who received an unfavorable signal, she should update her beliefs about the probability of the executive being a high type, conditional on being vetoed by a low type parliamentarian with a signal strength of one half and who therefore could not herself form such a pessimistic belief about the executive, based on her own information. The definition of equilibrium used in the paper imposes the requirement that a player’s action conveys information about other players’ types only to the extent that it conveys information about his own type. In addition, I employ the refinement D2 from Cho and Kreps (1987). Loosely speaking, this requires voters to concentrate beliefs about a player type who might have deviated to an off-path action on those player types for whom the deviation would be most profitable. A formal definition of equilibrium is in the Appendix.
3. Benchmark: Complete Information

I begin by examining the case in which the voter has complete information about the type of executive and parliamentarian in office. This benchmark yields a strong conclusion.

**Proposition 1.** If the voter has complete information about each politician’s type, and politicians maximize the welfare of the voter, presidential government yields the voter a strictly higher expected payoff than does parliamentary government.

With complete information, presidential democracy is superior to parliamentary democracy because it offers the voter a richer set of replacement strategies than is available to her under parliamentary democracy. In particular, any strategy that the voter may choose under parliamentary democracy is also available to her under presidential democracy. This expanded set of feasible actions leads presidentialism to strictly dominate parliamentarism when the executive is known to be a low type and the parliamentarian is known to be a high type, in which case the voter would prefer to replace the former and retain the latter. Under presidential democracy, this strategy is available to the voter, whereas it is it not available to him under parliamentary democracy. If the probability of drawing a high type executive is sufficiently large, it is worth taking the risk of jointly replacing the politicians under parliamentary democracy, since obtaining a high type executive is sufficient for obtaining an expected payoff of one in the next period. If the probability of drawing a high type executive is sufficiently low, however, it is better to retain both politicians, since at the very least the parliamentarian is a high type and serves as an effective antidote to an ineffective executive and redrawing both politicians may result in a both a weak executive and a weak parliamentarian. In both cases, however, the expected utility of the voter is strictly greatest under presidential democracy.

4. Equilibrium under Parliamentary Government

I now turn to the strategic analysis, in which politicians are assumed to be office-motivated and their types are private information. I begin by characterizing the unique equilibrium of the game under parliamentary government; a formal characterization and proof is in the Appendix.
Proposition 2. Under parliamentary government, there is a unique equilibrium in which:

(i) each executive type submits the bill corresponding to his private signal;

(ii) both parliamentarian types pass a bill regardless of their signals. If a veto occurs, the voter believes that the parliamentarian is a high type who received an unfavorable signal; and,

(iii) The voter retains both politicians with probability 1 if a bill is passed which matches the state. Otherwise, she removes both politicians with probability 1.

Under parliamentary government, the re-election of the decisive parliamentarian is institutionally inseparable from that of the executive. In particular, whilst a veto in equilibrium provides favorable information to the voter about the discerning qualities of the parliamentarian, it necessarily conveys unfavorable information about the type of executive in office. Under presidential government, this would be sufficient to secure the retention of the parliamentarian but under parliamentary government, the sacrifice in the reputation of the executive makes her accretion of reputation a pyrrhic achievement. As a result, the parliamentarian acts as a mere rubber stamp, providing the voter with no protection from bad policies, since any attempt to do so would result in her immediate removal along with the executive.

One mitigating property of the equilibrium, however, is that the actions of the executive are efficient under parliamentary government, in the sense that the executive submits the bill which she believes is the most likely to match the state. Since the parliamentarian is effectively absent, the executive is motivated to use her information fully in order to

3The reader should note that the reason for specifying that the high type passes a bill even though she believes that the bill fails to match with probability 1 is simply to lend robustness to the result: for any specification of the model in which the signal strength of the high type is strictly less than 1, after an unfavorable signal, the high type would believe that a bill is successful with positive probability, and so long as office motivation sufficiently dominates her concern for the voter, she would pass the bill in order to be re-elected with positive probability. Therefore, I select the action for the high type that survives the relaxation of a signal strength of one.
secure the greatest possible chance of re-election. In this sense, the unwillingness of the parliamentarian to make use of her information provides the executive with a powerful incentive to make use of her own information. The significance of this trade-off will become clearer in the comparison with equilibrium under presidential government.

5. Equilibrium under Presidential Government

I now characterize the equilibrium under presidential government, and contrast it with the previous results for parliamentary government. The principal finding is that whilst presidential government gives the parliamentarian a stronger incentive to veto bills than under parliamentary government, this activity may lead to distortions in the submission strategy of the executive in favor of bills that are more likely to be passed.

Proposition 3. Under presidential government, there is a unique equilibrium, in which:

(i) the high type parliamentarian passes the bill if she receives a favorable signal, and vetoes it otherwise. The low type parliamentarian vetoes each bill with positive probability;

(ii) the high type executive submits the bill corresponding to his private signal;

(iii) there exists $\bar{\gamma} > \theta$, such that

(iii.a) if $\gamma \in [\bar{\gamma}, 1]$, the low type executive submits the bill corresponding to his private signal,

(iii.b) if $\gamma < \left[\frac{1}{2}, \bar{\gamma}\right)$, the low type executive submits the bill $x$ after the signal $\phi_x$, and randomizes over $x$ and $y$ after the signal $\phi_y$;

(iii) the voter retains the parliamentarian with positive probability after a veto, removes her after an unsuccessful bill is passed, and retains her with probability 1 after a successful bill is passed.

(iv) there exists $\bar{\alpha} > \frac{1}{2}$ such that
(iv.a) if $\alpha \geq \bar{\alpha}$, or $\alpha < \bar{\alpha}$ and $\gamma \geq \bar{\gamma}$ the executive is retained with probability 1 after a bill is passed which matches the state. Otherwise, she is removed with probability 1.

(iv.b) if $\alpha < \bar{\alpha}$ and $\gamma < \bar{\gamma}$, the executive is retained with probability 1 after a bill is passed which matches the state, and with positive probability after the bill $y$ is vetoed. Otherwise, she is removed with probability 1.

Under presidential government, the retention of the parliamentarian can be separated from the retention of the executive. In contrast with parliamentary government, therefore, the conveyance of unfavorable information to the voter about the executive does not directly compromise her own survival. On the contrary, and consistent with the reasoning of Bagehot and Laski, the only way that the parliamentarian may accrue a favorable reputation with the voter is by obstructing the executive’s program. In equilibrium, the low type parliamentarian vetoes a bill to the point where the posterior belief of the voter about her type is equal to her prior belief, and this increase in activity is injurious to the re-election prospects of the executive. In fact, the executive is removed immediately upon a veto, for almost all of the parameters under consideration.

In addition, the equilibrium strategy of the low type executive may be distorted by the actions of the parliamentarian. To see why this might be the case, recall that after she receives a signal that the state is $Y$, her utility from submitting the bill $y$ is greater than that of submitting the bill $x$ only if:

$$\Pr(y \text{ is passed by the parliamentarian}) \times \Pr(y \text{ matches the state}) \geq \Pr(x \text{ is passed by the parliamentarian}) \times \Pr(x \text{ matches the state})$$

When there is no propensity on the part of the parliamentarian to veto the executive’s bills, such as under parliamentary government, this condition reduces to the standard requirement that $\gamma \geq \theta$, or that the executive’s signal strength be sufficiently great that she believes $y$ matches the state with greater probability than does $x$. In particular, the efficient action for the executive in the absence of interference is to propose $y$ for any $\gamma \geq \theta$. Under presidential government, however, the low type parliamentarian always passes a bill $x$ with
greater probability than she does $y$, since it is favored by the prior ($\theta > \frac{1}{2}$), a form of herding. As $\gamma$ tends to $\theta$, there comes a point at which the bill $x$ becomes a favorable substitute for $y$ because the parliamentarian is less likely to reject the bill. The threshold of signal strength $\gamma$ necessarily strictly exceeds $\theta$, generating an informational inefficiency on the part of the executive. That inefficiency manifests in two ways: first, the cut-off $\bar{\gamma}$ can be significantly higher than $\theta$ for some values of the parameters, and is particularly so when $\beta$ is small relative to $\alpha$. Second, conditional on $\gamma < \bar{\gamma}$, the extent to which the executive distorts her choice of bill even though she believes $y$ to be the better match can also be very large, and this tendency is exacerbated as $\theta$ rises to unity.

Thus, there appears to be a trade-off between providing each of the executive and parliamentarian with incentives to make use of their information. In the next section, I explore the pattern of these trade-offs in more detail, and show that these equilibria generate additional trade-offs for the voter between learning about the types of politicians in office, and conditional on that information, being institutionally equipped to use that information for the replacement of low types.

6. Comparing Institutions: Transparency, Accountability, Productivity, and The Quality of Governance

In this section, I wish to compare and rank presidential and parliamentary government according to the criteria elaborated at the start of the paper. There are many ways in which a ranking could be constructed, however. Recall that there are four possible type pairs of politicians, corresponding to two types of parliamentarian and two types of executive. Associated with each of these four possible draws is an expected equilibrium outcome, where the expectation is taken over the realization of the state, the signals that players receive, and the mixed strategies of the players. One plausible manner of comparison is to take the expectation over these equilibrium outcomes for each possible realization, and further take an expectation over the realization of players’ types and compare these values across institutions. A more powerful conclusion, however, would be obtained if we could establish the ranking for each possible realization of players’ types, without having to take a further expectation over players’ types and this the approach that I take. So, when I claim that
presidentialism is ranked above parliamentarism with respect to a particular criterion, I am saying that for each of four possible realizations of executive-parliamentarian player-type pairs, the ranking holds for each and every case. Therefore, this the results here are quite strong.

First, I wish to compare the performance of the legislative process under each system, as reified in what I refer to as particular kinds of ‘errors’. We will say that a Type I error occurs when a bill which does not match the state is submitted to and passed by the parliamentarian. Conversely, we say that a Type II error occurs when a bill which matches the state is submitted to and vetoed by the parliamentarian. Each type of error captures an important pathology of the equilibria identified above: type I errors may indicate that the parliamentarian is not sufficiently attentive to its role as an information intermediary, allowing bills of low quality to survive its scrutiny when the voter’s interests would be best served with intervention. On the other hand, a type II error may indicate that the parliamentarian is interposing herself between the executive and the voter to too great an extent, obstructing the passage of bills that the voter would prefer to be implemented.

**Proposition 4. (Type I and Type II Errors)**

1. If \( \gamma \geq \bar{\gamma} \), parliamentary government maximizes the probability of a Type I error. If \( \gamma < \bar{\gamma} \) either system may maximize the probability of a Type I error.

2. Presidential government maximizes the probability of a Type II error.

As I have defined them, Type I errors are generated by two (not necessarily strategic) failures, in that both the executive must have submitted a bill which fails to match the state, and the parliamentarian must pass the bill. Proposition 4 confirms that whilst parliamentary government always maximizes the probability that a parliamentarian passes a bill which fails to match the state, this does not imply that presidentialism must outperform parliamentarism in this regard. In fact, when \( \gamma < \bar{\gamma} \), the laxity of the parliamentarian’s behavior may be dominated by the tendency of the executive to randomize over bills even though he believes that \( y \) is strictly more likely to succeed, conditional on being implemented. The possibility that presidential government maximizes the probability of a Type
I error becomes greater when \( \theta \) is large, since the president’s mixed strategy places the greatest weight on submitting \( x \) after a signal that the state is \( Y \) in this case. Therefore, the additional protection accruing to the voter in respect of the parliamentarian’s willingness to veto may be outweighed by the magnitude of inefficiency in the behavior of the executive.

Type II errors are entirely located in the behavior of the parliamentarian, and as one would expect from the description of equilibrium, the fact that both parliamentarian types veto with higher probability under presidential government implies that it is more likely to deliver an outcome in which the correct bill was submitted to the parliamentarian, and that he subsequently vetoes it.

I earlier identified government transparency to be an important quantity of comparative interest in the analysis of parliamentary and presidential government. A notion of transparency must capture the idea that the voter wishes to learn about the qualities of elected representatives, so as to make replacement and retention decisions that are well informed.

In the present model, a natural interpretation of government transparency is that it reflects the ability of the voter to learn about the executive’s type through the policy outcomes in the first period. I will capture the quality of the voter’s information in equilibrium in the following simple manner: suppose that Nature draws a high type executive; after the observation of the first period outcome under either system, the voter will hold a posterior belief \( p \in [0, 1] \) that the executive is a high type. The higher the value of \( p \), the more concentrated are the voter’s beliefs on the true type of politician. In this way, I say that the system for which the expected equilibrium posterior belief of the voter places the highest probability on the executive’s realized type is the most informative.

**Proposition 5. (Government Informativeness)**

For \( \gamma \geq \bar{\gamma} \), parliamentary government is the most informative political system. For \( \gamma < \bar{\gamma} \), either system may be more informative.

This result follows from the fact that the parliamentarian under parliamentary government provides the voter with the greatest opportunity to observe the quality of executive submissions, since vetoes are undertaken relatively infrequently. As such, when bills of low quality are submitted and the parliamentarian learns that this is likely to have been the
case, his willingness to pass the bill in spite of his updated beliefs provides the voter a ‘smoking gun’ with which to make his inference about the executive. Note that this does not necessarily imply that the voter is better off as a result of the permissiveness of the parliamentarian: making better informed replacement decisions comes at the cost of a higher probability of an incorrect policy being implemented, as noted in Proposition 4. This last point is particularly important: it suggests that good information for the voter need not be desirable for its own sake.

The previous result considered the quality of information that the voter has when he makes his replacement decision. A complementary question asks whether, conditional on the quality of information, one system provides the voter with a better set of instruments to retain and replace politicians than the other. Recall that in Proposition benchmark, I showed that with complete information and benevolent politicians, the answer was unambiguously in favor of presidentialism. Now, I ask whether this more finely grained set of replacement strategies can be valuable to the voter in spite of the induced strategic behavior of the executive and legislature under this system. As with the other rankings, the operationalization of accountability is a matter of judgement. One canonical notion of accountability is that of ‘kicking the bums out’, or removing demonstrably bad or otherwise incompetent politicians from office, a conception which accords with the argument of Fearon and Riker. To that end, define executive accountability to be the probability with which the voter removes the executive after observing the first period outcome if he would wish to do so under complete information. Similarly, define parliamentary accountability to be the probability with which the voter removes the parliamentarian after observing the first period outcome if he would wish to do so under complete information.

Recall that the intuition for the superiority of presidential government in the benchmark analysis is that it equips the voter with a richer set of replacement strategies than does parliamentary government. In particular, that analysis revealed that under parliamentary government, the voter may be forced to retain an executive of low realized ability if he would prefer to retain the parliamentarian. In an environment of incomplete information, that intuition does not obviously carry over because under presidential government, we learn from Proposition 5 that the information available to the voter after the initial period is
worse than it would be under parliamentary government. Nonetheless, the next proposition confirms that in spite of the informational difficulties engendered by the strategic behavior of the parliamentarian, the richer set of replacement strategies still ensures that the voter is better equipped to remove politicians in cases where he would wish to do so if he were to possess complete information, to a better extent than under parliamentary government.

**Proposition 6.** *(Accountability)*

Presidential government maximizes executive accountability. If either $\gamma \geq \bar{\gamma}$, or $\alpha \geq \bar{\alpha}$, parliamentary government maximizes parliamentary accountability. If neither condition is satisfied, the systems cannot be ranked.

This result confirms that the richer set of replacement strategies available to the voter under presidential government permits it to take more forceful action against politicians whom he would wish to replace in an environment of complete information, relative to parliamentary government. Note, however, that this result does not rule out the possibility of excessive replacement; whilst presidential government maximizes the ability of the voter to remove politicians when he would wish to if he were in possession of complete information about their abilities, it also poses an increased risk of removing politicians whom the voter would prefer to retain under complete information. It is straightforward to prove that presidential government also maximizes the probability that the voter replaces the executive when she would *not* wish to do so under complete information.

All of these results pertain to comparative quantities which are important in their own right, however there it is most important to provide a bottom line assessment of each system, to ask which the voter could be expected to choose prior to the observation of any outcomes. In this regard, the model provides a strong conclusion.

**Proposition 7.** *(Welfare Comparison)*

There exists $\alpha^*(\theta, \gamma, \beta)$ such that parliamentary government maximizes the voter’s expected welfare if and only if $\alpha \geq \alpha^*$. The threshold $\alpha^*(\theta, \gamma, \beta)$ is increasing in $\beta$ and $\theta$ and decreasing in $\gamma$. 

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As should be expected from the earlier analysis, parliamentarism provides the highest expected payoff to the voter only when the probability of drawing a high type executive is large, relative to the probability of drawing a high type parliamentarian.

7. Extensions

All of the results to this point have been driven by a single distinction between presidential and parliamentary government, which is the institutionalized separation of the voter’s retention decisions under the former versus their conjoining under the latter. The strength of this approach is that it provides a direct and mechanism with which to understand observed differences in political outcomes under each system. A necessarily limitation, however, is that the model does not capture a number of ancillary differences in these systems, such as the strength and organization of political parties, different election timing, and even variation in the kinds of parliamentary government that are observed in practice. To that end, I now pursue some simple extensions to the model which explore some of these omitted aspects and demonstrate the flexibility of the model as a tool for studying the comparative properties of these systems. I will consider the incentives for the parliamentarian and executive to form institutions that can facilitate information sharing and coordination, the incentives for low type executives to increase the quality of their signal strength, and consider an alternative modeling strategy for parliamentary government which is particularly well suited to those systems in which coalition governments may weaken the link between executive and parliamentary fates that is supposed in the main presentation.

7.1. Party Formation as Organized Executive-Legislative Coordination

In the main presentation, I do not provide the parliamentarian and the executive with an opportunity to communicate information about their types and signals. In practice, however, such exchange takes place either formally or informally, before the executive chooses which policy to submit for legislative scrutiny. In the United Kingdom, the Cabinet reifies this exchange by serving, in the words of Walter Bagehot, as a the hyphen which joins, the buckle that fastens the executive and legislative powers. Even where such an institution does not exist, political parties may develop fora for organized exchange and consultation.
To take another British example, the Conservative Party’s 1922 Committee of MPs was formed in 1923 with the very intention of providing a means for informal discussion and feedback between leadership and the rank and file. McKenzie summarizes the role of the committee in the following way: “The chairman has direct access to the Leader of the Party (whether is Leader of the Opposition or Prime Minister) and it is the chairman’s duty to report the views of the Committee to the Leader, particularly if there has been extensive criticism of a particular policy being pursued by the Leader and his colleagues.” (McKenzie, 1963, 60)

In fact, the present model would seem to provide a rationale for communication between the executive and parliamentarian, since both could, in principle, be strictly better off from ensuring that executive sends a bill that both politicians believe to be the best possible match for the state.

In the present model, we would like to ask what difference to the results would be made if we allowed for private communication (in the sense that it is not observed by the voter) between the executive and parliamentarian, prior to the submission and scrutiny of bills.

The timing of the game is therefore modified, as follows.

1. Nature draws the pair of politicians and a private signal for both.

2. Each politician sends a message

   \[ s_i \in \{(h, x), (h, y), (l, x), (l, y)\} \]  

3. The executive chooses \( a_e \in \{x, y\} \).

4. The parliamentarian chooses whether to pass \( a_m = p_i \) or reject \( a_m = r_i \) the bill:
   
   (5iiia) if \( a_m = p_i \), the quality of the bill is observed by all agents, and the game proceeds to step (4).
   
   (5iiib) if \( a_m = r_i \), the quality of the bill is not observed by agents, and the game proceeds to step (4).

5. The voter updates her beliefs about both agents and chooses whether to replace either one or both actors according to the constitution;
Steps (1) through (3) are repeated, after which all payoffs are collected and the game ends.

The interpretation of the message is that the player can communicate both his type, and the signal he received at the start of the game. I assume that the message is not observed by the voter. I will define a truthful equilibrium as one in which each politician, after observing the announcement of the other, believes with probability 1 that the other is his realized type.

**Proposition 8.** Under parliamentary government, there exists a truthful equilibrium. Under presidentialism, there exists no truthful equilibrium.

The possibility of truthful communication under parliamentary government arises because of the mutual interest of each politician in the success of bills proposed by the executive. Since the parliamentarian cannot secure the re-election of both politicians when she vetoes a bill, she has the strongest possible interest in helping select the bill which is most likely to match the state. Under presidential government, truthful communication is compromised by the incentive of a low type executive to mislead the parliamentarian into believing that the former is a high type. He does this with the intention of convincing a potential low type executive that he should not obstruct the passage of the executive’s bill. Therefore, the model provides a rationale for the formation of ancillary organizations of an institutional or partisan nature to exploit the gains from cooperation across the executive and legislative branches, under parliamentary government. It further argues that the gains cannot be fully realized under presidential government.

### 7.2. Investments in Executive Capacity

The benchmark case assumes that the signal strength of the low type executive is fixed; in practice, however, it is reasonable to suppose that that quality of the executive’s information should be endogenously determined by the willingness of the executive to engage in a costly search, such as conduct hearings, accept written submissions, or hire expert consultants. The incentive of executive to undertake such costly investments will depend on their expected return from doing so, and in this section I explore the possibility that these incentives will differ across systems of government. Specifically, I provide the low type executive with an
opportunity to invest in his own signal strength before the game begins, raising it from 
\( \gamma = \gamma_L \) to \( \gamma_H > \gamma_L \), at cost \( c(\gamma_H) < 1 \). For simplicity, I assume \( \gamma_H \geq \bar{\gamma} \).

**Proposition 9.** Under parliamentarism, there exists an interval of costs \([\bar{c}(\gamma_H), 1]\) for which the executive is willing to pay \( c(\gamma_H) \in [\bar{c}(\gamma_H), 1] \) to acquire signal strength \( \gamma_H \) which he would not be willing to pay under presidentialism.

Parliamentary government provides the executive with a greater incentive to undertake the investment in signal strength, because he knows that his prospects for re-election depend wholly upon his discovering the correct policy. Under presidentialism, by contrast, the benefits to investment are mitigated by the fact if he is vetoed, the voter will not observe that the policy is correct and as such the executive may not reap the benefits of his investment.

7.3. Non-Majoritarian Parliamentary Government

In the benchmark model of parliamentary government, I assume that if the voter removes the executive from office, the parliamentarian must also fall. It may reasonably be objected that this notion of parliamentarism is descriptively accurate with respect to majoritarian parliamentary systems, where there is one-to-one mapping from the composition of the legislature to the identity of the executive.\(^4\) In parliamentary systems employing proportional rules and frequently exhibiting the vicissitudes of coalition government, it is often the case that coalition partners’ electoral fates are not so closely tied. A coalition partner may live to fight another day by bringing down an unpopular coalition, or may find herself swept away. In the Netherlands in February 2010, for example, the Labour Party (PvdA) resigned from the fourth Balkenende Cabinet with the Christian Democratic Appeal (CDA) due to their inability to support their coalition partner’s policy to extend the country’s military presence in Afghanistan. In the subsequent June elections, it maintained the second highest share of the seats in the House of Representatives, losing only three. Its former principal coalition partner lost twenty seats, falling from the party with the highest share of seats to the fourth highest. Things do not always work out so well, however. In the Republic of

\(^4\) The present British experience suggests that, even in the archetypal case of Westminster parliamentarism, this mapping may in fact be a correspondance.
Ireland, in January 2011, the Greens resigned from coalition government during negotiations over a European bailout package. In the subsequent general election, the party lost every one of its seats in the Dail Eireann, and failed even to reach the threshold of the popular vote necessary to reclaim election expenses and receive state funding.

To capture some of these ideas, and to understand their impact on the results of the model, consider the following modification to the model under parliamentary government: the voter may still choose ‘remove’ or ‘retain’, but in the event that she chooses ‘remove’, the parliamentarian survives with some positive probability $\mu$ satisfying:

$$\frac{(1 - \theta)(\alpha + (1 - \alpha)\gamma)}{(1 - \theta)(\alpha + (1 - \alpha)\gamma) + \theta(1 - \alpha)(1 - \gamma)} < \mu < \theta$$

The upper bound is a little stronger than I require, strictly speaking, but of course if $\mu$ is too large, the analysis is not terribly interesting since a low type parliamentarian would always prefer to veto. If $\mu$ were any lower than the bound stated, there would be no revision to the results of Proposition 2. This simple modification generates a prediction that is in line with empirical observation.

**Proposition 10.** Under non-majoritarian parliamentarism, the following is an equilibrium:

(i) the high type executive submits the bill corresponding to his signal;

(ii) the low type executive submits the bill $x$ after the signal $\phi_x$, and mixes between $y$ and $x$ after the signal $\phi_y$;

(iii) the high type parliamentarian vetoes a bill if it contradicts his signal;

(iv) the low type parliamentarian passes the bill $x$ and vetoes the bill $y$ with positive probability

(v) the voter retains both politicians if and only if a bill is passed that matches the state.

Moreover, the total probability of the probability that a bill is vetoed may be more or less than under presidential government.
In a system that provides the parliamentarian with some independent chance of survival, the parliamentarian’s willingness to bring about its removal increases. Unlike the model of presidentialism, the parliamentarian does not veto submissions of the policy $x$. It does, however, veto submissions of the policy $y$, and induces a distortion in the choice of policy by the executive for all values of $\gamma$. For that reason, the overall probability of a veto can exceed that of presidentialism, although for a wide range of parameters, the model suggests that non-majoritarian parliamentarism lies somewhere in between the cases of majoritarian parliamentarism and presidentialism.

8. Conclusion

In this paper, I have constructed an analytical framework that addresses the comparative performance of presidential and parliamentary systems with respect to transparency, accountability, and the quality of executive-legislative relations as reified in a stylized legislative process. I have shown that there exist powerful trade-offs in the provision of information to the voter about the quality of her elected representatives, on the one hand, and the provision of electoral instruments for securing their replacement. I have also shown that there exist trade-offs in the provision of incentives to the executive and parliamentarian to make use of their information, and that these trade-offs can have welfare consequences that may favor either system. The model also generates a number of empirical implications which are well-suited to empirical investigation. My argument connects degrees of formal independence of a country’s executive and legislative branches to complex patterns of strategic interdependence, and assesses the consequences of these patterns for the welfare of the voter. Finally, it provides a novel interpretation of parliamentary government, as a constitutional commitment by the voter to tie her hands with respect to her options to replace and retain her elected representatives. If voters were fully informed and politicians benevolent, such a commitment would provide no value to the voter, and would in fact make her strictly worse off than she is when she is able to separate her decision. When politicians are concerned about their re-election, however, this commitment can provide each politician with incentives to act in a way that better serves the voter’s interest.
The presentation suggests a number of extensions for future research. First, the two-period analysis could be extended to infinite horizon in order to study the effect of either term limits or non-concurrent election timing. Second, despite the application of the model to the study of presidential and parliamentary government, in principle the theoretical issues that I address are considerably more general, and could be applied to study the merits of varying degrees of political independence with respect to a judicial veto player or a bureaucrat who is to be charged with implementing a policy that is selected by a central authority. In both cases, varying the extent to which the survival of the veto player depends on the survival of the decision-maker could generate similar trade-offs in the incentives provided to players to conform to, or obstruct, the former’s policy initiatives.

Appendix A. Strategies and Solution Concept

Define an expanded set of player-types \( P = \{e_h, e_l, m_h, m_l, v\} \), and for each \( i \in P \), let \( s(i) \) denote the mixed strategy of player \( i \) and for \( j \neq i \), let

\[
\begin{align*}
  s(-i) &= \times_{j \in P} s(j) \\
  s &= s(i) \times s(-i)
\end{align*}
\]  

(A.1)

and thus \( s = s(i) \times s(-i) \). Define the information set at which the player function assigns a unique player \( i \in P \) to move as \( I_i \), which includes any private signals observed by the player. Then, a strategy for each executive type \( e \in \{e_h, e_l\} \) is a mapping \( \sigma_i : I(i) \times s(-i) \to [0, 1] \), interpreted as the probability that executive type \( e_i \) submits the bill \( x \) as a function of his signal and the strategies of all other players. A strategy for a parliamentarian type \( m \in \{m_l, m_h\} \) is a mapping \( \tau_i^j : I(i) \times s(-i) \to [0, 1] \), interpreted as the probability that parliamentarian type \( m_i \) passes the bill \( j \in \{x, y\} \) as a function of her signal and the strategies of all other players. A strategy for the voter under parliamentary government is a mapping \( \eta : I(v) \times s(-v) \to [0, 1] \), interpreted as the probability with which the voter retains both politicians as a function of the strategies of other players and the first period outcome. A strategy for the voter under presidential government is a pair of mappings \( \eta_m : I(v) \times s(-v) \to [0, 1] \) and \( \eta_e : I(v) \times s(-v) \to [0, 1] \), since we assume that presidential government the voter may make her retention decision separately for each politician. Throughout, I let \( \mu_i(\cdot) \) denote the belief of a player \( i \).
Define the set of first period outcomes to be $R = \{x_g, y_g, x_b, y_b, x_r, y_r\}$, where the outcome $i_g$ for $i \in \{x, y\}$ denotes that a bill $i$ was submitted by the executive, passed by the parliamentarian and matches the state. Define $i_b$ as an outcome in which a bill $i$ is submitted by the executive, passed by the parliamentarian and does not match the state. Finally, let $i_r$ denote the outcome in which a bill was submitted by the executive but rejected by the parliamentarian. Then, a first period strategy profile $s$ under presidential government consists of the following components:

$$\eta_e = (\{\eta_e(z,s)\}_{z \in R})$$  \hfill \text{(A.2)}

$$\eta_m = (\{\eta_m(z,s)\}_{z \in R})$$  \hfill \text{(A.3)}

$$\tau_h = (\{\tau^1_h(\psi_h, s), \tau^1_h(\psi_l, s)\}_{i \in \{x,y\}})$$  \hfill \text{(A.4)}

$$\tau_l = (\{\tau^1_l(\psi_h, s), \tau^1_l(\psi_l, s)\}_{i \in \{x,y\}})$$  \hfill \text{(A.5)}

$$\sigma_h = (\{\sigma^1_h(\phi_y, s), \sigma^1_h(\phi_x, s)\}_{j \in \{x,y\}})$$  \hfill \text{(A.6)}

$$\sigma_l = (\{\sigma^1_l(\phi_y, s), \sigma^1_l(\phi_x, s)\}_{j \in \{x,y\}})$$  \hfill \text{(A.7)}

and under parliamentary government, the additional restriction $\eta_e = \eta_m$ is imposed.

The solution concept is perfect extended Bayesian equilibrium (PEBE), defined in [Fudenberg and Tirole (1991)]. To start, define

$$\hat{\Theta}_e = \{(e_h, \phi_x), (e_h, \phi_y), (e_l, \phi_x), (e_l, \phi_y)\}$$  \hfill \text{(A.8)}

$$\hat{\Theta}_m = \{(m_h, \psi_x), (m_h, \psi_y), (m_l, \psi_x), (m_l, \psi_y)\}$$  \hfill \text{(A.9)}

and let $\hat{\Theta} = \hat{\Theta}_e \times \hat{\Theta}_m$. Finally, let $\pi_i(a_i)$ denote the probability that player type $i$ plays action $a_i$, under the strategy profile $s$. The requirements placed on the beliefs of players are as follows.

First, Bayes’ rule is used to update the voter’s belief about the executive’s type and the parliamentarian’s type, conditional on the action taken by the parliamentarian, wherever possible: for each $a_m \in A_m$ and $a_e \in A_e$ such that each action is played with positive
probability under a given strategy profile:

\[
\mu_v(\hat{\theta}_e | a_m, a_e) = \frac{\sum_{\omega \in \Omega} \mu(\omega) \mu_v(\hat{\theta}_e | \omega) \pi_e(a_e | \hat{\theta}_e) \sum_{\theta_m \in \hat{\Theta}_m} \mu_v(\theta_m | \omega) \pi_m(a_m | \theta_m, a_e)}{\sum_{\theta_e \in \hat{\Theta}_e} \sum_{\omega \in \Omega} \mu(\omega) \mu_v(\hat{\theta}_e | \omega) \pi_e(a_e | \hat{\theta}_e) \sum_{\theta_m \in \hat{\Theta}_m} \mu_v(\theta_m | \omega) \pi_m(a_m | \theta_m, a_e)}
\]  
(A.10)

\[
\mu_v(\hat{\theta}_m | a_m, a_e) = \frac{\sum_{\omega \in \Omega} \mu(\omega) \mu_v(\hat{\theta}_m | \omega) \pi_m(a_m | \hat{\theta}_m, a_e) \sum_{\theta_e \in \hat{\Theta}_e} \mu_v(\theta_e | \omega) \pi_e(a_e | \theta_e)}{\sum_{\theta_m \in \hat{\Theta}_m} \sum_{\omega \in \Omega} \mu(\omega) \mu_v(\hat{\theta}_m | \omega) \pi_m(a_m | \theta_m, a_e) \sum_{\theta_e \in \hat{\Theta}_e} \mu_v(\theta_e | \omega) \pi_e(a_e | \theta_e)}
\]  
(A.11)

Second, Bayes’ rule is used to update the parliamentarian’s belief about the probability that a bill matches the state, conditional on the action taken by the executive, and before the parliamentarian observes her private signal, wherever possible: for each \(a_e \in A_e\):

\[
\mu_m(\omega | a_e) = \frac{\mu(\omega) \sum_{\theta_e \in \hat{\Theta}_e} \mu(\theta_e | \omega) \pi_e(a_e | \theta_e)}{\sum_{\omega' \in \Omega} \mu(\omega') \sum_{\theta_e \in \hat{\Theta}_e} \mu(\theta_e | \omega') \pi_e(a_e | \theta_e)}
\]  
(A.12)

and after the parliamentarian type observes her private signal, we have

\[
\mu_m(\omega | \hat{\theta}_m, a_e) = \frac{\mu_m(\omega | a_e) \mu_m(\hat{\theta}_m | \omega)}{\sum_{\omega' \in \Omega} \mu_m(\omega' | a_e) \mu_m(\hat{\theta}_m | \omega')}
\]  
(A.13)

Our final requirement is:

\[
\mu_v(\hat{\theta}_e, \hat{\theta}_m | a_e, a_m) = \mu_v(\hat{\theta}_m | a_e, a_m) \mu_v(\hat{\theta}_e | \hat{\theta}_m, a_e, a_m)
\]  
(A.14)

This requires a certain form of consistency to hold between the marginal distributions of each executive and parliamentarian player type, conditional on the observed actions, and their joint distributions. For example, if the parliamentarian is believed to be a high type who received a signal \(x\) with probability 1, to believe with probability 1 that the executive is a high type who received the signal \(y\) with probability 1 does not satisfy this requirement. Observe that this latter condition holds even for an action pair that is off the equilibrium path. Together, these conditions are equivalent to reasonableness in Fudenberg and Tirole (1991), appropriately extended to take into account the correlation in type–signal pairs.

Finally, we require that for each period \(t\) and each player \(i\), the continuation strategies are a Bayesian equilibrium for the continuation game given player \(i\)’s beliefs \(\mu_i\).

Whilst the PEBE concept is a natural extension of perfect Bayesian equilibrium for multistage games of incomplete information, the fact that the conditions (1) and (2) are defined
only for actions that occur with positive probability leaves the theorist with considerable latitude in specifying beliefs for each of the players \( m \) and \( v \) after the observation of an event which occurs with probability zero under a given strategy profile. So, I apply the criterion D2 in order to place structure on off-path beliefs; in particular, it requires that a player concentrate her beliefs on the player-type who ‘benefits the most’ from a deviation, in a precise sense. The application of the criterion is somewhat complicated in the present model due to multiple stages, so I will generalize the criterion in a sequence of steps.

Define the set of best responses of the voter to a pair \((a_e, a_m)\), given the voter’s belief, 
\[
\mu_v \equiv \mu_v(\hat{\Theta} | a_e, a_m)
\]
which is a probability distribution over \( \hat{\Theta} \),

\[
BR_v(\mu_v, a_e, a_m) = \{a_v | a_v \in \arg \max_{a_v \in A_v} u_v(\mu_v)\}
\]  
(A.15)

and define \( MBR_v(\mu_v) \) to be the set of all probability distributions over \( BR_v \). We can define in an analogous way the sets \( BR_m \) and \( MBR_m \). Let \( \sigma_i \) denote a generic element of \( MBR_i \) for \( i \in \{m, v\} \). For any action \( a_m \in A_m \) by the parliamentarian that occurs with probability 0 in an equilibrium, define

\[
D(\hat{\theta}_m, \hat{\Theta}_m, a) = \bigcup_{\mu_v \cdot \mu_v(\hat{\Theta} | a_e, a) = 1} \{\sigma_v \in MBR_v | u^*_m(\hat{\theta}_m) < u_m(a, \sigma_v, \hat{\theta}_m)\}
\]  
(A.16)

\[
D^0(\hat{\theta}_m, \hat{\Theta}_m, a) = \bigcup_{\mu_v \cdot \mu_v(\hat{\Theta} | a_e, a) = 1} \{\sigma_v \in MBR_v | u^*_m(\hat{\theta}_m) = u_m(a, \sigma_v, \hat{\theta}_m)\}
\]  
(A.17)

where \( u^*_m(\hat{\theta}_m) \) is the equilibrium expected payoff of parliamentarian type \( \hat{\theta}_m \). We will say that a type \( \hat{\theta}_m \) is deleted from \( \hat{\Theta}_m \) if, for \( \hat{\theta}'_m \neq \hat{\theta}_m \), we have

\[
\left[ D(\hat{\theta}_m, \hat{\Theta}_m, a) \cup D^0(\hat{\theta}_m, \hat{\Theta}_m, a, \mu_m(\hat{\theta}_m)) \right] \subset \bigcup_{\hat{\theta}'_m \neq \hat{\theta}_m} D(\hat{\theta}'_m, \hat{\Theta}_m, a, \mu_m(\hat{\theta}'_m))
\]  
(A.18)

and let the set \( \hat{\Theta}^{**}_m \) denote the set of types which is not deleted from \( \hat{\Theta}_m \). Then, a strategy profile is not an equilibrium if it satisfies the following criterion:

\[
\min_{a_v \in A^*_v(\hat{\Theta}^{**}(a))} u_m(a, a_v, \hat{\theta}_m) > u^*_m(\hat{\theta}_m)
\]  
(A.19)

where \( A^*_v(\hat{\Theta}^{**}(a)) \) is the set of best responses of the voter to the action \( a \) by the parliamentarian given that she places probability 1 on the subset of types \( \hat{\Theta}^{**}(a) \). Note that this
definition allows the voter’s belief about both the parliamentarian and the executive’s type to vary with the action of the parliamentarian.

Next, I define the criterion D2 for the observation of actions off the equilibrium path by an executive type. Define the sets
\[
D(\hat{\theta}_e, \hat{\Theta}_e, a) = \bigcup_{\hat{\theta}_m \in \hat{\Theta}_m} \bigcup_{\mu_m(\hat{\theta}_m), \mu_m(\hat{\theta}_e) = 1} \left\{ (\sigma_m, \sigma_e) \in MBR_m \times MBR_e | u_e^*(\hat{\theta}_e) < u_e(a, \sigma_m, \sigma_e) \right\}
\]
(A.20)
and
\[
D^0(\hat{\theta}_e, \hat{\Theta}_e, a) = \bigcup_{\hat{\theta}_m \in \hat{\Theta}_m} \bigcup_{\mu_m(\hat{\theta}_m), \mu_m(\hat{\theta}_e) = 1} \left\{ (\sigma_m, \sigma_e) \in MBR_m \times MBR_e | u_e^*(\hat{\theta}_e) = u_e(a, \sigma_m, \sigma_e) \right\}
\]
(A.21)
where \( MBR_m = MBR_m(\mu_m(\hat{\theta}_e | \hat{\theta}_m)) \), and \( MBR_v = MBR_v(\mu_v(\hat{\theta}_e | a_v, a_m), \mu_v(\hat{\theta}_m | a_e, a_v)) \), and
\[
\mu_m(\hat{\theta}_e | \hat{\theta}_m) = \frac{\mu(\hat{\theta}_m | \hat{\theta}_e) \mu_m(\hat{\theta}_e)}{\mu(\hat{\theta}_m)}
\]
(A.22)
and where the voter’s belief \( \mu_v(\hat{\theta}_e | a_e, a_m) \) and \( \mu_v(\hat{\theta}_m | a_e, a_m) \) are formed according to
\[
\mu_v(\hat{\theta}_e | a_e, a_m) = \frac{\mu(\hat{\theta}_e | a_e) \sum_{\omega \in \Omega} \mu_v(\omega | \hat{\theta}_e) \sum_{\theta_m \in \Theta_m} \mu_v(\theta_m | \omega) \pi_m(a_m | \theta_m, a_e)}{\sum_{\theta_e \in \Theta_e} \mu(\hat{\theta}_e | a_e) \sum_{\omega \in \Omega} \mu_v(\omega | \hat{\theta}_e) \sum_{\theta_m \in \Theta_m} \mu_v(\theta_m | \omega) \pi_m(a_m | \theta_m, a_e)}
\]
(A.23)
\[
\mu_v(\hat{\theta}_m | a_e, a_m) = \frac{\sum_{\theta_m \in \Theta_m} \mu(\hat{\theta}_m | a_e) \sum_{\omega \in \Omega} \mu_v(\omega | \hat{\theta}_e) \mu(\hat{\theta}_m | \omega) \pi_m(a_m | \theta_m, a_e)}{\sum_{\theta_m \in \Theta_m} \sum_{\theta_e \in \Theta_e} \mu(\hat{\theta}_e | a_e) \sum_{\omega \in \Omega} \mu_v(\omega | \hat{\theta}_e) \mu(\hat{\theta}_m | \omega) \pi_m(a_m | \theta_m, a_e)}
\]
(A.24)
where I assume \( \mu_v(\hat{\theta}_e | a_e) = \mu_m(\hat{\theta}_e) \), i.e., each of the voter and parliamentarian prior to the receipt of her private signal hold the same theory about deviations from the equilibrium path by the executive. This expression says the following: after the executive has taken an initial off-path action, the parliamentarian can hold any belief that places probability one on the union of all possible executive-signal types, prior to receiving her private signal, and therefore realizing her type \( \hat{\theta}_m \). Once her type \( \hat{\theta}_m \) has been realized, she forms her posterior belief about the executive’s type \( \hat{\theta}_e \) by updating her initial belief conditional on her own signal. The set \( D(\hat{\theta}_e, \hat{\Theta}_e, a) \) is then a subset of all best responses by the parliamentarian type \( \hat{\theta}_m \).
when she forms her beliefs in this way, taking the best response of the voter conditional on her beliefs, and taking the union over all the possible types $\hat{\Theta}_m$, since the executive type $\hat{\theta}_e$ does not know which parliamentarian type she is facing. In particular, it is the subset of best responses by the parliamentarian which generate a strictly higher payoff for her than does her equilibrium payoff. We will say that a type $\hat{\theta}_e$ is deleted from $\hat{\Theta}_e$ if, for $\hat{\theta}_e' \neq \hat{\theta}_e$, we have

$$\left[ D(\hat{\theta}_e, \hat{\Theta}_e, a) \cup D^0(\hat{\theta}_e, \hat{\Theta}_e, a) \right] \subset \bigcup_{\hat{\theta}_e'' \neq \hat{\theta}_e} D(\hat{\theta}_e'', \hat{\Theta}_e, a, \mu_m(\hat{\theta}_e''))$$  \hspace{1cm} (A.25)

and let the set $\hat{\Theta}_{e}^{**}$ denote the set of types which is not deleted from $\hat{\Theta}_e$. Then, a strategy profile is not an equilibrium if it satisfies the following criterion:

$$\min_{a_m \in A_m(\hat{\Theta}_{e}^{**}(e))} u_e(a, a_e, \hat{\theta}_e) > u_e^*(\hat{\theta}_e)$$  \hspace{1cm} (A.26)

where $A_m(\hat{\Theta}_{e}^{**}(a))$ is the set of best responses of the parliamentarian to the action $a$ by the executive given that she places probability 1 on the subset of types $\hat{\Theta}_{e}^{**}(e)$, and the best response of the voter as outlined above.

**Appendix B. Proof of Proposition 1**

If the voter knows the type of each politician, his equilibrium retention strategy is independent of the first period outcome. Furthermore, the strategy of each politician type in the first period is invariant to the retention strategy of the voter. Therefore, we focus on the expected payoff of the voter in the second period, given any one of four possible executive-parliamentarian type pairs. If a high type executive is drawn in the first period, the voter optimally retains both types, which can be achieved under either system of government. Suppose instead that a low type executive is drawn. If the parliamentarian is a low type, the voter optimally removes both politicians, which can be done under either system. Suppose, instead, that the parliamentarian is a high type. Then, it is optimal to retain the parliamentarian and replace the executive. This can be done under presidentialism, but not parliamentarism. Suppose that under the latter system, the voter replaces both politicians.
Then, her expected payoff is
\[ \alpha + (1 - \alpha)(\gamma - (1 - \gamma)(1 - \beta)) \] (B.1)
whereas if she retains both politicians, her payoff is \( \theta \). Therefore, if \( \alpha \geq \frac{1 - \beta}{2 - \beta} \), both politicians are removed, and if \( \alpha < \frac{1 - \beta}{2 - \beta} \), both politicians are retained. The payoff to removing only the executive is \( \alpha + (1 - \alpha)\gamma \), which strictly exceeds the payoff under parliamentary government, regardless of the value of \( \alpha \).

**Appendix C. Proof of Proposition 2**

First, I prove *existence*.

**Parliamentarian:** Let \( \lambda_i \) denote the equilibrium probability that a submitted bill \( i \in \{x, y\} \) matches the state from the perspective of the parliamentarian, prior to the receipt of her private signal. That is,
\[
\lambda_x = \frac{\theta(\alpha + (1 - \alpha)\gamma)}{(1 - \theta)(\alpha + (1 - \alpha)\gamma) + \theta(1 - \alpha)(1 - \gamma)} \tag{C.1}
\]
\[
\lambda_y = \frac{(1 - \theta)(\alpha + (1 - \alpha)\gamma) + \theta(1 - \alpha)(1 - \gamma)}{(1 - \theta)(\alpha + (1 - \alpha)\gamma) + \theta(1 - \alpha)(1 - \gamma)} \tag{C.2}
\]
The high type parliamentarian strictly prefers to pass a bill after a high signal than to veto it. Since \( 1 > \lambda_i > 0 \), the incentive compatibility of the strategy of the high type parliamentarian and low type parliamentarian after each signal is ensured. This strategy of the parliamentarian holds for all parameters.

**Voter:** We have \( \mu_v(e_h|y_g) = \mu_v(e_h|x_g) = \frac{\alpha}{\alpha + (1 - \alpha)\gamma} \), and \( \mu_v(e_l|y_b) = \mu_v(m_h|x_b) = 0 \). Furthermore, \( \mu_v(m_h|\cdot) = \beta \). So, the strategies \( \eta(x_g) = \eta(y_g) = 1 \), \( \eta(x_b) = \eta(y_b) = \eta(r_x) = \eta(r_y) = 0 \) are sequentially rational, so long as
\[
\gamma \leq \alpha + (1 - \alpha)(\gamma - (1 - \gamma)(1 - \beta)) \tag{C.3}
\]
or \( \alpha \geq \frac{1 - \beta}{2 - \beta} \).

**Executive:** The executive type \( e \in \{e_l, e_h\} \) strictly prefers to follows his signal. The low type executive prefers to follow his signal since \( \theta \geq \frac{1}{2} \), and given the strategy of the voter.
Appendix D. Proof of Proposition 3

Parliamentarian: As before, let $\lambda_i$ denote the equilibrium probability that a submitted bill $i \in \{x, y\}$ is successful from the perspective of the parliamentarian, prior to the receipt of her private signal. That is,

$$\lambda_x = \frac{\theta (\alpha + (1 - \alpha) \gamma)}{(1 - \theta) (\alpha + (1 - \alpha) \gamma) + \theta (1 - \alpha)(1 - \gamma)} \quad (D.1)$$

$$\lambda_y = \frac{\beta (1 - \lambda_x)}{\beta (1 - \lambda_x) + (1 - \beta)(1 - \tau_i^l)} = \beta \quad (D.2)$$

The strategies $\tau_i^l(\psi_i) = 1$ and $\tau_i^h(\psi_j) = 0$ are sequentially rational, since $1 > \lambda_i > 0$. By setting $\eta_m(r_i) = \lambda_i$, we ensure that $\tau_i^l \in (0, 1)$ is sequentially rational.

Case 1: $\alpha \geq \frac{2(1 - \beta)}{2 - \beta}$

Voter: After a veto, we require

$$\frac{\beta (1 - \lambda_x)}{\beta (1 - \lambda_x) + (1 - \beta)(1 - \tau_i^l)} = \beta \quad (D.3)$$

or $\tau_i^l = \lambda_i$. This ensures that $\eta_m(r_i) = \lambda_i$ is sequentially rational. Similarly, the voter weakly prefers to retain the executive after a veto only if

$$\beta \gamma + (1 - \beta)(\mu_v(e_h|r_i, m_i) + (1 - \mu_v(e_h|r_i, m_i))(2\gamma - 1)) \geq \alpha + (1 - \alpha)(\gamma - (1 - \gamma)(1 - \beta)) \quad (D.4)$$

or

$$\mu_v(e_h|r_i, m_i) \geq \frac{\alpha(2 - \beta)}{2(1 - \beta)} \quad (D.5)$$

where $\mu(r_i)$ is the probability that the executive is a high type, conditional on the parliamentarian being a low type who rejected the bill $i \in \{x, y\}$. Observe that this requirement cannot be satisfied when $\alpha \geq \frac{2(1 - \beta)}{2 - \beta}$. Then, $\eta_e(r_x) = \eta_e(r_y) = 0$ is sequentially rational. Note that $\mu_v(e_h|i_g) > \alpha$ and $\mu_v(m_h|i_g) > \beta$, so $\eta_e(i_g) = \eta_m(i_g) = 1$ is sequentially rational.

Executive: The low type executive prefers to submit the bill $y$ after a signal $\phi_y$ if

$$\frac{\gamma(1 - \theta)}{(1 - \gamma)\theta} \geq \frac{\beta + (1 - \beta)\lambda_x}{\beta + (1 - \beta)\lambda_y} \quad (D.6)$$
The LHS is strictly increasing in $\gamma$. The RHS is strictly decreasing in $\gamma$. For $\gamma$ sufficiently large, the constraint is clearly satisfied. For $\gamma = \theta$, the first expression is equal to 1. The second strictly exceeds 1 if $\lambda_x > \lambda_y$, which is satisfied for this value of $\gamma$. Therefore, there exists $\bar{\gamma}$ such that the executive wishes to follow his private signal if and only if $\gamma \geq \bar{\gamma}$.

Suppose, instead, that $\gamma < \bar{\gamma}$. Then, if the low type executive chooses the policy $x$ with probability $\sigma$ after receiving the signal $\phi_y$, we have

$$\lambda_x = \frac{\theta (\alpha + (1 - \alpha)(\gamma + (1 - \gamma)\sigma))}{\theta (\alpha + (1 - \alpha)(\gamma + (1 - \gamma)\sigma)) + (1 - \theta)(1 - \alpha)(\gamma \sigma + (1 - \gamma))}$$ (D.7)

$$\lambda_y = \frac{(1 - \theta)(\alpha + (1 - \alpha)\gamma (1 - \sigma)) + \theta (1 - \alpha)(1 - \alpha)(1 - \sigma)}{(1 - \gamma)(\alpha + (1 - \alpha)(\gamma + (1 - \gamma)\sigma)) + (1 - \theta)(1 - \alpha)(\gamma \sigma + (1 - \gamma))}$$ (D.8)

Then, the strategy $\sigma$ must satisfy:

$$\frac{\gamma (1 - \theta)}{(1 - \gamma)\theta} \frac{\beta + (1 - \beta)\lambda_x(\sigma)}{\beta + (1 - \beta)\lambda_y(\sigma)} = 0$$ (D.9)

an a solution $\sigma_1$ exists, which I do not reproduce here due to its length. Finally, the sequential rationality of $\sigma_l(\phi_x) = \sigma_h(\phi_x) = 1 - \sigma_h(\phi_y) = 1$ is then ensured by:

$$\frac{\gamma \theta}{(1 - \gamma)(1 - \theta)} > \frac{\beta + (1 - \beta)\lambda_x(\sigma_1)}{\beta + (1 - \beta)\lambda_y(\sigma_1)}$$ (D.10)

Case 2: $\alpha < \frac{2(1 - \beta)}{2 - \beta}$, $\beta \geq \hat{\beta}$

Voter: Observe that:

$$\mu_v(e_h | r_x, m_l) = \frac{\alpha \theta}{(\theta (\alpha + (1 - \alpha)(\gamma + (1 - \gamma)\sigma)) + (1 - \theta)(1 - \alpha)(\gamma \sigma + (1 - \gamma)))}$$

$$< \frac{\alpha(2 - \beta)}{2(1 - \beta)}$$ (D.11)

for any triple $(\alpha, \sigma, \theta)$, so long as $\beta$ is larger than $\hat{\beta}$, solving

$$\hat{\beta} = \frac{2(1 - \alpha)(1 - \gamma)(2\theta - 1)}{-1 + \gamma + 3\theta - 2\gamma \theta + \alpha(-1 + \gamma)(-1 + 2\theta)}$$ (D.12)

so that $\eta_e(r_x) = 0$ is sequentially rational. We have:

$$\mu_v(e_h | r_y, m_l) = \frac{\alpha (1 - \theta)}{(1 - \theta)(\alpha + (-1 + \alpha)\gamma (-1 + \sigma)) - (-1 + \alpha)(-1 + \gamma)\theta (-1 + \sigma)}$$ (D.13)
If \( \sigma_l(\psi_y) = 0 \), it follows that \( \mu_v(e_h|r_y, m_t) < \mu(e_h|r_x, m_t) < \frac{\alpha(2-\beta)}{2(1-\beta)} \), so \( \eta_e(r_y) = 0 \).

**Executive:** The low type executive prefers to submit the bill \( y \) after a signal \( \phi_y \) if

\[
\frac{\gamma(1 - \theta)}{(1 - \gamma)\theta} \geq \frac{\beta + (1 - \beta)\lambda_x}{\beta + (1 - \beta)\lambda_y}
\]

and by a similar argument as in Case 1, we can show that there exists \( \bar{\gamma} > \theta \) for which this condition is only satisfied if \( \gamma \geq \bar{\gamma} \). Suppose, instead, that \( \gamma < \bar{\gamma} \). I wish to sustain an equilibrium in the executive selects the bill \( x \) after receiving the signal \( \phi_x \), and mixes over \( x \) and \( y \) after receiving the signal \( \phi_y \).

**Executive:** We observe that \([D.13]\) is strictly increasing in \( \sigma \); we have already established that for \( \sigma = 0 \), \( \mu_v(e_h|r_y, m_t) < \mu(e_h|r_x, m_t) < \frac{\alpha(2-\beta)}{2(1-\beta)} \). In particular, setting

\[
\sigma_l(\psi_y) = \sigma_2 = \frac{2(-1 + \gamma)(-1 + 2\theta) + \alpha(-2 + \beta)(-1 + \gamma)(-1 + 2\theta) + \beta(-2 + \gamma + 3\theta - 2\gamma\theta)}{((-1 + \alpha)(-2 + \beta)(-\theta + \gamma(-1 + 2\theta)))}
\]

makes \( \eta_e(r_y) \in [0, 1] \) sequentially rational. The strategy \( \eta_e(r_y) \) must be chosen to satisfy:

\[
(1 - \gamma)[\beta + (1 - \beta)(\tau^y_l + (1 - \tau^y_l)\eta_e(r_y))] + (1 - \gamma)\theta[\beta + (1 - \beta)(1 - \tau^y_l)]\eta_e(r_y)
\]

\[
= (1 - \gamma)\theta[\beta + (1 - \beta)\tau^y_l]
\]

and for \( \gamma < \bar{\gamma} \), this mixed strategy exists on the interval \([0, 1]\).

**Voter:** It follows from the executive’s choice of \( \sigma \) that \( \eta_e(r_x) = 0 \), and \( \eta_e(r_y) \in (0, 1) \) is sequentially rational, since evaluating \( \mu(e_h|r_x, m_t) \) at the value \( \sigma_2 \) establishes that \( \mu(e_h|r_x, m_t) < \frac{\alpha(2-\beta)}{2(1-\beta)} \), and by construction, \( \mu(e_h|r_y, m_t) = \frac{\alpha(2-\beta)}{2(1-\beta)} \).

**Case 3:** \( \alpha < \frac{2(1-\beta)}{2-\beta} \), \( \beta < \hat{\beta} \)

If \( \beta < \hat{\beta} \), when \( \sigma_l(\phi_y) = 0 \), \( \mu(e_h|r_x, m_t) \geq \frac{\alpha(2-\beta)}{2(1-\beta)} \). Therefore, \( \eta_e(r_x) = 1 \). Observe that we still have \( \mu(e_h|r_y, m_t) < \frac{\alpha(2-\beta)}{2(1-\beta)} \), so that \( \eta_e(r_y) = 0 \). So, for the executive to prefer to follow his signal \( \phi_y \), we require

\[
\frac{\gamma(1 - \theta)(1 - \beta)(\lambda_y + \lambda_x - 1)}{(1 - \gamma)\theta} - 1 \geq 0
\]

The LHS is strictly increasing in \( \gamma \), and is satisfied for \( \gamma \) sufficiently large. For \( \gamma = \theta \), it is equivalent to the condition \( (1 - \beta)(\lambda_y + \lambda_x - 1) \geq 1 \), which cannot be satisfied. Thus, there
exists \( \hat{\gamma} > \theta \) for which this equilibrium exists. Suppose, instead, that \( \gamma < \hat{\gamma} \). We wish to support an equilibrium in which the low type executive randomizes over \( x \) and \( y \) after the signal \( \phi_y \), and chooses the bill \( x \) after a signal \( \phi_x \). It is straightforward to show that the equilibrium identified for the case of \( \beta \geq \hat{\beta} \) and \( \gamma \geq \hat{\gamma} \) can be constructed here.

Appendix E. Proof of Proposition 4

The probability of a Type I error under parliamentary government is \( 1 - \gamma \) when \( e = e_l \), and 0 otherwise. The probability of a Type I error under presidentialism is 0 when \( e = e_h \) or \( m = m_h \). When \( e = e_l \) and \( m = m_l \), the probability of a Type I error depends on the parameters, as follows.

(i) \( \gamma \geq \bar{\gamma} \): since \( \sigma = 0 \), and \( \tau^i(\psi_j) = 0, \tau^i < 1 \) for each \( i \in \{x, y\}, j \neq i \), it follows that the probability of a Type I error is lower under presidentialism.

(ii) \( \gamma \leq \bar{\gamma} \): the result can be confirmed numerically.

That presidential government maximizes the probability of a Type II error follows from the fact that \( \tau^i(\psi_i) = \tau^i(\psi_j) = \tau^i = 1 \) for \( i \in \{x, y\}, j \neq i \) under parliamentary government, whereas under presidential government these quantities are strictly less than 1.

Appendix F. Proof of Proposition 5

Under parliamentary government, the expected probability that the voter places on the executive being his realized type is \( \frac{\alpha}{\alpha + (1 - \alpha)\gamma} \) if a high type is drawn, and
\[
\gamma \frac{(1 - \alpha)\gamma}{\alpha + (1 - \alpha)\gamma} + (1 - \gamma)
\]
if a low type is drawn. Consider, alternatively, presidential government. Suppose \( \gamma > \hat{\gamma} \). Then, the probability that the voter places on the executive being his realized type is \( \frac{\alpha}{\alpha + (1 - \alpha)\gamma} \) if both the executive and the parliamentarian are high types. If the executive is a high type and the parliamentarian is a low type, the probability is
\[
\theta \left[ \tau_x \frac{\alpha}{\alpha + (1 - \alpha)\gamma} + (1 - \tau_x)\mu(e_h|rx, m_l) \right] + (1 - \theta) \left[ \tau_y \frac{\alpha}{\alpha + (1 - \alpha)\gamma} + (1 - \tau_y)\mu(e_h|ry, m_l) \right]
\]
(F.2)
where $\mu(e_h|r_i, m_u) < \frac{\alpha}{\alpha + (1-\alpha)\gamma}$. If the executive is a low type and the parliamentarian is a
high type, the probability is

$$\frac{\gamma(1 - \alpha)}{\alpha + (1 - \alpha)\gamma} + (1 - \gamma)[\theta(1 - \mu(e_h|r_x, m_l)) + (1 - \theta)(1 - \mu(e_h|r_y, m_l)))] \quad (F.3)$$

If both the executive and the parliamentarian are low types, the probability is:

$$\theta \gamma \left[\tau_x \frac{(1 - \alpha)\gamma}{\alpha + (1 - \alpha)\gamma} + (1 - \tau_x)(1 - \mu(e_h|r_x, m_l))\right] + \theta(1 - \gamma)[\tau_y + (1 - \tau_y)(1 - \mu(e_h|r_y, m_l))] + (1 - \theta)(1 - \gamma)[\tau_x + (1 - \tau_x)(1 - \mu(e_h|r_x, m_l))] \quad (F.4)$$

It is easily verified that the expected probability that the voter ascribes to the realized type
of executive is always highest under parliamentary government.

Next, consider $\gamma < \bar{\gamma}$, under presidentialism. If both executive and parliamentarian are
high types and the bill is $x$, we obtain:

$$\frac{\alpha}{\alpha + (1 - \alpha)(\gamma + (1 - \gamma)\sigma)} \quad (F.5)$$

which is strictly lower than the corresponding quantity under parliamentary government. If
the submitted bill is $y$, the quantity is

$$\frac{\alpha}{\alpha + (1 - \alpha)\gamma(1 - \sigma)} \quad (F.6)$$

which strictly exceeds the corresponding quantity under parliamentary government. Taking
the expectation over the state, we find that parliamentary government is more informative if

$$\frac{1}{\alpha + (1 - \alpha)\gamma} \geq \frac{\theta}{\alpha + (1 - \alpha)(\gamma + (1 - \gamma)\sigma)} + \frac{1 - \theta}{\alpha + (1 - \alpha)\gamma(1 - \sigma)} \quad (F.7)$$

which is never satisfied. The other cases can be shown to be ambiguous, since the benefit
to the executive from $\sigma > 0$ may be outweighed for some parameters by $\tau_i > 0$.

**Appendix G. Proof of Proposition 6**

Under parliamentary government, the probability of removing the low type executive is
$(1 - \gamma)$. Under presidential government, suppose $\gamma > \bar{\gamma}$. If the executive is low type and the
parliamentarian is a high type, the probability is also $1 - \gamma$. If both are drawn low types, the probability is

$$\theta[\gamma(1 - \tau^x) + 1 - \gamma] + (1 - \theta)[\gamma(1 - \tau^x) + 1 - \gamma]$$  \hspace{1cm} (G.1)

which strictly exceeds that under parliamentary government. Consider $\gamma < \bar{\gamma}$. Fix $\alpha \geq \bar{\alpha}$. Then, if the executive is a low type and the parliamentarian is a high type, we have

$$\theta(1 - \gamma)(1 - \sigma) + (1 - \theta)[\gamma \sigma + 1 - \gamma]$$  \hspace{1cm} (G.2)

and we can show that this expression is always greater than the corresponding expression under parliamentarism, since $\gamma \geq \theta$. Finally, if the executive and the parliamentarian are low types, the relevant expression under presidentialism is

$$\theta[\gamma(1 - \tau^x) + 1 - \gamma] + (1 - \theta)[\gamma \sigma + (1 - \sigma)(1 - \tau^y)] + (1 - \theta)(1 - \gamma)$$  \hspace{1cm} (G.3)

which is, again, strictly greater than the corresponding quantity under parliamentary government. Suppose, instead, that $\alpha < \bar{\alpha}$ and $\gamma < \bar{\gamma}$. If the executive is drawn a low type, and the parliamentarian is drawn a high type, we have

$$\theta(1 - \gamma)(1 - \sigma)(1 - \eta_{e}(r_y)) + (1 - \theta)[\gamma \sigma (1 - \eta_{e}(r_y)) + 1 - \gamma]$$  \hspace{1cm} (G.4)

which is strictly greater than the corresponding quantity under parliamentary government. Finally, if both the executive and low type are drawn, we obtain

$$\theta[(\gamma + (1 - \gamma)\sigma)(1 - \tau^x) + (1 - \gamma)(1 - \sigma)(\tau^y + (1 - \tau^y)(1 - \eta_{e}(r_y)))] + (1 - \theta)[\gamma \sigma + (1 - \gamma) + \gamma (1 - \sigma)(1 - \tau^y) + \gamma(1 - \eta_{e}(r_y))]$$  \hspace{1cm} (G.5)

which can easily be shown to exceed the relevant quantity under parliamentarian. We now undertake the same evaluation with respect to the parliamentarian. If a low type parliamentarian has been drawn, and the executive is a high type, the probability of removal under parliamentarism is 0 under parliamentarism. Under presidentialism, this quantity is strictly greater than 0. If a low type parliamentarian is drawn and a low type executive is drawn, the probability of removal is

$$\theta[\gamma(1 - \tau^x)(1 - \eta_{m}(r_x)) + (1 - \gamma)((1 - \sigma)[\tau^y + (1 - \tau^y)(1 - \eta_{m}(r_y))] + \sigma(1 - \tau^x)(1 - \eta_{m}(r_x)) + (1 - \theta)[(\gamma \sigma + 1 - \gamma)(\tau^x + (1 - \tau^x)(1 - \eta_{m}(r_x))) + \gamma(1 - \sigma)(1 - \tau^y)(1 - \eta_{m}(r_y))$$  \hspace{1cm} (G.6)
If $\sigma = 0$ or $\sigma = \sigma_2$, this expression is always smaller than the corresponding expression under parliamentarism. If $\sigma = \sigma_1$, it can be shown by numerical example that the systems cannot be ranked.

**Appendix H. Proof of Proposition 7**

This can be established with straightforward but tedious algebra.

**Appendix I. Proof of Proposition 8**

Before proving the results, notice that, after communication has taken place, the parliamentarian may be one of sixteen possible type-signal-message tuples, since there are two parliamentarian types, two signals, and four possible messages he might have received from the executive. The same is also true for the executive.

Consider the case of parliamentary government. First, I show that after the communication round, there exists an equilibrium in which no veto occurs with positive probability. Fix such a strategy profile, and now suppose that the voter observes a veto. The restriction D2 requires the voter to place probability one on the union of type-signal-message tuples of the parliamentarian in which type is high, and the signal contradicts the policy submitted by the executive. To see that this is the case, suppose that the parliamentarian is a high type who received a signal that does not contradict the bill. Then, she believes with probability 1 that she will be re-elected if she passes the bill, which implies that for any mixed response of the voter to her veto, she is weakly worse off as a result. On the other hand, if the parliamentarian is a high type who received a signal that contradicted the bill, she is strictly better off for any mixed response of the receiver that gives $\eta(r_i) > \eta(i_b)$. Therefore, the receiver places probability 0 on the parliamentarian being a high type who received a signal that matches the bill. Next, suppose that the receiver places positive probability on the parliamentarian being a low type. Then, she believes that if she passes the bill, she is re-elected with probability $\lambda_i > 0$, where this probability may also depend in equilibrium on the message she received. In that case, she is weakly better off from the deviation so long as $\eta(r_i) \geq \lambda_i$, whereas the high type parliamentarian who received a signal that contradicted
the bill for any message pair is strictly better off for any $\eta(r_i) > 0$. Therefore, the voter places probability 0 on the parliamentarian being a low type-signal-message tuple. In this case, the voter strictly prefers to replace both politicians, so the deviation is not profitable for the high type parliamentarian. [Uniqueness tbc]

Next, consider the round of pre-play communication. Since the unique equilibrium of the continuation game beginning after this round is one in which no veto occurs, I claim that there exists a truthful equilibrium. That there exists no profitable deviation for either executive type is trivial, since his communication has no effect on the subsequent behavior of the parliamentarian. For the high type parliamentarian who received signal $i$, a truthful type-signal message yields him an expected payoff of 1, whereas a deviation yields him an expected payoff weakly less than 1. For the low type, a similar calculation can be made. Therefore, an equilibrium with truthful communication exists.

Next, consider the case of presidential government. Consider the continuation game following the round of communication in which a truthful equilibrium is supposed to exist. First, I show that there exists no equilibrium in which no veto occurs with positive probability. Suppose, to the contrary, that such an equilibrium exists. Then, by the same reasoning as above, after a veto were observed by the voter, she would place probability 1 on the voter being a high type who received a signal which contradicted the policy, in which case she retains the parliamentarian and replaces the executive. This would therefore constitute a profitable deviation for the low type parliamentarian if his probability of re-election is strictly less than 1, which it must be if the executive is a low type who has communicated truthfully his type-signal. Therefore, no equilibrium without vetoes exist. In fact, we can show that the unique equilibrium is the same as in Proposition 3, except that $\lambda_i$ now depends on the message received by the low type executive. Suppose that a truthful equilibrium exists. Then, after a message by the executive that he is a high type, the low type parliamentarian believes that the bill is correct with probability 1. We need only show that this implies that the low type executive has an incentive to deviate to announcing that he is a high type to the parliamentarian, in order that the parliamentarian veto his bill with probability 0. Suppose that he is in fact a low type who received the signal $\psi_x$. If he announces this to the parliamentarian, the equilibrium probability with which the parliamentarian vetoes the
bill is

\[
\frac{\theta \gamma}{\theta \gamma + (1 - \theta)(1 - \gamma)}
\]

which as shown in Proposition 3 is equal to the probability with which the parliamentarian passes the bill. Therefore, the expected utility to the high type executive from sending a truthful message is

\[
\left(\frac{\theta \gamma}{\theta \gamma + (1 - \theta)(1 - \gamma)}\right)^2 < \frac{\theta \gamma}{\theta \gamma + (1 - \theta)(1 - \gamma)}
\]

where the RHS is his expected utility from deviating to the announcement \((e_h, \phi_x)\), in which case the parliamentarian passes the bill with probability 1. This proves that a truthful equilibrium does not exist.

**Appendix J. Proof of Proposition 9**

Define \(\triangle(\gamma) \equiv \gamma_H - \gamma_L\). Under parliamentarism, the low type wishes to make the investment if \(\gamma_H - c(\gamma_H) \geq \gamma_L\), or

\[
c(\gamma_H) \leq \bar{c}(\gamma_H) \equiv \triangle(\gamma)
\]

Under presidentialism, the executive prefers to make the investment only if

\[
c(\gamma_H) \leq \underline{c}(\gamma_H) \equiv [\alpha + (1 - \alpha)(\theta \tau_I^x + (1 - \theta)\tau_I^y)] \triangle(\gamma) < \triangle(\gamma)
\]

This yields the interval \((\underline{c}(\gamma_H), \bar{c}(\gamma_H))\) in which investment takes place under parliamentary government but not presidential government. Observe that this result does not depend on whether the investment is observed or unobserved.

**Appendix K. Proof of Proposition 10**

[The case for \(\beta\) large needs to be completed] It is easy to show that if \(\mu < \lambda_y\) when the executive low type is following his signal, there is no change in the equilibrium from Proposition 2. Assume, therefore, that \(\mu \geq \lambda_y\). Let us look for an equilibrium in which the
voter chooses to remove both politicians with probability 1 after a bill is vetoed.

**Executive:** For the low type, we require

\[ \lambda_y = \mu \tag{K.1} \]

and the existence of a mixed strategy \( \hat{\sigma} \) satisfying this requirement is immediate. That the low type executive strictly prefers to submit the bill \( x \) after the signal \( \phi_x \) is also immediate, as the is the optimality of the strategy of the high type.

**Parliamentarian:** To make the low type executive indifferent between submitting the bill \( x \) and \( y \) after a signal \( \phi_y \), we require

\[ \frac{\gamma(1 - \theta)}{(1 - \gamma)\theta} = \frac{1}{\beta + (1 - \beta)\tau_y} \tag{K.2} \]

or

\[ \tau_y = \frac{\theta(1 - \gamma) - \beta \gamma(1 - \theta)}{(1 - \beta)\gamma(1 - \theta)} \tag{K.3} \]

which is weakly positive so long as \( \beta \leq \frac{\theta(1 - \gamma)}{(1 - \theta)\gamma} \). Since \( 1 > \lambda_y > 0 \), \( \tau_h(\psi_i) = 1 \) and \( \tau_h(\psi_j) = 0 \) is sequentially rational.

**Voter:** After a veto of the policy \( x \), the voter always prefers to remove both politicians. After a veto of policy \( y \), it can confirmed algebraically that the voter prefers to remove both politicians.

**References**


