Do The Right Thing.

Incentives for policy selection in presidential and parliamentary systems[*]

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Abstract

Constitutional structures shape politicians' behaviour and hence policy outcomes through the different incentives schemes they generate. In this paper we analyze these mechanisms in parliamentary and presidential systems. The comparison is carried out by analyzing how the two systems may select the efficient policy in presence of asymmetric information. Presidential and parliamentary systems differ in that the policy proposed by the executive in the parliamentary system is confidence-dependent and observable. The main findings suggest that the parliament responds better to the incentive scheme in the presidential system due to the lower uncertainty legislators face over their term limit. However, the parliamentary system generates a more efficient behavior of the executive due to selection and disciplining effects.

Keywords: presidential system, parliamentary system, confidence vote, hierarchical accountability

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1 Introduction

In every democracy national policies originate from the interplay of the executive and legislative bodies. In this paper we study how different constitutional structures, presidential and parliamentary, affect the incentives of politicians in presence of asymmetric information. This paper is an attempt to fill a gap by comparing the two constitutional systems in a novel way by taking a closer look at the politicians' incentives they generate.

The debate over the relative merits of parliamentary and presidential systems has been present in the economics and political science literature for a very long time. In the second half of the past century the issue has been dissected in many ways but still, in spite of the numbers of pages written, we have no consensus on which system has to be preferred.

We follow the seminal works of Persson and Tabellini [2002, 2005]: institutional setups have a relevant impact in shaping economic policies. We take a step further by looking inside the mechanism through which new laws see the light and become effective and by studying how the two systems perform in terms of efficient policy selection.

Our interest in the links between institutions, incentives and behaviour is motivated by the observation that the effect of a constitutional rule on agents' behaviour and policy outcomes may be heterogeneous. [1]

In particular a few studies (see Voigt (2001)) have suggested that the binary distinction between parliamentary and presidential system may be too course to explain the observed variety of policy outcomes. In particular parliamentary systems may lead to heterogeneous outcomes due to the higher degree of complexity of their legislative rules. The distinctive feature of the parliamentary system that may induce heterogeneity is the confidence vote that may generate frequent changes of government, act as a credible threat or induce the parliament to lean on the executives proposal (for a detailed review of the importance of the confidence vote see Lijphart (2004). In a related empirical work, Bettarelli et al (2015) exploit this heterogeneity in parliamentary systems related to the use of confidence vote and investigate

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[1]For example Ardanaz and Scartascini (2014) show how the form of government interacts with budget procedures in determining the size of government spending. More precisely the find that presidential and parliamentary systems become statistically indistinguishable when the budget institution allocates total discretion to the president while this is not the case for different procedural rules.

whether parliament systems behave differently according to their government stability. The authors find that the difference between presidential and parliamentary systems documented in the literature is mostly driven by stable parliamentary systems and argue how the finding may be due to (the absence of) selection or legislative cohesion

In this work we therefore compare presidential versus parliamentary systems with a specific focus on the equilibrium effects of the confidence vote through the following two-period setup. The government is defined by an executive body, represented by a single player, and by a legislative body, represented by a parliament composed of L members. At the beginning of the game each player observes his type (i.e. policy/office-oriented). In the first period, politicians observe the true state of the world while voters remain uninformed. Then the executive proposes a policy to be approved by majority in the parliament. At the end of the first period voters too observe the true state of the world, update their beliefs on the probability of facing policy motivated politicians in both constitutional bodies and then the second period occurs analogously. These two institutions differ in two respects. First, as mentioned above, the presence of the confidence vote is the key constitutional ingredient of the parliamentary system. The main implication of the confidence requirement is that if the policy proposed by the executive is rejected, new elections are called for both bodies. This allows the parliamentary system to replace bad politicians even before the natural conclusion of the legislature; in turn though, it makes the system very sensitive to the incentives of those legislators who may have private agendas. Second, in the presidential system voters observe only the implemented policy, while in the parliamentary one they observe also the policy proposed by the executive. The first assumption affects politicians' first-period behavior, while the second one influences the incentives arising from informational asymmetries in the second period. In the paper we'll highlight the role of each hypothesis in driving the results.

The first result of the model is that the presidential system always selects the efficient policy, outperforming the parliamentary system. This is due to legislators' perfect information on the state of the world, that enables them to correct attempts at inefficient behavior by a possibly office-oriented executive. Moreover, since the length of the legislature does not depend on the approval of the executive's proposal, the parliament votes for the imple-

mentation of the efficient policy regardless of its composition. This happens because office-oriented legislators, that have nothing to gain from separating themselves from the policy motivated types, vote for the efficient policy to maximize the parliament's end-of-period reputation. In a parliamentary system instead, office-oriented legislators have a strong incentive to approve every executive's proposal to avoid early elections. As a consequence, the inefficient policy will be implemented with positive probability. The presence of the confidence vote therefore generates a distortion in the incentives of office-oriented legislators. On the other side though, the confidence vote allows policy-oriented members of parliament to replace an office-oriented executive before the legislature is over. This generates another interesting result: the expected quality of the proposal in the second period improves because office-oriented governments are voted out of office more often. This is a *selection effect* that improves the executive performance in the parliamentary system in the final period with respect to the presidential one. The confidence vote though has also a *disciplining effect* in the first period, if the cost of implementing the efficient policy is not too high, as the executive may propose the efficient policy for fear of being voted against and facing early elections.

Additionally, assuming policy proposal observability in parliamentary systems leads to a less opportunistic behavior of the executive in the second period, as when new elections are certain the executive is interested in maximizing his end-of-period reputation with voters.

We show that the supremacy of the presidential system in selecting the efficient policy follows from the symmetric information among politicians about the state of the world. It is natural to analyze what happens when this assumption is relaxed. In Section 4 we provide an example where the parliament is not perfectly informed about the state of the world and votes according to an informative signal. In this case the presidential system no longer achieves full efficiency, as the parliament may not correct the misbehavior of the executive due to an incorrect signal. We show that the parliamentary system may outperform the presidential one by selecting the efficient policy with higher probability.

This paper relates to the literature about the role of constitutions in shaping national policies. As mentioned above, the seminal contribution is due to Persson and Tabellini [2002, 2005]. More precisely, Persson and

Tabellini [2002, 2005] show how constitutional designs affect the composition and the size of government spending, for example empirical analysis suggests that presidential regimes favors smaller governments. We as well fit in what Elgie [2005] calls the "third wave" of studies that have addressed the relative merits of presidential and parliamentary systems.

This paper also belongs to the political agency literature (see Besley [2007]) where citizens delegate decisions to policy makers with an informational advantage. Our model displays the two issues that typically arise in this literature: one related to opportunistic behavior and a moral hazard element (see Barro [1973] and Ferejohn [1986]) and one related to the type of the politician (expertise or motivation) and an adverse selection component (see Carrillo and Mariotti [2001]).

Our chosen criteria to judge a political system rests in its ability to select the efficient policy, as in Besley and Coate [1998], who, in a different setup, identify a political failure as the inability to undertake a potentially Pareto improving public investment with the available policy instrument.

Most of the political agency literature though has limited itself to model government as a single agent while we use a hierarchical structure that separates the effect of accountability on the executive and the parliament. Our hierarchical agency structure is somehow related to the one in Vlaicu [2008] and Vlaicu and Whalley [2016] where they study accountability in government under different hierarchical controls but without comparing different constitutions. They assume as well that each politician has private information about his type, while all agents (i.e. voters and other politicians) update their beliefs by observing the institutional activities.

A key issue we tackle is the role of the confidence requirement, which is a relevant characteristic of the parliamentary system. Diermeier and Vlaicu [2011] study how constitutional features influence political behavior in terms of legislative success rate, defined as the frequency with which bills proposed by the executive government are passed by the legislature in a given legislative session. They show how the confidence vote explains the different performance of parliamentary and presidential systems in terms of legislative success. Also Becher [2012] believes that differences in executive-legislative institutions shape the policymaking ability of the two systems. He identifies the dissolution power of the executive in the parliamentary framework as the force leading to higher spending in parliamentary systems versus presidential

ones.

Finally, our paper is closely related to Maskin and Tirole [2004] where they study costs and benefits of making public officials accountable in presence of both ego rents and legacy motives (i.e. public good concerns). In our framework we model a similar trade-off through the presence of office-vs policy-oriented politicians.

The structure of the papers is as follows: Section 2 describes the elements of the model, Sections 3 presents the equilibrium analysis, Section 4 contains an example where the assembly is not fully informed, Section 5 briefly concludes. All proofs are in the Appendix.

2   The model

We introduce a political economy framework of policy formation resulting from the interplay between an executive and a legislative body by building the following two-period structure in which (passive) voters and politicians face an uncertain policy environment.

Policy environment.   We assume a two-period model in which every period $t = 1, 2$ is characterized by a state of the world $s_t \in \{s_A, s_B\}$. States are equally likely, in that $\mathbb{P}[s_t = s_k] = \frac{1}{2}$ for $k = A, B$, and $t = 1, 2$, and independently distributed across periods. In every period a public good $g_t \in \{A, B\}$ has to be produced where we assume that good A costs $c_A \in (0, 1)$ and we normalize the cost of B to zero. In every period the amount of resources the executive can use either for the production of the public good or for private consumption is one.

The policy is determined by the behavior of the executive and the parliament. The executive proposes a policy $g_t^e \in \{A, B\}$ and the parliament votes on it. If the parliament rejects the proposal a status-quo policy $g^0 = A$ is implemented.[2]

Voters.   In this context voters are passive players in that we do not model the voting stage. The electorate is composed by N homogeneous voters and with a slight abuse of notation we define the per-period utility $u(g_t, s_k)$ such

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[2]We focus on $g^0 = A$ because this is the most interesting case, as A is the costly good.

that for every $t = 1, 2$ and $k = A, B$:

$$u(g_t, s_k) = \begin{cases} 1, & \text{if } g_t = k \\ 0, & \text{otherwise.} \end{cases}$$

Hence, the efficient policy is $g^*(s_t)$, where:

$$g^*(s_t) = \begin{cases} A, & \text{if } s_t = s_A \\ B, & \text{if } s_t = s_B. \end{cases}$$

We assume that voters perfectly observe s_1 only at the end of period one.

Executive. The executive body cares about rents, which in our framework are given by the amount of resources not invested in the public good (i.e. $1 - c_{g_t}$) and may also care directly about the implemented policy. Following the political economy literature, let us define the executive *policy-oriented* if he cares about the implemented policy, and *office-oriented* if not. Being policy/office-oriented is private information: the executive is characterized by a privately observed type $\theta^e \in \{0, 1\}$, where $\theta^e = 1$ means a policy-oriented executive. We denote the probability of being policy-oriented $\mathbb{P}[\theta^e = 1] = \gamma$. The executive observes the state of the world in every period.

The executive's utility function is:

$$U^e = 1 - c_{g_1} + \theta^e u(g_1, s_1) + \pi \left(1 - c_{g_2} + \theta^e u(g_2, s_2)\right) + \varepsilon \widehat{\theta}^e,$$

where $u(g_t, s_t)$ is the per-period utility from policy experienced in case the executive is policy-oriented. The interpretation is that the executive cares about the policy, if $\theta^e = 1$, exactly in the same way as voters do. The second part of the utility is weighted by the probability of being in power in period two, π. Let $\widehat{\theta}^e$ be the ex-post voters' belief on the probability that the executive is policy-oriented, and let $\varepsilon \in [0, c_A]$. The parametric assumption on ε ensures that in the second period reputational concerns are not strong enough to induce an office-oriented executive to behave efficiently. The term $\varepsilon \widehat{\theta}^e$ represents in a reduced form the executive's concerns about future elections.[3] In other words, we are assuming that expected rents from future periods of political activity are proportional to the final reputation gained by being in office. Intuitively, the parametric assumption on ε ensures that, in period two, a policy-oriented executive cares more about the implemented policy than about his final reputation.

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[3]This reputational component ensures a tractable model, which generates qualitatively comparable disciplining effects as if we had a more explicit voting stage.

Parliament. The legislative body has to approve or reject the executive's policy proposal in each period. The parliament is composed of L (odd) legislators, $l = 1, ..., L$. Analogously to the executive body, every legislator privately observes his type $\theta^l \in \{0, 1\}$, where $\theta^l = 1$ $(= 0)$ means a policy (office)-oriented legislator. The probability of being policy-oriented is $\mathbb{P}[\theta^l = 1] = \gamma$, and types are independent across members. We are therefore assuming that both executive and legislative posts are filled with politicians drawn from the same pool. This assumption will be dropped in the asymmetric information example of Section 4. We denote by Γ the probability that the majority of the assembly is policy-oriented, where

$$\Gamma = \sum_{k = \frac{L-1}{2}+1}^{L} \binom{L}{k} \gamma^k (1-\gamma)^{L-k}.$$

Note that if $\gamma > (<) \frac{1}{2}$ then Γ is increasing (decreasing) in L.[4] Each legislator observes the state of the world in every period.

The utility function of legislator l is:

$$U^l = (1 - \theta^l)R + \theta^l u(g_1, s_1) + \pi \left((1 - \theta^l)R + \theta^l u(g_2, s_2) \right) + \varepsilon \widehat{\theta}^p,$$

where $R \geq \varepsilon$ is the office-holding part of the legislator's utility while $u(g_t, s_t)$ is the policy component. Office-oriented legislators care about being in office, and their rent does not depend on the implemented policy. Policy-oriented legislators, instead, only enjoy utility from the implementation of the efficient policy. The parametric assumption on R ensures that in the first period the office-holding concerns are stronger than those for reputation for the office-oriented legislators. Moreover, as before, $\varepsilon \widehat{\theta}^p$ represents in a reduced form the legislator's concerns about future elections, where $\widehat{\theta}^p$ is the ex-post voters' belief on the probability that the majority of the parliament is policy-oriented.

The institutional frameworks: presidential and parliamentary systems. Both systems are analyzed over two periods. In the presidential system, at $t = 0$ each player observes his private type, at $t = 1$ politicians

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[4]Although we essentially consider each branch of government as a single player to abstract from issues of preference and information aggregation, we allow multimember parliament as its size L can be thought as a policy instrument. This will be more important when we introduce asymmetric information on the state of the world in Section 4.

observe the state of the world s_1. Then, the executive makes a policy proposal and, if it is different from the status quo policy, the parliament votes to accept or reject it. Notice that if $g_t^e = g^0 = A$ then voting over the proposal is irrelevant. At the end of period one, voters observe the state of the world s_1 and, given the implemented policy g_1, they update their beliefs on the executive's and the parliament's types. In period two, politicians observe s_2 and jointly determine the policy, as described in period one. Voters, who do not observe s_2, update their beliefs on the executive and the parliament given g_2.

In the parliamentary system, at $t = 0$ each player observes his private type, at $t = 1$ politicians observe the state of the world s_1. Then, the executive makes a policy proposal and, if it is different from the status quo policy, the parliament votes to accept or reject it. If the policy is rejected a new executive ($\widetilde{E}$) and a new parliament ($\widetilde{P}$) are elected. The new executive and the new legislators are randomly drawn from the same pool of politicians (with probability of being policy-oriented γ). As we model concerns for future elections in a reduced form through $\varepsilon\widehat{\theta}^e$ and $\varepsilon\widehat{\theta}^p$, we assume that the probability that either the old executive or a member of the old parliament is reelected is 0.[5] Hence, in the parliamentary system, contrary to the presidential one, voters may also infer the policy proposal of the executive, i.e. g_1^e. At the end of period one, voters observe s_1 and update their beliefs given g_1^e and g_1. In period two, politicians (also in case of reelected bodies) observe s_2 and jointly determine the policy, as described in period one. Voters, who do not observe s_2, update their beliefs on the executive and the parliament given g_2^e and g_2.

Notice that presidential and parliamentary institutional structures differ in two aspects. First, period-one policy proposals are subject to the confidence vote only in the parliamentary system. This assumption fits literature (see, among many others, Diermeier and Vlaicu [2011]). Therefore $\pi = 1$ for the presidential system and $\pi \leq 1$ for the parliamentary system. Secondly, voters do observe the policy proposed by the executive only in the parliamentary system. This assumption is reasonable because voters can infer the policy proposed in the first period by observing the identity of the executive

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[5]Explicitly modelling the probability of reelection is equivalent to assume that politician are replaced with probability smaller than one after a negative confidence vote. This assumption is relaxed in Section 4.

and legislative bodies in period two.[6] The two structures are summarized in Figure 1 and 2.
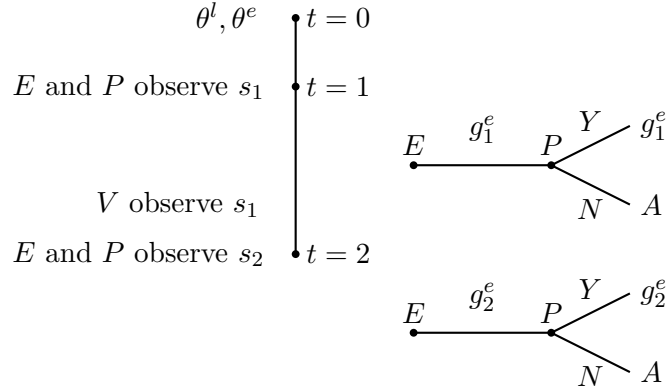
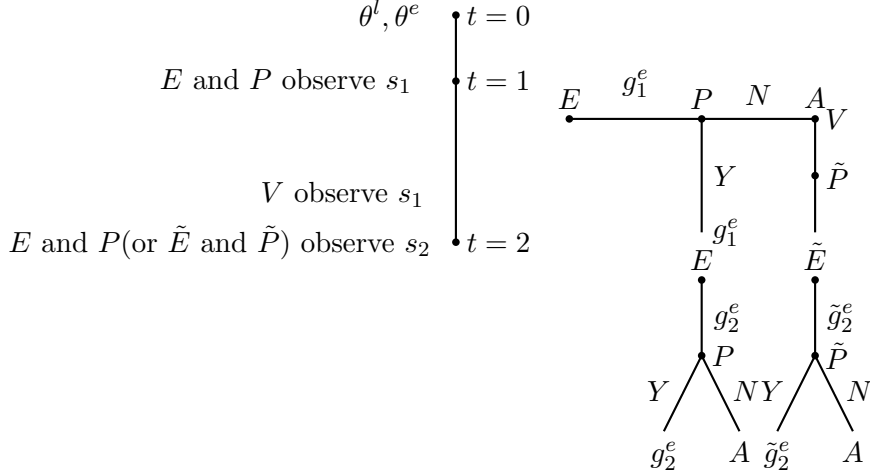Figure 1: The presidential system

Figure 2: The parliamentary system

3   Equilibrium analysis

Given the game described in Section 2, it appears natural to solve it relying on the standard notion of Perfect Bayesian Equilibrium. We present the

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[6]We will discuss in Section 3 the implications of this assumption on the results.

results in the following sections.

3.1 The presidential system

The main constitutional feature of the presidential system is that, given the absence of a confidence vote, the executive and the parliament hold office in both periods. This characteristic has interesting consequences for both bodies. The executive is not disciplined by the threat of early elections, hence office-oriented politicians offer the costless policy in both periods. Interestingly, the parliament, that does not control the executive through the confidence vote, is able to select the efficient policy outcome as a response to an undistorted incentive scheme. Clearly the voting stage in parliament has a plethora of equilibria.[7] We focus on the undominated ones in which, when indifferent, office-oriented legislators mimic the policy-oriented ones. To be more clear, on one hand, policy-oriented legislators maximize their utility by voting for the efficient policy. On the other hand, office motivated legislators, whose utility function is $U^l = 2R + \varepsilon \widehat{\theta}^p$, adopt the same behavior in the first period to maximize the final reputation of the parliament, and in the second period because they are indifferent. We present this intuition in the following proposition:

Proposition 1 *In the presidential system the following pure-strategy equilibrium exists:*

- *both types of executive propose B if $s_t = s_B$ and they are indifferent between any policy proposal if $s_t = s_A$;*

- *each legislator approves B if and only if $s_t = s_B$.*

Notice that even if we do not have uniqueness of the equilibrium strategies, we have uniqueness of the equilibrium outcome given the voting equilibrium in parliament described above. As already mentioned, even in this simple framework, the parliament (who does not have the disciplining power given by the confidence vote) corrects any misbehavior of the executive by voting against inefficient proposals.

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[7]Among these equilibria many are implausible, e.g. those in which every legislator always rejects the efficient policy. Hence, following the voting literature, we disregard them.

The power of the parliament in this framework derives from the undistorted incentive scheme that legislators face, the ability to ascertain the efficient policy (all politicians do observe the state of the world unlike voters) and the nature of the status quo policy, which is in contrast with the interests of an office-oriented executive.[8] Both types of executive are indifferent between offering the efficient policy $g^*(s_t)$ or B. This behavior arises from two features of this framework: first, legislators face undistorted incentives and hence vote for the efficient policy (as explained above); second, voters only observe the implemented policy. This leads to the executive being indifferent between any policy proposal when $s_t = s_A$ as the implemented policy is always A. If instead we had assumed the observability of the policy offer, as in the parliamentary system, we could have resolved such indifference and the second period equilibrium strategy would have been $g^*(s_2)$.

The above proposition has a striking effect on the welfare analysis in that the efficient policy is implemented in every period and in every state of the world. Hence, the average probability of doing the right thing is one.

3.2 The parliamentary system

The parliamentary system differs from the presidential one in two constitutional characteristics: in the first period policies are confidence-dependent and voters observe both the proposed and the implemented policy in every period. These characteristics shape the incentive schemes the executive and the parliament face. The parliament now has disciplining power deriving from the confidence vote. This power, however, comes at the cost of a distortion in the legislators' first-period incentives since the probability that the parliament remains in office for a second period depends on the confidence vote. For the sake of simplicity we assume that elections for both bodies are called whenever the executive policy proposal is rejected by the parliament. Nevertheless, our results hold also in case this happens with a positive, but small, probability.[9] Also in this case, there are a plethora of equilibria at the voting stage, and we focus on undominated ones. Therefore, policy-

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[8]Notice that we assumed $g^0 = A$. If we instead assumed $g^0 = B$ the presidential and the parliamentary systems would deliver the same results, i.e. policy-oriented executive would offer $g^*(s_t)$, the office-oriented executive would offer B, and the parliament would vote only when A is proposed.

[9]In Section 4 we will present an example where parliament and executive face early elections with different probability.

oriented legislators maximize their utility by voting for the efficient policy in both periods. Office-oriented legislators instead react to the possibility of early elections by approving every policy proposed by the executive in the first period. In the second period this effect vanishes and office-oriented legislators behave efficiently because end of period reputations is their only concern. The aggregate behavior of the parliament depends on the type of the legislators, i.e. if the majority is policy-oriented which happens with probability Γ.

In this constitutional framework, the executive may face a trade-off between implementing the desired policy and remaining in power. Such a trade-off is a function of the cost of A and of the quality of the parliament Γ. The following proposition shows the equilibrium behaviors in function of the mentioned parameters:

Proposition 2 *In the parliamentary system the following pure strategy equilibria exist: policy-oriented legislators approve B if and only if $s_t = s_B$ in every period, office-oriented legislators approve B always in the first period and if and only if $s_t = s_B$ in the second period; the executive behaves as follows:*

-Equilibrium 1: *a policy-oriented executive proposes the efficient policy, an office-oriented executive proposes B in the first period and the efficient policy in the second period if $c_A > \frac{2(\varepsilon+\Gamma)}{2-\Gamma}$;*

-Equilibrium 2: *both types of executive propose the efficient policy in the first and in the second period if $c_A < \frac{2(\varepsilon\gamma+\Gamma)}{2-\Gamma}$.*

Proposition 2 shows that the parliamentary system performs like the presidential one when the cost of implementing policy A is not too high, as in both systems the average probability of doing the right thing is one. Notice that in the first period this derives from the efficient behavior of the executive despite an inefficient behavior of the parliament (contrary to the presidential system). When the cost of implementing policy A is high enough instead, also the executive behaves inefficiently in the first period as the cost of implementing policy A is larger than the expected loss from being voted out of office. As a consequence, the average probability of doing the right thing is $\frac{3}{4} + \frac{\Gamma}{4} + \frac{\gamma}{4}(1-\Gamma)$ that is smaller than one.

3.3 Comparison between the two systems

The presidential system in our framework achieves the first best, in that it always produces the implementation of the efficient policy. In this respect, the presidential system outperforms the parliamentary one that achieves the first best only when the cost of implementing policy A is not too high. However, the two constitutional setups operate in a complementary way in shaping politicians' incentive schemes.

The strength of the presidential system lies in the provision of undistorted incentives to the parliament. When legislators are perfectly informed, this implies that the parliament corrects any possible misbehavior of an office-oriented executive.

On the other side, the parliamentary system is effective in improving the performance of the executive, both through a *disciplining* and a *selection* effect. When the first type of equilibrium arises, an office-oriented executive proposes B in every state of the world. However, office-oriented executives are voted out of office more often than policy-oriented ones, hence quality of the executive improves in the second period. If instead the cost of production of policy A is low, the parliamentary system has a disciplining effect on the first period behavior of the executive, which implies that every type of executive proposes the efficient policy in the first period. Finally, the observability of the policy proposal induces the executive's efficient behavior in the second period.

To understand how these effects influence the policy determination process, we now consider two parametric examples. In both examples politicians are policy- or office-oriented with equal probability (i.e. $\gamma = \frac{1}{2}$, which also implies $\Gamma = \frac{1}{2}$). Under this assumption, in the presidential system the executive proposes the efficient policy with probability at least $\frac{1}{2}$ in every period; the implemented policy is always the efficient one because the parliament always votes against B when $s_t = s_A$; finally, the probability that the executive is policy-oriented is $\frac{1}{2}$ in every period. We now analyze the implications of the parliamentary system in a case of high cost of production of A and in a case of low cost. In both cases we assume $\varepsilon = \frac{1}{15}$.

Example 1 (high cost). Let us first consider the case in which $c_A = \frac{9}{10}$. In this case $c_A > \frac{2(\varepsilon + \Gamma)}{2 - \Gamma} = \frac{34}{45}$, hence Equilibrium 1 arises in the parliamentary system. As a consequence, the probability that the executive proposes the efficient policy in the first period is $\frac{3}{4}$. The parliament, however, votes

against B when $s_1 = s_A$ only with probability $\frac{1}{2}$, i.e. when the majority of the legislators are policy-oriented, so the probability that the efficient policy is implemented in the first period is $\frac{7}{8} < 1$. Whenever the parliament votes against B, new elections are called for both bodies, and the newly elected politicians are policy-oriented with probability $\frac{1}{2}$. Hence, the probability that the executive is policy-oriented in the second period is $\frac{5}{8} > \frac{1}{2}$, due to this selection effect. In the second period the probability that the efficient policy is proposed is therefore 1. With respect to these two characteristics, the parliamentary system outperforms the presidential one, due to the better average quality of the executive and the observability of the policy proposal. In any case the parliament votes against an inefficient proposal with probability one, so the efficient policy is implemented in the second period. The average probability of doing the right thing is therefore $\frac{15}{16} < 1$.

Example 2 (low cost). Let us now consider the case in which $c_A = \frac{3}{10} < \frac{32}{45} = \frac{2(\varepsilon\gamma + \Gamma)}{2 - \Gamma}$. In this case Equilibrium 2 arises in the parliamentary system. As a consequence, every type of executive proposes the efficient policy in the first period, so that the efficient policy is implemented with probability one. Notice that this is due to a well behaved executive which is disciplined by the threat of a negative confidence vote; in this way, the parliament is never active, and the distorted incentive schemes legislators face do not influence the policy determination process. As the same executive remains in power for both periods, the probability that the executive is policy-oriented in the second period is $\frac{1}{2}$. Given the observability of policy proposal, in the second period the efficient policy is proposed with probability 1.

These examples helps showing the strengths and weaknesses of the two systems where the performance of the presidential one is determined by an efficient parliament while the performance of the parliamentary one is improved by the disciplining and selections effects described above.

4 Asymmetric information on the state of the world: an example

The model analyzed so far has shown a superiority of the presidential system over the parliamentary one. However, the examples introduced at the end of the previous section have highlighted the strengths and weaknesses of the

two constitutional systems, suggesting the possibility that the parliamentary system may indeed be the optimal constitutional structure under some conditions. As long as legislators are fully informed on the state of the world, the presidential system always implements the efficient policy due to the behavior of the well-functioning and perfectly informed parliament. Therefore, the parliamentary system can at most match its performance. However, if we relax the assumption that legislators observe s_t, the presidential system may fail to achieve first best, and a closer look can help understanding which constitutional system is the most efficient one. In this section we present an example where we relax a few assumptions of the perfect information model and show that the parliamentary system may indeed outperform the presidential one.

As in the previous examples we keep the assumption that the executive's expected motivation is $\gamma = \frac{1}{2}$, and $\varepsilon = \frac{1}{15}$; we allow $c_A \in \left[\frac{3}{10}, 1\right)$, which includes both previous specifications.

We modify the setup as follows. First, we relax the assumption that legislators perfectly observe the state of the world. We assume that in every period t legislators receive a common signal σ_t on the state of the world; the signal has precision ρ, is independent across periods, and observed in each period before voting on the executive's policy proposal. Formally, the signal is as follows:

$$\sigma_t = \begin{cases} s_A \text{ with probability } \rho, \\ s_B \text{ with probability } 1 - \rho, \end{cases} \text{ if } s_t = s_A;$$

$$\sigma_t = \begin{cases} s_B \text{ with probability } \rho, \\ s_A \text{ with probability } 1 - \rho, \end{cases} \text{ if } s_t = s_B.$$

Legislators (and voters) perfectly observe s_1 before the beginning of period 2, hence legislators update their belief on the executive's type based on the true realization of the state of the world. Let us assume $\rho \in \left[\frac{7}{12}, \frac{2}{3}\right)$ in the example.

Moreover, the link between the executive and the parliament is weakened in two ways. First of all, Γ may differ from $\frac{1}{2}$, which implies that politicians are no longer drawn from the same population.[10] Moreover, we

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[10]Recall that the executive is policy motivated with probability $\gamma = \frac{1}{2}$. If we assume that all politicians were drawn from the same pool, we would obtain $\Gamma = \frac{1}{2}$ independently from L.

introduce the possibility of a cabinet reshuffle that does not involve new elections. More precisely, after a negative vote, when the executive is replaced with probability 1, the same parliament remains in power with probability π^l. In what follows $\pi^l = \frac{2}{3}$. Both assumptions increase the performance of the parliamentary system, through the reduction of the distortions to legislators' incentives and the potential improvement of the parliament's expected motivation (i.e. probability of being policy-oriented).

In this new specification a parliament will be described by the two parameters ρ and Γ. These parameters represent two dimensions of the parliament's quality. The first one is related to the precision of the information received by legislators, ρ, and we call it expertise. The second one is related to the policy preferences of legislators, Γ, and we call it intrinsic motivation.

Let us compare the two constitutional structures showing how expertise does affect the performance of both systems while intrinsic motivations is relevant only in the parliamentary one.

4.1   Presidential system

The introduction of asymmetric information on the state of the world induces legislators, who do not observe s_t, to change their behavior depending on the precision of the common signal. Given their expertise, and the executive's equilibrium strategies, legislators find it optimal to follow the signal (when it contrasts with the policy proposal) whenever the probability that the executive is policy-oriented is at most $\frac{1}{2}$, and to approve the proposal in any case when such probability is larger than $\frac{1}{2}$. This implies that legislators may vote in a different way in the first and in the second period. In the first period, given our parametric specification, they approve every policy proposal. In the second period their behavior depends on the belief $\widehat{\gamma}_p^e$ that legislators hold on the executive intrinsic motivation at the beginning of period two. In particular, if the executive has signalled himself as office-oriented ($\widehat{\gamma}_p^e = 0$), legislators follow their own signal, otherwise they approve his proposal regardless of σ_2.

The following proposition describes the equilibrium behavior.

Proposition 3 *In the presidential system with asymmetric information, given the assumed parametric specification, the following pure-strategy equilibrium exists:*

- *a policy-oriented executive proposes $g_t^e(s_t, 1) = g^*(s_t)$, for every period $t = 1, 2$;*

- *an office-oriented executive proposes $g_t^e(s_t, 0) = B$, for every period $t = 1, 2$;*

- *policy- and office-oriented legislators always approve B in the first period, and they reject B in the second period only when $\sigma_2 = s_A$ and $(g_1^e, s_1) = (B, s_A)$.*

In this context, the presidential system fails to achieve the first best, as legislators do not observe the state of the world but only an imprecise signal about s_t. As a consequence, the parliament, who still faces undistorted incentives, is not as effective as before in correcting the potential misbehavior of office-oriented executives.

4.2 Parliamentary system

The introduction of asymmetric information on the state of the world reduces legislators' understanding of the efficient policy also in the parliamentary system. In presence of the confidence vote this implies that, contrary to the perfect information case, a policy-oriented executive may be replaced if he proposes B when the state is s_B due to an incorrect signal σ_1. However, the parliamentary system still displays a positive selection effect, as office-oriented politicians are more likely to be replaced at the end of the first period, and, as a consequence, the average quality of the executive in the second period is higher than $\frac{1}{2}$.

This selection effect is anticipated by policy-oriented legislators who find it optimal to follow their own signal in period 1 for lower levels of expertise which include our specification. In the second period instead, they share the same incentives as in the presidential system and follow their own signal only when $(g_1^e, s_1) = (B, s_A)$. Office-oriented legislators instead behave as in the perfect information case, approving every policy in period 1 and mimicking their policy-oriented colleagues in period 2.

Moreover, due to the lower expertise of the parliament, an office-oriented executive always proposes B in equilibrium so that the second period is equal to presidential one.

The following proposition describes the structure of the equilibrium.

Proposition 4 *In the parliamentary system with asymmetric information, given the assumed parametric specification, when $c_A \geq \frac{2(\rho\Gamma + \varepsilon)}{1 - \rho\Gamma}$, the following pure-strategy equilibrium exists equilibrium:*

- *a policy-oriented executive proposes $g_t^e(s_t, 1) = g^*(s_t)$, for every period $t = 1, 2$;*

- *an office-oriented executive proposes $g_1^e(s_t, 0) = B$, for every period $t = 1, 2$;*

- *policy-oriented legislators reject B in period 1 when $\sigma_1 = s_A$;*

- *office-oriented legislators always approve B in the first period;*

- *policy- and office-oriented legislators reject B in the second period only when $\sigma_2 = s_A$ and $(g_1^e, s_1) = (B, s_A)$.*

4.3 Comparison of the two systems

Let us now compare the welfare, in terms of the expected probability of implementing the efficient policy, in the two constitutional systems.

The **presidential system** has, in the first period, a probability of implementing the efficient policy of

$$w_1^{pres} = \gamma + \frac{1-\gamma}{2} = \frac{3}{4}.$$

This is due to the fact that the policy-oriented executive always proposes the efficient policy, and the office-oriented executive always proposes B, which is efficient with probability $\frac{1}{2}$. In the second period, there is extra information due to the first period learning. If the first period is characterized by $(g_1^e, s_1) = (B, s_A)$, which happens with probability $\frac{1}{4}$, legislators understand that the executive is office-oriented, and so follow their signal in the second period; otherwise they pass every policy proposal. Hence, the probability of implementing the efficient policy in the second period of the presidential system is

$$w_2^{pres} = \frac{1}{4} + \frac{1}{2}\left(\gamma + \frac{1-\gamma}{2}\right) + \frac{1}{4}\rho = \frac{5}{8} + \frac{\rho}{4}$$

The average probability of doing the right thing is therefore $W^{pres} = \frac{w_1^{pres} + w_2^{pres}}{2} = \frac{11}{16} + \frac{\rho}{8}$. Notice that given that the signal is informative $\left(\rho > \frac{1}{2}\right)$ the presidential system performs better in the second period than in the first period, due to the learning process.

The **parliamentary system** has, in the first period, a probability of implementing the efficient policy of

$$w_1^{parl} = \frac{1}{4} + \frac{1}{2}\left(1 - (1-\rho)\,\Gamma\right) + \frac{1}{4}\rho\Gamma = \frac{3}{4} + \frac{3}{4}\Gamma\rho - \frac{1}{2}\Gamma$$

This is due to the fact that when B is proposed, the parliament votes according to its signal σ_1, with precision ρ, only when the majority of its members are policy-oriented, and approves B regardless of the realization of the signal otherwise. For this range of precision of the signal, the parliamentary system performs worse than presidential one in the first period. In the second period, there is extra information due to the first period learning, and a higher probability that the executive is policy-oriented, due to the confidence vote in the first period. If the first period delivered $(g_1^e, s_1) = (A, s_A)$, which happens with probability $\frac{1}{4}$, the *original* executive is still in power and recognized as policy-oriented, and the second period probability of implementing the efficient policy is one. If the first period is characterized by $(g_1^e, s_1) = (B, s_B)$, which happens with probability $\frac{1}{2}$, the second period executive has a probability of being policy-oriented of $\frac{1}{2}$; this may happen either because the first period executive is still in power (if the assembly approves B) or because there is a new executive. Regardless of the mechanism at work, the probability of having a policy-oriented executive is $\frac{1}{2}$; hence, the probability of implementing the efficient policy in the second period is $\frac{3}{4}$. Finally, if $(g_1^e, s_1) = (B, s_A)$ two cases arise: if legislators rejected B, there is a new executive that is policy-oriented with probability $\frac{1}{2}$, and the probability of implementing the efficient policy in the second period is $\frac{3}{4}$; if legislators approved B, they understand upon observing s_1 that the executive is office-oriented and vote according to σ_2 in the second period, hence the probability of implementing the efficient policy is ρ. Overall the probability of implementing the efficient policy in the second period of the parliamentary system is

$$w_2^{parl} = \frac{1}{4} + \frac{1}{2}\frac{3}{4} + \frac{1}{4}\left(\rho\Gamma\frac{3}{4} + (1-\rho\Gamma)\,\rho\right) = \frac{5}{8} + \frac{1}{4}\rho + \frac{3}{16}\Gamma\rho - \frac{1}{4}\Gamma\rho^2$$

The average probability of doing the right thing in the parliamentary system is $W^{parl} = \frac{11}{16} + \frac{\rho}{8} - \Gamma\left(\frac{1}{4} - \frac{15}{32}\rho + \frac{1}{8}\rho^2\right)$.

Hence in this region the parliamentary system outperforms the presidential one when $\frac{1}{8}\rho^2 - \frac{15}{32}\rho + \frac{1}{4} < 0$, which happens for $\rho > \frac{15}{8} - \frac{1}{8}\sqrt{97}\left(< \frac{2}{3}\right)$. In this range the performance of the parliamentary system is increasing with Γ

which in turn is increasing in L whenever each legislator is policy-oriented with probability larger than $\frac{1}{2}$.[11]

Note that the asymmetric information assumption reduces the performance of both systems, as it worsens the ability of the parliament to ascertain the nature of the efficient policy.

4.4   Effects of legislators' quality

Recall that legislators' quality in this framework has two dimensions, *expertise*, parametrized by ρ, and *intrinsic motivation*, parametrized by Γ.

These parameters describe aspects of legislators' quality that are somehow orthogonal to each other, and that affect constitutional structures and their incentives in a different way.

Expertise.   Expertise increases the performance of both constitutional structures as it is a way of contrasting the effects of asymmetric information. In this example, the parliamentary system is more responsive than the presidential one to changes in the level of expertise. This comes from the fact that, for this parametric specification of ρ, legislators in the parliamentary system rely on their signal, while their colleagues in the presidential system do not. However, this does not necessarily hold for higher levels of expertise.

Intrinsic motivation.   Legislators' intrinsic motivation influences only the performance of the parliamentary system. The presidential system offers undistorted incentives to each legislator, so the parliament's behavior is independent of the intrinsic motivation of its majority. In the parliamentary system, instead, office-oriented legislators face distorted incentives, so that the motivation of the majority of the parliament affects its voting behavior. In the example welfare is not always increasing with Γ: its effect depends on the level of expertise. For sufficiently high levels of expertise, the policy-oriented legislators optimally use their signal. When the level of expertise is low, policy-oriented legislators still vote according to their signal, but this is suboptimal, as their signal is not sufficiently precise. This result comes from a disalignment of the welfare and the policy motivated legislators since

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[11]Recall that the equilibrium in the parliamentary system exists when $c_A \geq \frac{2(\rho\Gamma+\varepsilon)}{1-\rho\Gamma}$. This implies that the equilibrium exists for some value of c_A only if $\rho < \frac{1-2\varepsilon}{3\Gamma}$. There is a non empty set of (ρ, Γ) that satisfies this condition together with $\rho > \frac{15}{8} - \frac{1}{8}\sqrt{97}$.

they do not care about the policy that is implemented when they are not in power.

5 Concluding remarks

This paper analyzes the incentive schemes generated by two constitutional systems, a presidential and a parliamentary one, and their effects on the implementation of efficient policies over time.

We identify two key differences between the systems: the presence of the confidence vote and the observability of policy proposals in the parliamentary system. We find that the strength of the presidential system is that it offers undistorted incentives to legislators, thus inducing an efficient behavior in the parliament that corrects perfectly any potential misbehavior of the executive. The structure of the parliamentary system, on the other hand, improves the quality of the proposed policy through a disciplining effect, due to the threat of a negative confidence vote, and a selection effect, as office-oriented executives are more likely to be replaced.

We prove that, when legislators are fully informed, the presidential system outperforms the parliamentary one in that the efficient policy is implemented in every state and in every period. The parliamentary system instead achieves the first best only when the costly policy A is relatively cheap, while it fails to do so when the cost of A is high.

We show that the ranking between the constitutional systems may be reversed if we reduce the quality of the information that legislators receive. We provide an example in which the parliamentary system outperforms the presidential one and we highlight the mechanisms that generate such a result.

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6 Appendix

Proof of Proposition ??. **Legislators.** In the presidential system, legislators face undistorted incentives. The voting stage in parliament has a plethora of equilibria. We focus on undominated equilibria which do not induce additional exogenous distortion. The utility function of a policy-oriented legislator is:

$$U^l = u(g_1, s_1) + u(g_2, s_2) + \varepsilon \widehat{\theta}^p.$$

In both periods the undominated strategy for policy-oriented legislators is to approve B only when it is efficient, i.e. when $s_t = s_B$, as $\varepsilon \leq c_A < 1$ implies that reputation concerns cannot induce policy-oriented legislators to prefer the implementation of B when it is not efficient.

The utility function of an office-oriented legislator l is:

$$U^l = R + R + \varepsilon \widehat{\theta}^p.$$

As the vote of the parliament does not influence who is in office in the second period, office-oriented legislators in both periods maximize their utility by maximizing the final reputation of the parliament. We focus on the equilibrium in which this happens when they mimic the behavior of the policy-oriented ones. As a consequence the parliament approves B if and only if $s_t = s_B$.

Executive. In the presidential system, voters only observe the implemented policy, and not the proposed one. In equilibrium the implemented policy is always the efficient one, hence, the final reputation of every type of executive is $\frac{1}{2}$. The final reputation is equal to the initial one, as voters do not learn anything about the executive's type. To show that the described strategy profiles are indeed equilibria, we need to show that:

- No type of executive has incentive to propose A when $s_t = s_B$;

- Every type of executive is indifferent between proposing A and B when $s_t = s_A$.

We first show that proposing A when it is not efficient is suboptimal for both types of executive in both periods. The utility function of a policy motivated executive is:

$$U^e = 1 - c_{g_1} + u(g_1, s_1) + (1 - c_{g_2} + u(g_2, s_2)) + \varepsilon \widehat{\theta}^e.$$

When $s_1 = s_B$ the policy-oriented executive has no incentive to offer A. The expected utility from the deviation to A is

$$1 - c_A + \left(2 - \frac{c_A}{2}\right) + \varepsilon \widehat{\theta}^e (s_1 = s_B, g_1 = g_A),$$

which, for any possible value of $\widehat{\theta}^e (s_1 = s_B, g_1 = g_A)$ is smaller than

$$2 + \left(2 - \frac{c_A}{2}\right) + \varepsilon \frac{1}{2}$$

given that $c_A > 0$ and $\varepsilon \leq c_A < 1$. When $s_2 = s_B$ the policy-oriented executive has no incentive to offer A, as this reduces the second period utility without changing the reputation at all.

The utility function of an office-oriented executive is:

$$U^e = 1 - c_{g_1} + (1 - c_{g_2}) + \varepsilon \widehat{\theta}^e.$$

When $s_1 = s_B$ the office-oriented executive has no incentive to offer A. The expected utility from the deviation to A is

$$1 - c_A + \left(1 - \frac{c_A}{2}\right) + \varepsilon \widehat{\theta}^e (s_1 = s_B, g_1 = g_A),$$

which, for any possible value of $\widehat{\theta}^e (s_1 = s_B, g_1 = g_A)$ is smaller than

$$1 + \left(1 - \frac{c_A}{2}\right) + \varepsilon \frac{1}{2},$$

given that $c_A > 0$ and $\varepsilon < c_A$. When $s_2 = s_B$ the office motivated executive has no incentive to offer A, as this reduces the second period utility without changing the reputation at all.

We now show that the executive is indifferent between offering A or B when $s_t = s_A$. Given legislators' behavior, when $s_t = s_A$ the implemented policy is A, regardless of the proposed one, as the parliament corrects any possible misbehavior. Moreover, as voters observe only the implemented policy and not the offered one, reputation is the same under both policy proposals. Hence, every type of executive is indifferent between proposing A or B in every period t in which $s_t = s_A$. ■

Proof of Proposition ??. Legislators. The second period behavior is the same in the two equilibria. Legislators in the second period face the same undistorted incentives as in the presidential system, hence we focus again on the voting equilibrium in which both types of legislators approve B only when $s_2 = s_B$.

The utility function of an office-oriented legislator l is:

$$U^l = R + \pi(R) + \varepsilon\widehat{\theta}^p.$$

In the first period the only undominated strategy for office-oriented legislators is to approve any policy offer, so that $\pi = 1$, given that $\varepsilon\widehat{\theta}^p < R$.

The utility function of a policy-oriented legislator is:

$$U^l = u(g_1, s_1) + \pi(u(g_2, s_2)) + \varepsilon\widehat{\theta}^p.$$

As office-oriented legislators approve any policy in the first period, the final reputation of the parliament is higher after the rejection of a policy proposal than after the approval of a policy. Hence, the only undominated strategy for policy-oriented legislators is to reject B when $s_1 = s_A$.

Executive. Given the efficient behavior of the assembly, the implemented policy is always the efficient one. Hence, in the second period what matters for the executive is the reputation; as voters in the parliamentary system observe both the proposed and the implemented policy both types of executive find optimal to propose the efficient policy $g^*(s_t)$. Depending on the first period behavior of the executive we can characterize two different equilibria.

Equilibrium 1. In Equilibrium 1 in the first period a policy-oriented executive proposes the efficient policy and an office-oriented executive proposes B always.

The policy-oriented executive could deviate and offer B when $s_1 = s_A$ or A when $s_1 = s_B$. It is not profitable to deviate and offer B when $s_1 = s_A$, as it yields

$$1 + \Gamma(1 - c_A) + (1 - \Gamma)\left(2 - \frac{c_A}{2}\right) + \varepsilon(0) < 2 - c_A + \left(2 - \frac{c_A}{2}\right) + \varepsilon(1),$$

which is the utility from offering A when $s_1 = s_A$. Notice that voters observe the policy proposal, hence the final reputation is 0 if he offers B when $s_1 = s_A$ regardless of the implemented policy. It is not profitable to deviate and offer A when $s_1 = s_B$, as it yields

$$1 - c_A + \left(2 - \frac{c_A}{2}\right) + \varepsilon\widehat{\theta}^p(A, s_1 = s_B) < 2 + \left(2 - \frac{c_A}{2}\right) + \varepsilon(1),$$

which is the utility from offering the efficient policy. Notice that $\widehat{\theta}^p(A, s_1 = s_B)$ cannot be derived via Bayes' rule, but the inequality holds whatever such belief is.

An office-oriented executive could instead deviate and offer A when $s_1 = s_A$, or when $s_1 = s_B$. The most profitable deviation is to offer A when $s_1 = s_A$; for this not to be a profitable deviation the following must hold:

$$1 - \Gamma c_A + (1 - \Gamma)\left(1 - \frac{1}{2}c_A\right) + \varepsilon(0) > 1 - c_A + \left(1 - \frac{1}{2}c_A\right) + \varepsilon(1),$$

which is satisfied iff $c_A > \frac{2(\varepsilon + \Gamma)}{2 - \Gamma}$.

Equilibrium 2. In Equilibrium 2 in the first period both types of executive propose the efficient policy. The policy-oriented executive could deviate and offer B when $s_1 = s_A$ or A when $s_1 = s_B$. It is not profitable to deviate and offer B when $s_1 = s_A$, as it yields

$$1 + \Gamma(1 - c_A) + (1 - \Gamma)\left(2 - \frac{c_A}{2}\right) + \varepsilon(0) < 2 - c_A + \left(2 - \frac{c_A}{2}\right) + \varepsilon(\gamma),$$

which is the utility from offering A when $s_1 = s_A$. It is not profitable to deviate and offer A when $s_1 = s_B$, as it yields

$$1 - c_A + \left(2 - \frac{c_A}{2}\right) + \varepsilon\widehat{\theta}^p(A, s_1 = s_B) < 2 + \left(2 - \frac{c_A}{2}\right) + \varepsilon(\gamma),$$

which is the utility from offering the efficient policy. Notice that $\widehat{\theta}^p(A, s_1 = s_B)$ cannot be derived via Bayes' rule, but the inequality holds whatever such belief is, given that $\varepsilon\widehat{\theta}^p(A, s_1 = s_B) < 1$. An office-oriented executive could instead gain by deviating and offering B when $s_1 = s_A$ or A when $s_1 = s_B$. It is not profitable to deviate and offer A when $s_1 = s_B$, as it yields

$$1 - c_A + \left(1 - \frac{c_A}{2}\right) + \varepsilon\widehat{\theta}^p(A, s_1 = s_B) < 1 + \left(1 - \frac{c_A}{2}\right) + \varepsilon(\gamma),$$

which is the utility from offering the efficient policy. Notice that $\widehat{\theta}^p(A, s_1 = s_B)$ cannot be derived via Bayes' rule, but the inequality holds whatever such belief is, given that $\varepsilon\widehat{\theta}^p(A, s_1 = s_B) < c_A$. It is not profitable to deviate and offer B when $s_1 = s_A$, when

$$1 - \Gamma c_A + (1 - \Gamma)\left(1 - \frac{1}{2}c_A\right) + \varepsilon(0) < 1 - c_A + \left(1 - \frac{1}{2}c_A\right) + \varepsilon(\gamma),$$

which is satisfied iff $c_A < \frac{2(\varepsilon\gamma + \Gamma)}{2 - \Gamma}$.

■

Proof of Proposition 3. Let $\widehat{\gamma}_p^e$ be the updated belief that the legislators have on the policy motivation of the executive at the beginning of period two, and $\widehat{\gamma}_v^e$ the updated belief of the voters. Notice that $\widehat{\gamma}_p^e$ is relevant to determine the voting behavior of the legislators in period 2, while $\widehat{\gamma}_v^e$ is relevant to determine the executive's reputation incentives. Moreover in the presidential system the two beliefs may differ, given that $\widehat{\gamma}_p^e$ is an update of γ based on g_1^e and s_1, while $\widehat{\gamma}_v^e$ is an update of γ based on g_1 and s_1, and in general g_1 may differ from $g_1^{e\cdot}$. Recall that in this section we assume $\gamma = \frac{1}{2}$.

Legislators. As in Proposition 1, in the presidential system, legislators face undistorted incentives. The utility function of a policy-oriented legislator is:

$$U^l = u(g_1, s_1) + u(g_2, s_2) + \varepsilon \widehat{\theta}^p.$$

In both periods the undominated strategy for policy-oriented legislators is to approve B only when they believe that is efficient. The utility function of an office-oriented legislator l is:

$$U^l = R + R + \varepsilon \widehat{\theta}^p.$$

As the vote of the parliament does not influence who is in office in the second period, office-oriented legislators in both periods maximize their utility by maximizing the final reputation of the parliament. We focus on the equilibrium in which this happens when they mimic the behavior of the policy-oriented ones.

Given the first period executive's equilibrium behavior, if the parliament observes $g_1^e = B$ and $\sigma_1 = s_B$ it approves B because the signal that the legislators receive is compatible with the policy that is proposed by the executive. If the parliament observes $g_1^e = B$ and $\sigma_1 = s_A$, instead, it computes $\Pr[s_2 = s_B | g_2^e = B, \sigma_2 = s_A]$ in order to decide on its vote. Such probability, given the equilibrium strategies, is

$$\Pr[s_2 = s_B | g_2^e = B, \sigma_2 = s_A] = \frac{\Pr[g_2^e = B, \sigma_2 = s_A | s_2 = s_B] \cdot \Pr[s_2 = s_B]}{\Pr[g_2^e = B, \sigma_2 = s_A]}$$

$$= \frac{1 - \rho}{1 - \gamma \rho}; \tag{1}$$

the parliament approves B after $\sigma_1 = s_A$ given that $\Pr[s_2 = s_B | g_2^e = B, \sigma_2 = s_A] > \frac{1}{2}$, because $\rho < \frac{1}{2 - \gamma} = \frac{2}{3}$.

Given the second period executive's equilibrium behavior, if the parliament observes $g_2^e = B$ and $\sigma_2 = s_B$ it approves B because the signal that the legislators receive is compatible with the policy that is proposed by the executive. If the parliament observes $g_2^e = B$ and $\sigma_2 = s_A$, instead, it computes $\Pr[s_2 = s_B | g_2^e = B, \sigma_2 = s_A]$ in order to decide on its vote. Such probability, given the equilibrium strategies, is

$$
\begin{aligned}
\Pr[s_2 = s_B | g_2^e = B, \sigma_2 = s_A] &= \frac{\Pr[g_2^e = B, \sigma_2 = s_A | s_2 = s_B] \cdot \Pr[s_2 = s_B]}{\Pr[g_2^e = B, \sigma_2 = s_A]} \\
&= \frac{1 - \rho}{1 - \widehat{\gamma}^p \rho};
\end{aligned}
\tag{2}
$$

the parliament approves B after $\sigma_2 = s_A$ iff $\Pr[s_2 = s_B | g_2^e = B, \sigma_2 = s_A] > \frac{1}{2}$, which happens when $\rho < \frac{1}{2 - \widehat{\gamma}_p^e}$. We assume that legislators follow their signal when indifferent. Based on the equilibrium strategies, and on the voting behavior of the parliament the beliefs of the parliament at the beginning of period 2 are:

$$
\begin{aligned}
\widehat{\gamma}_p^e(A, s_A) &= \Pr(\theta^e = 1 | g_1^e = A, s_1 = s_A) = 1, \\
\widehat{\gamma}_p^e(A, s_B) &= \Pr(\theta_e = 1 | g_1^e = A, s_1 = s_B) = \tfrac{1}{2}, \\
\widehat{\gamma}_p^e(B, s_A) &= \Pr(\theta^e = 1 | g_1^e = B, s_1 = s_A) = 0, \\
\widehat{\gamma}_p^e(B, s_B) &= \Pr(\theta^e = 1 | g_1^e = B, s_1 = s_B) = \tfrac{1}{2}.
\end{aligned}
$$

All the above beliefs are derived by Bayes' rule, apart from $\widehat{\gamma}_p^e(A, s_B)$ which is an out-of-equilibrium belief. We assume that the parliament in this case holds passive beliefs (that also coincide with voters' beliefs) and does not update the executive's reputation. The above reputations imply that legislators follow their own signal in the second period only after the history $(g_1^e, s_1) = (B, s_A)$.

Executive.

Second period. The executive's utility depends on voters' beliefs final beliefs. Voters' beliefs in this equilibrium are equal to legislators' beliefs, as legislators never reject the policy proposal g_1^e; hence, $g_1 = g_1^e$.

- Let's consider first the incentives after $s_1 = s_B$. In this case $\widehat{\gamma}_p^e = \frac{1}{2}$ so that legislators approve every policy proposal. A type $\theta^e = 0$ could deviate and choose $g_2^e(s_A, 0) = A$ or $g_2^e(s_B, 0) = A$. For these not to be profitable deviations it must be:

$$
1 + \varepsilon \frac{1}{3} \geq 1 - c_A + \varepsilon,
$$

which is satisfied given that $c_A > \varepsilon$.

A policy-oriented type never deviates to $g_2^e(s_A, 1) = B$ as this deviation decreases both the utility from policy implementation and the final reputation. He could however deviate and choose $g_2^e(s_B, 1) = A$. For this not to be a profitable deviation it must be:

$$2 + \varepsilon \frac{1}{3} \geq 1 - c_A + \varepsilon,$$

which is satisfied by our assumptions on c_A and ε.

- Let's now consider the incentives after $s_1 = s_A$ and $g_1^e = g_1 = B$. In this case $\widehat{\gamma}_v^e = \widehat{\gamma}_p^e = 0$ so the ex post reputation of the executive is 0 regardless of the policy that is implemented in the second period. As a consequence, the office-oriented executive has no incentive to deviate from proposing B in every state. A policy-oriented executive never proposes $g_1^e = B$ when $s_1 = s_A$.

- In the case in which $s_1 = s_A$ and $g_1 = A$, voters and legislators recognize the executive as policy-oriented. His reputation is 1 and he maximizes his utility by proposing the efficient policy.

First period. In the first period a policy-oriented executive offers $g_1^e(1, s_A) = A$. As discussed above, this implies that the final reputation is 1 regardless of the policy offered in period 2. A policy-oriented executive could deviate and choose instead $g_1^e(1, s_A) = B$. In this case he would enter the second period with a zero reputation, and he would be subject to the vote of the parliament. For $g_1^e(1, s_A) = B$ not to be a profitable deviation the following must hold:

$$2 - c_A + \left(2 - \frac{c_A}{2}\right) + \varepsilon \geq 1 + \left(\frac{3}{2} + \frac{\rho}{2} - \left(2 - \frac{\rho}{2}\right) c_A\right).$$

The above condition is always satisfied by our assumptions on c_A.

A policy-oriented executive could also deviate to $g_1^e(1, s_B) = A$. Both actions induce the same final reputation. Hence, there is no incentive to deviate as the deviation reduces the per period utility without increasing the final reputation.

An office-oriented executive could deviate and choose $g_1^e(0, s_A) = A$ or $g_1^e(0, s_A) = B$. The deviation to $g_1^e(0, s_B) = A$ does not improve the reputation and decreases the first period utility. The deviation

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to $g_1^e(0, s_A) = A$, instead, implies a final reputation equal to 1 instead of 0. More importantly, it implies that legislators in the second period approve any policy offer instead of following their signal. For $g_1^e(1, s_A) = A$ not to be a profitable deviation the following must hold:

$$1 + \left(1 - \frac{c_A}{2}\right) \geq 1 - c_A + 1 + \varepsilon.$$

The condition is satisfied given when $c_A \geq 2\varepsilon$, which is the case in our parametric specification.

∎

Proof of Proposition 4. In the parliamentary system both $\widehat{\gamma}_p^e$ and $\widehat{\gamma}_v^e$ are updates of γ based on g_1^e and s_1, hence $\widehat{\gamma}_v^e = \widehat{\gamma}_p^e$ by construction. Recall that we assume $\gamma = \frac{1}{2}$, but we assume that legislators may come from a different pool, so that we let Γ free to vary in the interval $[0, 1]$. A policy-oriented executive in equilibrium proposes $g_t^e(1, s_t) = g_t^*(s_t)$ and an office-oriented one proposes $g_t^e(0, s_t) = B$.

Legislators. The utility function of an office-oriented legislator l is:

$$U^l = R + \pi R + \varepsilon \widehat{\theta}^p.$$

Office-oriented legislators approve any policy in the first period, as their major concern is to remain in power. In the second period, instead, office-oriented legislators in both periods maximize their utility by maximizing the final reputation of the parliament. We focus on the equilibrium in which this happens when they mimic the behavior of the policy-oriented ones.

The utility function of a policy-oriented legislator is:

$$U^l = u(g_1, s_1) + \pi u(g_2, s_2) + \varepsilon \widehat{\theta}^p.$$

Given the second period executive's equilibrium behavior, if the parliament observes $g_2^e = B$ and $\sigma_2 = s_B$ it approves B because the signal that the legislators receive is compatible with the policy that is proposed by the executive. If the parliament observes $g_2^e = B$ and $\sigma_2 = s_A$, instead, it computes $\Pr[s_2 = s_B | g_2^e = B, \sigma_2 = s_A]$ in order to decide on its vote. Such probability, given the equilibrium strategies, is

$$
\begin{aligned}
\Pr[s_2 = s_B | g_2^e = B, \sigma_2 = s_A] &= \frac{\Pr[g_2^e = B, \sigma_2 = s_A | s_2 = s_B] \cdot \Pr[s_2 = s_B]}{\Pr[g_2^e = B, \sigma_2 = s_A]} \\
&= \frac{1 - \rho}{1 - \widehat{\gamma}_p^e \rho};
\end{aligned}
\tag{3}
$$

the parliament approves B after $\sigma_2 = s_A$ iff $\Pr[s_2 = s_B | g_2^e = B, \sigma_2 = s_A] > \frac{1}{2}$, which happens when $\rho < \frac{1}{2 - \widehat{\gamma}_p^e}$. We assume that legislators follow their signal when indifferent. In the first period, instead policy-oriented legislators maximize their overall utility by following their own signal when it contrasts with the policy offer. The relevant case to consider is what happens when $\sigma_1 = s_A$ and $g_1^e = B$. Recall that we assume that by rejecting the policy offer the legislators are replaced with probability $(1 - \pi^l)$. The expected utility from the rejection of the policy is $\rho + \pi^l \frac{3}{4} + \varepsilon$, as only when the majority of the parliament is policy-oriented B is rejected, so that $\widehat{\theta}^p = 1$. By approving B the legislators' expected utility is $(1 - \rho) + \frac{2}{3} + \varepsilon\widehat{\theta}^p$, where

$$\widehat{\theta}^p = \frac{4(1 + \rho)\Gamma}{3(\Gamma\rho - 2\Gamma + 3)} \leq 1$$

is the parliament reputation when it accepts the policy offer. Given our assumption on π^l and ρ it is optimal for policy-oriented legislator to follow their signal.

Executive.

Second period Given the equilibrium strategies, the updated reputation at the beginning of period 2, $\widehat{\gamma}^v = \widehat{\gamma}^p = \widehat{\gamma}$ is

$$\widehat{\gamma}(A, s_A) = \Pr(\theta^e = 1 | g_1^e = A, s_1 = s_A) = 1,$$
$$\widehat{\gamma}(A, s_B) = \Pr(\theta_e = 1 | g_1^e = A, s_1 = s_B) = \tfrac{1}{2},$$
$$\widehat{\gamma}(B, s_A) = \Pr(\theta^e = 1 | g_1^e = B, s_1 = s_A) = 0,$$
$$\widehat{\gamma}(B, s_B) = \Pr(\theta^e = 1 | g_1^e = B, s_1 = s_B) = \tfrac{1}{2}.$$

All the above beliefs are computed via Bayes' rule, with the exception of $\widehat{\gamma}(A, s_B)$ which is an out-of-equilibrium belief. We assume that in this case voters and legislators hold passive beliefs, and do not update the executive's reputation. Notice that legislators follow their signal only after (B, s_A), when $\widehat{\gamma}(B, s_A) = 0$

- If $s_1 = s_A$ a policy-oriented executive enters the second period with a reputation $\widehat{\gamma} = 1$, and an office-oriented executive enters the second period with a reputation $\widehat{\gamma} = 0$. In either case, their final reputation is $\widehat{\gamma}$. Hence an office-oriented executive finds optimal to propose $g_2^e(0, s_t) = B$, and a policy-oriented executive finds optimal to propose $g_t^e(1, s_t) = g_t^*(s_t)$.

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- If $s_1 = s_B$ each type of executive enters the second period with reputation $\widehat{\gamma} = \frac{1}{2}$. A type $\theta^e = 0$ could deviate and choose $g_2^e(s_A, 0) = A$ or $g_2^e(s_B, 0) = A$. For these not to be profitable deviations it must be:

$$1 + \varepsilon \frac{1}{3} \geq 1 - c_A + \varepsilon,$$

which is satisfied given that $c_A > \varepsilon$.

A policy-oriented type never deviates to $g_2^e(s_A, 1) = B$ as this deviation decreases both the utility from policy implementation and the final reputation. He could however deviate and choose $g_2^e(s_B, 1) = A$. For this not to be a profitable deviation it must be:

$$2 + \varepsilon \frac{1}{3} \geq 1 - c_A + \varepsilon,$$

which is satisfied by our assumptions on c_A and ε.

First period A policy-oriented executive in equilibrium proposes $g_1^e(1, s_t) = g_1^*(s_t)$ and an office-oriented one proposes $g_1^e(0, s_t) = B$.

An office-oriented executive could deviate and choose $g_1^e(0, s_B) = A$ or $g_1^e(0, s_A) = A$, because this would ensure being in power in period 2. He has the greatest incentive to deviate when $s_1 = s_A$ because of the higher probability rejection of B and the additional gain in reputation. For $g_1^e(0, s_A) = A$ not to be a profitable deviation the following must hold:

$$(1 - \rho \Gamma c_A) + (1 - \rho \Gamma)\left(1 - \frac{1}{2}c_A\right) \geq 1 - c_A + 1 + \varepsilon,$$

that is $c_A \geq \frac{2(\rho \Gamma + \varepsilon)}{1 - \rho \Gamma}$. Notice that there are values of c_A that satisfy this equilibrium only when $\rho < \frac{1 - 2\varepsilon}{3\Gamma}$

A policy-oriented executive could deviate and choose $g_1^e(1, s_B) = A$. Notice that $\widehat{\gamma}(A, s_B) = \frac{1}{2} = \widehat{\gamma}(B, s_B)$, hence the second period differs only in terms of the probability of reaching it. In particular the expected final reputation when reaching the second period is $\frac{1}{2} * 1 + \frac{1}{2} * \frac{1}{3} = \frac{2}{3}$, while when not reaching it is $\frac{1}{2}$. The probability of being in power in the second period is one if the executive proposes A and $1 - (1 - \rho)\Gamma$ if the executive proposes B as he is voted out of office only by a parliament

with a majority of policy-oriented legislators and an incorrect signal. Hence, for $g_1^e(1, s_B) = A$ not to be a profitable deviation the following must hold:

$$1 + (1 - (1 - \rho)\Gamma) - (1 - \rho)\Gamma c_A$$
$$+ (1 - (1 - \rho)\Gamma)\left(2 - \frac{c_A}{2}\right)$$
$$+\varepsilon\left((1 - (1 - \rho)\Gamma)\frac{2}{3} + (1 - \rho)\Gamma\frac{1}{2}\right)$$
$$\geq\ 1 - c_A + \left(2 - \frac{c_A}{2}\right) + \varepsilon\frac{2}{3}$$

that is for $c_A \geq \frac{6(1-\rho)\Gamma - 2 + \varepsilon\frac{(1-\rho)\Gamma}{3}}{(2 - (1-\rho)\Gamma)}$, which which given our assumptions on ε and c_A is always satisfied.

∎