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# Politicians' Motivation, Political Culture, and Electoral Competition\*

Klaas J. Beniers<sup>†</sup> and Robert Dur<sup>‡</sup>

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## Abstract

We study electoral competition among politicians who are heterogeneous both in competence and in how much they care about (what they perceive as) the public interest relative to the private rents from being in office. We show that politicians may have stronger incentives to behave opportunistically if other politicians are more likely to behave opportunistically. A political culture may therefore be self-reinforcing and multiple equilibria may arise. We also show that politicians' incentives to behave opportunistically increase with politicians' pay and with polarization of policy preferences.

**Keywords:** politicians' motivation, politicians' pay, political culture, electoral competition, coalition governments.

**JEL codes:** D72, D78

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# 1 Introduction

When politicians talk about their motives for pursuing a political career, they rarely mention their narrow private interests such as desire for power, prestige, and remuneration. Instead, they refer to their devotion to the people, their commitment to the nation's interests, and a strong sense of mission and responsibility. History has learned that we should not always take these words for granted. Indeed, sceptics claim that politicians care about nothing but their narrow self-interest.

The importance of politicians' motivation for the quality of government decision making is self-evident. Since moral hazard and adverse selection problems in political decision making abound, politicians' motivation matters for policy choices. This is also clear from the literature on electoral competition: in many settings, policy choices depend on whether politicians care about the private rents from office (opportunism) or represent the interest of a particular group of voters (partisanship), see Persson and Tabellini (2000). Wittman (1983), Rogoff (1990), and Harrington (1993), among others, develop models where politicians care about both policy outcomes and holding office. Then, policy choices depend on how much politicians value policy relative to office. Empirical studies indicate that politicians are neither purely policy-oriented nor purely office-motivated, see Martin and Stevenson (2001)'s findings for European countries and Canada and those by Diermeier, Keane, and Merlo (2005) for the US. Also, voters' trust in politicians differs markedly across countries, suggesting heterogeneity in politicians' motivation.<sup>1</sup>

The objective of this paper is to examine how politicians with *heterogeneous* motivations interact in electoral competition. We examine how beliefs about other politicians' motivation and behavior affect the incentive to behave opportunistically of a politician with a given motivation. We show that opportunistic behavior may breed opportunistic behavior. A political culture may therefore be self-reinforcing and multiple equilibria may arise. We also examine the effects of politicians' pay and of polarization of policy preferences on politicians' incentives to behave opportunistically.

Compared to the existing literature, our model has two important distinguishing features. First, we allow for heterogeneity in politicians' motivation as well as in politicians' competence. We define a politician's motivation

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<sup>1</sup>See e.g. the European Social Survey Data, <http://ess.nsd.uib.no/>.

as the extent to which he cares about (what he perceives as) the public interest relative to the private rents from being in office. We assume that a politician's motivation, as well as his competence, are not observable. Voters and other politicians are informed, though, about the distribution of types from which politicians are drawn. Second, we consider a setting where, in each period, multiple politicians are involved in policy making and, hence, may face a trade-off between the public interest and their electoral prospects. More specifically, we develop a model with three political parties of which two form a coalition government. In each period, there are two politicians in office, each being responsible for a particular policy area. Together, these two features of the model (heterogeneity in motivation and multiple politicians with decision-making power) imply that a politician's behavior is not only dependent on his own motivation, but also on 'political culture,' that is, his beliefs about other politicians' motivation and behavior.

We consider a two-period model with elections at the end of the first period. We assume that each incumbent leader, before the elections, acquires an informational advantage over voters concerning the quality of the policies he has implemented. When a policy turned out to be a failure, reversing the policy before the next elections is in the best interest of voters. However, reversing a policy entails a reputational loss for the incumbent as voters update their belief about the incumbent's competence in designing good policies. Therefore, politicians who care little about the public interest have an incentive to stick to their policies so as to avoid erosion of their electoral prospects. Only those politicians who care sufficiently about the public interest are willing to admit a policy failure at the risk of losing the next election.<sup>2</sup>

Our analysis yields two main results. First, we show that politicians are less inclined to admit that a policy has failed when politicians' pay is higher. As holding office becomes more rewarding, a larger range of politicians are willing to compromise on voters' welfare so as to increase their chance of reelection. Likewise, politicians' incentive to behave opportunistically is stronger in more polarized political environments, that is, in environments where politicians differ more in their perception of the public

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<sup>2</sup>By our two-period structure, voters optimally base their vote only on their beliefs about the politicians' competence, not about politicians' motivation. If politicians can stay in office for more than two periods, this need not hold. Then, opportunistic politicians may have an incentive to pretend a policy failure, so as to improve upon their reputation as a motivated politician.

interest. The reason is that in more polarized political environments, staying in office is more rewarding as it keeps politicians with sharply different policy preferences out of power.

Second, we show that politicians have stronger incentives to behave opportunistically if they believe other politicians are more likely to behave opportunistically. The reason is that a given reputational loss has less of an effect on a politician's electoral prospects in an environment where other politicians are more likely to put at risk their reputation as well, than in an environment where politicians hardly ever admit policy failures. Consequently, a political culture may be self-reinforcing and multiple equilibria may arise. Moreover, the effects of politicians' pay and polarization on politicians' behavior are magnified by the strategic complementarity in politicians' opportunism.

The paper is organized as follows. The next section gives a brief overview of earlier work and discusses how this paper relates to it. Section 3 presents our main argument using a very simple model. Section 4 presents our complete model. In Section 5, we solve the complete model and provide the comparative static results. Section 6 concludes.

## 2 Related Literature

Building on the seminal works by Barro (1973) and Ferejohn (1986) on moral hazard in politics and by Rogoff and Sibert (1988) and Rogoff (1990) on adverse selection in politics, several recent papers have studied electoral competition when politicians are heterogeneous in motivation. In contrast to the present study, almost all of the existing papers consider heterogeneity in politicians' willingness to accept bribes or to steal tax revenues.<sup>3</sup> Early papers include Besley and Case (1995), who study the role of yardstick competition in disciplining 'bad' policy makers, and Coate and Morris (1995), who show that 'bad' politicians may use inefficient 'sneaky' methods of redistribution towards special interests rather than cash payments, so as to avoid

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<sup>3</sup>An exception is a recent paper by Callander (2004) who shows that politicians may be unwilling to commit to the median voter's position in the campaign stage, as this may be a bad signal about their motivation to perform well in office. Roemer (1999) studies electoral competition between political parties in proposing progressive income tax policies, assuming that each party consists of factions with different motivations which must reach agreement on the proposal.

reputational damage. Recently, several papers have built on these contributions to examine the role of politicians' pay, term limits, and other features of the political process in disciplining and selecting politicians. An important element in these models is the assumption that is made about the information that voters have when they cast their ballot.

When voters can observe or infer bribe-taking by office-holders, they will punish politicians who have accepted bribes by voting them out of office. Paying politicians generously may then reduce politicians' incentive to take bribes as losing office becomes more costly (Besley, 2004).<sup>4</sup> Paying higher wages, however, may impair the selection of politicians since bad politicians, by their better behavior, are reelected more often. This is important if politicians face no reelection constraint in a future period, for instance because of a term limit (Besley and Smart, 2003). High politicians' pay also adversely affects selection in our model, but the effect arises from politicians behaving worse rather than better in their first period. In our model, higher politicians' pay weakens politicians' incentive to admit a policy failure, which impairs voters' selection of competent politicians.

When voters can not infer whether an incumbent has accepted bribes, but they can observe the incumbent's policy choices, high politicians' pay may distort policy choices by 'good' politicians (that is, those who do not accept bribes). This may happen when some policy choices may be in the voters' interest but at the same time raise suspicion about the incumbent's integrity (Smart and Sturm, 2003). Our result on politicians' pay depends on a similar information asymmetry between incumbents and voters about the efficacy of policies, but relies on politicians' concern about their reputation as a competent policy maker. Whereas in Smart and Sturm (2003) 'good' politicians compromise on voters' welfare so as to avoid being considered corrupt, in our paper politicians refuse to admit a policy failure so as to preserve their reputation as a competent policy maker.<sup>5</sup>

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<sup>4</sup>Relatedly, Dal Bó and Di Tella (2003) consider a model where honest politicians are threatened by 'nasty' interest groups. Increasing the rents from office may increase politicians' resistance against those pressures. These results relate to Becker and Stigler (1974) who argue that paying high wages to bureaucrats may help to fight corruption if the probability that corruption is discovered is strictly positive but smaller than one.

<sup>5</sup>Other papers have focused on citizen's incentives to run for office, building on the citizen-candidate model developed by Osborne and Slivinsky (1996) and Besley and Coate (1997). See, among others, Caselli and Morelli (2004), Messner and Polborn (2004), Poutvaara and Takalo (2004) and Le Borgne and Lockwood (2002).

An important feature of our model is that we have more than one politician in each period who may face a trade-off between the public interest and electoral prospects. This feature is responsible for our main result, namely that there is a strategic complementarity in politicians' opportunism. Our result relates to (but is different from) studies showing strategic complementarity in accepting bribes and in rent-seeking, see e.g. Andvig and Moene (1990), Murphy et al. (1991), and Tirole (1996). Aidt (2003, Section 4) provides a survey of studies in this area. Caillaud and Tirole (2002) study intra- and interparty competition between candidates who have the option to invest in designing a good policy platform. They show that *interparty* competition may give rise to strategic substitutability in platform investment, whereas *intraparty* competition may give rise to strategic complementarity. We abstract from intraparty competition and exclusively focus on interparty competition. An important difference between their paper and our paper is that politicians are purely office-motivated and homogeneous in their paper, whereas in our paper politicians care about both the public interest and office-holding, and are heterogeneous in competence and motivation. The heterogeneity of politicians gives rise to an adverse selection problem in addition to a moral hazard problem.

Our model builds on Dur (2001) who shows that policy makers may stick to inefficient policies for reputational reasons.<sup>6</sup> Compared to that paper, there are two main innovations. First, in this paper politicians differ not only in competence but also in their motivation and in their policy preferences. Second, we consider a multi-party system with coalition governments instead of a two-party system. Our model of coalition governments is deliberately kept simple so as to focus on the effects of heterogeneity in politicians' motivation. Richer models of coalition governments and elections include Austen-Smith and Banks (1988), Laver and Shepsle (1990), and Baron and Diermeier (2001).

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<sup>6</sup>Relatedly, in Canes-Wrone, Herron, and Shotts (2001), Chiu (2002), and Maskin and Tirole (2004), politicians who care a lot about reelection may have a reputational incentive to implement inefficient policies which are popular among the electorate and reject efficient policies which are unpopular. Majumdar and Mukand (2004) and Slantchev (2003) consider a similar agency problem as we do and extend it in other directions.



### 3 The Main Argument

To illustrate our main argument, we start with the following simplified model. Suppose there are two periods, and in each period there are two politicians in office, each having authority over a particular policy area. At the end of the first period, elections take place in which the two incumbents compete with one outside challenger for the two positions in office in period 2. Politicians differ in two ways: in competence and in motivation. Each politician knows his motivation, but learns about his competence only after implementing a policy.

A politician is either competent or incompetent. The prior probability that a politician is competent is denoted by  $\alpha$ , which is common knowledge. When in office, competent politicians implement good policies that raise voters' welfare with  $b$ . Incompetent politicians implement bad policies that reduce voters' welfare with  $c$ . Incumbents learn about the effects of the policies they have implemented before the elections and, at the same moment, they have the opportunity to reverse their policies. Policy reversal is costless and nullifies the effect of the policy on voters' welfare. Voters learn about the effects of policies only after the elections. However, they do observe whether a politician continues or reverses his policy.

Politicians are either 'unselfish' or 'normal'. Unselfish politicians care only about what they perceive as the public interest. Normal politicians care about what they perceive as the public interest as well as about the private rents from office. Whether a politician is unselfish or normal is only known to the politician himself. It is common knowledge, though, that with prior probability  $\theta$  a politician is of the unselfish type. The probabilities  $0 < \theta < 1$  and  $0 < \alpha < 1$  are assumed to be independent. Unselfish politician  $i$  has utility function:

$$U_i = V_{1i} + V_{2i},$$

where  $V_{ti}$  is voters' welfare in period  $t$  as perceived by politician  $i$ , which is normalized to zero at  $t = 0$ . Normal politician  $i$ 's utility function is:

$$U_i = \beta (V_{1i} + V_{2i}) + (e_1 + e_2)X,$$

where  $\beta > 0$  measures how much a normal politician cares about the public interest,  $e_t$  is one if the politician is in office in period  $t$  and zero otherwise, and  $X$  is the private rents from holding office in a period (which includes politicians' pay, perks, fame, and so on). We assume that politicians have

different perceptions of the public interest: they think that good policies designed by themselves increase voters' welfare more than good policies designed by others. In this section, we make the extreme assumption that politicians think other politicians' policies can do no good at all, even when other politicians are competent.

First consider the behavior of politicians in office in period 2. Since private rents from office in period 2 are secure, and the game ends at the end of period 2, private rents play no role in politicians' decision-making. Hence, in period 2, both unselfish and normal politicians reverse their policy when it turns out to reduce voters' welfare and continue their policy when it turns out to raise voters' welfare. As a result, voters optimally base their vote at the end of period 1 only on their beliefs about the politicians' competence, not about politicians' motivation.

Voters update their beliefs about incumbents' competence according to Bayes' rule. We assume that the two politicians whom voters believe to have the highest probability of being competent at the end of period 1 win office in period 2. If incumbents have an equal posterior probability of being competent of less than  $\alpha$  (that is, less than the challenger's prior probability of being competent), the incumbents have equal chance of winning office in period 2.

Next consider politicians' behavior in period 1. Since unselfish politicians care only about the public interest, they continue good policies and reverse bad policies. Suppose voters and politicians believe that normal politicians always continue good policies<sup>7</sup> and continue bad policies with probability  $\delta$ . Then, after observing that a politician has continued his policy, the voters' belief about the politician's competence is:

$$\hat{\alpha}^c = \frac{\theta\alpha + (1 - \theta)\alpha}{\theta\alpha + (1 - \theta)\alpha + \delta(1 - \theta)(1 - \alpha)} > \alpha.$$

Clearly, independent of normal politicians' behavior, continuing a policy is a good signal about competence because unselfish politicians continue a policy only when the policy is good. Hence, reelection is guaranteed after continuing a policy. After observing that a politician has reversed his policy, the voters' belief about the politician's competence is:

$$\hat{\alpha}^r = 0 < \alpha.$$

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<sup>7</sup>We abstract from the case where voters and politicians believe that normal politicians reverse good policies.

Reversing a policy is a bad signal about competence, because good policies are never reversed.<sup>8</sup> When an incumbent has reversed his policy, his reelection chances depend on the other incumbent's behavior. If the other incumbent has continued his policy, then the incumbent is out of office in period 2 for sure. If the other incumbent has also reversed his policy, both have probability  $\frac{1}{2}$  of staying in office. The outside challenger always holds a position in office in period 2 if at least one incumbent has reversed his policy in period 1.

When a normal politician has learned that his policy is good, he continues his policy if:

$$\begin{aligned} 2(\beta b + X) &\geq X + \frac{1}{2} [\theta(1 - \alpha) + (1 - \theta)(1 - \alpha)(1 - \delta)] (\beta b + X) \\ \implies \beta b + \left\{ 1 - \frac{1}{2} (1 - \alpha) [1 - \delta(1 - \theta)] \right\} (\beta b + X) &\geq 0, \end{aligned}$$

which always holds. The intuition is clear. Continuing the policy preserves the benefits of the good policy in period 1 and guarantees the benefits from holding office in period 2. When a normal politician has learned that his policy is bad, he reverses his policy if:

$$\begin{aligned} -\beta c + 2X &\leq X + \frac{1}{2} [\theta(1 - \alpha) + (1 - \theta)(1 - \alpha)(1 - \delta)] X \\ \implies \beta &\geq \left\{ 1 - \frac{1}{2} (1 - \alpha) [1 - \delta(1 - \theta)] \right\} \frac{X}{c}. \quad (1) \end{aligned}$$

A normal politician faces a trade-off when his policy turns out to be bad. Reversing the policy prevents the cost of a bad policy in period 1, but reduces the politician's probability of enjoying the private rents from office in period 2. Clearly, the trade-off is affected by the belief about other normal politicians' behavior ( $\delta$ ). When the probability that normal politicians continue bad policies increases, reelection becomes less likely after reversing a policy. Hence, the condition (1) under which a normal politician reverses his policy becomes more restrictive.

Suppose voters and politicians believe that normal politicians always continue bad policies ( $\delta = 1$ ). Then, condition (1) implies that a normal politi-

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<sup>8</sup>In Section 5, the impact of reversing a policy on the belief about the politician's competence is smaller as our complete model allows for policy failures by competent politicians.

cian continues a bad policy if:

$$\beta < \left[ 1 - \frac{1}{2} (1 - \alpha) \theta \right] \frac{X}{c}. \quad (2)$$

Clearly, below a certain treshold level of public spiritedness ( $\beta$ ), all normal politicians continue bad policies. This treshold level decreases with the probability that the other incumbent is of the unselfish type ( $\theta$ ). That is, an increase in the proportion of unselfish politicians decreases the level of public spiritedness necessary for a normal politician to admit a policy failure. The intuition is clear. As reelection chances depend on relative performance, a normal politician's incentive to behave opportunistically is weaker when other politicians are more likely to put at risk their reputation as well.

Suppose voters and politicians believe that normal politicians always reverse bad policies ( $\delta = 0$ ). Then, condition (1) implies that a normal politician reverses a bad policy if:

$$\beta \geq \left[ 1 - \frac{1}{2} (1 - \alpha) \right] \frac{X}{c}. \quad (3)$$

Comparing (2) and (3), it is easy to see that there is a range of  $\beta$  for which both conditions hold. Hence, within this range, two equilibria in pure strategies exist: one in which all normal politicians reverse bad policies and one in which all normal politicians continue bad policies. Within this range, beliefs about normal politicians' behavior are self-fulfilling. The reason is that normal politicians have stronger incentives to behave opportunistically if they believe other normal politicians behave opportunistically as well, see condition (1). In addition, there also exists an equilibrium in mixed strategies, where normal politicians reverse a bad policy with probability  $\mu$  such that  $\mu = \delta$  and condition (1) holds with equality.

Outside the range for which both conditions (2) and (3) hold, only one equilibrium in pure strategies exists. When  $\beta$  is sufficiently high so that condition (2) is violated, normal politicians always reverse bad policies. When  $\beta$  is sufficiently low so that condition (3) is violated, normal politicians always continue bad policies.

Summarizing, we have seen that a politician's behavior is not only dependent on his own motivation ( $\beta$ ), but also on 'political culture,' that is, the motivation of other politicians ( $\theta$ ) and the beliefs about other politicians' behavior ( $\delta$ ). Hence, opportunistic behavior may breed opportunistic behavior.

A political culture may therefore be self-reinforcing and multiple equilibria may arise. In the next section, we extend our model in several directions to include heterogeneous voters, endogenous government formation, and voting by politicians on policy continuation. Also, rather than assuming that only two types of politicians exist, we allow for a distribution of types of politicians. This enables us to examine how several institutional variables, such as the rewards from office and the degree of policy polarization, affect the proportion of politicians who behave opportunistically in equilibrium. We will also see that the direct effect of an institutional change on politicians' behavior is magnified as a result of the strategic interdependence between politicians.

## 4 The Model

Consider a three party system. Each party  $I$  consists of a single leader  $i$ , where  $i \in \{l, m, r\}$ . There are two periods. In each period none of the parties constitutes a majority. We assume that in period 1 party  $L$  and  $M$  form a coalition government. Each leader  $i$  in office designs and implements one policy  $y_i$ .<sup>9</sup> Hence, policies  $y_l$  and  $y_m$  are implemented in period 1.<sup>10</sup> To save space, we assume that policies last for only one period. Assuming that policies designed in period 1 may yield benefits or costs in period 2 as well does not affect our results qualitatively.

A policy is either good or bad, which is unknown before implementation. The expected quality of a policy depends on the competence of the leader who designed it. A leader is either competent or incompetent. A competent (incompetent) leader designs a good policy with probability  $p$  ( $q$ ), where  $1 \geq p > q \geq 0$ . Neither voters nor the leader himself know whether he is competent.<sup>11</sup> The prior belief that a leader is competent is denoted by  $\alpha$ ,

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<sup>9</sup>We abstract from leader's option not to implement a policy in period 1. Majumdar and Mukand (2004) have recently shown that reputational concerns may induce incumbents to be too conservative or too radical in policy implementation. See also Biglaiser and Mezzetti (1997), Gersbach (2004), Glazer (2002), and Suurmond, Swank, and Visser (2004).

<sup>10</sup>Allowing for a vote on each policy by the three leaders does not affect the results. When a policy has political support after implementation, it also has political support before implementation. See the discussion below Lemma 1.

<sup>11</sup>Assuming that each leader knows his own ability does not affect the results qualitatively. A leader who knows that he is competent has a weaker incentive to reverse a bad policy than an incompetent leader since a competent leader faces a higher probability to

which is equal for all three leaders. To facilitate the presentation, denote by  $x$  the prior probability that a leader designs a good policy, where  $x = [\alpha p + (1 - \alpha)q]$ .

Leaders have different perceptions of the public interest (ideologies), and design their policy accordingly. Therefore, they value good policies designed by themselves more than good policies designed by others. More specifically, according to leader  $i$ , a good policy  $y_i$  raises social welfare with  $b_i^i$ , whereas a good policy  $y_j$  raises social welfare with  $b_i^j$ , where  $j \neq i \in \{l, m, r\}$  and  $b_i^i > b_i^j > 0$ . Note that a leader cares equally about good policies designed by the two other leaders (e.g.,  $b_r^l = b_r^m$ ). This implies that a leader's policy preferences do not affect his chances to be part of a coalition government in period 2.<sup>12</sup> A bad policy decreases social welfare with cost  $c$ , irrespective of which leader designed the bad policy. This cost  $c$  can be avoided by reversing the bad policy which, however, comes at a cost  $d$ . We assume that  $c > d > 0$  such that reversing a bad policy is in the public interest.

Besides ideological differences, politicians also differ in their motivation. The utility function of leader  $i$  is:

$$U_i = \beta_i (V_{1i} + V_{2i}) + (e_1 + e_2)X,$$

where  $V_{ti}$  are the consequences of government policies for social welfare in period  $t$  as perceived by leader  $i$ ,  $e_t$  is one if leader  $i$  is in office in period  $t$  and zero otherwise,  $X$  is the private rents from being in office in a period, and  $\beta_i$  measures how much leader  $i$  cares about (what he perceives as) the public interest relative to the private rents from office-holding.<sup>13</sup> We assume that a politician's motivation  $\beta_i$  is private knowledge. However, leaders as well as voters know that  $\beta_i$  is drawn from a uniform distribution on the interval  $[0, \bar{\beta}]$ . We study the implications of non-uniform distributions in Section 5.3.

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design a good policy in period 2, making reelection more valuable.

<sup>12</sup>Relaxing this assumption may imply that a centrist party's leader has less of an incentive to behave opportunistically as, because of her policy preferences, she is much more certain to be in office again next period. A centrist party's internal control mechanism may be weaker, however, see Caillaud and Tirole (1999).

<sup>13</sup>An interesting extension is to allow for heterogeneity in  $X$  among politicians as well. This heterogeneity may stem from differences in tastes but also from differences in politicians' outside options. Professional politicians may have a particularly bad outside option compared to politicians who entered politics after a career elsewhere. Therefore, professional politicians may be most tempted to behave opportunistically and may be least trusted by voters. We leave this topic for future research.

After implementing  $y_i$ , leader  $i$  receives a signal which reveals the quality of  $y_i$ . Voters do not observe the content of the signal.<sup>14</sup> Furthermore, a leader can not credibly transmit the content of his signal to other leaders or to voters.<sup>15</sup>

After the signals have been received, the three leaders decide on the continuation of each policy through majority voting. The vote on  $y_l$  and the vote on  $y_m$  take place simultaneously. Since leaders are uninformed about the quality of each other's policy, leader  $i$ 's vote on leader  $j$ 's policy does not affect voters' beliefs about leader  $i$ 's or leader  $j$ 's competence. Hence, leaders base their vote on each other's policy only on the expected effects on the public interest. We restrict our analysis to the case in which the expected effects on the public interest of an other leader's policy are positive. For otherwise, policy continuation will never obtain majority support and, as a result, none of the leaders would have an incentive to design and implement a policy in the first place, as it will only bring cost  $d$ . The condition under which there is political support by leader  $i$  for continuation of a policy  $y_j$  is most restrictive if leader  $j$  always prefers to continue his own policy, even when his policy turns out to be a failure. In that case, leader  $i$  prefers to continue  $y_j$  if  $xb_i^j - (1-x)c \geq -d$ , see also the discussion of Lemma 1 below. Assumption 1 ensures that  $b_i^j$  is sufficiently high such that this condition holds.

**Assumption 1:**  $b_i^j \geq \frac{(1-x)c-d}{x}$ .

Citizens observe the leaders' votes.<sup>16</sup> Accordingly, voters update their beliefs about the competence of leader  $l$  and  $m$  using Bayes' rule. The voters' posterior belief about the competence of leader  $i$  is denoted by  $\hat{\alpha}^v$ , where superscript  $v \in \{c, r\}$  refers to leader  $i$ 's vote to continue ( $c$ ) or reverse ( $r$ ) his policy. As leaders may act opportunistically, the posterior beliefs of voters and leaders need not coincide. We denote by  $\hat{\alpha}^e$  leader  $i$ 's posterior belief about his own competence, where superscript  $e \in \{g, h\}$  refers to the

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<sup>14</sup>We consider an extreme case where a politician becomes completely informed whereas voters remain completely uninformed about the consequences of government policies. Results are qualitatively unaffected, though, when voters receive a noisy signal about the quality of policies, e.g. through the media. Crucial is that politicians are better informed than voters.

<sup>15</sup>In an earlier version of this paper, we have examined the implications of giving leaders the opportunity to evaluate each other's policy (see Beniers and Dur, 2004). We briefly discuss the results of this analysis in the concluding section of this paper.

<sup>16</sup>We feel this is a plausible assumption as, usually, a Minister who admits that his policy is a failure makes headlines.

quality of his policy, good ( $g$ ) or bad ( $h$ ). For future reference, we denote by  $\hat{x}^v = [\hat{\alpha}^v p + (1 - \hat{\alpha}^v)q]$  the voters' posterior belief about the probability that leader  $i$  designs a good policy if in office in period 2, given his voting decision in period 1. Similarly, we define  $\hat{x}^e = [\hat{\alpha}^e p + (1 - \hat{\alpha}^e)q]$ .

At the end of period 1 elections take place. We distinguish four groups of voters. Three equally-sized groups of voters are 'loyalists,' each attached to a different party. Loyalists have strong partisan preferences such that they always vote for their party's leader, irrespective of their belief about the competence of the leader. Formally, this requires that  $\hat{x}^r b_i^i - (1 - \hat{x}^r)d \geq \hat{x}^e b_i^j - (1 - \hat{x}^e)d$  for a loyal voter attached to party  $I$ . That is, even when a loyal voter's party leader has reversed his policy, the loyal voter prefers his own party leader to a leader of another party who has continued his policy. As we will see in the next section, in equilibrium,  $\hat{x}^e$  depends on the probability that a politician favors continuation of his own policy irrespective of the quality of the policy, which is denoted by  $w$ . The following assumption guarantees that loyalists vote for their own leader for any level of  $w$ :

**Assumption 2:**  $b_i^i \geq \frac{\hat{x}^e b_i^j + (\hat{x}^e - \hat{x}^r)d}{\hat{x}^r}$  for any  $w$ .

Note that assumption 2 does not conflict with assumption 1 if  $b_i^i$  is sufficiently high.

A fourth group of voters, the swing voters, derive benefits from a good policy irrespective of which of the three leaders designed the policy,  $b^i = b^j$ . As each group of loyalists is of equal size, swing voters determine the winner of the elections (that is, the leader with the highest number of votes).

After the elections, two parties form a coalition government.<sup>17</sup> We assume that any two parties prefer a minimum winning coalition over a grand coalition consisting of all three parties. For otherwise, electoral competition would disappear, and so leaders would never have an incentive to behave opportunistically in period 1. A minimum winning coalition is preferred to a grand coalition if an additional leader in period 2 reduces the expected payoff of the other leaders. Since there are no electoral concerns in period 2, and the additional leader's probability of being competent is at most  $\alpha$ ,<sup>18</sup> a sufficient condition for this is  $x b_i^j - (1 - x)d < 0$ .

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<sup>17</sup>A two-party coalition government requires that the group of swing voters is smaller than 25% of the whole population. If the group of swing voters is larger, then the winner of the elections constitutes a majority.

<sup>18</sup>As we will see, leaders with probability of being competent higher than  $\alpha$  are always included in a two-party coalition.



**Assumption 3:**  $b_i^j < \frac{(1-x)d}{x}$ .

It is easy to verify that assumption 3 and assumption 1 hold simultaneously if  $(1-x)c < (2-x)d$ . Assumption 3 does not conflict with assumption 2 if  $b_i^i$  is sufficiently high.

Finally, we assume that the winner of the elections has the right to form a government. As in period 1, the two coalition parties in period 2 both implement a policy. Hence, also a leader who knows that he designed a bad policy in period 1 prefers to implement a policy in period 2. This requires that  $\hat{x}^h b_i^i - (1 - \hat{x}^h)d > 0$ . As we will see,  $\hat{x}^h = \hat{x}^r$  because good policies are never reversed. Assumption 4 ensures that incumbents implement a policy in period 2.

**Assumption 4:**  $b_i^i > \frac{(1-\hat{x}^r)d}{\hat{x}^r}$ .

It is immediate that assumption 4 need not be in conflict with assumptions 1-3.

After the policies are implemented in period 2, signals are received and decisions are made on the continuation of the two new policies through majority voting.

Summarizing, the sequence of events is as follows:

1. Nature chooses ability and motivation of the leaders.
2. In period 1, leader  $l$  ( $m$ ) designs and implements policy  $y_l$  ( $y_m$ ).
3. Leader  $l$  ( $m$ ) receives a private signal revealing the quality of  $y_l$  ( $y_m$ ).
4. The three leaders vote simultaneously on the continuation of  $y_l$  and of  $y_m$ .
5. Leaders and voters observe each leader's votes and update their beliefs about the competence of leader  $l$  and  $m$ .
6. Elections take place.
7. The winner of the elections chooses a coalition party.
8. Incumbent leaders in period 2 design and implement one new policy.
9. Incumbents receive a private signal about the quality of their policies.
10. There is a simultaneous vote on the continuation of the policies.

11. The world ends.

A list of notation is provided at the end of the paper.

## 5 Equilibrium Political Culture

### 5.1 Equilibrium

In this section, we solve the model as presented in Section 4 for a Perfect Bayesian equilibrium. Hence, we identify conditions under which neither player has an incentive to deviate from his equilibrium strategy, given the equilibrium strategies and beliefs of the other players. We assume throughout that players do not use weakly dominated strategies. This assumption rules out equilibria where players' actions are never affected by information.<sup>19</sup> Players update their beliefs about leaders' competence according to Bayes' rule. The model is solved by backward induction.

**Period 2** Two parties are in office in period 2, say party  $I$  and  $J$ . Leader  $i$  designs and implements  $y_i$  while leader  $j$  designs and implements  $y_j$ . After implementation, leader  $i$  ( $j$ ) receives a fully informative and private signal revealing the quality of  $y_i$  ( $y_j$ ). After the signals have been received, a decision is made on continuation of each policy by majority voting rule. Denote by  $Y_i$  ( $Y_j$ ) a vote of a leader in favor of  $y_i$  ( $y_j$ ) and by  $N_i$  ( $N_j$ ) a vote against  $y_i$  ( $y_j$ ). The following proposition describes a set of equilibrium voting strategies of the three leaders in period 2.

**Proposition 1** *Consider the vote on  $y_i$  and on  $y_j$  in period 2. Suppose the opposition leader votes  $(N_i, N_j)$ . Then leader  $i$  votes  $(Y_i, Y_j)$  if  $y_i$  is good and  $(N_i, Y_j)$  if  $y_i$  is bad. Similarly, leader  $j$  votes  $(Y_i, Y_j)$  if  $y_j$  is good and  $(Y_i, N_j)$  if  $y_j$  is bad. Given this, the voting strategy of the opposition leader is optimal.*

The strategies described in Proposition 1 imply that good policies are continued and bad policies are reversed in period 2. The intuition is simple.

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<sup>19</sup>For instance, there exists an equilibrium in which all leaders always vote against all policies, including their own. Similarly, since in the equilibria that we study none of the swing voters is pivotal, randomizing between the three leaders may be an equilibrium strategy for each swing voter.

First note that electoral concerns do not play a role in period 2 as the world ends afterwards. As a consequence, each leader's objective is to maximize (what he perceives as) the public interest. In spite of the ideological differences, all three leaders prefer good policies to be continued, as  $b_i^i > b_i^j > -d$ , and bad policies to be reversed, as  $c > d$ . However, only the designer of a policy receives a signal revealing the policy's quality. Therefore, it is in everybody's interest that each incumbent is pivotal in the vote on the continuation of his own policy. Given that the opposition leader votes against both policies, leader  $i$  then optimally votes in favor of  $y_j$  and leader  $j$  votes in favor of  $y_i$ . Leader  $i$  and  $j$  vote in favor of their own policy only when it is good.<sup>20</sup>

**Elections and government formation** Recall that swing voters determine the winner of the elections. Swing voters value good policies designed by the three leaders equally,  $b^i = b^j$ . Since politicians do not behave opportunistically in period 2, swing voters vote for the leader they believe is most likely to be competent in designing policies in period 2. As leader  $r$  did not design a policy in period 1, voters' belief that leader  $r$  is competent remains  $\alpha$ . Voters' posterior beliefs about the competence of leader  $l$  and  $m$  depend on the decisions made in period 1. Suppose, as in period 2, that a leader is decisive in the vote on continuation of his policy. We derive the condition under which this is the case in Lemma 1, see below. Voters know that leader  $l$  ( $m$ ) is informed about the quality of  $y_l$  ( $y_m$ ). Therefore, voters' posterior belief about the competence of leader  $l$  ( $m$ ) depends on his vote to continue or reverse  $y_l$  ( $y_m$ ).

Given that policies are either good or bad, leader  $l$  and  $m$  can follow two possible voting strategies regarding their own policy.<sup>21</sup> They can vote in favor of their own policy irrespective of the quality. We call this strategy the dishonest voting strategy. They can also vote in favor of their own policy if and only if it turned out to be a good policy. We call this strategy the honest voting strategy. Voters do not know which strategy the leader follows.

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<sup>20</sup>Note that there exist different sets of equilibrium voting strategies, all yielding the same outcome. Suppose, for instance, that leader  $i$  always votes against  $y_j$  and leader  $j$  always votes against  $y_i$ . Then, the opposition party optimally votes in favor of both policies. Throughout the paper, we focus on equilibria where the opposition party votes against all government policies.

<sup>21</sup>As in Section 3, we abstract from the case where politicians may not continue good policies.

As we will see below, whether a leader selects the dishonest or the honest strategy depends on how much he cares about the public interest relative to the private rents from office-holding, which is measured by  $\beta$ . Define  $w$  as the probability that a leader selects the dishonest voting strategy. We derive the equilibrium value of  $w$  later on, see equation (12).

If leader  $i$  votes for continuation of his policy  $y_i$ , then voters update their belief about the competence of leader  $i$  to:

$$\hat{\alpha}^c = \frac{\alpha p + \alpha(1-p)w}{\alpha p + \alpha(1-p)w + (1-\alpha)q + (1-\alpha)(1-q)w} > \alpha \text{ for any } w < 1. \quad (4)$$

When  $y_i$  is continued, either leader  $i$  played the honest voting strategy and  $y_i$  is a good policy, or leader  $i$  pursued the dishonest voting strategy. Note that given that there is a probability that a leader pursues the honest strategy ( $w < 1$ ), continuation improves the leader's reputation of being a competent policy maker. In the extreme case in which all leaders are expected to act dishonestly when their policy is a failure,  $w = 1$ , continuation does not affect a leader's reputation,  $\hat{\alpha}^c = \alpha$ . When  $y_i$  is good, leader  $i$  updates the belief about his own competence to:

$$\hat{\alpha}^g = \frac{\alpha p}{\alpha p + (1-\alpha)q} > \hat{\alpha}^c \text{ for any } w > 0.$$

Voters' and leader's posterior beliefs only coincide when all politicians are expected to play the honest voting strategy,  $w = 0$ .

If leader  $i$  votes for reversing his policy  $y_i$ , then voters' posterior belief about the competence of leader  $i$  is:

$$\hat{\alpha}^r = \left[ \frac{\alpha(1-p)(1-w)}{\alpha(1-p)(1-w) + (1-\alpha)(1-q)(1-w)} \right] < \alpha. \quad (5)$$

Voters know that a leader votes for reversing his policy if and only if the policy turned out to be bad. Reversing a policy therefore always damages a leader's reputation of being a competent policy maker. Note that, when a policy is reversed, voters' and leader's posterior beliefs always coincide ( $\hat{\alpha}^r = \hat{\alpha}^h$ ).

Equations (4) and (5) imply that, for any  $w < 1$ , voters believe that leader  $i$  designs a good policy in period 2 with higher probability if leader  $i$  voted for  $y_i$  in period 1, and with lower probability if he voted against  $y_i$  in period 1;  $\hat{\alpha}^c > \alpha > \hat{\alpha}^r$ . Hence, if  $y_l$  ( $y_m$ ) is continued and  $y_m$  ( $y_l$ ) is reversed, then

swing voters vote for leader  $l$  ( $m$ ). If both  $y_l$  and  $y_m$  are continued, swing voters are indifferent between leader  $l$  and  $m$ , but prefer both of them to leader  $r$ . We assume that, in that case, with equal probability either leader  $l$  or leader  $m$  wins the elections.<sup>22</sup> Leader  $r$  wins the elections if both policies implemented in period 1 are reversed, since  $x > \hat{x}^r$ .

After the elections, the winner forms a new coalition government. Recall that, by assumption 3, a two-party government is preferred to a three-party government by any coalition party. Since the winner of the elections does not prefer one party's policy over the other's for ideological reasons, he chooses the party with the leader he believes is most likely to be competent. This way, the winner maximizes the probability of obtaining benefit  $b_i^j$  and minimizes the probability of incurring the cost  $d$ . Hence, the coalition party that is most likely to be competent is selected. As a consequence, a leader  $i$  who continues  $y_i$  is certain to be reelected: Either he wins the elections or he is selected by leader  $j$  when leader  $j$  won the elections, since  $\hat{x}^c > x$ .<sup>23</sup> Note that the winner of the elections has the same beliefs about the other leaders' competence as voters.

**Period 1** In period 1 policies  $y_l$  and  $y_m$  are implemented. After implementation, leader  $l$  receives a signal revealing the quality of  $y_l$  whereas leader  $m$  receives a signal revealing the quality of  $y_m$ . Through majority voting, a decision is made on continuation of each policy. Since leaders are uninformed about the quality of each other's policy, leader  $i$ 's vote on leader  $j$ 's policy does not affect voters' beliefs about leader  $i$ 's or leader  $j$ 's competence. Hence, leaders base their vote on each other's policy only on the expected effects on the public interest, as in period 2. Lemma 1 shows under which condition coalition parties vote in favor of each other's policies in period 1.

**Lemma 1** *Consider the vote on  $y_l$  and on  $y_m$  in period 1. Suppose that the*

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<sup>22</sup>When  $w = 1$ , policies are always continued in period 1 and the posterior probability equals the prior probability  $\hat{\alpha}^c = \alpha$ , see (4). Hence, voters are indifferent between the opposition leader and the incumbents. To save space, we assume that, in that case, an incumbent wins the elections, and both incumbents remain in office. A reason for this could be that leader  $r$ 's prior probability of being competent is slightly lower than  $\alpha$ , which may also motivate why leaders  $l$  and  $m$  are in office in period 1.

<sup>23</sup>Assuming that the prior belief about the competence of the opposition leader is drawn from a distribution makes the impact of policy continuation on reelection chances more smooth. Then, rather than being sure of reelection, a leader faces a higher probability of reelection if he continues his policy, as in Dur (2001).

opposition leader votes  $(N_l, N_m)$ . Then, leader  $l$  votes  $Y_m$  and leader  $m$  votes  $Y_l$  if:

$$x(b_i^j + d) - (1 - x)w(c - d) \geq 0 \quad (6)$$

Given this, the voting strategy of the opposition leader is optimal.

When a policy, although designed by the other leader, is good, supporting the policy increases leader  $i$ 's utility from policies with  $b_i^j + d$ . However, supporting the other's policy also gives an opportunistic leader  $j$  the opportunity to continue a bad policy, resulting in net cost  $c - d$ . When the probability that a leader behaves opportunistically ( $w$ ) increases, the condition in Lemma 1 becomes more restrictive. When politicians have little trust in one another (a high level of  $w$ ), the expected benefits from a policy designed by an other leader may be negative, as policies are unlikely to be reversed when they turn out to be bad. Then, a complete political deadlock may result. When policies lack political support after implementation, neither leader has an incentive to design and implement a policy as it will only bring cost  $d$ . Assumption 1 guarantees that Lemma 1 holds for any  $w$ . Leader  $l$  ( $m$ ) then is decisive in the vote on continuation of  $y_l$  ( $y_m$ ).

Consider the voting decision of leader  $l$  on  $y_l$ . The voting decision of leader  $m$  on  $y_m$  is analogous. Suppose leader  $l$  receives a signal that  $y_l$  is a good policy. Leader  $l$  updates his belief about his competence to  $\hat{\alpha}^g$ , implying a probability  $\hat{x}^g$  to design a good policy in the next period. Leader  $l$  decides to vote in favor of  $y_l$  if:

$$\begin{aligned} & \beta_l \left\{ \begin{array}{l} b_l^l + [x + (1 - x)w] [\hat{x}^g b_l^l + \hat{x}^c b_l^m - (1 - \hat{x}^g)d - (1 - \hat{x}^c)d] \\ + (1 - x)(1 - w) [\hat{x}^g b_l^l + x b_l^r - (1 - \hat{x}^g)d - (1 - x)d] \end{array} \right\} + X \geq \\ & \beta_l \left\{ \begin{array}{l} -d + [x + (1 - x)w] [\hat{x}^c b_l^m + x b_l^r - (1 - \hat{x}^c)d - (1 - x)d] \\ + (1 - x)(1 - w) \left[ \frac{1}{2} \hat{x}^g b_l^l + \frac{1}{2} \hat{x}^r b_l^m + x b_l^r - (1 - x)d - \left(1 - \frac{1}{2} \hat{x}^g - \frac{1}{2} \hat{x}^r\right) d \right] \end{array} \right\} \\ & \quad + \frac{1}{2}(1 - x)(1 - w)X, \end{aligned}$$

which reduces to:

$$\begin{aligned} & \beta_l \left\{ \begin{array}{l} b_l^l + d + [x + (1 - x)w] [\hat{x}^g b_l^l - x b_l^r + (\hat{x}^g - x)d] \\ + (1 - x)(1 - w) \frac{1}{2} [\hat{x}^g b_l^l - \hat{x}^r b_l^m + (\hat{x}^g - \hat{x}^r) d] \end{array} \right\} \\ & \quad + \left[ 1 - \frac{1}{2}(1 - x)(1 - w) \right] X \geq 0. \quad (7) \end{aligned}$$

Condition (7) always holds. Voting in favor of a good policy is beneficial for three reasons. First, the utility from policies in period 1 increases as voting in favor of  $y_l$  provides the benefits  $b_l^l$  and prevents the cost of reversing  $d$ . Second, expected utility from policies in period 2 also increases. Voting in favor of  $y_l$  ensures that leader  $l$  is in office in period 2. As he is as least as likely as any other leader to design a good policy in period 2,  $\hat{x}^g > x > \hat{x}^r$ , and since he values his own policies more than those designed by others ( $b_l^l > b_l^m = b_l^r$ ), voting in favor of  $y_l$  always increases his expected utility from policies in period 2. Third, continuing  $y_l$  ensures that leader  $l$  receives the private rents from office,  $X$ , in period 2.

Suppose leader  $l$  receives a signal that  $y_l$  is bad. Leader  $l$  updates his belief about his competence to  $\hat{\alpha}^h$ , implying a probability  $\hat{x}^h = \hat{x}^r$  to design a good policy in the next period. Leader  $l$  votes against  $y_l$  if:

$$\beta_l \left\{ \begin{array}{l} -d + [x + (1-x)w] [xb_l^l + \hat{x}^c b_l^m - (1-x)d - (1-\hat{x}^c)d] \\ +(1-x)(1-w) [xb_l^r + \frac{1}{2}\hat{x}^r b_l^m + \frac{1}{2}\hat{x}^r b_l^l - (1-x)d - (1-\hat{x}^r)d] \end{array} \right\} \\ + \frac{1}{2}(1-x)(1-w)X \geq \\ \beta_l \left\{ \begin{array}{l} -c + [x + (1-x)w] [\hat{x}^r b_l^l + \hat{x}^c b_l^m - (1-\hat{x}^r)d - (1-\hat{x}^c)d] \\ +(1-x)(1-w) [xb_l^r + \hat{x}^r b_l^l - (1-x)d - (1-\hat{x}^r)d] \end{array} \right\} + X,$$

which reduces to:

$$\beta_l \left\{ (c-d) - [x + (1-x)w] [\hat{x}^r b_l^l - xb_l^r - (x-\hat{x}^r)d] - (1-x)(1-w) \frac{1}{2} \hat{x}^r (b_l^l - b_l^m) \right\} \\ - \left[ 1 - \frac{1}{2}(1-x)(1-w) \right] X \geq 0. \quad (8)$$

In contrast to condition (7), condition (8) does not always hold. Let us discuss condition (8) in detail.

First, reversing  $y_l$  increases utility in period 1 as the cost of continuing a bad policy are higher than the cost of reversing the policy ( $c > d$ ), see the first term in (8).

Second, reversing  $y_l$  decreases leader  $l$ 's probability of reelection and, therefore, the expected benefits from policies implemented in period 2, see the second and third term in (8). The decrease in leader  $l$ 's reelection chances depends on the vote of leader  $m$ . With probability  $[x + (1-x)w]$  leader  $m$  votes in favor of  $y_m$ . Reversing  $y_l$  then implies that party  $R$  and  $M$  are in office in period 2 rather than party  $L$  and  $M$ . This has two effects on leader  $l$ 's

utility from policies in period 2. First, the probability that policies designed in period 2 are good increases as leader  $r$  is more likely to be competent than leader  $l$  ( $x > \hat{x}^r$ ). As a result, the probability that policies are reversed decreases, which saves cost  $d$ . Second, however, leader  $l$  cares more about a policy designed by himself than about a policy designed by leader  $r$ ,  $b_l^l > b_l^r$ . This second effect always dominates the first. This follows from assumption 3, which guarantees that any coalition party prefers a two-party coalition to a grand coalition. Hence, reversing policy  $y_l$  in period 1 entails a cost for leader  $l$  in case leader  $m$  decides to vote in favor of his own policy. With probability  $(1-x)(1-w)$ , leader  $m$  reverses  $y_m$ . As a result, the opposition party is in office for sure. If leader  $l$  reverses his policy as well, leader  $l$  and  $m$  are in office again each with probability  $\frac{1}{2}$ , whereas leader  $l$  is certain to be in office again if he continues his policy. Reversing  $y_l$  does not affect the probability that policies are reversed in period 2, as leader  $l$  and  $m$  are equally likely to be competent. However, leader  $l$  values his own policies more than those designed by leader  $m$ . Therefore, reversing  $y_l$  reduces the expected benefits from policies in period 2. Concluding, irrespective of leader  $m$ 's vote on his own policy, leader  $l$ 's expected utility from policies implemented in period 2 decreases when he reverses his policy implemented in period 1.

Third, as reversing  $y_l$  reduces leader  $l$ 's chance of reelection, the expected private rents from office decrease, see the final term in (8).

In sum, when deciding whether to reverse or continue bad policy  $y_i$ , leader  $i$  faces a trade-off between the increase in voters' welfare in period 1 on the one hand, and decreases in expected private rents from office and in voters' welfare in period 2 on the other hand. Note that even when  $X = 0$  (no private rents from office) politicians may be tempted to continue bad policies. This may happen when there is strong polarization (high  $b_i^i$  compared to  $b_i^j$ ), such that the first term in (8) is negative. Then, all politicians, regardless of their motivation  $\beta_i$ , behave opportunistically so as to keep out of office rival politicians with very different policy preferences. In what follows, we focus on equilibria where the private rents from office as well as policy preferences play a role. So, we assume that the first term in (8) is positive for any  $w$ . This requires that the level of  $b_i^i$  is not too large.<sup>24</sup> Then, condition (8) only holds if leader  $i$  cares sufficiently about the public interest relative to the private rents from holding office, measured by  $\beta_i$ .

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<sup>24</sup>In Appendix 1 we show that this assumption need not conflict with assumptions 1-4.



There exists a level of  $\beta_i$  for which condition (8) holds exactly. Denote this threshold level by  $\hat{\beta}$ . Leaders with  $\beta_i$  above  $\hat{\beta}$  reverse a bad policy  $y_i$ , while leaders with  $\beta_i$  below  $\hat{\beta}$  stick to inefficient policies. Thus,  $\hat{\beta}$  can be described as the minimum amount of public spiritedness a politician must have so as to resist the temptation to behave opportunistically. Using (8), we can write  $\hat{\beta}$  as:

$$\hat{\beta} = \frac{[1 - \frac{1}{2}(1-x)(1-w)] X}{(c-d) - [x + (1-x)w] [\hat{x}^r b_i^i - x b_i^j - (x - \hat{x}^r)d] - (1-x)(1-w)\frac{1}{2}\hat{x}^r(b_i^i - b_i^j)} \quad (9)$$

Equation (9) shows how  $\hat{\beta}$  depends on the exogenous variables and on  $w$ , the probability that other politicians behave opportunistically. Hence, there is strategic interdependence between politicians' actions.

Before we derive the equilibrium value of  $w$ , it is useful to first consider the partial effect of  $w$  on  $\hat{\beta}$ , that is, how a politician's incentive to behave opportunistically is affected by the probability that other politicians behave opportunistically. Straightforward algebra yields:<sup>25</sup>

$$\frac{\partial \hat{\beta}}{\partial w} = \frac{\frac{1}{2}(1-x) [(c-d) - (x - \hat{x}^r)(b_i^j + d)] X}{\{(c-d) - [x + (1-x)w] [\hat{x}^r b_i^i - x b_i^j - (x - \hat{x}^r)d] - (1-x)(1-w)\frac{1}{2}\hat{x}^r(b_i^i - b_i^j)\}^2} \quad (10)$$

An increase in  $w$  affects the incentive to reverse a bad policy, and thus  $\hat{\beta}$ , for two reasons.

First, an increase in  $w$  makes it less likely that after admitting a policy failure incumbent  $i$  enjoys the private rents from office in period 2, see also the numerator in equation (9). The reason is that, after admitting a policy failure, incumbent  $i$  faces a positive probability of being in office again *only* if the other incumbent *also* admits a policy failure. This is less likely when  $w$  is higher. Hence, an increase in  $w$  strengthens incumbents' incentive to continue a bad policy, implying an increase in  $\hat{\beta}$ .

Second, an increase in  $w$  also affects the incumbent's incentive to reverse a bad policy through its effect on utility from policies implemented in period 2, see also the denominator in (9). This effect appears to be ambiguous. Clearly, a sufficient condition for  $\partial \hat{\beta} / \partial w > 0$  is that the denominator of (9) decreases with  $w$ . This requires that:

$$\hat{x}^r b_i^i - x b_i^j - (x - \hat{x}^r)d > \frac{1}{2}\hat{x}^r(b_i^i - b_i^j), \quad (11)$$

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<sup>25</sup>Recall that  $\hat{x}^r$  does not depend on  $w$ , see (2).

which says that reversing a policy must have a stronger effect on incumbent  $i$ 's utility from policies in period 2 when the other incumbent continues his policy than when the other incumbent reverses his policy as well, see the discussion of condition (8) above. Since, after reversing his policy, incumbent  $i$  is always out of office when the other incumbent continues his policy, while he faces probability  $\frac{1}{2}$  to remain in office when the other incumbent reverses his policy, condition (11) seems a plausible condition. Henceforth, we focus on equilibria where this condition holds.<sup>26</sup> However, when there is little polarization in policy preferences (low  $b_i^i$  relative to  $b_i^j$ ), or when the cost of reversing a policy  $d$  is large, it might be that the incumbent's incentive to admit a policy failure is weaker rather than stronger when the probability that other politicians admit policy failures is higher. Then, there is strategic substitutability in politicians' opportunism.

So far, we have treated the probability that the other leader selects the dishonest voting strategy,  $w$ , as exogenous. Since  $\beta_i$  is drawn from a uniform distribution  $[0, \bar{\beta}]$ , it follows that:

$$w = \frac{\hat{\beta}}{\bar{\beta}}, \quad (12)$$

where  $\hat{\beta}$  is defined by (9). Equations (9) and (12) describe the equilibrium values of  $w$  and  $\hat{\beta}$  in terms of the exogenous variables. We assume that  $\bar{\beta}$  is sufficiently high such that an interior solution exists, implying  $0 \leq \hat{\beta} \leq \bar{\beta}$  and  $0 \leq w \leq 1$ . Since equation (9) is nonlinear, there need not be a unique equilibrium. In Appendix 2, we show that if  $\partial\hat{\beta}/\partial w > 0$ , then a unique equilibrium is guaranteed. This is illustrated with the help of Figure 1.

#### FIGURE 1

The convex curve starting at  $w = 0$ ,  $\hat{\beta} > 0$ , represents equation (9), describing the relation between the minimum amount of public spiritedness a politician must have so as to resist the temptation to behave opportunistically,  $\hat{\beta}$ , and the proportion of politicians expected to behave opportunistically,  $w$ . The curve is upward sloping if there is strategic complementarity in politicians' opportunism. In Appendix 2 we show that if the curve is upward sloping, then it is always convex. Given that there are private rents from

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<sup>26</sup>It is easy to verify that when assumptions 1-4 hold, the denominator of (10) can be positive.

office,  $X > 0$ , the curve starts at  $w = 0$ ,  $\hat{\beta} > 0$ , that is, even when the probability that other leaders behave opportunistically would be zero, some leaders have an incentive to do so, namely the leaders with very low  $\beta$ . The straight line represents equation (12), describing the uniform distribution of politicians' motivations.

Clearly, with a uniform distribution, and sufficiently high maximum motivation  $\bar{\beta}$  such that when  $w = 1$  equation (9) implies  $\hat{\beta} < \bar{\beta}$ , there is a unique equilibrium, as depicted in Figure 1 and proven in Appendix 2. In Section 5.3, we discuss the possibility of multiple equilibria, which may arise when the distribution of politicians' motivation is non-uniform or when  $\bar{\beta}$  is low.

Proposition 2 summarizes the equilibrium voting strategies of leader  $l$  and  $m$ .

**Proposition 2** *Consider the vote on  $y_l$  and on  $y_m$  in period 1. Suppose that the condition in Lemma 1 holds. Then leader  $l$  votes  $Y_l$  when  $y_l$  is good and  $N_l$  when  $y_l$  is bad if  $\beta_l \geq \hat{\beta}$ . If  $\beta_l < \hat{\beta}$ , then leader  $l$  votes  $Y_l$  irrespective of the quality of  $y_l$ . Similarly, leader  $m$  votes  $Y_m$  when  $y_m$  is good and  $N_m$  when  $y_m$  is bad if  $\beta_m \geq \hat{\beta}$ . If  $\beta_m < \hat{\beta}$  then leader  $m$  votes  $Y_m$  irrespective of the quality of  $y_m$ .*

Proposition 2 shows that politicians who care little about the public interest relative to the private rents from office-holding continue bad policies so as to preserve their reputation as a competent policy maker and, hence, avoid erosion of their electoral prospects. Only politicians who care sufficiently about the public interest are willing to admit a policy failure at the risk of losing the next election.

## 5.2 Comparative Statics

In this subsection, we examine how the exogenous variables affect the threshold level  $\hat{\beta}$  and, hence, the proportion  $w$  of politicians who follow the dishonest strategy. As we have seen,  $\hat{\beta}$  does not only depend on the exogenous variables, but also on  $w$ , which in turn is dependent on  $\hat{\beta}$ . Therefore, a change in any of the exogenous variables affects  $\hat{\beta}$  directly and indirectly through its effect on  $w$ .

Consider the effect of an exogenous variable, say  $z$ , on  $w$ . Using (12), it follows that by definition:

$$\frac{dw}{dz} = (1/\bar{\beta}) \frac{d\hat{\beta}}{dz}. \quad (13)$$

That is, in equilibrium, it must hold that the change in  $w$  as a result of a change in exogenous variable  $z$  equals  $1/\bar{\beta}$  times the change in the equilibrium value of  $\hat{\beta}$ . Using (9), the effect of a change in  $z$  on the equilibrium value of  $\hat{\beta}$  is given by:

$$\frac{d\hat{\beta}}{dz} = \frac{\partial\hat{\beta}}{\partial z} + \frac{\partial\hat{\beta}}{\partial w} \frac{dw}{dz}, \quad (14)$$

where  $\partial\hat{\beta}/\partial w$  is given by (10). Combining (13) and (14) yields after some rewriting:

$$\frac{d\hat{\beta}}{dz} = \frac{\partial\hat{\beta}}{\partial z} \left[ \frac{1}{1 - (1/\bar{\beta}) \frac{\partial\hat{\beta}}{\partial w}} \right]. \quad (15)$$

The total effect of an increase in an exogenous variable on  $\hat{\beta}$  is the product of a direct effect,  $\partial\hat{\beta}/\partial z$ , and a ‘multiplier,’ which stems from the strategic interdependence between politicians. Note that, given that we consider an interior solution (sufficiently high  $\bar{\beta}$ ), the multiplier is always positive because  $\partial\hat{\beta}/\partial w$  does not exceed  $\bar{\beta}$ . The multiplier magnifies the direct effect if:

$$\left[ \frac{1}{1 - (1/\bar{\beta}) \frac{\partial\hat{\beta}}{\partial w}} \right] > 1 \implies \frac{\partial\hat{\beta}}{\partial w} > 0,$$

that is, if politicians’ opportunistic actions are strategic complements. The reason is clear. When a change in  $z$  increases  $\hat{\beta}$ , a larger range of politicians act opportunistically, which induces even more politicians to act opportunistically. Hence, the effect of a change in any of the exogenous variables on politicians’ incentive to behave opportunistically is magnified by strategic complementarity in politicians’ opportunism.

Next consider the effects of the exogenous variables. Let us start with the effect of private rents from office. Using (9), it is easy to verify that  $\partial\hat{\beta}/\partial X$  is positive. The intuition is simple. As holding office becomes more rewarding, a larger range of politicians are willing to compromise on voters’ welfare so as to increase their chance of reelection. Likewise, politicians’ incentive to behave opportunistically is stronger in more polarized political environments, that is, when  $b_i^i$  increases or  $b_i^j$  decreases. The reason is that in more polarized political environments, staying in office is more rewarding as it keeps politicians with more differing policy preferences out of power. It is also clear from (9) that politicians have a stronger incentive to act opportunistically when the cost of continuing a bad policy,  $c$ , are lower, and when the cost of reversing a policy,  $d$ , are higher.

Lastly, consider the effect of a change in the composition of the pool of candidates from which politicians are drawn. Recall our assumption that a politician's  $\beta_i$  is drawn from a uniform distribution  $[0, \bar{\beta}]$ . A higher value of  $\bar{\beta}$  implies that candidates, on average, care more about the public interest relative to the private rents from office-holding. From (9) we can see that this does not directly affect the threshold level  $\hat{\beta}$ . However, the threshold level is indirectly affected as the probability that a given politician acts opportunistically,  $w$ , changes. Substituting (9) into (12), and totally differentiating with respect to  $w$  and  $\bar{\beta}$  yields after some rewriting using (12):

$$\frac{dw}{d\bar{\beta}} = -\frac{\hat{\beta}}{\bar{\beta}^2} \left[ \frac{1}{1 - (1/\bar{\beta}) \frac{\partial \hat{\beta}}{\partial w}} \right] < 0. \quad (16)$$

Hence, the direct effect of an increase in  $\bar{\beta}$  on  $w$ , which is  $-\hat{\beta}/\bar{\beta}^2$ , see (12), is reinforced as politicians' incentive to act opportunistically decreases when other politicians are less likely to act opportunistically. From (9), it follows that the effect of  $\bar{\beta}$  on the equilibrium value of  $\hat{\beta}$  is given by:

$$\frac{d\hat{\beta}}{d\bar{\beta}} = \frac{\partial \hat{\beta}}{\partial w} \frac{dw}{d\bar{\beta}} < 0 \text{ if } \frac{\partial \hat{\beta}}{\partial w} > 0. \quad (17)$$

Hence, when, for some exogenous reason, the composition of the pool of candidates changes such that politicians on average care more about the public interest, a politician with a given  $\beta_i$  has a weaker incentive to act opportunistically. The reason is that a given reputational loss has less of an effect on a politician's electoral prospects in an environment where other politicians are more likely to put at risk their reputation as well, than in an environment where politicians hardly ever admit policy failures. Similarly, entry of politicians who care little about the public interest gives current politicians with a given motivation a stronger incentive to behave opportunistically. A political culture may therefore be self-reinforcing.

### 5.3 Multiple Equilibria

So far, we focused on situations where a unique equilibrium arises. If  $\bar{\beta}$  is not sufficiently high, or if we relax the assumption that politicians' motivations follow a uniform distribution, then multiple equilibria may arise.

Consider again Figure 1. Reducing the value of  $\bar{\beta}$  rotates the straight line clockwise around the origin. For sufficiently low values of  $\bar{\beta}$ , multiple

equilibria arise: one unstable equilibrium, and two stable equilibria, of which one with  $w < 1$ , and the other with  $w = 1$ . When  $\bar{\beta}$  becomes very low, we have a unique equilibrium again, the one where all politicians behave opportunistically,  $w = 1$ .

When the distribution of politicians' motivations is non-uniform, equation (12) becomes nonlinear and is no longer represented by a straight line in Figure 1. It is easy to imagine distribution functions which, together with equation (9), imply multiple equilibria. For instance, when relatively few politicians have 'extreme' motivations ( $\beta$  close to zero and  $\beta$  close to  $\bar{\beta}$ ), equation (9) could be represented in Figure 1 by a curve which is concave for low values of  $w$  and convex for high values of  $w$ . Clearly, multiple equilibria may then arise.

## 6 Concluding Remarks

We have studied politicians' incentive to behave opportunistically for reelection purposes. A key element of our model is that politicians do not only differ in competence and policy preferences, but also differ in their intrinsic motivation to improve upon the well-being of citizens. We have focused on an agency problem that arises when voters are less informed about the effects of policies than politicians are. We have shown that a higher reward from holding office and increased polarization in the policy positions strengthen the politicians' incentive to behave opportunistically. When several politicians are involved in decision making, these effects are magnified by a strategic complementarity in politicians' opportunism. We have shown that politicians have stronger incentives to behave opportunistically if they believe other politicians are more likely to behave opportunistically. A political culture may therefore be self-reinforcing and multiple equilibria may arise.

An interesting issue is whether politicians who care a lot about the public interest may undo opportunistic actions by politicians who care little about the public interest. In a previous version of this paper, we have examined this issue (see Beniers and Dur, 2004). When politicians can evaluate each other's policy, continuation of bad policies may be avoided, because politicians who care a lot about the public interest search for information and withdraw support for a policy when they find out that it is bad. However, the opportunity to learn about effects of competing politicians' policies may

also enable politicians who care little about the public interest to damage the reputation of other politicians. Opportunistic politicians do not search for information. However, the fact that highly motivated politicians do, lends some credibility to a politician's claim that his competitor's policy is a failure. Opportunistic politicians take advantage of this and may vote against efficient policies designed by other politicians.

Another interesting extension of the model is to endogenize politicians' participation decision, as in Caselli and Morelli (2004), Besley (2004), and other recent papers. While a higher reward from holding office may encourage people with high ability, or with high moral cost of taking bribes, to strive for a political career, it may also attract people who care most about the rewards from office, not about society. This, in turn, may strengthen the incentive of the politicians that already participated to behave opportunistically as a result of the strategic complementarity in politicians' opportunism. Other interesting extensions include examining endogenous removal of a party's leader by party members, the endogenous determination of politicians' pay, and information provision to voters by media and 'independent' agencies.

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## Appendix 1

This appendix proves that the level of  $b_i^j$  for which the first term in condition (8) is positive is not necessarily in conflict with assumptions 1-4. So, we have to prove that:

$$(c - d) - [x + (1 - x)w] [\hat{x}^r b_i^j - x b_i^j - (x - \hat{x}^r)d] - (1 - x)(1 - w) \frac{1}{2} \hat{x}^r (b_i^j - b_i^j)$$

can be positive given that assumptions 1-4 are satisfied. Substituting the minimum value of  $b_i^j$  implied by assumption 2 gives after some rewriting:

$$(c - d) - \left\{ [x + (1 - x)w] (\hat{x}^c - x) + (1 - x)(1 - w) \frac{1}{2} (\hat{x}^c - \hat{x}^r) \right\} (b_i^j + d) > 0$$

From assumption 1 and 3 it follows that the maximum value of  $c$  is  $\frac{(2-x)d}{1-x} - \epsilon$  and the maximum value of  $b_i^j = \frac{(1-x)(d-\epsilon)}{x}$ , where  $\epsilon > 0$  is a certain infinitesimal number. Given this value of  $b_i^j$ , assumption 2 is always more restrictive than assumption 4. Hence, assumption 4 becomes redundant. Substituting the maximum values for  $c$  and  $b_i^j$  gives:

$$\begin{aligned} & \left[ \frac{(2-x)d}{1-x} - \epsilon - d \right] + \\ & - \left\{ [x + (1-x)w] (\hat{x}^c - x) + (1-x)(1-w) \frac{1}{2} (\hat{x}^c - \hat{x}^r) \right\} \left[ \frac{(1-x)(d-\epsilon)}{x} + d \right] > 0 \\ & \Rightarrow \frac{x}{1-x} > [x + (1-x)w] (\hat{x}^c - x) + (1-x)(1-w) \frac{1}{2} (\hat{x}^c - \hat{x}^r) \end{aligned}$$

Note that the first term on the right-hand side is always less than 1 and that the second term on the right-hand side is always less than  $\frac{1}{2}$ . Hence, if  $x > 3/5$ , then this condition is always satisfied. Since  $0 < x < 1$ , this completes the proof.

## Appendix 2

This appendix proves that there exists a unique equilibrium if  $\partial\hat{\beta}/\partial w > 0$ . First note that equation (12) can be written as  $\hat{\beta} = \bar{\beta}w$ : a linear relation with slope  $\bar{\beta}$ , with minimum 0 when  $w = 0$  and maximum  $\bar{\beta}$  when  $w = 1$ . Next consider equation (9). Denote the function on the right-hand side by  $\hat{\beta}(w)$ . When  $w = 0$ , it follows that  $\hat{\beta}(0) > 0$  given that  $X > 0$ . In the main text, we showed that, under a plausible condition,  $\hat{\beta}'(w)$  is positive. To ensure that at least one interior solution exists, it is sufficient to assume that  $\bar{\beta}$  is sufficiently high such that  $\hat{\beta}(1) < \bar{\beta}$ . The second derivative reads:

$$\frac{\partial^2 \hat{\beta}}{\partial w^2} = \frac{\left( (1-x)^2 \{ (c-d) + [\hat{x}^r b_i^i - x b_i^j - (x - \hat{x}^r)d] - \hat{x}^r (b_i^i - b_i^j) \} \times \right)}{\left\{ (c-d) - [x + (1-x)w] [\hat{x}^r b_i^i - x b_i^j - (x - \hat{x}^r)d] - (1-x)(1-w)\frac{1}{2}\hat{x}^r (b_i^i - b_i^j) \right\}^3} \quad (18)$$

By comparing (10) with (18), and using (11), it is easy to verify that if  $\hat{\beta}'(w) > 0$ , then  $\hat{\beta}''(w) > 0$  for any  $0 \leq w \leq 1$ . Hence,  $\hat{\beta}(w)$  is convex and increasing. Since (12) is linear, it follows that a unique equilibrium is guaranteed, see also Figure 1 in Section 5.1.

# Notation

$i \in \{l, m, r\}$  a leader attached to party  $I$

$y_i$  policy designed by leader  $i$  in office

$\alpha$  prior belief that a leader is competent

$x$  prior probability that a leader designs a good policy

$\hat{\alpha}^v$  where  $v \in \{c, r\}$ , voters' posterior belief that a leader is competent when he voted for his policy in period 1 ( $c$ ), or against ( $r$ ).

$\hat{\alpha}^e$  where  $e \in \{g, h\}$ , a leader's posterior belief that he is competent when he has observed that his policy in period 1 is good ( $g$ ), bad ( $h$ )

$\hat{x}^v$  voters' posterior probability that leader  $i$  designs a good policy in period 2

$\hat{x}^e$  leader  $i$ 's posterior probability that he designs a good policy in period 2

$b_i^i$  increase in social welfare according to leader  $i$  if a good policy  $y_i$  is continued

$b_i^j$  increase in social welfare according to leader  $i$  if a good policy  $y_j$  is continued

$c$  decrease in social welfare when a bad policy is continued

$d$  decrease in social welfare when a policy is reversed

$\beta_i \in [0, \bar{\beta}]$  value attached to social welfare by leader  $i$

$X$  private rents from being in office in a period

$w$  probability that an incumbent plays the dishonest voting strategy

Figure 1

