Executive Performance under Direct and Hierarchical Accountability Structures[*]

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Abstract

This paper introduces institutions in the standard political agency model with adverse selection and moral hazard. I analyze two basic accountability mechanisms for the executive branch of government: direct popular election vs. appointment by a popularly elected legislature. The model predicts that hierarchical control can improve executive performance to a larger extent than direct control, despite the additional agency problem between the legislature and the executive. The benefits of hierarchical control over direct control are more evident when policy issues are complex (as opposed to simple), when voters are better-informed monitors, and when the legislature is independent of the executive.

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1   Introduction

One of the most common forms of representative government is delegation to two agents, one more informed, generically called the *executive*, and the second, usually less informed, generically called the legislature or *assembly*. For instance, a corporation is managed by a CEO together with a board of directors, a city by a mayor with a city council, a country by a president and parliament. Originally, as stipulated in constitutions, charters or statutes, the legislature has the power to make policies for the community, and the executive to implement and execute those policies. In actual practice, however, the executive is very often heavily involved in policy formulation, even though officially this function is assigned to the legislature. To a large extent this historical development has been a natural consequence of the *informational advantage* that the executive has come to acquire by virtue of its day-to-day involvement in policy execution and implementation.

While the common mechanism to control a single leader is popular elections, in the case of a two-branch government the executive can be either *elected* by the community or *appointed* by the legislature. The legislature is almost always elected by the community. I refer to the first control mechanism as *direct control* of the executive. It is a defining institution of presidential democracy and it is also common in many democracies' regional or local politics, where executives carry the title of e.g. governor or mayor. I refer to the second control mechanism as *hierarchical control* of the executive. It is used, for instance, in parliamentary systems of government (where the chief executive is appointed by, and has to maintain the confidence of, a majority in the national assembly) in a large number of municipal governments in countries such as the U.S., United Kingdom, the Netherlands and Germany, and in the management structures of many publicly held corporations.[1] Given the pervasiveness of the hierarchical accountability structure in contemporary government and business it is surprising that the political agency literature has not yet offered a general analysis of its merits (Besley 2006).

This paper explicitly models the hierarchical accountability structure in a principal(s)-agent(s) framework with asymmetric information. My analysis has several features. First, it starts from the premise that the executive has more policy expertise than the assembly, and, further, that the assembly obtains policy information faster than the public. Second, the model I build is a non-conventional signaling game. It features two senders/agents (the executive and the assembly) and two receivers/principals (the assembly and the voters).[2] Third, in the model institutions are exogenous; players take institutions as fixed and unchangeable when they design their strategies. Fourth, the focus is on characterizing how the accountability structure (direct vs. hierarchical) shapes executive incentives. It does not address the

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[1] The U.S. was the first country to have city executives appointed by the city council, rather than having them elected by city residents. In 2004 about 60 percent of U.S. cities with populations above 25,000 residents had appointed chief executives.

[2] Prat and Rustichini (2003) also study a multiple principals - multiple agents model, but in environments with complete information.

broader question of what is the comparative performance of each "system" of government. The reason to focus on the narrower question is twofold. (a) "Systems" that feature different accountability structures are distinct along other dimensions as well, for instance, different methods to nominate candidates (primaries vs. party caucuses), different electoral rules to select among candidates (majoritarian vs. proportional), various checks and balances within government, different party systems, different transparency requirements etc. These are hard to incorporate in a single model. (b) My goal is to understand the causal (ceteris paribus) effect of the accountability structure on executive incentives; to achieve this I keep constant all other parameters of the game: players, their preferences, the selection of political candidates, and the information structure, and vary only the accountability structure. Then I compare executive behavior (and not voter welfare) in each institutional setting.

The key message emerging from my analysis is that hierarchical control of an expert executive can improve executive performance to a larger extent than direct control. This finding seems counterintuitive if we adopt the view commonly expressed in the political science literature (Manin et al. 1999) namely that direct electoral control is the single most effective tool for improving accountability. According to this view any further link in the chain of delegation between voters and the executive can only weaken the (already imperfect) control that voters are able to exert, and therefore can only adversely affect executive accountability. The model that I analyze shows that this type of argument underplays a central feature of political delegation: the *asymmetry of information* between government and the public.[3] If the government is indeed better informed than the public then my theory points to the following four arguments that should enter the discussion of alternative accountability structures for an executive.

First, an accountability mechanism must not only ensure that the executive is controlled, but it should also allow the executive enough discretion to pursue policies that are the *public interest* even if they go against current *public opinion*.[4] These two objectives, control and discretion, are obviously in conflict with one another; so the question becomes which accountability mechanism strikes a better balance between the two. In general, direct elections are better at controlling the executive, while appointment is better at allowing him more discretion i.e. insulating him from public opinion. When voters are highly uncertain about the merits of policy alternatives they are judging executive performance according to a highly imperfect standard, and so executive discretion becomes more valuable to them. Second, delegating the task of monitoring the executive to the legislative branch, although weakening the *extent* of executive control, will improve the *quality* of that control because the legislative branch is a better informed principal than the public. More exactly, I find that

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[3] The executive's expertise advantage is key to my argument. In its absence the direct and hierarchical accountability structures yield identical accountability outcomes.

[4] For instance, based on classified intelligence the executive knows better whether a foreign military intervention is in the national interest, but public opinion nevertheless may oppose a war. However, after the decision is made more information becomes public, say through public debate or journalistic investigations, and popular sentiment may sway in support of the war. Therefore, in this case an executive who always follows public opinion is bound to make a suboptimal decision.

elected executives often choose to *pander* to voters while an executive appointed by a better informed (and, preferably, independent) legislature sometimes chooses to *represent* voters' interests faithfully because the legislature requires it; although this latter behavior is less frequent, due to the possibility that the legislature itself may not share voters' preferences, it is clearly better for voters than pandering.

Third, in order for hierarchical control to fully perform its "executive insulation" function voters must view their indirect control agent, the legislature, as being independent of the executive. If voters perceive that the two branches have similar motivations then they will hold the two agents accountable for each other's actions and so even under hierarchical control the executive becomes responsive to popular opinion in order to help keep in power the legislature that appointed it. Fourth, how well hierarchical control does depends on the type of policy issue: an important distinction seems to be between simple and complex issues. *Simple issues* are those about which the public has relatively strong feelings about the optimal policy. For instance, in a large city where crime has been a problem for some time most voters may think that hiring extra police is always the optimal thing to do. *Complex issues* are those for which voters are less confident in their gut feelings about what the government should do. In general I find that for simple issues hierarchical control does better when the executive's reelection concerns are strong, but direct control does better if reelection concerns are weaker; this is because the discretion allowed by hierarchical control is only going to produce better outcomes than pandering when the executive is strongly motivated to hold office for its own sake. For complex issues hierarchical control always improves executive incentives more effectively than direct control, since voter passivity towards an elected executive can be compensated for by delegating the power to dismiss the executive to a better informed assembly.

The theory presented in this paper is related to two different literatures in political economics: political agency under asymmetric information (Besley 2006) and constitutional rules (Persson et al. 1997). Several recent contributions to the political agency literature explicitly model the government's expertise advantage in a principal-agent framework with adverse selection and moral hazard. The main insight of these papers, that sets them apart from the earlier contributions (Barro 1973, Ferejohn 1986) where the government had no expertise advantage,[5] is that reelection concerns may actually work against voters' interests because they can lead even politicians who share voters' preferences to behave opportunistically by pandering to public opinion.[6] Addressing this issue, Maskin and Tirole (2004) find that when reputational concerns drive the behavior of elected politicians representative

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[5] Banks and Sundaram (1993), for instance, present a political agency model with adverse selection and moral hazard where voters' retrospective voting rule performs its two beneficial effects: disciplining incumbents and selecting better politician types. In their model elections do not exert their distorting effect on the behavior of good types because public opinion coincides with the public interest.

[6] Canes-Wrone et al. (2001) characterize another type of electoral distortion created by this informational asymmetry namely a reelection-seeking executive enacts a policy that is both unpopular and expected to be contrary to voters' interests but whose effects are very likely to be known before elections; they call this distortion "fake leadership."

democracy is worse for voters than other institutions, in particular appointed judges (unaccountable, in their model), if voters are very ignorant. Part of this intuition is present in my model. For simple policy issues voters demand the popular policy, causing elected executives to pander to them, an incentive from which appointed executives are insulated. However, interestingly, the Maskin and Tirole (2004) intuition is completely reversed when I look at complex policy issues. In that setting, an elected executive is left *de facto* unaccountable by poorly informed voters, while an appointed executive is still constrained by the legislature to be responsive to voters; thus elections make voters worse off not because the executive panders to public opinin, but because voters understand that the information revealed by an unconstrained executive's actions will help the better informed legislature to later keep the executive in check.

The political agency literature, while taking informational asymmetries seriously, has limited itself to modeling government as a single agent, and so it cannot capture accountability structures that are more complex than a simple election, such as the (highly pervasive) hierarchical structure introduced above. It is conceivable that these other institutions have significant effects on behavior and outcomes, as the recent research on constitutional rules has argued (e.g. Persson and Tabellini 2003). In Persson et al. (1997) *separation of powers* (i.e. the division of tax and spending powers between two branches of government) and the executive's *accountability structure* work together for voters by setting the branches against each other in order to contain rent seeking. By comparison, my theory's focus is narrower, in that it isolates the effect of the accountability structure on executive performance, by abstracting from any *other* institutional differences, but also more general in that it fully accounts for informational asymmetries.[7] Informational asymmetries turn out to be consequential. Persson and al. (1997) find that the accountability structure does not matter unless executive appointment leads to collusion between the executive and the legislature, which weakens the accountability of the appointed executive. In contrast, in my model a better management of informational asymmetries under hierarchical delegation cause appointed executives to perform better more often. As in Persson et al. (1997) collusion does, however, reduce the performance of appointed executives. My model also contributes to theories of political accountability in formal political science (Przeworski et al. 1999). Here, as in the political agency literature, the focus has been on direct elections as a mechanism of accountability and little work - none of it formal - has examined alternative accountability structures.[8]

The rest of the paper is organized as follows. The next section presents the theoretical

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[7] Abstracting from the agency relationship between public servants and the public, Alesina and Tabellini (2007) ask a complementary question: *given* that different accountability structures induce politicians to behave differently from bureaucrats, what determines the socially optimal allocation of tasks between the two public servants? In my paper the incentives of elected and appointed executives are derived endogenously through interaction with their principals.

[8] Manin et al. (1999) summarize the contributions to a volume on political accountability this way: "the importance of the institutional structure of government [...] is a topic with regard to which we made little headway and where further research is definitely needed."

framework within which I model the two basic mechanisms of control under adverse selection and moral hazard. I start with the case of independent assembly and executive types. In section three I analyze the model under the assumption that at elections time the electorate and the assembly are uncertain about the optimality of past executive actions. In section four I show that the baseline results are robust to more information becoming available before elections. Section five explores how accountability is affected by collusion between the executive and the assembly. The last section concludes with a discussion of possible extensions.

2   The Theoretical Framework

I develop a two-period political agency environment in which voters exercise control over the government on the backdrop of uncertainty about the effects of current policies and about the motivations of their representatives. Within this environment I model two institutions for monitoring the executive branch of government - popular election and appointment through a representative body - and study executive performance under these alternative institutional arrangements. In what follows the term "government" collectively designates the two branches of government, the executive branch, or executive for short, and the legislative branch, or the assembly.

In each period $t = 1, 2$ there are two policy alternatives to the status quo Q, which we denote by A and B. The government, through its two branches, the executive and the assembly, determines the policy outcome of each period t, denoted by $\hat{z}_t$, via a political process in which the executive acts as the agenda setter. Let z_t stand for the policy proposal made by the incumbent executive in period t, where $z_t \in \{A, B\}$, and v_t the decision of the legislative body of whether to approve (Y) or block (N) the executive's proposal, $v_t \in \{Y, N\}$. Then the mapping that we assume to exist between policy proposals and votes, on the one hand, and policy outcomes, on the other, is simply:

$$\hat{z}_t = \begin{cases} z_t & \text{if } v_t = Y \\ Q & \text{if } v_t = N \end{cases} \quad \text{for } t = 1, 2 \tag{1}$$

namely at time t a proposal, or bill, becomes law, or policy outcome $\hat{z}_t$, if and only if the assembly approves it, otherwise the status quo is preserved.

In any given period the two policy alternatives may be either optimal or suboptimal. The period optimality of a policy alternative depends on the state of the world prevailing in that period; this state is denoted S_t, with $S_t \in \{A, B\}$. If in period t the policy alternative, or the policy outcome, is identical to the state we say that the policy, or outcome, is optimal; otherwise it is suboptimal.

The electorate has preferences over policy outcomes. In each period they receive a payoff of zero if the status quo obtains in that period, a payoff of one if the optimal policy is

implemented and a payoff of negative one if instead the suboptimal policy is adopted.[9] Formally, voters' period payoff depends on the policy outcome $\hat{z}_t$ and the state S_t and is constant across periods:

$$u_v(\hat{z}_t, S_t) = [\mathbb{I}\{\hat{z}_t = S_t\} - \mathbb{I}\{\hat{z}_t \neq S_t\}]\,\mathbb{I}\{\hat{z}_t \neq Q\} \quad \text{for } t = 1,2 \qquad (2)$$

where $\mathbb{I}$ is an indicator function, i.e. a function that takes the value one if its argument is true and zero otherwise.

Note that conditional on the state voters have a well defined ranking over policy outcomes. However, before the state is known voters can only have beliefs about their *true* ranking of these outcomes. Specifically we assume that the state is drawn at random and independently each period from a binary distribution that places probability p on state A, where $\frac{1}{2} < p < 1$. Thus, in the terminology of Maskin and Tirole (2004), we may say that A is the *popular* policy outcome in the sense that, absent information about the state of the world, voters prefer in expectation that outcome A occurs.

The electorate delegates policy making to the executive and legislative branches of government. The legislative branch may be of one of two types θ_a, congruent (when $\theta_a = 1$) and noncongruent (when $\theta_a = -1$); the prior probability that the assembly is congruent is π with $\frac{1}{2} < \pi < 1$.[10] While both types equally value reelection to a new term, which provides them with a positive ego rent R_a, they also care about policy issues. I assume that the two types are different in so far as congruent assemblies rank policy outcomes in the same order as voters do, whereas noncongruent types rank them in reverse order. Formally, the lifetime utility of an incumbent assembly of type θ_a can be written as a function of policy outcomes and states of the world realized in the two periods:

$$U_a\left(\hat{\mathbf{z}}, S \mid \theta_a\right) = u_v(\hat{z}_1, S_1)\theta_a + \delta\rho_a\left[R_a + u_v(\hat{z}_2, S_2)\theta_a\right] \qquad (3)$$

where δ is a time discount factor, with $0 < \delta \leq 1$, and ρ_a is the probability that the incumbent assembly is reelected for a new term.[11] The preferences of an incoming (second

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[9] The assumption of a homogenous electorate implies that we are restricting attention to valence issues i.e. there is wide agreement among voters about the desired course of action. Conflicting preferences within the electorate raise additional considerations that are beyond the scope of this paper.

[10] The probability of congruence can be interpreted in two ways. First, it is a summary measure of the quality, or reputation, of the political class. Second, it captures the degree to which voters are able to distinguish congruent from noncongruent assemblies. For an approach to endogenizing the quality of politicians see Caselli and Morelli (2004). The assumption that it is above a half captures in reduced form the idea that elections are fairly free and competitive and therefore a newly elected politician is more likely to be like voters than to be different from them.

[11] The assumption that policy outcomes matter to politicians only when in office is commonplace in the political agency literature. It may be interpreted as a legacy motivation: the politician cares that he will be remembered for outcomes that he himself had a role in bringing about. Besley (2006) offers a comprehensive review of typical preferences and information structures underlying political agency models.

period) assembly of type θ_a are represented by the utility function:

$$u_v(\hat{z}_2, S_2)\theta_a. \tag{4}$$

I also assume that the reelection concern dominates policy motivations for both types of assembly. Formally the assumption is that:

$$\delta R_a > 1 \tag{5}$$

in words, the discounted value of reelection is larger than the payoff from having the ideal policy outcome today.[12]

The executive branch of government similarly can be of one of the same two generic assembly types, congruent and noncongruent.[13] I denote the executive's type by the random variable θ_e and assume it has the same (marginal) distribution as the assembly type θ_a. With respect to the joint distribution of the two type variables I consider two polar cases. First, I assume that types are independent and second, that they are perfectly correlated. The second case captures a political environment with collusion between branches.

Because in the sequence of play to be laid out shortly the executive acts as the agenda setter it is natural to endow him with preferences over his own proposals. I can think about each type of executive as serving nonvoting constituencies with divergent interests by influencing the agenda of the government in their desired direction. Specifically in each period in which he is in office the executive receives a random benefit, or rent, X_t ($>$ 0) for introducing his constituency's preferred policy and a payoff of zero otherwise. The payoff X_t is drawn each period independently from a probability distribution with cumulative distribution function $G : (0, x_M) \rightarrow [0, 1]$ and mean $\mathbb{E}(X) = \bar{x}$. I also make the assumption that the distribution of executive private benefits has full support and that the upper bound of this support is large enough - larger than the discounted expected payoff from being in office in period two: $x_M > \delta(R_e + \bar{x})$; this insures that with positive probability the executive follows his own preferences thus making the agency problem sufficiently severe.

I can then write the lifetime utility function of an executive of type θ_e in compact form

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[12] The primacy of the reelection concern in the behavior of legislators has been exploited elsewhere in the political science literature. Mayhew (1974), for instance, makes a compelling case in favor of this basic motivation. A closely related, but technically more involved, assumption on assembly motivations can be that the relative intensity of preferences between reelection and policy goals is issue-dependent and therefore unknown to the assembly itself before a new period begins. Then assembly behavior will alternate between being ideological and reelection-focused depending on the realization of this intensity variable at the beginning of a period. Assuming these preferences does not however affect the qualitative predictions on executive behavior, which is our main concern in this paper.

[13] We choose to model each branch of government as a single player in order to astract from problems of preference aggregation, collective action and coordination that any collective agent potentially faces.
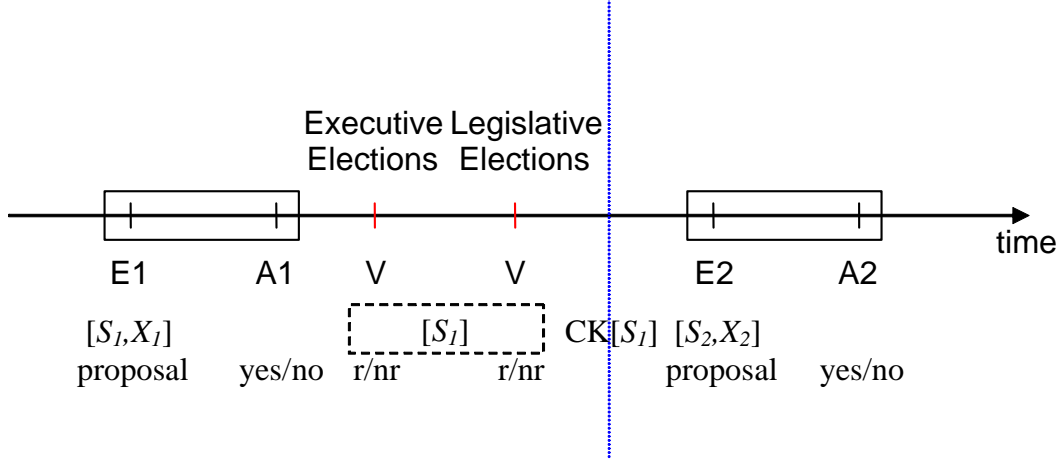
Figure 1: Timing: Direct Control of the Executive

as follows.

$$U_e\left(\mathbf{z}, S, X \mid \theta_e\right) = X_1\left[\mathbb{I}\left\{z_1 = S_1\right\}\left(1 + \theta_e\right) + \mathbb{I}\left\{z_1 \neq S_1\right\}\left(1 - \theta_e\right)\right] + \tag{6}$$
$$+\delta\rho_e\left\{2R_e + X_2\left[\mathbb{I}\left\{z_2 = S_2\right\}\left(1 + \theta_e\right) + \mathbb{I}\left\{z_2 \neq S_2\right\}\left(1 - \theta_e\right)\right]\right\}$$

where δ is the time discount factor and ρ_e is the probability that the executive is reelected, or reappointed, to a new term.[14] The preferences of a challenger executive of type θ_e are represented by the utility function:

$$X_2\left[\mathbb{I}\left\{z_2 = S_2\right\}\left(1 + \theta_e\right) + \mathbb{I}\left\{z_2 \neq S_2\right\}\left(1 - \theta_e\right)\right]. \tag{7}$$

I model the two institutions as distinct signaling games. The games are identical in every respect (including the information structure) except for who holds the power to remove the executive and when this power can be exercised. Under *direct control* the executive and the assembly are both popularly elected and cannot remove each other.[15] These features suggest the following sequence of play and information structure (see Figure 1). At the beginning of period one the incumbent executive and assembly separately learn their own types; the executive also learns the state of the world S_1 and his benefit draw X_1. In the first policy stage the executive introduces one of two bills A or B; without observing the state or the executive's benefit the assembly can then approve or block the executive's bill. After the

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[14] Since the executive, through his control of the agenda, can prevent certain policy outcomes from being realized his preferences represented in equation (6) may also be regarded as ranking policy *outcomes* as well as policy *proposals*. For instance, if the executive is congruent he receives a payoff X_t if in period t the policy outcome is not the suboptimal policy and a payoff of zero otherwise. Thus he is indifferent between the optimal policy and the status quo and both are ranked above the suboptimal policy.

[15] In the terminology of Shugart and Carey (1992) the two branches are characterized by separate origin (separate popular elections) and independent survival (fixed terms of office for both executive and assembly).
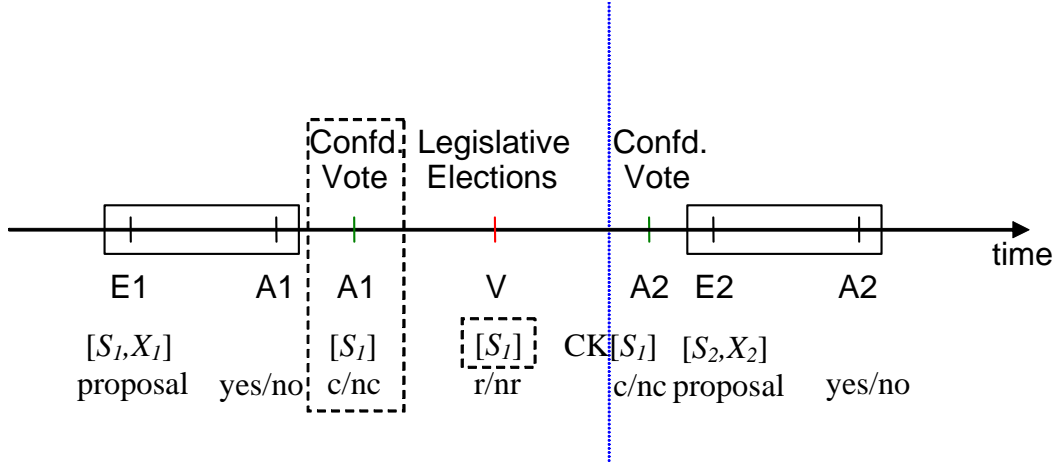
Figure 2: Timing: Hierarchical Control of the Executive

policy stage but before elections the assembly and the electorate may or may not learn the state S_1;[16] this ends period one. Voters observe the decisions made by the government in the first period, however they observe neither types nor the executive's private benefit. In general elections for assembly and executive voters decide whether, and which of the two bodies, to reelect for a new term. At the beginning of period two the past period's state is common knowledge. If newly elected, the executive and assembly privately learn their types and the previous period's policy decisions. The current executive observes the state S_2 and benefit X_2 and makes a proposal A or B. The assembly does not observe the state or the executive's benefit and votes whether to approve or block the executive's bill. This ends the second policy stage and the game.

Under *hierarchical control* voters can directly elect the legislative branch which in turn has sole authority to appoint and dismiss the executive. The above extensive form changes to reflect this important distinction (see Figure 2). At the beginning of period one the incumbent executive and assembly privately learn their own types; the executive moreover observes the state of the world S_1 and his benefit X_1. In the first policy stage the executive introduces a proposal A or B; the assembly observes neither the state nor the executive's private benefit and votes Yes or No on the proposal. After policy stage one and before elections the assembly may or may not learn the state S_1.[17] If it does then the assembly votes on a no confidence motion i.e. the assembly decides whether to retain the incumbent executive or else to appoint a challenger. Voters observe the executive's proposal and the assembly vote (or votes, if there has been a confidence vote after the policy stage) but they do not learn types or the executive's benefit X_1. They may or may not learn the past period's state; if they do, the assembly must have also learnt it. Voters decide whether to give the

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[16] In section three I assume neither the assembly nor voters can learn the state. In section four the assembly learns the state with probability one and voters with probability φ, where $0 \leq \varphi \leq 1$. [17] See previous footnote.

assembly a new term. At the beginning of period two the past period's state is common knowledge. If newly elected, the challenger assembly observes its own type and all first period actions. The assembly, incumbent or challenger, subjects the executive to a vote of confidence. If appointed, the challenger executive learns his type. The current executive observes the period state S_2 and his benefit X_2 and makes a proposal A or B. The assembly, without observing the state or the executive's type and payoff may approve or reject the executive's proposal.

Finally, I specify strategies and beliefs using a unified notation across the two baseline games. The incumbent executive's first period proposal strategy is a function of his information and type, denoted $\zeta_1(x, s, \theta_e)$. It will often be convenient to summarize the executive's behavior using the probability that he introduces the popular policy A defined as

$$\alpha(s, \theta_e) = \mathbb{P}\{\zeta_1(X, s, \theta_e) = A\}. \tag{8}$$

I let $\eta(z, \theta_a)$ denote a type θ_a assembly's mixed strategy for voting on policy. In order to simplify the exposition I do not introduce additional notation for second period proposal and voting strategies and thus omit the time subscripts on the functions α and η. Voters' reelection strategies are symbolized by $\rho_a(z, v_p, v_c \mid s)$ for the assembly, and $\rho_e(z, v_p, v_c \mid s)$ for the executive, where v_p and v_c are the votes cast by the assembly at the policy stage and confidence stage, respectively. In the game of hierarchical control I let $\gamma_t(z, \theta_a \mid s)$ stand for the probability that in period t the incumbent executive is reappointed by the assembly. Without risking confusion I abuse notation and employ the same symbols for these strategies even when they are based on fewer observed actions. For instance, the function $\rho_a(z, v_p)$ denotes the probability that the assembly is reelected by voters based only on the observed proposal and vote at the first policy stage. The meaning of each function will be clear from the context.

I denote posterior beliefs about the period one state by $\tilde{p}(z, v_p, v_c)$. I also let

$$\tilde{\pi}_i(z, v_p, v_c \mid s) \quad \text{for } i = e, a \tag{9}$$

stand for the incumbent executive's, respectively assembly's, posterior reputation after a history (z, v_p, v_c, s). As the game progresses the assembly may be in a position in which it has more information about the executive for instance because they may learn period one's state S_1 before voters do. However, when types are independent and when assemblies and voters have received the same information at the same time they share the same posterior beliefs about the executive and the state.

The following language will be helpful in understanding the model. If the executive introduces the optimal policy in both states we say that the executive behaves optimally. When this behavior comes from a congruent executive it reflects *representation* of voter preferences since the preferences of the two players are aligned. When this is instead the behavior of a noncongruent politician we can say it reflects *responsiveness* to voter preferences because

the executive follows voters' preferences instead of its own. If the executive introduces the popular policy in both states we say that it *panders* to public opinion because this behavior follows voters' ex ante preferences which may diverge from their true preferences. Finally, if the executive introduces the suboptimal policy in both states we say that it behaved suboptimally. When this behavior comes from a noncongruent executive it reflects *corruption* because it follows the executive's private interest at the expense of the public interest.[18]

The equilibrium concept chosen for my analysis is Perfect Bayesian Equilibrium (henceforth, PBE, or simply, the equilibrium). I require that strategies be optimal given beliefs and that beliefs be consistent, in the sense of satisfying Bayes's Rule, with equilibrium strategies at all information sets that are reached with positive probability via equilibrium actions.

As is common in retrospective voting games in which voters move after policies have been chosen my models feature multiple equilibria. In each case I characterize equilibria that maximize *executive performance*,[19] defined as the expected value to voters of executive proposals in the two periods:

$$\Theta = \mathbb{E}\left[\sum_t u_v\left(\zeta_t, S_t\right)\right] \tag{10}$$

where ζ_t is the executive's equilibrium proposal strategy in period t and S_t is period t's state. The period components of executive performance $\Theta_1 = \mathbb{E}\left[u_v\left(\zeta_1, S_1\right)\right]$ and $\Theta_2 = \mathbb{E}\left[u_v\left(\zeta_2, S_2\right)\right]$ are measures of executive *discipline* and executive *selection*, respectively (see Besley 2006). I select equilibria that maximize executive performance in order to capture the maximum extent to which each institution makes accountability possible.

In order to compare the equilibrium outcomes of the two games I establish the following relation of dominance. Fix the vector of parameter values at $(\mathbf{q}, G)$. I say that game $\Gamma'(\mathbf{q}, G)$ is *weakly superior* to game $\Gamma''(\mathbf{q}, G)$ in terms of criterion ω at parameter vector $(\mathbf{q}, G)$ if the equilibrium outcome of game $\Gamma'(\mathbf{q}, G)$ yields at least as high a value of the criterion as the equilibrium outcome of game $\Gamma''(\mathbf{q}, G)$. If the comparison value is strictly larger I say that game $\Gamma'(\mathbf{q}, G)$ is strictly superior to game $\Gamma''(\mathbf{q}, G)$ in terms of criterion ω. Further, I say that game $\Gamma'(\mathbf{q})$ *dominates* game $\Gamma''(\mathbf{q})$ in terms of criterion ω at parameter vector $\mathbf{q}$ if game $\Gamma'(\mathbf{q}, G)$ is weakly superior to game $\Gamma''(\mathbf{q}, G)$ at all distributions G and game $\Gamma'(\mathbf{q}, G)$ is strictly superior to game $\Gamma''(\mathbf{q}, G)$ for at least one distribution G. In words, an institutional arrangement dominates another in terms of a given criterion if it does at least as well by this criterion no matter what beliefs voters might hold about the rent opportunities of politicians and does strictly better for at least one set of beliefs. In what follows my comparison criteria will be executive discipline, executive selection and executive overall performance.

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[18] The notion of corruption employed here is perhaps broader than the common understanding of this term. It includes actions that are not verifiable and thus cannot trigger legal sanctions.

[19] Maximal voter satisfaction is the standard equilibrium selection criterion in the political agency literature. It selects the only equilibrium that survives if the game were perturbed by allowing for a small probability that politicians act on their true policy preferences. See Maskin and Triole (2004).

3 Late-Term Accountability

In this section I study direct and hierarchical control for the case in which the executive is certain that feedback on the optimality of his first period action arrives only *after* elections. The strategic situation implicit in this information structure is suggestive of decisions that a government has to make towards the end of an electoral term because for these "late-term" decisions the informational asymmetry between the executive, on the one hand, and the assembly and voters, on the other, is at its peak. In this section there is no confidence vote on the executive before elections, due to the fact that the assembly is not perfectly informed about policy.[20]

Take first the game of direct control. There are two possible types of executive behavior the occurrence of each depending on two parameters, voters' prior beliefs about the optimal alternative p, and politicians' initial reputation π. If p is below a threshold $p^*(\pi)$, that is increasing in π, both executive types follow their preferences with probability one and voters reelect the executive with probability one no matter which policy alternative was introduced. I designate issues for which this type of equilibrium occurs as *complex issues*, because voters' behavior suggests that they do not know enough about the relative merits of policy alternatives in order for them to be able to send a clear message to the executive. The second type of equilibrium occurs when p is above the threshold $p^*(\pi)$. At these parameter values both congruent and noncongruent executives introduce the popular policy A if they have strong reelection concerns and follow their preferences otherwise. This happens because voters' reelection strategies require that the popular policy be proposed and approved. Issues for which this second type of equilibrium occurs may be thought of as *simple issues* because voters are sufficiently confident that their assessment of policy alternatives is correct to condition the survival of the executive on promoting their ex ante preferred policy. I state these results formally in the next proposition, the proof of which is in the appendix. All results are understood to refer to behavior along the equilibrium path.

Proposition 1 *Depending on the values of the parameters, two types of executive behavior can occur under direct control with no feedback.*

(a) For complex issues congruent executives behave optimally, noncongruent executives behave corruptly and voters reelect the executive with probability one regardless of the policy introduced.

(b) For simple issues both congruent and noncongruent executives pander to the electorate if their private benefit is below $\delta(R_e + \bar{x})$ and follow their preferences otherwise; voters reelect the executive if and only if the popular policy A was introduced in period one.

To understand the logic behind this equilibrium it is useful to start with the incentives of the assembly. Assemblies care first and foremost about reelection. Voters thus can induce

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[20] If we allowed the assembly to exercise its confidence prerogative before elections, while still uninformed about policy, the equilibrium would resemble the case of direct voter control.

assemblies to vote on the proposal submitted by the executive as they themselves would have voted, by reelecting with a high probability those assemblies that follow voters' preferences.[21] Both assembly types then pool by voting in the required manner with equal probability. This pliant behavior is beneficial for voters in terms of obtaining the desired outcome, either the proposal or the status quo, but precludes a better selection of assembly types into the second period. The best that voters can do therefore is to employ a reelection strategy that guarantees their preferred outcome and this is possible by conditioning reelection of the assembly solely on the assembly vote.

Just as with their vote on the assembly, in their decision whether to reelect the incumbent executive voters act prospectively since at elections time they can no longer affect the past period's outcome. Their objective in casting their second vote is to prevent a low quality executive from continuing in office for another term. If the executive introduced the popular policy in period one voters' beliefs that the executive is congruent are reinforced because, on the one hand, they believe it is more likely that they are in state A and, on the other hand, it is congruent types that are most willing to propose A when this policy is optimal. Thus voters reelect the incumbent with probability one when the popular policy is introduced.

If the unpopular policy B is introduced, however, voters do not necessarily vote the executive out despite the fact that his reputation has weakened below that of his challenger:

$$\tilde{\pi}_e(B) = \frac{\pi(1-p)}{\pi(1-p) + (1-\pi)p} \quad (< \pi).$$ (11)

Whether or not the executive is given a new term in this case depends on how valuable the information revealed through the executive's proposal is for second period voter welfare. To see this suppose the executive's period one proposal of B will completely reveal its type at the beginning of the second period when the state becomes known.[22] If this is the case then voters may find that on average they can expect a better second period outcome if they reelect since the assembly's knowledge of the executive's type improves its control of executive proposal power. The condition for this to happen defines the cutoff level $p^*(\pi)$ that separates complex from simple issues and is given by:

$$\pi\tilde{\pi}_e(B) - (1-\pi)[1 - \tilde{\pi}_e(B)] \geq \pi(2\pi - 1)$$ (12)

where $\tilde{\pi}_e(B)$ is defined in equation (11).[23] The left-hand side of the inequality in (12) is voters' expected payoff from reelecting an incumbent that proposed B and the right-hand

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[21] In the appendix we show that independence of types implies that voters' reelection rule for the assembly depends exclusively on the assembly vote on the current proposal, and not in any way on executive behavior. This is not in general the case if types are correlated.

[22] This happens whenever one type proposes A with probability one in state B.

[23] Note that a necessary condition for this inequality to hold is $\tilde{\pi}_e(B) \geq \frac{1}{2}$, or equivalently $\tilde{p}(B) \leq \frac{1}{2}$. In words, seeing an executive introduce the unpopular policy leads voters to believe that B is more likely the optimal policy.

side is their expected payoff from electing the challenger.[24]

As long as condition (12) holds voters reelect the incumbent executive regardless of his behavior in office in period one. This reelection rule, although generating complete separation of executive types within states - both types follow their preferences - does not achieve any screening of executives and thus results in an inferior equilibrium outcome in which there is neither correction of noncongruent executives' behavior in the first period, nor selection of congruent types in the second period. In effect, what voters do in this equilibrium is to give up dismissal power altogether and rely only on the assembly's veto power.

When condition (12) does not hold voters' reelection rule takes a retrospective form: voters reelect the incumbent if and only if he introduces the popular policy A in period one. This rule creates the electoral incentive for both executive types to propose the popular policy regardless of the state; they do so whenever private benefits are smaller than their reservation value:

$$X < \delta \left(R_e + \bar{x} \right) \tag{13}$$

and follow their preferences otherwise. Compared to executive behavior in the first type of equilibrium, in this equilibrium noncongruent types behave better - since they choose the optimal policy with positive probability in state A - but this comes at the cost of distorting the incentives of congruent types.

I now ask how the executive's incentives change at the end of the term when his survival depends on maintaining the continuous confidence of an elected assembly. The next proposition establishes that when the executive is appointed, in sharp contrast to direct control, the end of the term produces no distortion in the behavior of congruent executive types. Moreover, it induces noncongruent types with strong reelection concerns to behave optimally as well.

Proposition 2 *Under hierarchical control with no feedback congruent executives always represent voter preferences. Noncongruent executives are responsive when the private benefit from following their preferences is smaller than $\delta \pi \left(R_e + \bar{x} \right)$ and behave corruptly otherwise. In period two congruent assemblies reappoint the executive if and only if his first-period policy proposal was optimal; noncongruent assemblies reappoint the incumbent executive regardless of his period one behavior, but veto his period two proposal. Voters reelect the incumbent assembly if and only if it votes for the popular policy.*

The key to understanding this equilibrium outcome is to observe that at the confidence vote stage in period two the assembly, whether continuing from period one or newly elected, knows whether the incumbent executive's first period behavior was optimal, because period one's state is revealed right after elections. Moreover, at that stage it is also known that

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[24] If the incumbent executive continues in office voters expect either the optimal policy, if the two branches are congruent, or the suboptimal policy, if both are noncongruent. If instead a new executive assumes office, voters expect a change in status quo only if the assembly is congruent, because a noncongruent assembly blocks all initiatives of a new executive.

congruent executives are more likely to behave optimally than noncongruent types. Assembly posterior beliefs about the incumbent's type therefore satisfy:

$$\tilde{\pi}_e\left(z \mid s\right) > \pi \quad \text{iff} \quad z = s \tag{14}$$

which implies that congruent assemblies will reappoint the executive if and only if his behavior was optimal whereas noncongruent assemblies strictly prefer to reappoint an executive whose behavior was suboptimal, but are indifferent between reappointing and dismissing an executive that behaved optimally. There are thus multiple equilibria depending on the choice of noncongruent assemblies at the confidence vote stage. The equilibrium that maximizes executive performance is the one in which noncongruent assemblies do reappoint an executive that behaved optimally. This does not affect second period outcomes, since the noncongruent assembly will block second period executive proposals anyway, but it does affect first period payoffs by giving noncongruent executives a stronger incentive to behave optimally.[25]

At elections time voters act prospectively. Their goal is to improve the likelihood that the assembly of the second period is congruent. Since assembly and executive types are independent voters' only source of information about the incumbent assembly's type is assembly voting behavior at the policy stage (since there is no confidence vote). Thus they condition reelection of the assembly exclusively on the assembly's first period vote. The assembly behavior that produces the best expected outcome for voters is then similar to that under direct control: assemblies always approve the popular policy A and are reelected for doing so.

The equilibria discussed above reveal significant differences in executive behavior under the two accountability structures. With direct control the executive acts unconstrained if issues are complex and has a strong incentive to pander to public opinion for issues that voters feel strongly about. By contrast, under hierarchical control we see that strong reelection concerns, $X < \delta\pi\left(R_e + \bar{x}\right)$, induce optimal executive behavior; however, if reelection is relatively unimportant noncongruent executives will act corruptly. The threshold that determines noncongruent executives' decision to pursue reelection is below their reservation value because they can get away with nonoptimal behavior if the assembly is itself noncongruent.[26]

The next proposition is the key theoretical result of the paper. It shows that the differ-

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[25] If a noncongruent assembly reappoints with probability γ an executive whose first period behavior is optimal then congruent executives will still follow their preferences while noncongruent executives are responsive whenever

$$X < \delta\left[\pi - \left(1 - \gamma\right)\left(1 - \pi\right)\right]\left(R_e + \bar{x}\right) \tag{15}$$

which is increasing in γ.

[26] First period executive behavior highlights the moral hazard correcting properties of each accountability mechanism. There is, however, a second dimension of voter control that is of equal importance, namely the extent to which each system prevents adverse selection. There generally is, however, an inherent tradeoff between the two goals. More discipline necessarily hinders selection because voters are less likely to be able to distinguish between types (Besley 2006). The effectiveness of an accountability mechanism thus crucially depends on the particular form in which this tradeoff is resolved.

ences in behavior identified above are consequential for voters' interests.

Proposition 3 *With no feedback before elections:*

(a) for complex policy issues hierarchical control dominates direct control both in terms of executive discipline and in terms of executive selection;

(b) for simple policy issues hierarchical control dominates direct control both in terms of executive discipline and in terms of executive selection if and only if $p \leq \pi$.

When $p > \pi$ neither institution is dominant by both criteria. In this case hierarchical control dominates direct control in terms of overall *executive performance if voters' prior p is sufficiently small; if p is large then direct control creates better executive performance for moderate reelection concerns ($\delta\pi(R_e + \bar{x}) < X < \delta(R_e + \bar{x})$), while hierarchical control produces better executive performance for strong reelection concerns ($0 < X < \delta\pi(R_e + \bar{x})$).*

The results of this section are significant in two ways. First, Proposition 3 shows how making the executive directly responsible to an uninformed electorate can aggravate agency losses. This occurs through two channels:

(a) If voters are ex ante close to indifferent between policy alternatives - complex issue - it may be rational for them to reelect the incumbent executive for another term regardless of its position on the issue, thus implicitly relinquishing control of the executive to the assembly; however, since the assembly cannot dismiss the executive, but can at most act to block its proposals, this type of electoral behavior leaves the executive unconstrained in its policy choice and consequently leads to high levels of corruption.

Note how the logic of this outcome turns the Maskin and Tirole (2004) intuition on its head. Here direct elections leave the executive *de facto* unaccountable; the elected executive is behaving like the "judge" in their model. The appointed executive, on the other hand, faces quite tight accountability from the assembly, making the appointed executive look more like the "politician" in their model. This is the natural result of poorly informed voters rationally choosing their optimal level of political involvement.

(b) If voters are more confident that their own assessment of policy alternatives is correct - simple issue - they demand that their ex ante preferred alternative be adopted. This electoral constraint, however, induces a strong bias in the preferences of (both congruent and noncongruent) executives in favor of the popular policy and results in opportunistic behavior and inefficient outcomes.[27] By contrast, under hierarchical control the incentive to pander to public opinion is muted to the extent that confidence votes will take place after the effects of policies have been realized. This does prevent pandering but also reduces the extent to which noncongruent executives can be disciplined since they know they will not

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[27] This pattern of executive behavior in the proximity of elections is consistent with studies which find that politicians seeking reelection become more representative of public opinion - though not necessarily of public interest - as the end of their term approaches. See, for instance, Rogoff and Siebert (1988) on political business cycles, Shi and Svensson (2003) on political budget cycles and Gaubatz (1991) on the existence of an electoral cycle of war.

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be dismissed if the assembly is noncongruent itself. Note how the Maskin and Tirole (2004) logic carries over to this second type of equilibrium outcome.

In short, direct control fails voters because it induces pandering, and hierarchical control fails voters because it reduces congruent behavior. Pandering can be very detrimental, worse even than corruption, when voters are poorly informed ($p \leq \pi$), but even when it does better than corruption on average ($p > \pi$) it is inferior to a responsive appointed executive; significantly, pandering also impairs voters' ability to select congruent types in the next term since all types pander in the first term. Thus even in the range where the elected executive behaves better than the appointed one (due to the latter's relatively weak reelection concerns) appointment has the benefit that it delivers better type selection for the next term.

Second, Proposition 1 provides a parsimonious formalization of the idea that a direct control mechanism is characterized by "temporal rigidity" (Linz 1994). The executive is elected for a fixed term and cannot be removed until the next elections even though his past behavior and recent information have revealed his incompetence or dissonance with the public interest.[28] This institutional feature causes direct control to have poor selection properties. The only check on executive power remains the power of the assembly to obstruct executive initiatives.[29,30]

4   Accountability with Policy Feedback

In this section I compare executive incentives in the two accountability structures when policy issues arise earlier in the electoral term or, more generally, when the agenda of the government contains policy alternatives whose effects are expected to be realized in a short period of time since their adoption. To capture this strategic situation I modify (in both games) the information structure of the preceding section by assuming that in period one, after the policy stage but before elections, the assembly learns the state with probability one and voters receive the same information with some fixed probability φ, where $0 \leq \varphi \leq 1$.

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[28] In presidential systems of government, for instance, the president cannot be removed from office between elections except through a formal procedure of impeachment initiated by congress. This procedure, however, can be invoked only in exceptional circumstances when there is enough evidence that the president has committed a criminal offense ("high crimes and misdemeanors" in the language of the U.S. Constitution). In this paper we assume that all the actions available to the executive are legal and so impeachment is never warranted.

[29] Linz (1994) helped spark the contemporary debate on the relative merits of presidentialism and parliamentarism. It goes so far as to argue that the constitutional design of presidentialism undermines democratic stability. This is because an unsatisfied electorate or congress have to wait until the chief executive's term expires. The "temporal rigidity" of the presidential constitution thus makes it prone to divided government, deadlock and crises of governability.

[30] In the U.S. there have historically been attempts to correct this problem, the most recent in the 1987 proposal of the Committee on the Constitutional System. The solution advanced was to intoduce a rule of mutual dismissal: "If it were possible for a President to call new elections, or for Congress to do so, we would have a mechanism for resolving deadlocks over fundamental policy issues" (page 16). A similar provision was present in the Israeli Constitution after the introduction of a directly elected prime minister in 1996.

Allowing for the possibility that both principals are informed at elections time leads to several important new results. First, under direct control the incentive to pander to public opinion starts to lose its force because with positive probability voters will condition executive reelection on promoting the optimal, rather than the popular, policy alternative. However, opportunistic behavior vanishes completely only when voters are perfectly informed, $\varphi = 1$. Second, the superior information held by principals leads to an improvement both in discipline and in the selection of executives. I find that this improvement occurs faster under hierarchical control. If it is sufficiently likely that voters will become informed by elections time, hierarchical control produces an equilibrium outcome that functions *as if* voters were perfectly informed and directly controlled the executive themselves; under direct control this outcome occurs only if voters *are* perfectly informed. This result suggests that the hierarchical structure makes possible more control with less of a requirement for voters to become informed, in other words it economizes on voter information. Third, the normative comparative results from the no feedback case continue to hold and are even strengthened: if φ is sufficiently large hierarchical control dominates direct control for both complex and simple issues.

I start with the case of direct control. Executive behavior when issues are complex - defined by the condition $p \leq p^*(\pi, \varphi)$ - becomes more responsive than in the case of no feedback (cf. Proposition 1). Congruent executives still follow their preferences however noncongruent executives now also behave optimally with positive probability; the probability of optimal behavior is increasing in the quality of the government's performance measurement, captured by the parameter φ. Moreover, now there is also some screening of noncongruent executives that improves the average quality of the executive serving in the second period. With simple issues the improvement in executive discipline takes the form of a decrease in the likelihood of opportunistic behavior by both types whose place is taken by optimal behavior. Pandering is no longer an electorally profitable strategy for a congruent executive if φ exceeds a half, however the incentive to pander is still present, though weaker as φ becomes closer to one, for noncongruent types. Formally I have the following result.

Proposition 4 *Consider the game of direct control with the possibility of an informed electorate.*

(a) For complex issues congruent executives behave optimally; noncongruent executives behave optimally if private benefits are below $\delta\varphi(R_e + \bar{x})$ and act corruptly otherwise. When voters do not have feedback they reelect the executive regardless of the alternative introduced; if they are informed they reelect conditional on optimal behavior;

(b) For simple issues there are two cases. If feedback is slow, $0 \leq \varphi < \frac{1}{2}$, congruent executives pander when

$$X < \delta\left[(1 - \varphi)(1 - \rho) - \varphi\right](R_e + \bar{x}) \tag{16}$$

and behave optimally otherwise; noncongruent executives pander if

$$X < \delta\left[(1 - \varphi)(1 - \rho) + \varphi\right](R_e + \bar{x}) \tag{17}$$

and behave corruptly otherwise. If feedback is faster, $\frac{1}{2} \leq \varphi \leq 1$, congruent executives behave optimally with probability one; noncongruent executives are responsive if

$$X < \delta \left[\varphi - (1 - \varphi)(1 - \rho) \right] (R_e + \bar{x}) \tag{18}$$

pander if

$$\delta \left[\varphi - (1 - \varphi)(1 - \rho) \right] (R_e + \bar{x}) < X < \delta \left[\varphi + (1 - \varphi)(1 - \rho) \right] (R_e + \bar{x}) \tag{19}$$

and are corrupt otherwise. Voters without feedback reelect the incumbent executive with probability one if the popular policy is introduced and with probability ρ (< 1) if B is introduced; informed voters reelect the executive conditional on optimal behavior.

When voters have received feedback their unique best response is to reelect only those executives that behaved optimally in period one. To see this, consider the executive's payoff change caused by a deviation from proposing the suboptimal to proposing the optimal policy. For instance, in state A for an executive of type θ_e it is (for state B the argument is completely symmetric):

$$\Delta(A, \theta_e) = X\theta_e + \delta \left\{ \varphi \left[\bar{\rho}_e(A \mid A) - \bar{\rho}_e(B \mid A) \right] + (1 - \varphi) \left[\bar{\rho}_e(A) - \bar{\rho}_e(B) \right] \right\} (R_e + \bar{x}) \tag{20}$$

where $\bar{\rho}_e(z \mid s)$ is the ex ante expected likelihood of reelection for an executive that makes proposal z in state s.[31] Note that the congruent type gains more by choosing A, since $\Delta(A, 1) - \Delta(A, -1) > 0$, which implies, by the assumption of full support of the distribution of X, that the congruent type is strictly more willing to introduce the optimal policy, in this particular case A, than a noncongruent executive would be.[32] This implies that $\tilde{\pi}_e(A \mid A) > \pi > \tilde{\pi}_e(B \mid A)$, namely the executive's reputation improves whenever the optimal proposal is observed. Thus, independent of assembly actions, it is a unique best response for voters to reelect the executive conditional on the optimal policy being introduced.

If voters have not received feedback by elections time their behavior mirrors the case of no feedback. When the popular policy is proposed in period one voters' beliefs that the state is A and that the executive is congruent are reinforced and they reelect the incumbent executive with probability one. If a B proposal has been made, however, voters' decision depends on the strength of their prior beliefs that they are in state A, or equivalently on the

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[31] Formally the expected probability of executive reelection in state s is given by:

$$\begin{aligned}
\bar{\rho}_e(z \mid s) &= \pi \left\{ \rho_e(z, Y \mid s) \eta(z, 1) + \rho_e(z, N \mid s) \left[1 - \eta(z, 1) \right] \right\} + \\
&\quad + (1 - \pi) \left\{ \rho_e(z, Y \mid s) \eta(z, -1) + \rho_e(z, N \mid s) \left[1 - \eta(z, -1) \right] \right\}.
\end{aligned} \tag{21}$$

Note that it depends on voters' as well as assemblies' strategies.

[32] If in state A a congruent executive proposes the popular policy A with a probability that is positive but smaller than one then a noncongruent type will propose B with probability one and, conversely, if a noncongruent type proposes A it must be doing so with a probability smaller than one, since $\mathbb{P}\{X > \delta(R_e + \bar{x})\} > 0$, and consequently a congruent type proposes A with probability one.

type of issue on the government agenda. If the issue is complex they reelect the executive with probability one; if they strongly believe that policy A is optimal then they are either indifferent or against giving the executive another term.

It is also worth pointing out an informational property of the direct delegation structure. Even though the assembly possesses superior information ahead of elections - it has learnt the state - this does not affect the equilibrium outcome, i.e. the equilibrium outcome would be identical even if the assembly did not have this information. The reason why this occurs in my model is simply that the assembly does not have the opportunity to act in any way on this information. In some sense this information is lost and from this perspective the equilibrium outcome is inefficient. We should observe, however, that even if the assembly had the option to make a public announcement regarding the state the equilibrium outcome would still remain unaffected unless there was a way to make the announcement credibly.

I turn now to the game of hierarchical control. The arrival of information about the state triggers a confidence vote before elections. According to the type of assembly behavior at the confidence vote stage there are three types of perfect Bayesian equilibria of this game. In a *pooling* equilibrium both assembly types make the same decision and this decision is the same across states. In a *crosspooling* equilibrium both assembly types pool on the same decision but the decision differs across states: one crosspooling equilibrium is responsive, in the sense that the assembly votes as voters would vote if they had the information and authority (namely it reappoints if and only it the executive behaved optimally); the other is divergent from voters' interests, since reappointment is conditional on suboptimal behavior. Finally, there are two types of *semiseparating* equilibria in which congruent assemblies adopt voters' preferred decision while noncongruent assemblies mix between reappointment and dismissal in one of the states: if feedback is slow noncongruent assemblies mix in one state and vote according to their preferences in the other state; if feedback is faster noncongruent assemblies mix in one state and vote according to voter preferences in the other state. Of the three types only pooling equilibria exist for all parameter values. A sufficient condition for the responsive crosspooling equilibrium to exist is $\varphi \geq \frac{1}{R_a+1}$.

Proposition 5 *In the game of hierarchical control with the possibility of an informed electorate the equilibrium can take two forms.*

If the responsive crosspooling equilibrium does not exist the equilibrium is pooling. Congruent executives' behavior is optimal with probability one; noncongruent executives behave optimally if private benefits are below $\delta\pi(R_e + \bar{x})$ and are corrupt otherwise. At the first confidence vote the incumbent executive is reappointed with probability one in both states.

If the responsive crosspooling equilibrium exists congruent executives behave optimally; noncongruent executives are responsive if their private benefits are below $\delta(R_e + \bar{x})$ and are corrupt otherwise. At the first confidence vote the assembly reappoints the executive if and only if his behavior was optimal at the policy stage.

At the confidence vote stage of period one the two assembly types have opposite interests. If the executive behaved optimally a congruent assembly strictly prefers to reappoint,

while a noncongruent type strictly prefers to dismiss the incumbent executive. However, separation cannot occur in equilibrium because it would imply that a noncongruent assembly cannot gain reelection and so it would deviate with positive probability to mimic a congruent type.[33] Thus, in equilibrium there must be a certain degree of pooling, some of these pooling strategies more conducive to voter satisfaction than others. The proposition says that if politicians think it sufficiently likely that voters are informed at elections time $\left(\varphi \geq \frac{1}{R_a+1}\right)$ assemblies can be induced to play an equilibrium that replicates voters' preferred executive reappointment rule they would use if they were perfectly informed about the state and had direct authority to remove the executive.

Since voters now observe the result of the assembly's confidence vote along with the assembly's vote on policy, they can condition assembly reelection on the result of the confidence vote. Why don't *uninformed* voters require the assembly to oust an executive for not choosing the popular policy? Actually this *is* a possible equilibrium. However it is dominated by another equilibrium in which voters, when uninformed, choose to give the assembly free hand over how to behave at the confidence vote in period one. This latter equilibrium induces responsive executive behavior. It is supported by the following assembly reelection strategy used by voters:

- if not informed, reelect the assembly if and only if it votes on the executive's proposal as voters would vote themselves (and therefore regardless of the decision made at the confidence stage);

- if informed, reelect the assembly if and only if it voted at the policy stage *and* at the confidence stage as voters would vote themselves had they had the authority.

This reelection rule allows congruent assemblies to express their preferences without fear of electoral consequences and at the same time constrains noncongruent assemblies to use their dismissal power optimally.

To see this is an equilibrium suppose that a noncongruent assembly is in office in period one and, on the basis of the information received about the state, has established that the executive is also noncongruent: $\tilde{\pi}_e(z \mid s) = 0$. The assembly then has the option to reappoint the executive, which results in a loss of office if voters become informed, however if voters do not receive feedback the assembly stays in power and also sees its preferred policy implemented in period two. If it chooses to dismiss the executive then it will be reelected for doing what voters want but will have to content itself with the status quo under the new executive in period two. This tension is resolved in the interest of voters whenever:

$$(1 - \varphi)(R_a + 1) \leq R_a \tag{22}$$

which is precisely the sufficient condition for the existence of a responsive crosspooling equi-

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[33] Assembly behavior at the confidence vote cannot change the first period policy outcome and is thus driven solely by the prospect of reelection and possibly expectations of future policy outcomes.

librium that achieves voters' preferred executive survival rule.[34]

Interestingly, in a responsive crosspooling equilibrium the assembly does not have an incentive to revise the outcome of the first confidence vote after elections passed. In a pooling equilibrium this is not the case. The executive is reappointed before elections but this decision is reversed by a congruent assembly in period two if the executive did in fact behave suboptimally in period one.

I now compare the normative properties of the equilibria discussed in this section. The results are summarized in the following proposition.

Proposition 6 *Suppose the assembly becomes informed before elections about the effects of policy, and voters receive the same information with probability φ $(0 \leq \varphi < 1)$. If the responsive crosspooling equilibrium does not exist under hierarchical control then:*

(a) for complex issues hierarchical control dominates direct control in terms of executive discipline and executive overall performance (but not in terms of selection);

(b) for simple issues hierarchical control dominates direct control, if p is small or ρ large; otherwise, there are tradeoffs: direct control has superior executive performance if the executive has moderate reelection concerns, and hierarchical control is superior for strong executive reelection concerns.

If the responsive crosspooling equilibrium does exist under hierarchical control then for both complex and simple issues hierarchical control dominates direct control in terms of executive discipline and executive overall performance.

When $\varphi = 1$ the two institutions are outcome-equivalent.

The superiority of hierarchical control for all issues when feedback is sufficiently fast should not be surprising. The responsive crosspooling equilibrium attains the upper bound on executive discipline that can be enforced by a principal under the informational constraints of the model: the executive behaves optimally for benefits below his reservation value $\delta (R_e + \bar{x})$ and follows its preferences otherwise. Under direct control this bound is reached if and only if feedback is certain, $\varphi = 1$. I refer the reader to the appendix for a verification of this claim and here I briefly discuss the case of slow feedback when the responsive crosspooling equilibrium does not exist.

Under direct control executive performance with complex issues is increasing in the speed of feedback φ and is given by:

$$\Theta^D = 2\pi G \left[\delta \varphi (R_e + \bar{x}) \right] + 2 \left[\pi - (1 - \pi) (1 - \varphi \pi) \right] \left\{ 1 - G \left[\delta \varphi (R_e + \bar{x}) \right] \right\}. \qquad (24)$$

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[34] The necessary conditions for the existence of this equilibrium are $\varphi \geq \frac{1}{2(R_a+1)}$ and

$$\delta \left\{ \tilde{p}(z) \left(\frac{R_a}{R_a + 1} + \varphi \right) + [1 - \tilde{p}(z)] \right\} R_a \geq \max \left\{ 2\tilde{p}(z) - 1, 1 - 2\tilde{p}(z) \right\} \qquad (23)$$

for $z = A, B$. The second condition says that at the policy stage a noncongruent assembly must weakly prefer to pursue reelection over obtaining their preferred policy outcome in period one.

The corresponding expression under hierarchical control is:

$$\Theta^H = 2\pi G\left[\delta\pi\left(R_e + \bar{x}\right)\right] + 2\left[\pi - (1-\pi)\left(1-\pi^2\right)\right]\left\{1 - G\left[\delta\pi\left(R_e + \bar{x}\right)\right]\right\}. \qquad (25)$$

The first term in each equation measures executive performance when executives pool on the optimal policy while the second term captures performance when there is separation by preferred policies. I observe that separation occurs earlier under direct control since

$$\varphi < \frac{1}{R_a + 1} < \frac{1}{2} < \pi \qquad (26)$$

implying that $\Theta^H > \Theta^D$ for all voter beliefs G and so hierarchical control dominates due to superior executive discipline in period one.

With regard to simple issues, direct control cannot be dominant because if voters believe that the executive's private benefits cannot exceed $\delta\pi\left(R_e + \bar{x}\right)$ (reelection concerns are strong) then hierarchical control is strictly superior. To see this note that for executive benefits below this value discipline is at its highest under this system, $\Theta_1^H = 1$, while under direct control either the noncongruent type panders or both types pander, resulting in a loss of discipline that cannot be compensated by a possibly superior selection of types into the second period. If the executive's outside office benefits exceed $\delta\pi\left(R_e + \bar{x}\right)$ (moderate reelection concerns) direct control features better executive discipline and poorer selection, but overall is strictly superior to hierarchical control if p is not too small or ρ not too large.

5   Hierarchical Control with Partisanship

Some polities whose government is based on a hierarchical structure of delegation can see various degrees of collusion develop between the direct and the indirect agent, for instance between the legislative majority and the executive branch. Collusion may be sustained through several mechanisms. At the level of national politics the most common form of collusion is political partisanship. Leaders of political parties competing for executive power have access to instruments that can be used to secure the support of party members who win legislative seats, such as control over the funding of political campaigns or the right to selection and deselection of candidates for parliamentary elections (Strøm 2003). Collusion can also arise as a consequence of executive procedural prerogatives, such as the confidence vote procedure (Diermeier and Feddersen 1998) or the right to dissolve parliament and call for new elections.[35] Partisanship is empirically more prevalent under plurality rule, single member district, electoral systems which lead to the formation of only a few competitive

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[35] The confidence vote procedure should not be confused with the other institution of this paper, namely the vote of no confidence or censure. The former is the prerogative of the chief executive to link the survival of the government to the approval by parliament of a particularly consequential policy measure. The latter is a constitutional prerogative of parliament to dismiss the executive "at virtually any time and for whatever reason they deem sufficient" (Strøm 2003).

parties. The parliamentary scene is then one in which the chief executive and his or her cabinet are often backed by a disciplined parliamentary majority of their own party. The prime example of this political environment is United Kingdom's majoritarian parliamentary system, also known as the Westminster model (Lijphart 1999).

The fusion of executive and legislative powers was decried very early on in the modern history of democratic government by political activists and political scientists alike. In the United States the urban reform movement of the end of the nineteenth century proposed a model of city government with nonpartisan ballots, a hierarchical structure of delegation (from voters to city council to city manager), and at-large elections that were to be held separately from state and national elections. The leading premise of the reformers was that the root cause of corruption and machine politics in city halls across the country was partisan politics. In Europe at the beginning of the twentieth century Ostrogorski (1902) argued that the growing importance of parties as political actors undermined political accountability. He maintained that under a cohesive, party-based, parliamentary government the control of the executive is almost nonexistent since the responsibility of the members of parliament "disappears in that of the party" (page 714). In the language of my theoretical framework these views essentially claim that collusion between the branches of government fosters moral hazard.[36]

In this section I use the model developed so far to explore the consequences of partisanship on executive accountability in a hierarchical monitoring structure. I adopt a simple, reduced-form, approach to modeling partisanship between executive and assembly. I assume that at the beginning of period one the assembly's and the executive's types are perfectly correlated and the assembly can, at a confidence vote stage, dismiss the executive and replace him with an executive of its own type. I do not presume that a strict correlation of underlying preferences must exist between the two branches but rather that an (unmodeled) mechanism is in place that can induce one of the branches to act as if it had the exact policy preferences of the other.

The presence of partisanship along the chain of delegation does affect the equilibrium of this game and the qualitative change largely confirms the views presented above. I find that partisanship decreases the level of discipline that can be enforced on noncongruent executive types by increasing the incidence of either pandering or corruption. Furthermore, this effect is stronger the less likely voters are to become informed prior to elections. I also find that with partisanship noncongruent executives' incentives may lead them to pander to public opinion. In the case of no feedback this is the only form in which they respond

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[36] A more recent example of public suspicion of the effects of collusion between branches is this excerpt from the August 2005 ruling of Judge William Chandler, State of Delaware's Chancellor, in the case brought by Walt Disney Company's shareholders against the company's CEO Michael Eisner over a hiring decision. "... Eisner to a large extent is responsible for the failings in process that infected and handicapped the board's decision-making abilities. Eisner stacked his (and I intentionally write "his" as opposed to "the company's") board of directors with friends and other acquaintances who, though not necessarily beholden to him in a legal sense, were certainly more willing to accede to his wishes and support him unconditionally than truly independent directors."

to voter preferences. When the normative properties of the new equilibria are contrasted with those of the game of direct control, however, the instances in which hierarchical control unequivocally dominates direct control are now more limited.

I start with the case of no feedback before elections. The following proposition is the counterpart of Proposition 3 when there is partisanship in the political environment.

Proposition 7 *Suppose assembly and executive types are perfectly correlated. Then:*

(a) for complex issues hierarchical control dominates direct control in terms of executive discipline and overall executive performance (but not in terms of selection);

(b) for simple issues hierarchical control dominates direct control in terms of executive discipline and executive overall performance if and only if $p \leq \pi$. When $p > \pi$ hierarchical control dominates direct control in terms of overall executive performance if p is sufficiently small. If p is large then direct control creates better executive performance for moderate reelection concerns, and hierarchical control produces better executive performance for strong reelection concerns.

Consider the following equilibrium under hierarchical control with partisanship. Congruent executives behave optimally with probability one; noncongruent executives pander when private benefits are below $\delta \psi (G) (R_e + \bar{x})$, where:

$$\psi (G) = \sup_{[0,1]} \left\{ \psi \mid \frac{\pi p}{\pi p + G \left[\delta \psi (R_e + \bar{x}) \right] (1 - \pi) p + (1 - \pi) (1 - p)} \geq \pi \right\} \qquad (27)$$

and act corruptly otherwise. The assembly approves all executive proposals. Voters reelect the assembly if and only if the executive proposed the popular policy A and the assembly approved it. At the confidence vote stage in period two congruent assemblies, if reelected, reappoint the executive if and only if it behaved optimally in period one; noncongruent assemblies reappoint with probability $\psi (G)$ in state A and dismiss in state B if the executive behaved optimally, and in both states it reappoints with probability one if the executive did not behave optimally in period one. Newly elected assemblies do not reappoint the executive in either state. At the second policy stage the executive proposes its preferred policy and the assembly approves it.

Unlike in the case of independent types here voters condition reelection of the government at least partly on executive actions because these reveal information about the executive and, due to the correlation of types, about voters' direct agent, the assembly. Any incumbent assembly, if reelected, is indifferent between reappointing the incumbent executive and dismissing it since the replacement can be chosen to be of the assembly's type.

However, the assembly's reappointment strategy does affect its overall welfare in the game because it influences executive first period behavior and thus assembly first period payoffs. An assembly faces the following tradeoff. If it reappoints the executive with a high probability for responding to voters' preferences the executive will have a strong incentive to pander to voters thereby increasing the assembly's own chances of reelection; at the same

time this strategy decreases the likelihood that the assembly's preferred policy is adopted in period one. If the assembly reappoints the executive with a low probability for being responsive to voters' preferences the executive's incentive to pander is reduced; the assembly obtains its preferred policy more frequently but its chances of staying in power are reduced. Several reappointment strategies, in which a congruent assembly punishes the executive for introducing A in state B and a noncongruent assembly punishes the executive for introducing A in state A, thus seem reasonable.[37] In the equilibrium above both types of assembly punish to some extent the executive for behaving in a manner that affects assembly policy payoffs.

A newly elected assembly can always expect its preferred policy outcome in period two by appointing an executive of its own type. For this reason a newly elected assembly can reappoint the incumbent executive in an equilibrium only if the incumbent' type was revealed within that state and is identical to that of the incoming assembly. This requires that at least one executive type chooses one policy with probability one in that state.

It is useful to compare this result with Proposition 3. There hierarchical control with independent types dominates both in terms of discipline and selection. In an environment with partisanship the comparative advantage of hierarchical control remains discipline because congruent executives are allowed to follow their preferences; however selection deteriorates because it is driven by an assembly reelection rule that requires that the popular policy be adopted. This reelection rule leads to the replacement of a congruent government in state B. Without partisanship this event cannot take place because in that environment voters condition reelection of the assembly exclusively on its voting behavior, which is responsive with probability one, and further the assembly conditions reappointment of the executive on optimal behavior. Thus the probability of a Type I error when types are independent is zero.

I now turn to the case of positive feedback in period one.

Proposition 8 *If $\frac{1}{\delta(R_a+1)} \leq \varphi < 1$ then:*

(a) for complex issues hierarchical control dominates direct control in terms of executive discipline and executive overall performance (but not in terms of selection);

(b) for simple issues hierarchical control dominates direct control in terms of overall executive performance if p is small or ρ is large. Otherwise, direct control is superior in terms of executive performance for moderate reelection concerns, and hierarchical control is superior for strong reelection concerns.

When $\varphi = 1$ the two institutions are outcome-equivalent.

Consider the following equilibrium under hierarchical control with partisanship and the possibility of an informed electorate. Congruent executives behave optimally with probability

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[37] It is perhaps not reasonable to expect that a congruent assembly penalizes the executive for introducing A in state A because this choice benefits the assembly both in terms of policy and in terms of reelection. Analogously a noncongruent assembly should not be expected to punish the executive for introducing A in state B.

one; noncongruent executives behave optimally if $X < \delta\varphi\left(R_e + \bar{x}\right)$, pander if $\delta\varphi\left(R_e + \bar{x}\right) < X < \delta\psi\left(G\right)\left(R_e + \bar{x}\right)$, where:

$$\psi\left(G\right) = \sup_{[0,1]}\left\{\psi \mid \frac{\pi p}{\pi p + G\left[\delta\psi\left(R_e + \bar{x}\right)\right]\left(1 - \pi\right)p + \left\{1 - G\left[\delta\varphi\left(R_e + \bar{x}\right)\right]\right\}\left(1 - \pi\right)\left(1 - p\right)} \geq \pi\right\}$$

(28)

and are corrupt otherwise. The assembly approves all executive proposals. After learning the state the assembly reappoints the executive if and only if it introduced the optimal alternative. If voters have not received feedback they reelect the assembly if and only if the executive introduced the popular policy A and the assembly approved it. If voters are informed about the state they reelect the assembly if and only if the executive introduced the optimal policy and the assembly approved it. In period two a reelected congruent assembly reappoints the executive if and only if it introduced the optimal policy in period one; a reelected noncongruent assembly reappoints the executive with probability $\psi\left(G\right)$ in state A after proposal A and with probability one otherwise. A newly elected assembly does not reappoint the incumbent executive. At the second policy stage the executive proposes its preferred policy and the assembly approves it.

This equilibrium exists for all distributions G if and only if $\varphi \geq \frac{1}{\delta(R_a+1)}$. The reason for this restriction is that if state B is very likely a noncongruent assembly may not find it in its interest to approve an executive proposal of B, thereby undoing the pooling that takes place at the voting stage in period one. Suppose the assembly knows the state is B. If B is proposed in period one the assembly is not going to be reelected for approving it unless this policy is optimal and voters have received feedback indicating so. However, if the assembly blocks B it will lose power for certain but is content with the status quo. The assembly then approves B when it knew the state were B if and only if $\varphi\left[-1 + \delta\left(R_a + 1\right)\right] + \left(1 - \varphi\right)\left(-1\right) \geq 0$ thus mimicking the behavior of the congruent type.

6 Conclusion

The relative merits of alternative *institutions* for disciplining and selecting public officials is an important yet little studied issue in political economy. This paper has made a step towards understanding how two basic accountability structures work to reduce the agency loss inherent in any delegation relationship in which the motives and actions of the representatives cannot be completely known by the principals. At first sight, a hierarchical accountability structure seems to only take us further away from the ideal "government by the people" conception of democracy, as it reduces voters' ability to hold the executive accountable for its policy choices. I have developed a political agency model to show that this particular institutional configuration can in fact achieve superior de facto accountability despite the additional agency problem that arises between the executive and the assembly.

The key to this conclusion is a close look at the effects of the *informational asymmetries* between principals and their agents. When the executive has policy expertise and voters have

few opportunities (or incentives) to acquire information the electoral mechanism can sometimes work against voters' interests by distorting the incentives of congruent politicians. This points to the need for institutions whose performance relies less on voter involvement. One common alternative is hierarchical control: voters delegate executive control to a representative body that is better informed than themselves. To isolate the effect of the accountability structure on executive behavior I abstracted from other institutional differences. Finally the paper presents evidence that directly elected executives pander more to public opinion than appointed executives when policy issues are simple, as predicted by the model.

My results support the view that political agency problems are only partially resolved through the mechanism of competitive elections. As we have seen part of the logic from existing electoral models with a single politician and a single voter extends to my framework and part of it does not; see in particular Section 3 where the Maskin and Tirole (2004) intuition is reversed. This alone suggests that a more comprehensive understanding of the relationship between voters and their representatives could be gained by augmenting the standard principal-agent framework with the finer institutional details of this relationship. Then we can address more rigorously the question of how different constitutional rules shape public choices.

To make further progress in this direction one could extend the analysis along several dimensions. First, removing the restriction to two periods would allow an analysis of the effects of term limits on executive behavior. At the level of national politics, although there is great variation in the restrictions placed on politicians' term lengths, a common arrangement is to limit chief executives to two terms and impose no limits on the term lengths of legislators. It would be feasible to adapt my framework in order to understand the desirability of such restrictions on tenure. Second, enriching the policy space would permit an analysis of issues that were ignored in this paper. How do voters behave when they care about several aspects of public policy? Are they able to disentangle responsibility for each issue that affects their welfare? How should decision powers be allocated among branches in order to maximize accountability for outcomes? A larger policy space would also allow the application of the model to specific public policy decisions such as fiscal policy and foreign policy. A third extension would be to relax the assumption of an exogenous pool of candidates. The process of candidate selection is not random but is in large part itself determined by the institutional structure of government. Political parties may also play an important role in selecting candidates for high office and in holding them accountable thereafter. Fourth, the information structure itself may be endogenous to the accountability structure. It is possible that when voters are empowered to hold the executive directly accountable they expend more effort in becoming informed. These seem natural directions for future research on political agency.

Appendix

Proof of Proposition 1

At the second policy stage the executive proposes his preferred policy, for which he receives a payoff $X_2 > 0$, whereas introducing the alternative policy yields no return. Congruent assemblies will approve the executive's proposal if and only if his reputation $\tilde{\pi}_e(z \mid s)$ is above a half, receiving a payoff $2\tilde{\pi}_e(z \mid s) - 1$; a noncongruent assembly will adopt the opposite strategy.

Now consider the first period. In any equilibrium it must be that both assembly types approve the executive's proposal with equal probability. To see this consider the subgame starting after a proposal A.[38] Suppose the congruent type were to approve A more often than the noncongruent type. Then, because $\tilde{\pi}_a(A) > \pi > \tilde{\pi}_a(B)$ voters would reelect if and only if A were approved. Then a noncongruent assembly will choose to approve A because it yields for him

$$1 - 2\tilde{p}(A) + \delta\left\{R_a + \tilde{p}(A)\max\left\{1 - 2\tilde{\pi}_e(A \mid A), 0\right\} + [1 - \tilde{p}(A)]\max\left\{1 - 2\tilde{\pi}_e(A \mid B), 0\right\}\right\} \tag{29}$$

which is positive, even if he thinks A is the optimal policy, by assumption (5). This however is in in contradiction to the supposition that the congruent type approves A more often. Similarly, if the congruent type were to approve A less often than a noncongruent type, then voters would reelect if and only if A were blocked which will prompt a noncongruent type to block A with probability one, a contradiction. We conclude that in any equilibrium $\tilde{\pi}_a(z, v) = \pi$ for all z, v and voters are indifferent between reelecting the assembly or not.

At the beginning of period one the incumbent executive's proposal strategy depends on his expectations of serving a second term in office. Let $\bar{\rho}_e(z \mid s)$ denote the ex ante equilibrium probability that the executive is reelected if he proposes policy z. This expected likelihood of reelection is a function of voters' reelection strategies as well as of assemblies' equilibrium voting strategies:

$$\begin{aligned}\bar{\rho}_e(z \mid s) &= \pi\left\{\rho_e(z, Y \mid s)\eta(z, 1) + \rho_e(z, N \mid s)[1 - \eta(z, 1)]\right\} + \\ &\quad + (1 - \pi)\left\{\rho_e(z, Y \mid s)\eta(z, -1) + \rho_e(z, N \mid s)[1 - \eta(z, -1)]\right\}.\end{aligned} \tag{30}$$

However, since voters do not know the state at election time, the best they can do is to condition their voting strategies on the observed policy decisions (z, v). Therefore:

$$\bar{\rho}_e(z \mid A) = \bar{\rho}_e(z \mid B) \quad \text{for } z = A, B. \tag{31}$$

Let $\Delta(s, \theta_e)$ denote the change in expected payoff for an executive of type θ_e in state s

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[38] The argument for the subgame starting after a proposal B is completely symmetric.

that occurs by a deviation from proposing alternative B to proposing alternative A :

$$\Delta\left(s, \theta_e\right) = \bar{U}_e\left(A, s, X \mid \theta_e\right) - \bar{U}_e\left(B, s, X \mid \theta_e\right) \tag{32}$$

where

$$
\begin{aligned}
\bar{U}_e\left(z, s, x \mid \theta_e\right) = \ & x\left[\mathbb{I}\left\{z = s\right\}\left(1 + \theta_e\right) + \mathbb{I}\left\{z \neq s\right\}\left(1 - \theta_e\right)\right] + \\
& + \delta\bar{\rho}_e\left(z \mid s\right)\left\{2R_e + \bar{x}\left[\mathbb{I}\left\{z_2 = S_2\right\}\left(1 + \theta_e\right) + \mathbb{I}\left\{z_2 \neq S_2\right\}\left(1 - \theta_e\right)\right]\right\}
\end{aligned}
\tag{33}
$$

is the executive's lifetime expected utility at the beginning of period one after a benefit draw $X_1 = x$. For executive state-types (A, θ_e) and (B, θ_e) these changes in expected payoffs are written as:

$$
\begin{aligned}
\Delta\left(A, \theta_e\right) &= X\theta_e + \delta\left[\bar{\rho}_e\left(A \mid A\right) - \bar{\rho}_e\left(B \mid A\right)\right]\left(R_e + \bar{x}\right) \tag{34} \\
\Delta\left(B, \theta_e\right) &= -X\theta_e + \delta\left[\bar{\rho}_e\left(A \mid B\right) - \bar{\rho}_e\left(B \mid B\right)\right]\left(R_e + \bar{x}\right) \tag{35}
\end{aligned}
$$

However, using equation (31) we can see that $\Delta\left(A, 1\right) = \Delta\left(B, -1\right)$ and so we can conclude that state-types $(A, 1)$ and $(B, -1)$ have equally strong incentives to propose A. In terms of their strategies this observation can be expressed as:

$$\alpha\left(A, 1\right) = \mathbb{P}\left\{\Delta\left(A, 1\right) > 0\right\} = \mathbb{P}\left\{\Delta\left(B, -1\right) > 0\right\} = \alpha\left(B, -1\right). \tag{36}$$

Analogously, executive state-types $(B, 1)$ and $(A, -1)$ have the same incentives to introduce bill A. Furthermore, their incentives are weaker than those of state-types $(A, 1)$ and $(B, -1)$ because

$$
\begin{aligned}
\Delta\left(A, 1\right) &= X + \delta\left[\bar{\rho}_e\left(A \mid A\right) - \bar{\rho}_e\left(B \mid A\right)\right]\left(R_e + \bar{x}\right) > \tag{37} \\
&> -X + \delta\left[\bar{\rho}_e\left(A \mid B\right) - \bar{\rho}_e\left(B \mid B\right)\right]\left(R_e + \bar{x}\right) = \Delta\left(B, 1\right).
\end{aligned}
$$

We conclude that
$$\alpha\left(A, 1\right) = \alpha\left(B, -1\right) > \alpha\left(B, 1\right) = \alpha\left(A, -1\right). \tag{38}$$

We next claim that if the executive's prior reputation π is maintained or improves, the best response of voters is to reelect the executive regardless of the actions taken by the assembly. By contrast, if the executive's prior reputation deteriorates, i.e. falls below π, voters may or may not reelect him depending on their beliefs about the assembly's type.

First, we show that an executive's reputation strengthens if the popular policy A is proposed and weakens otherwise. The equilibrium beliefs that the executive is congruent given that a proposal A, respectively B, was made at the beginning of period one are:

$$\tilde{\pi}_e\left(A\right) = \frac{\alpha\left(A, 1\right)\pi p + \alpha\left(B, 1\right)\pi\left(1 - p\right)}{\alpha\left(A, 1\right)\left[\pi p + \left(1 - \pi\right)\left(1 - p\right)\right] + \alpha\left(B, 1\right)\left[\pi\left(1 - p\right) + \left(1 - \pi\right)p\right]} \tag{39}$$

and

$$\tilde{\pi}_e(B) = \frac{[1-\alpha(A,1)]\pi p + [1-\alpha(B,1)]\pi(1-p)}{[1-\alpha(A,1)][\pi p + (1-\pi)(1-p)] + [1-\alpha(B,1)][\pi(1-p)+(1-\pi)p]}. \quad (40)$$

Observe that

$$\tilde{\pi}_e(A) > \pi \quad \text{iff} \quad \tilde{\pi}_e(B) < \pi \quad \text{iff} \quad [\alpha(A,1)-\alpha(B,1)]p > [\alpha(A,1)-\alpha(B,1)](1-p) \quad (41)$$

the last inequality of which, by equation (38) and $p > \frac{1}{2}$, can be seen to be true.

Second, upon learning the state at the beginning of period two, assemblies' beliefs about the executive's type are further updated as follows:

$$\tilde{\pi}_e(A \mid A) = \frac{\alpha(A,1)\pi}{\alpha(A,1)\pi + \alpha(B,1)(1-\pi)} \quad (> \pi \text{ because } \alpha(A,1) > \alpha(B,1)) \quad (42)$$

$$\tilde{\pi}_e(A \mid B) = \frac{\alpha(B,1)\pi}{\alpha(B,1)\pi + \alpha(A,1)(1-\pi)} \quad (< \pi \text{ because } \alpha(A,1) > \alpha(B,1)). \quad (43)$$

It is useful to record at this point a result that will be important later, namely that, by equation (42) and $\pi > \frac{1}{2}$, in the second period congruent assemblies will approve, and noncongruent assemblies will block, the submitted proposal if it was learnt that in period one the executive behaved optimally.

Finally we observe that as long as the assembly's reputation remains above average, it is optimal for voters to reelect an executive that introduced the popular policy A. Voters' expected payoff from reelecting both the executive and the assembly is larger than the expected payoff from reelecting only the assembly:

$$\tilde{\pi}_a \{\tilde{p}(A)[2\tilde{\pi}_e(A \mid A) - 1] + [1-\tilde{p}(A)]\max\{2\tilde{\pi}_e(A \mid B) - 1, 0\}\} +$$
$$+ (1-\tilde{\pi}_a)[1-\tilde{p}(A)]\min\{2\tilde{\pi}_e(A \mid B) - 1, 0\}$$
$$> \tilde{\pi}_a\{\tilde{p}(A)[2\tilde{\pi}_e(A \mid A) - 1] + [1-\tilde{p}(A)][2\tilde{\pi}_e(A \mid B) - 1]\} \quad (44)$$
$$= \tilde{\pi}_a[2\tilde{\pi}_e(A) - 1] \quad (45)$$
$$> \tilde{\pi}_a(2\pi - 1) \qquad \text{for all } p, \pi > \frac{1}{2}.$$

The first inequality is immediate if we observe that the term $\min\{2\tilde{\pi}_e(A \mid B) - 1, 0\}$ receives weight $(1-\tilde{\pi}_a)[1-\tilde{p}(A)]$ on the left hand side and larger weight $\tilde{\pi}_a[1-\tilde{p}(A)]$ on the right hand side, with the other terms keeping the same weights. The equality follows from the definitions of $\tilde{p}(A)$ and $\tilde{\pi}_e(A \mid A)$. The last inequality follows directly from equation (41).

We can then conclude that if $\tilde{\pi}_a(A,v) \geq \pi$ then reelecting both or only the executive are optimal responses for voters, whereas if $\tilde{\pi}_a(A,v) < \pi$ voters reelect the executive only. We have thus shown that in any equilibrium voters necessarily reelect the executive for

introducing the popular policy A regardless of the assembly's vote on this bill:

$$\rho_e(A, Y) = \rho_e(A, N) = 1. \tag{46}$$

By equations (31), (34) and (35) it then follows that executive state-types $(A, 1)$ and $(B, -1)$ will always propose the popular policy:

$$\alpha(A, 1) = \alpha(B, -1) = 1. \tag{47}$$

The executive's posterior reputation after proposing the unpopular policy becomes, by equation (40):

$$\tilde{\pi}_e(B) = \frac{\pi(1-p)}{\pi(1-p) + (1-\pi)p}. \tag{48}$$

Proposal strategies of executive state-types $(B, 1)$ and $(A, -1)$ depend on voters' reelection rule after seeing an unpopular policy proposed. If

$$\pi\tilde{\pi}_e(B) - (1-\pi)[1 - \tilde{\pi}_e(B)] \geq \pi(2\pi - 1) \tag{49}$$

the executive is reelected regardless of his proposal thus $\alpha(B, 1) = 0$; if (49) does not hold he is not reelected for proposing B and then $\alpha(B, 1) = G[\delta(R_e + \bar{x})]$.

Finally we characterize behavior at the policy stage in period two. Since $\tilde{\pi}_e(A \mid A) > \pi$ and $\tilde{\pi}_e(B \mid B) = 1$ congruent assemblies approve, and noncongruent assemblies block, the executive's proposal if it behaved optimally in period one. Since $\tilde{\pi}_e(B \mid A) = 0$ congruent assemblies block, and noncongruent assemblies approve, the incumbent's second period proposal if the state was revealed to have been A after a first period proposal B. In equilibria with no distortion of congruent types' behavior we have $\tilde{\pi}_e(A \mid B) = 0$ and the second period strategy for voting on policy is as before. If congruent types pander with positive probability then $\tilde{\pi}_e(A \mid B) = \frac{\alpha(B,1)\pi}{\alpha(B,1)\pi + (1-\pi)}$ and the previous assembly strategies obtain if and only if $\alpha(B, 1) \geq \frac{1-\pi}{\pi}$.

Proof of Proposition 2

At the second policy stage the executive faces no electoral constraint and will propose his preferred policy regardless of the state. The assemblies' responses thus only depend on their beliefs about the executive's type: if the incumbent has won all previous confidence votes his proposal is approved by a congruent assembly, and blocked by a noncongruent assembly, if and only if his reputation is above a half; if a new executive has been appointed at the beginning of period two his bill will be approved by a congruent assembly but blocked by a noncongruent assembly. Assembly voting behavior at the first policy stage is similar to that under direct control: both assembly types approve the proposal with equal probability and voters are indifferent between reelecting the assembly and not reelecting. See the proof of Proposition 1.

We next show that the reputation of an executive who proposed the optimal policy in period one necessarily strengthens. First, note that a congruent executive is more likely than a noncongruent type to propose the optimal policy in either state. If as before $\Delta(s, \theta_e)$ denotes the change in the executive's expected payoff generated by a deviation from proposing B to proposing A, we have:

$$\Delta(A, \theta_e) = X\theta_e + \delta \left[\bar{\rho}_e(A \mid A) - \bar{\rho}_e(B \mid A)\right](R_e + \bar{x}) \tag{50}$$

where

$$\bar{\rho}_e(z \mid s) = \pi\gamma_2(z, 1 \mid s) + (1 - \pi)\gamma_2(z, -1 \mid s) \tag{51}$$

is the ex ante probability that the executive is reappointed for proposing policy z in state s. From equation (50) $\Delta(A, 1) > \Delta(A, -1)$ implying that the probability that a congruent type proposes A in state A is larger than the corresponding probability for a noncongruent type $\alpha(A, 1) > \alpha(A, -1)$. Analogously, observing that $\Delta(B, 1) < \Delta(B, -1)$ leads to the conclusion that $\alpha(B, 1) > \alpha(B, -1)$.

Given these incentives, assemblies equilibrium beliefs about the executive's type will be revised to reflect the greater propensity of congruent executives to introduce optimal policies. Upon their learning the state at the beginning of period two assemblies update their beliefs in the direction of more confidence that the executive is of the congruent type if it was learnt that the first bill was optimal and less confidence otherwise:

$$\tilde{\pi}_e(A \mid A) = \frac{\alpha(A, 1)\pi}{\alpha(A, 1)\pi + \alpha(A, -1)(1 - \pi)} > \pi \tag{52}$$

$$\tilde{\pi}_e(B \mid A) = \frac{[1 - \alpha(A, 1)]\pi}{[1 - \alpha(A, 1)]\pi + [1 - \alpha(A, -1)](1 - \pi)} < \pi \tag{53}$$

and

$$\tilde{\pi}_e(A \mid B) = \frac{\alpha(B, 1)\pi}{\alpha(B, 1)\pi + \alpha(B, -1)(1 - \pi)} < \pi \tag{54}$$

$$\tilde{\pi}_e(B \mid B) = \frac{[1 - \alpha(B, 1)]\pi}{[1 - \alpha(B, 1)]\pi + [1 - \alpha(B, -1)](1 - \pi)} > \pi. \tag{55}$$

At the confidence vote stage of period two congruent assemblies will then reappoint the executive if and only if its behavior was optimal whereas noncongruent assemblies strictly prefer to reappoint an executive whose behavior was suboptimal but are indifferent between reappointing and dismissing an executive that behaved optimally. There are thus multiple equilibria depending on the choice of noncongruent assemblies at the confidence vote stage. The equilibrium that maximizes executive performance is the one in which noncongruent assemblies reappoint an executive that behaved optimally.

We can now solve for executive equilibrium behavior at the beginning of period one. The

equilibrium probabilities that the executive proposes policy A by executive state-type are:

$$\alpha(A, 1) = 1 \tag{56}$$

$$\alpha(B, 1) = 0 \tag{57}$$

$$\alpha(A, -1) = \mathbb{P}\{X < \delta\pi(R_e + \bar{x})\} \quad (> 0) \tag{58}$$

$$\alpha(B, -1) = 1 - \alpha(A, -1). \tag{59}$$

Note that congruent executives' behavior suffers no distortion whereas noncongruent types are responsive to the electorate's preferences with positive probability $\alpha(A, -1)$ and act corruptly if current benefits are large.

The beliefs that are consistent with these equilibrium executive proposal strategies are then found by making the necessary substitutions in equations (52) - (55). We infer that at the first policy stage the executive's posterior reputation improves if the popular policy is introduced and weakens otherwise:

$$\tilde{\pi}_e(A) = \frac{\pi p}{\alpha(A, -1)p + [1 - \alpha(A, -1)][\pi p + (1 - \pi)(1 - p)]} \quad (> \pi) \tag{60}$$

$$\tilde{\pi}_e(B) = \frac{\pi(1 - p)}{\alpha(A, -1)(1 - p) + [1 - \alpha(A, -1)][(1 - \pi)p + \pi(1 - p)]} \quad (< \pi). \tag{61}$$

At the beginning of the second period, upon learning the state, assemblies' beliefs are given by:

$$\tilde{\pi}_e(A \mid A) = \tilde{\pi}_e(B \mid B) = \frac{\pi}{\pi + \alpha(A, -1)(1 - \pi)} \tag{62}$$

$$\tilde{\pi}_e(A \mid B) = \tilde{\pi}_e(B \mid A) = 0. \tag{63}$$

Note that the executive's type is completely revealed following a suboptimal proposal. The implication for second period assembly behavior at the policy stage is that if the incumbent executive survived the no confidence vote a congruent assembly blocks, and a noncongruent assembly approves, with probability one the second period bill if the first period bill was learnt to have been suboptimal.

Proof of Proposition 3

If issues are complex the executive acts unconstrained under direct control and is reelected with probability one. Executive discipline and selection are then equal to the expected quality of a new executive:[39]

$$\Theta_1^D = \Theta_2^D = 2\pi - 1. \tag{64}$$

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[39] The common value in equation (64) can also be interpreted as voters' expected utility when the technical decision is made by an unaccountable official.

Under hierarchical control there is pooling on optimal behavior if $0 < X < \delta\pi\left(R_e + \bar{x}\right)$ and complete separation otherwise. Discipline and selection are, respectively:

$$\Theta_1^H = G\left[\delta\pi\left(R_e + \bar{x}\right)\right] + (2\pi - 1)\left\{1 - G\left[\delta\pi\left(R_e + \bar{x}\right)\right]\right\} \tag{65}$$

and

$$\Theta_2^H = (2\pi - 1)\,G\left[\delta\pi\left(R_e + \bar{x}\right)\right] + \left\{\pi + (1 - \pi)\left[\pi\left(2\pi - 1\right) - (1 - \pi)\right]\right\}\left\{1 - G\left[\delta\pi\left(R_e + \bar{x}\right)\right]\right\} \tag{66}$$

both strictly larger than the corresponding expressions under direct control.

For simple issues executive discipline and selection under direct control are, respectively:

$$\Theta_1^D = (2p - 1)\,G\left[\delta\left(R_e + \bar{x}\right)\right] + (2\pi - 1)\left\{1 - G\left[\delta\left(R_e + \bar{x}\right)\right]\right\} \tag{67}$$

and

$$\begin{aligned}\Theta_2^D \;=\; & (2\pi - 1)\,G\left[\delta\left(R_e + \bar{x}\right)\right] + \\ & + \left\{(1 - p - \pi) + \left[\pi\left(1 - p\right) + (1 - \pi)\,p\right]\left(2\pi - 1\right)\right\}\left\{1 - G\left[\delta\left(R_e + \bar{x}\right)\right]\right\}.\end{aligned} \tag{68}$$

Then $\Theta_1^H > \Theta_1^D$ for all G if and only if $p \leq \pi$. Furthermore, when this condition holds it is also true that $\Theta_2^H > \Theta_2^D$ for all G. When $p > \pi$ neither institution is dominant on both counts because if executive rents from outside office are low (reelection concerns are strong), $0 < X < \delta\pi\left(R_e + \bar{x}\right)$, hierarchical control is superior in terms of discipline while if they are larger (reelection concerns are moderate), $\delta\pi\left(R_e + \bar{x}\right) < X < \delta\left(R_e + \bar{x}\right)$, direct control is superior in terms of discipline. Intuitively if p is larger than π it is better in expectation to have the politicians pander (resulting in an expected payoff of $2p - 1$) than to let politicians decide according to their preferences (which yields a payoff $2\pi - 1$). For these parameter values pandering can be thought of as an intermediate form of responsiveness.[40]

If $p > \pi$ direct control cannot be dominant in terms of overall executive performance because if the executive's reelection concerns are strong hierarchical control does strictly better by this criterion. However, hierarchical control can remain dominant in terms of overall executive performance if p is not too large because even if voters believe that reelection concerns are moderate hierarchical control can do at least as well as direct control overall due to its superior selection properties.

It is also worth noting that even when the executive's reelection concerns are moderate $\left(\delta\pi\left(R_e + \bar{x}\right) < X < \delta\left(R_e + \bar{x}\right)\right)$, and consequently complete separation of types occurs under

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[40] The distinction between pandering and responsiveness is often blurred in the political agency literature. For instance Jacobs and Shapiro (2000) define pandering as following centrist voters' preferences. We use the terminology of Canes-Wrone et al. (2001) and Maskin and Tirole (2004) as is apparent from the definitions given in section two.

hierarchical control, selection is superior under this mechanism:

$$\Theta_2^H \mid_{\delta\pi(R_e+\bar{x})<X<x_M} - \Theta_2^D = 2\pi^2 (1 - \pi). \tag{69}$$

This failure of direct control of effecting selection stems from the very institutional structure of direct delegation since it does not allow for the removal of the agent after elections even if his type has been completely revealed.

Proof of Proposition 4

At the second policy stage executives propose their preferred policies. If the incumbent was not reelected, congruent assemblies approve, and noncongruent assemblies block, the proposal of the newly elected executive. If the incumbent was reelected congruent assemblies approve, and noncongruent assemblies block, his second period proposal if and only if $\tilde{\pi}_e (z_1 \mid s_1) \geq \frac{1}{2}$.

Now consider the first period. In any equilibrium it must be that both assembly types approve the executive's proposal with equal probability. To see this consider the subgame starting after a proposal A.[41] Suppose the congruent type were to approve A more often than the noncongruent type. Then, because $\tilde{\pi}_e (A) > \pi > \tilde{\pi}_e (B)$ voters would reelect if and only if A were approved. Then a noncongruent assembly will choose to approve A because it yields for him

$$1 - 2\tilde{p}(A) + \delta \{R_a + \tilde{p}(A) \max \{1 - 2\tilde{\pi}_e (A \mid A) , 0\} + [1 - \tilde{p}(A)] \max \{1 - 2\tilde{\pi}_e (A \mid B) , 0\}\} \tag{70}$$

which is positive, even if he thinks A is the optimal policy,.by assumption (5). This however is in in contradiction to the supposition that the congruent type approves A more often. Similarly, if the congruent type were to approve A less often than a noncongruent type, then voters would reelect if and only if A were blocked which will prompt a noncongruent type to block A with probability one, a contradiction. We conclude that in any equilibrium $\tilde{\pi}_a (z, v \mid s) = \tilde{\pi}_a (z, v) = \pi$ for all z, v, s and voters are indifferent between reelecting the assembly or not.[42]

We next argue that when voters have feedback they reelect the executive if and only if it introduced the optimal policy in period one. Consider executives in state A. They propose A if $\Delta (A, \theta_e) > 0$ where:

$$\Delta (A, \theta_e) = X\theta_e + \delta \{\varphi [\bar{p}_e (A \mid A) - \bar{p}_e (B \mid A)] + (1 - \varphi) [\bar{p}_e (A) - \bar{p}_e (B)]\} (R_e + \bar{x}). \tag{71}$$

Note, however, that $\Delta (A, 1) - \Delta (A, -1) = 2X > 0$ which implies, by full support of the distribution of X, that in state A the congruent type proposes A more often than the

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[41] The argument for the subgame starting after a proposal B is completely symmetric.
[42] The equilibrium that voters prefer is the one in which both assemblies pool on the strategy: approve A if and only if $\tilde{p}(A) \geq \frac{1}{2}$.

noncongruent type: $\alpha(A,1) > \alpha(A,-1)$ and voters will consequently respond by reelecting the executive if and only if A, the optimal policy, was proposed. Similarly

$$\Delta(B,\theta_e) = -X\theta_e + \delta\left\{\varphi\left[\bar{\rho}_e(A\mid B) - \bar{\rho}_e(B\mid B)\right] + (1-\varphi)\left[\bar{\rho}_e(A) - \bar{\rho}_e(B)\right]\right\}(R_e + \bar{x}).$$

$$(72)$$

implies $\Delta(B,1) - \Delta(B,-1) = -2X < 0$ and therefore $\alpha(B,1) < \alpha(B,-1)$ and voters reelect if and only if B, the optimal policy, was proposed in state B. Assembly posterior beliefs about the incumbent's type then satisfy:

$$\tilde{\pi}_e(z\mid s) > \pi \quad \text{iff} \quad z = s. \tag{73}$$

Two immediate implications of this voting behavior are $\alpha(A,1) \geq \alpha(B,-1)$ (with equality iff $\varphi = 0$) and $\alpha(B,1) \leq \alpha(A,-1)$ (with equality iff $\varphi = 0$) which are sufficient to conclude that in any equilibrium proposing the popular policy results in posterior beliefs that place larger probability on state A :

$$\tilde{p}(A) = \frac{\alpha(A,1)\pi p + \alpha(B,1)(1-\pi)p}{\alpha(A,1)\pi p + \alpha(B,1)\pi(1-p) + \alpha(A,-1)(1-\pi)p + \alpha(B,-1)(1-\pi)(1-p)} > p.$$

$$(74)$$

It remains to determine voters' reelection rules when they do not have feedback and executives' proposal strategies in period one. For this we need to make a simple but important observation. Suppose that after a first period proposal z the executive's reputation did not weaken $\tilde{\pi}_e(z) \geq \pi$. Then we claim that the executive must in equilibrium be reelected with probability one regardless of the assembly's vote. This follows because:

$$
\begin{aligned}
& \pi\left\{\tilde{p}(z)\max\{2\tilde{\pi}_e(z\mid A) - 1, 0\} + [1 - \tilde{p}(z)]\max\{2\tilde{\pi}_e(z\mid B) - 1, 0\}\right\} + \\
& + (1-\pi)\left\{\tilde{p}(z)\max\{1 - 2\tilde{\pi}_e(z\mid A), 0\} + [1 - \tilde{p}(z)]\max\{1 - 2\tilde{\pi}_e(z\mid B), 0\}\right\} \\
> \ & \pi\left\{\tilde{p}(z)[2\tilde{\pi}_e(z\mid A) - 1] + [1 - \tilde{p}(z)][2\tilde{\pi}_e(z\mid B) - 1]\right\} & (75) \\
= \ & \pi[2\tilde{\pi}_e(z) - 1] & (76) \\
\geq \ & \tilde{\pi}_a[2\pi - 1]. & (77)
\end{aligned}
$$

Intuitively, the first inequality simply says that, as long as the assembly is more likely to be congruent than noncongruent, having an informed assembly with veto power over the executive's decisions leads to greater voter welfare than if the assembly were not informed. Note also that even if $\tilde{\pi}_e(z) = \pi$ voters strictly prefer to reelect the executive, despite the fact that they may have to replace the assembly. This is because the information generated by the executive's first period proposal is valuable by making it easier for congruent assemblies to check executive proposal power in the second period.

We now show that $\tilde{\pi}_e(A) > \pi > \tilde{\pi}_e(B)$ in all equilibria. Suppose this were not true. Then $\tilde{\pi}_e(B) \geq \pi$ and, by the previous argument, the executive is reelected with probability one for introducing policy B regardless of the assembly vote on it. Since $\bar{\rho}_e(B) = 1$, the

following are the equilibrium proposal strategies of each executive state-type:

$$\alpha\left(A,1\right) \;=\; 1 - G\left\{\delta\left\{-\varphi + \left(1-\varphi\right)\left[1 - \bar{\rho}_e\left(A\right)\right]\right\}\left(R_e + \bar{x}\right)\right\} \tag{78}$$

$$\alpha\left(B,1\right) \;=\; G\left\{\delta\left\{-\varphi - \left(1-\varphi\right)\left[1 - \bar{\rho}_e\left(A\right)\right]\right\}\left(R_e + \bar{x}\right)\right\} \tag{79}$$

$$\alpha\left(A,-1\right) \;=\; G\left\{\delta\left\{\varphi - \left(1-\varphi\right)\left[1 - \bar{\rho}_e\left(A\right)\right]\right\}\left(R_e + \bar{x}\right)\right\} \tag{80}$$

$$\alpha\left(B,-1\right) \;=\; 1 - G\left\{\delta\left\{\varphi + \left(1-\varphi\right)\left[1 - \bar{\rho}_e\left(A\right)\right]\right\}\left(R_e + \bar{x}\right)\right\} \tag{81}$$

Note that $\alpha\left(A,-1\right) + \alpha\left(B,-1\right) \leq 1$ and either $0 \leq \alpha\left(A,-1\right) < \alpha\left(A,1\right) = 1$ or $0 = \alpha\left(A,-1\right) < \alpha\left(B,-1\right) \leq \alpha\left(A,1\right) \leq 1$. In both cases we have

$$\alpha\left(A,1\right)p + \alpha\left(B,1\right)\left(1-p\right) > \alpha\left(A,-1\right)p + \alpha\left(B,-1\right)\left(1-p\right) \tag{82}$$

which implies $\tilde{\pi}_e\left(B\right) < \pi$, a contradiction to my supposition. We conclude that in all equilibria $\tilde{\pi}_e\left(A\right) > \pi > \tilde{\pi}_e\left(B\right)$ and when voters do not have feedback they reelect the executive with probability one for introducing the popular policy. As in Proposition 1 this reelection rule creates strong incentives to pander if the probability of feedback is low enough. From equation (71) it follows immediately that $\alpha\left(A,1\right) = 1$ and so $\tilde{\pi}_e\left(B \mid A\right) = 0$.

Voters' strategy for reelecting an executive that proposed B when they do not have feedback can take several forms depending on the parameters of the model. If feedback is slow, $0 \leq \varphi < \frac{1}{2}$, then there are two types of equilibria. First, voters reelect the executive with probability $\bar{\rho}_e\left(B\right)$, where $\frac{1-2\varphi}{1-\varphi} \leq \bar{\rho}_e\left(B\right) \leq 1$, and executives' proposal strategies are:

$$\alpha\left(A,1\right) \;=\; 1 \tag{83}$$

$$\alpha\left(B,1\right) \;=\; 0 \tag{84}$$

$$\alpha\left(A,-1\right) \;=\; G\left\{\delta\left\{\varphi + \left(1-\varphi\right)\left[1 - \bar{\rho}_e\left(B\right)\right]\right\}\left(R_e + \bar{x}\right)\right\} \tag{85}$$

$$\alpha\left(B,-1\right) \;=\; 1 - G\left\{\delta\left\{\varphi - \left(1-\varphi\right)\left[1 - \bar{\rho}_e\left(B\right)\right]\right\}\left(R_e + \bar{x}\right)\right\} \tag{86}$$

These equilibria require that

$$\pi\left[1 - \tilde{p}\left(B\right)\right]\left[2\tilde{\pi}_e\left(B \mid B\right) - 1\right] - \left(1-\pi\right)\tilde{p}\left(B\right) \geq \pi\left(2\pi - 1\right) \tag{87}$$

where

$$\tilde{p}\left(B\right) \;=\; \frac{\left[1 - \alpha\left(A,-1\right)\right]\left(1-\pi\right)p}{\pi\left(1-p\right) + \left[1 - \alpha\left(A,-1\right)\right]\left(1-\pi\right)p} \tag{88}$$

$$\tilde{\pi}_e\left(B \mid B\right) \;=\; \frac{\pi\left(1-p\right)}{\pi\left(1-p\right) + \left[1 - \alpha\left(B,-1\right)\right]\left(1-\pi\right)\left(1-p\right)}. \tag{89}$$

Second, voters reelect the executive with probability $\bar{\rho}_e\left(B\right)$, where $0 \leq \bar{\rho}_e\left(B\right) < \frac{1-2\varphi}{1-\varphi}$, and

executives' proposal strategies are:

$$\alpha\left(A,1\right) = 1 \tag{90}$$

$$\alpha\left(B,1\right) = G\left\{\delta\left\{-\varphi+\left(1-\varphi\right)\left[1-\bar{\rho}_e\left(B\right)\right]\right\}\left(R_e+\bar{x}\right)\right\} \tag{91}$$

$$\alpha\left(A,-1\right) = G\left\{\delta\left\{\varphi+\left(1-\varphi\right)\left[1-\bar{\rho}_e\left(B\right)\right]\right\}\left(R_e+\bar{x}\right)\right\} \tag{92}$$

$$\alpha\left(B,-1\right) = 1 \tag{93}$$

These equilibria require that

$$\pi-\tilde{p}\left(B\right)\leq\pi\left(2\pi-1\right) \tag{94}$$

where

$$\tilde{p}\left(B\right)=\frac{\left[1-\alpha\left(A,-1\right)\right]\left(1-\pi\right)p}{\left[1-\alpha\left(B,1\right)\right]\pi(1-p)+\left[1-\alpha\left(A,-1\right)\right]\left(1-\pi\right)p}. \tag{95}$$

Note that while in the first kind of equilibrium the behavior of congruent executives is not distorted, in the second kind of equilibrium both executive types pander with positive probability.

Finally if $\frac{1}{2}\leq\varphi\leq1$, voters without feedback reelect an executive that proposed the unpopular policy with probability $\bar{\rho}_e\left(B\right)$ (in the case $\varphi=1$ this strategy is not needed) and executives proposal strategies are the same as in equations (83)-(86). The equilibria in which $\bar{\rho}_e\left(B\right)=1$ are interesting because the executive is reelected with probability one despite the fact that its reputation is weaker that that of its challenger. This is rational because voters' payoff for the next period is not solely dependent of the executive's expected quality but also on the assembly's information about the executive's type.

In the second period the vote on a reelected executive's proposal is determined by the assemblies' posterior beliefs about the executive's type. Since $\tilde{\pi}_e\left(A\mid A\right),\,\tilde{\pi}_e\left(B\mid B\right)>\pi$ congruent assemblies approve, and noncongruent assemblies block, the executive's proposal if it behaved optimally in period one. Since $\tilde{\pi}_e\left(B\mid A\right)=0$ congruent assemblies block, and noncongruent assemblies approve, the incumbent's second period proposal if the state was revealed to have been A after a first period proposal B. In equilibria with no distortion of congruent types' behavior we have $\tilde{\pi}_e\left(A\mid B\right)=0$ and the second period strategy for voting on policy is as before. If congruent types pander with positive probability then $\tilde{\pi}_e\left(A\mid B\right)=\frac{\alpha(B,1)\pi}{\alpha(B,1)\pi+(1-\pi)}$ and the previous assembly strategies obtain if and only if $\alpha\left(B,1\right)\geq\frac{1-\pi}{\pi}$.

Proof of Proposition 5

Behavior in the second period is identical to the case of an uninformed assembly. Upon learning the state congruent assemblies reappoint the executive if and only if its first period bill proved optimal. Noncongruent assemblies reappoint the executive regardless of its behavior. The executive then proposes his preferred policy. This proposal is approved by a congruent assembly and blocked by a noncongruent assembly if and only if $\tilde{\pi}_e\left(z_1\mid s_1\right)\geq\frac{1}{2}$. Since voters cannot elect the executive branch their only concern at election time is with the

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type of assembly that will control the executive in the second period. We first solve the sub-game starting after a proposal has been made by the executive in period one. The equilibria of these two subgames together with the results of the second confidence vote determine the reappointment rule that the executive faces in equilibrium.

Suppose policy z was proposed in the first period and that in equilibrium congruent assemblies approve z more often than noncongruent types. Then, for all values of the probability of feedback φ, and regardless of the results of the subsequent confidence vote, voters replace the assembly for blocking z : $\rho_a(z, N, c) = \rho_a(z, N, c \mid s) = 0$ for $c = Y, N$ and $s = A, B$. To establish this claim we show that neither $\rho_a(z, N, c \mid s) > 0$ nor $\rho_a(z, N, c) > 0$ can be equilibrium strategies. Without loss of generality consider the case $c = Y$.

Suppose $\rho_a(z, N, Y \mid s) > 0$. Then it must be that $\tilde{\pi}_a(z, N, Y \mid s) \geq \pi$ and the executive must be replaced with positive probability in state s after z is blocked. This implies $\tilde{\pi}_a(z, N, N \mid s) < \pi$ and therefore $\rho_a(z, N, N \mid s) = 0$. Now if in equilibrium $\rho_a(z, N, N) = 0$ then we reach a contradiction because z, N, N cannot be chosen with positive probability in state s. Thus for an equilibrium it must be that $\rho_a(z, N, N) > 0$. But this implies that $\tilde{\pi}_a(z, N, N) \geq \pi$ and that the executive must be reappointed with positive probability in at least one state after z is blocked. This further requires that $\tilde{\pi}_a(z, N, Y) < \pi$ and therefore $\rho_a(z, N, Y) = 0$ and since $\tilde{\pi}_a(z, N, Y \mid s) \geq \pi$ it must also be that $\tilde{\pi}_a(z, N, Y \mid s') < \pi$ and $\rho_a(z, N, Y \mid s) = 0$, where $s' \neq s$. These two, however imply that z, N, Y cannot be chosen in state s', or equivalently that $\pi \leq \tilde{\pi}_a(z, N, Y \mid s) = \tilde{\pi}_a(z, N, Y) < \pi$, a contradiction.

Suppose $\rho_a(z, N, Y) > 0$. This implies $\tilde{\pi}_a(z, N, Y) \geq \pi$ and the executive must be replaced with positive probability after z is blocked in either state A or in state B. Thus, since $\tilde{\pi}_a(z, N, N) < \pi$, it must be that $\rho_a(z, N, N) = 0$. Now if in equilibrium $\rho_a(z, N, N \mid A) = \rho_a(z, N, N \mid B) = 0$ then z, N, N cannot be chosen with positive probability in equilibrium. At least one of the state dependent reelection probabilities has to be positive. Suppose, without loss of generality that $\rho_a(z, N, N \mid A) > 0$. Then $\tilde{\pi}_a(z, N, N \mid A) \geq \pi$, but since $\tilde{\pi}_a(z, N, N) < \pi$ it must be that $\tilde{\pi}_a(z, N, N \mid B) < \pi$ and so $\rho_a(z, N, N \mid B) = 0$. But this means that z, N, N cannot be chosen in state B. Therefore $\pi \leq \tilde{\pi}_a(z, N, N \mid A) = \tilde{\pi}_a(z, N, N) < \pi$, a contradiction. This establishes the claim.

Based on this observation we can now infer that if A was proposed in period one and state A is believed to be more likely than state B there are no equilibria where a congruent assembly blocks A more often than the noncongruent assembly. This follows since, by the previous claim, reelection is not possible for approving A. However, this means that a non-congruent assembly will block A with probability one, in other words at least as often as the congruent assembly. Symmetrically, if A was proposed and state B is believed to be more likely than state A there do not exist equilibria where the congruent assembly approves A more often than the noncongruent assembly.

Consider, without loss of generality, the subgame that begins after a proposal A and suppose $\tilde{p}(A) > \frac{1}{2}$. There are three types of equilibria: pooling, crosspooling and semisep-arating. There are two pooling equilibria: first, both assembly types approve A and then reappoint the executive regardless of the state; second, both assembly types approve A and

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then replace the executive regardless of the state. Similarly there are two crosspooling equilibria: first, both assembly types approve A and then reappoint the executive in state A and replace it in state B; second, both assembly types approve A and then replace the executive in state A and reappoint it in state B. Pooling equilibria exist for all parameter values. A sufficient condition for the first crosspooling equilibrium to exist is $\frac{1}{R_a+1} \leq \varphi \leq 1$.

Semiseparating equilibria can be of two forms. If the probability of feedback is low, $0 \leq \varphi < \frac{1}{2(R_a+1)}$, then congruent assemblies approve A with probability one and reappoint with probability one if and only if the proposal matches the state; noncongruent assemblies approve A with positive probability and at the confidence vote mix in state A and reappoint in state B. If voters have feedback they reelect the assembly if and only if it approved A and reappointed only when the proposal matched the state. If voters do not have feedback they reelect with probability one if the executive is replaced and with probability $\frac{1-2\varphi}{1-\varphi}$ if the executive is reappointed. For higher probabilities of feedback, $\frac{1}{2(R_a+1)} \leq \varphi \leq \frac{1}{R_a+1}$, congruent assemblies approve A with probability one and reappoint with probability one if and only if the proposal matches the state; noncongruent assemblies approve A with positive probability and at the confidence vote reappoint in state A and mix in state B. If voters have feedback they reelect the assembly if and only if it approved A and reappointed only when the proposal matched the state. If voters do not have feedback they reelect with probability one if the executive is replaced and with probability $\frac{R_a}{(1-\varphi)(R_a+1)}$ if the executive is reappointed.

The executives' proposal strategies that correspond to the first pooling equilibrium are:

$$
\begin{align}
\alpha\left(A, 1\right) &= 1 \tag{96}\\
\alpha\left(B, 1\right) &= 0 \tag{97}\\
\alpha\left(A, -1\right) &= G\left[\delta\pi\left(R_e + \bar{x}\right)\right] \tag{98}\\
\alpha\left(B, -1\right) &= 1 - G\left[\delta\pi\left(R_e + \bar{x}\right)\right]. \tag{99}
\end{align}
$$

The executives' proposal strategies that correspond to the first crosspooling equilibrium are:

$$
\begin{align}
\alpha\left(A, 1\right) &= 1 \tag{100}\\
\alpha\left(B, 1\right) &= 0 \tag{101}\\
\alpha\left(A, -1\right) &= G\left[\delta\left(R_e + \bar{x}\right)\right] \tag{102}\\
\alpha\left(B, -1\right) &= 1 - G\left[\delta\left(R_e + \bar{x}\right)\right]. \tag{103}
\end{align}
$$

Note that in either case neither executive type behaves opportunistically: congruent types behave optimally while noncongruent types behave either optimally or corruptly.

Proof of Proposition 6

Suppose $\varphi < 1$ and the responsive crosspooling equilibrium exists under hierarchical control. When $X < \delta (R_e + \bar{x})$ both executive types behave optimally under hierarchical control. Discipline is then maximal: $\Theta_1^H = 1$. Under direct control the executive behaves nonoptimally with positive probability, either by pandering or by being corrupt, and therefore $\Theta_1^D < 1$. When $X > \delta (R_e + \bar{x})$ both executive types follow their preferences in each system and discipline is $\Theta_1^D = \Theta_1^H = 2\pi - 1$. We conclude that hierarchical control is superior for all full support distributions G, since $G[\delta (R_e + \bar{x})] > 0$.

We now compare the systems in terms of overall executive performance. Consider first the case $X < \delta (R_e + \bar{x})$. Under hierarchical control the executive behaves optimally and performance is $\Theta^H = 2\pi$. Under direct control there are four types of behavior, at least two occurring with positive probability. First, both executive types behave optimally and so $\Theta^D = 2\pi$. Second, a congruent type behaves optimally and a noncongruent type panders; in this case performance is:

$$\Theta^D = 2\pi \left\{ p + (1-p) \left\{ \varphi + (1-\varphi) \left[\rho + \pi (1-\rho) \right] \right\} \right\} - 2 (1-\pi)(1-p)(1-\varphi\pi) \quad (104)$$

which is strictly less than 2π. Third, a congruent type behaves optimally and a noncongruent type corruptly; performance is:

$$\begin{aligned}
\Theta^D &= 2\pi - 2(1-\pi) \left\{ \pi (1-p)(1-\varphi)(1-\rho) + \right. \quad (105) \\
&\left. + p \left[\varphi (1-\pi) + (1-\varphi)\rho + (1-\varphi)(1-\rho)(1-\pi) \right] (1-\pi)(1-p) \left[\varphi (1-\pi) + (1-\varphi) \right] \right\}
\end{aligned}$$

which is also strictly smaller than 2π. Fourth, both executive types pander. Performance is then given by:

$$\Theta^D = 2\pi \left\{ p + (1-p) \left[1 - \varphi (1-\pi) \right] \right\} - 2(1-\pi) \left[p + (1-p)\varphi (1-\pi) \right] \quad (106)$$

and is strictly smaller than 2π.

Finally, suppose that $X > \delta (R_e + \bar{x})$. Under both systems the executive follows its preferences. Relative performance then turns on how well each system achieves selection.

$$\begin{aligned}
\Theta_2^D &= \pi \left\{ p + (1-p) \left[\varphi + (1-\varphi) \left[\rho + (2\pi - 1)(1-\rho) \right] \right] \right\} + (1-\pi) \left\{ p \left[\varphi (2\pi - 1) - (1-\varphi)\rho \right. \right. \\
&\left. \left. + (1-\varphi)(1-\rho)(2\pi - 1) \right] + (1-p) \left[\varphi (2\pi - 1) - (1-\varphi) \right] \right\} \quad (107)
\end{aligned}$$

$$\Theta_2^H = \pi + (1-\pi)(2\pi - 1). \quad (108)$$

It can be easily verified that $\Theta_2^D < \Theta_2^H$ for all parameter values.

If $\varphi = 1$ the two systems yield the same equilibrium outcome. Furthermore, the implicit executive survival rule is identical. It follows that no system is dominant in this case.

Proof of Proposition 7

For complex issues discipline is higher under hierarchical control if $X < \delta\psi\left(G\right)\left(R_e + \bar{x}\right)$ because the noncongruent executive panders instead of following its preferences:

$$\Theta_1^D = 2\pi - 1 < \pi + \left(1 - \pi\right)\left(2\pi - 1\right) = \Theta_1^H. \tag{109}$$

When $X > \delta\psi\left(G\right)\left(R_e + \bar{x}\right)$ the executive follows its preferences in each system and discipline is consequently the same. It thus follows that $\Theta_1^D < \Theta_1^H$ for all full support distributions G.

Overall executive performance for complex issues is given, respectively, by:

$$\Theta^D = 2\left(2\pi - 1\right) \tag{110}$$

and

$$\begin{aligned}\Theta^H &= \left\{2\left(2\pi - 1\right) + 2\left(1 - \pi\right)\left[\pi\left(2\pi - 1\right) + \left(1 - \pi\right)p\right]\right\}G\left[\delta\psi\left(G\right)\left(R_e + \bar{x}\right)\right] + \quad (111)\\ &\quad + \left[2\left(2\pi - 1\right) + 2\pi\left(1 - \pi\right)\right]\left\{1 - G\left[\delta\psi\left(G\right)\left(R_e + \bar{x}\right)\right]\right\}\end{aligned}$$

and so $\Theta^D < \Theta^H$ for all distributions G.

For simple issues discipline under direct control is:

$$\Theta_1^D = \left(2p - 1\right)G\left[\delta\left(R_e + \bar{x}\right)\right] + \left(2\pi - 1\right)\left\{1 - G\left[\delta\left(R_e + \bar{x}\right)\right]\right\} \tag{112}$$

and under hierarchical control it is:

$$\Theta_1^H = \left[\pi + \left(1 - \pi\right)\left(2p - 1\right)\right]G\left[\delta\psi\left(G\right)\left(R_e + \bar{x}\right)\right] + \left(2\pi - 1\right)\left\{1 - G\left[\delta\psi\left(G\right)\left(R_e + \bar{x}\right)\right]\right\} \tag{113}$$

where $\psi\left(G\right)$ is defined in equation (27). Since $\psi\left(G\right) > 0$ we have that $\Theta_1^D < \Theta_1^H$ for all G if and only if $p \leq \pi$.

In terms of executive performance with simple issues direct control yields:

$$\Theta^D = 2\left[\pi p - \left(1 - \pi\right)\left(1 - p\right)\right]G\left[\delta\left(R_e + \bar{x}\right)\right] + 2\left[\left(2\pi - 1\right) + \pi\left(1 - \pi\right)\right]\left\{1 - G\left[\delta\left(R_e + \bar{x}\right)\right]\right\} \tag{114}$$

while hierarchical control has:

$$\begin{aligned}\Theta^H &= 2\left\{\pi\left[p + \pi\left(1 - p\right)\right] - \left(1 - \pi\right)\left(1 - p\right)\right\}G\left[\delta\psi\left(G\right)\left(R_e + \bar{x}\right)\right] \quad (115)\\ &\quad + 2\left[\left(2\pi - 1\right) + \pi\left(1 - \pi\right)\right]\left\{1 - G\left[\delta\psi\left(G\right)\left(R_e + \bar{x}\right)\right]\right\}.\end{aligned}$$

It can be verified that $p \leq \pi$ is a sufficient condition in order to have $\Theta^D < \Theta^H$ for all G. The dominance of hierarchical control according to this criterion remains true if $p > \pi$ but p remains sufficiently small. Otherwise, neither institution is dominant because if $X < \delta\psi\left(G\right)\left(R_e + \bar{x}\right)$ hierarchical control is superior due to the better discipline (instead of pandering a congruent executive can behave optimally without electoral consequences) and

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if $\delta\psi(G)(R_e + \bar{x}) < X < \delta(R_e + \bar{x})$ direct control is superior also due to higher discipline.

Proof of Proposition 8

We first show that $\psi(G) > \varphi$. To see this note that

$$\tilde{\pi}_e(A) = \frac{\pi p}{\pi p + G[\delta\psi(R_e + \bar{x})](1 - \pi)p + \{1 - G[\delta\varphi(R_e + \bar{x})]\}(1 - \pi)(1 - p)} \quad (116)$$

is increasing in ψ and $\tilde{\pi}_e(A)|_{\psi=\varphi} > \pi$. By full support of G there exists a $\hat{\psi} > \varphi$ such that $\tilde{\pi}_e(A)|_{\psi=\hat{\psi}} \geq \pi$. Then $\psi(G)$, defined to be the largest such ψ, must itself be larger than φ.

Suppose $\varphi < 1$. Direct control cannot dominate hierarchical control in terms of overall executive performance because if voters believe that executive private benefits are below $\delta\psi(G)(R_e + \bar{x})$ and for these beliefs the equilibrium outlined in section five exists, then hierarchical control is superior by inducing the executive to behave optimally and yields performance $\Theta^H = 2\pi$. Under direct control at least one type panders with positive probability. If only the noncongruent type panders then:

$$\Theta^D = 2\pi\{p + (1 - p)[\varphi + (1 - \varphi)[\rho + \pi(1 - \rho)]]\} - 2(1 - \pi)(1 - p)(1 - \varphi\pi). \quad (117)$$

If both the congruent and the noncongruent types pander then

$$\Theta^D = 2\pi\{p + (1 - p)[1 - \varphi(1 - \pi)]\} - 2(1 - \pi)[p + (1 - p)\varphi(1 - \pi)]. \quad (118)$$

In both cases we have $\Theta^D < 2\pi$ and therefore hierarchical control is strictly superior at these beliefs.

Now suppose that the equilibrium of section five exists for all distributions G. A necessary and sufficient condition for this to happen is that $\varphi \geq \frac{1}{\delta(R_a + 1)}$. For simple issues discipline under each system is respectively:

$$\Theta_1^D = G[\delta\varphi(R_e + \bar{x})] + (2\pi - 1)\{1 - G[\delta\varphi(R_e + \bar{x})]\} \quad (119)$$

$$\Theta_1^H = G[\delta\psi(G)(R_e + \bar{x})] + (2\pi - 1)\{1 - G[\delta\psi(G)(R_e + \bar{x})]\}. \quad (120)$$

We see that $\Theta_1^D < \Theta_1^H$ for all G because $\psi(G) > \varphi$. Finally, overall executive performance is given by:

$$\begin{aligned} \Theta^D = {}& 2\pi G[\delta\varphi(R_e + \bar{x})] + \\ & + \{2\pi - 2(1 - \pi)[p + (1 - \pi)(1 - p)][\varphi(1 - \pi) + (1 - \varphi)]\}\{1 - G[\delta\varphi(R_e + \bar{x})]\} \end{aligned} \quad (121)$$

$$\begin{aligned}
\Theta^H \;=\; & 2\pi G\left[\delta\psi\left(G\right)\left(R_e + \bar{x}\right)\right] + \\
& + \left\{2\pi + \left(1 - p\right)\left\{\left(2\pi - 1\right)\left(1 + \varphi - \pi\right)\right.\right. \\
& \left.\left. - \left[\varphi\pi + \left(1 - \varphi\right)\left(1 - \pi\right)\right]\right\}\right\}\left\{G\left[\delta\psi\left(G\right)\left(R_e + \bar{x}\right)\right] - G\left[\delta\varphi\left(R_e + \bar{x}\right)\right]\right\} + \\
& + \left\{2\pi - 2\left(1 - \pi\right)\left[p + \left(1 - \pi\right)\left(1 - p\right)\right]\left[\varphi\left(1 - \pi\right) + \left(1 - \varphi\right)\right]\right\}\left\{1 - G\left[\delta\psi\left(G\right)\left(R_e + \bar{x}\right)\right]\right\}
\end{aligned} \tag{122}$$

under each system respectively. Hierarchical control dominates because in the middle interval it is superior due to higher discipline: the noncongruent type panders whereas under direct control it acts corruptly.

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