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# The effects of bureaucracy on political accountability and electoral selection

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## ABSTRACT

This paper examines how bureaucracy affects political accountability and electoral selection, using a three-tier political agency model consisting of voters, politicians and bureaucrats. In the model's hierarchy, politicians are constrained by elections while bureaucrats are controlled by budgets. If voters and bureaucrats prefer different types of politicians (i.e. they have a conflict of interests), incumbents pass oversized budgets to prevent bureaucrats from engaging in strategic behaviours that damage incumbents' reputations. If, instead, voters and bureaucrats prefer the same type of politicians (i.e. they have an alignment of interests), bureaucrats cannot obtain a concession from politicians. In the latter case, however, bureaucrats send voters a credible signal regarding an incumbent's type, which improves electoral selection. This paper also shows that political appointment systems improve political accountability in the conflict-of-interests case while they weaken electoral selection in the alignment-of-interests case.

## 1. Introduction

The purpose of this paper is to examine how bureaucracy affects political accountability and political selection. Incumbent politicians need to control the bureaucracy and show their competence in policy making to the electorate to obtain re-election. Bureaucrats, however, may act strategically in policy implementation. For example, bureaucrats can sabotage policy implementation, which could damage incumbents' reputations. In fact, the 37th President of the U.S., Richard Nixon, was worried about sabotage by federal bureaucrats opposed to his conservative policies (Wilson, 1989). Bureaucrats want politicians to make decisions that do not conflict with their interest in preserving their jobs. Moe (2006) conjectures that politicians worrying about bureaucrats' political power being used against them may choose policies that are more preferable to bureaucrats.<sup>1</sup> Bureaucrats' political power, thus, could make it difficult to hold incumbents accountable to voters. On another front, voters can infer incumbents' types from bureaucrats' sabotage, if the sabotage is publicly observed, since sabotage shows a political conflict between incumbents and bureaucrats. Bureaucrats, thus, may use sabotage as a form of political endorsement, which could influence citizens' voting behaviour.

Building on political agency models regarding public finance problems (e.g. Barro, 1973; Rogoff, 1990; Besley, 2006), I construct a three-tier model: the top principal is voters, the supervisor is politicians and the agent is bureaucrats. While politicians have authority to determine the size of the government budget (taxes), bureaucrats have discretion over its use. The model assumes that an incumbent politician is either the informed type who observes the cost of public goods provision or the uninformed type who does not.

Bureaucrats' choice of public goods provision affects voters' belief regarding incumbents' type. By reducing public goods

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<sup>1</sup> Moe (2012) points out that although the analysis of bureaucrats' political power is important, it is completely missing from the literature.

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provision (i.e. sabotaging), bureaucrats try to give voters a negative (or positive) impression of incumbents. Bureaucrats prefer an incumbent who allocates larger budgets to them, and thus have an incentive to help the incumbent's re-election. Bureaucrats may try to obstruct their non-preferred incumbents' policy implementation.

The main result is that bureaucrats' strategic motivation causes an oversized government when bureaucrats and voters have a 'conflict of interests' regarding politicians' type (i.e. when bureaucrats prefer uninformed politicians while voters prefer informed politicians). Bureaucrats may try to damage an informed incumbent's reputation by reducing public goods provision. The informed politician needs to increase bureaucrats' budgets to prevent them from manipulating information (incentive-compatibility conditions), an outcome that supports Moe's conjecture. Bureaucrats, however, cannot obtain any concession from politicians when bureaucrats and voters have an 'alignment of interests' (i.e. when both prefer informed politicians). This is because bureaucrats in this case prefer not to damage informed incumbents' reputations.

Another major finding concerns electoral selection. Voters infer incumbents' type from bureaucrats' policy choices. In the alignment-of-interest case, bureaucrats can send a credible signal to voters at minimal cost to remove bureaucrats' non-preferred incumbents from office. This result is regarded as bureaucrats' information-leak strategy to damage their non-preferred incumbents' reputation (Tullock, 2002).

This paper also explores whether political appointment systems can restrict bureaucrats' strategic behaviour. I show that political appointees prevent bureaucrats from damaging incumbents' reputations. In conflict-of-interest cases, political appointees help informed politicians implement the first-best policy, showing an improvement in political accountability. In alignment-of-interest cases, however, the political appointment system leads to the persistence of the incompetent government and thus a deterioration in electoral selection.

The remainder of this paper is organised as follows. The next section presents a review of the related literature. Section 3 presents a benchmark model with voters, politicians and honest bureaucrats (who have no strategic motivation). Section 4 introduces strategic bureaucrats who could engage in sabotage strategically. Section 5 analyses political appointments. Section 6 provides the conclusion. Proofs are contained in the Supplemental material.

## 2. Related literature

This study is related to several research areas. The model in this study builds on political agency models (e.g. Barro, 1973; Rogoff, 1990; Besley, 2006). The several studies show that politicians' strong re-election incentives lead to inefficient policy making decisions (Morris, 2001; Canes-Wrone et al., 2001; Maskin and Tirole, 2004; Hodler et al., 2010; Acemoglu et al., 2013; Smart and Sturm, 2013). My model with strategic bureaucrats also shows that informed politicians set inefficiently high taxes to achieve re-election. Maskin and Tirole (2004) argue that in such an inefficient situation, the policy making process should be allocated to non-accountable officials. My model shows that a hierarchical policy making process of politicians and bureaucrats provides voters with different sources of information about politicians' competence, which serves for better electoral selection in the alignment-of-interest case.<sup>2</sup> In addition, I show that political appointment in the hierarchical government strengthens political accountability but weakens electoral selection.

The literature on political agency models often differentiates politicians' type in terms of their preferences, e.g. a 'good' type shares policy preference with voters and a 'bad' type has a different preference from voters. In contrast, following Tirole (1986) and Canes-Wrone et al. (2001), I model politicians' competence regarding information acquisition as their type. A competence-based analysis describes my three-tier hierarchy model better than a preference-based analysis. A preference-based analysis needs to specify the four players' preferences: voters, good politicians, bad politicians and bureaucrats.<sup>3</sup> However, in the competence-based analysis where both types of politicians have an identical preference (i.e. re-election in my study), the model's specification is structurally simplified.

This study also relates to research on bureaucracies, which has been developing since the seminal work of Tullock (1965) and Niskanen (1971). Brehm and Gates (1997) discuss the phenomenon of bureaucratic sabotage, which prevents political authorities from implementing their preferred policies. Tirole (1994), Dewatripont et al. (1999) and Dixit (2002) examine career-concern incentives of bureaucrats who engage in multiple tasks and pursue multiple missions. Swank (2002) and Warren (2012) study the role of appointed bureaucrats in governments' policy making processes. Alesina and Tabellini (2007) examine the policy-task allocation between politicians motivated by re-election and bureaucrats motivated by career concerns. In contrast to the literature that focuses on the two-tier political relationship between politicians and bureaucrats, I employ a three-tier model to study how bureaucrats' strategic action affects political accountability and electoral selection.

A three-tier hierarchical model (principal-supervisor-agent) was originally examined by Tirole (1986). One main difference between this paper's approach and Tirole's is the role given to the top principal. While Tirole's top principal is a constitutional designer who can offer complete contracts with monetary transfers to both supervisor and agent, my top principal is a voter who can only select a politician in an election, which implies that my top principal possesses quite limited ability.<sup>4</sup> Three recent papers have

<sup>2</sup> Ashworth and Bueno de Mesquita (2014) provide a detailed discussion about how increases in voters' information influence political accountability and electoral selection.

<sup>3</sup> Although voters and good politicians have the same 'policy' preference in a preference-based analysis, good politicians also obtain a payoff from winning re-election.

<sup>4</sup> Another difference is that Tirole (1986) allows a side contract (collusion) between supervisor and agent. I, instead, consider 'implicit' collusion between them (e.g. bureaucrats trying to manipulate an incumbent's type to enable her re-election).

used a three-tier hierarchical model with voters as the top principal. [Drometer \(2012\)](#) studies a probabilistic voting model combined with bargaining between politicians and bureaucrats. He shows that a hierarchical government implements a higher level of public investment, which may improve social welfare. While his model ignores electoral selection, I examine it by introducing politicians' types. [Fox and Jordan \(2011\)](#); [Vlaicu and Whalley \(2016\)](#) study the effect of delegation to bureaucrats on political accountability. [Fox and Jordan \(2011\)](#) show that delegation to bureaucrats harms political accountability since politicians can implement their preferred policy by using bureaucrats' expertise. [Vlaicu and Whalley \(2016\)](#) show, instead, that delegation can avoid an inefficient pandering equilibrium because voters obtain additional information from politicians' choice regarding reappointment of bureaucrats. My model derives a similar result, but the mechanisms are quite different. Bureaucrats' strategic policy-making decisions (rather than politicians' choices of delegation) give voters additional information about incumbents' types, which helps voters select their preferred type. A major difference from these papers is that I study bureaucrats' strategic action to gain political concession, whereas these papers ignore such behaviour. I, thereby, argue that bureaucracy has different effects on political accountability and electoral selection between the conflict-of-interest case and the alignment-of-interest case.

### 3. Model without bureaucrats' strategic motivation

Building on competence-based agency models developed by [Tirole \(1986\)](#) and [Canes-Wrone et al. \(2001\)](#), I examine a simple two-period model with politicians, bureaucrats and voters. Bureaucrats in this section have no strategic motivation to engage in sabotage or inefficient policy making. This section provides benchmark results for the later sections, which consider strategic bureaucrats.

#### 3.1. Model

In each period  $t = 1, 2$ , the government collects taxes  $\tau_t$  from a unit measure of identical voters and provides them with public goods  $g_t$ . The minimum cost of producing public goods  $g_t$  (i.e. the cost function) is represented by  $\theta_t g_t$ , where  $\theta_t$  is a stochastic state taking one of the two values:  $\bar{\theta}$  with probability  $p$  and  $\underline{\theta}$  with probability  $1 - p$ , where  $\bar{\theta} > \underline{\theta} > 0$ . For simplicity, I assume  $p > 1/2$ . State  $\theta$  is realised independently in each period. The government must satisfy the budget constraint  $\tau_t \geq \theta_t g_t$  in each period. Let  $\hat{g}(\tau; \theta) = \tau/\theta$ , which shows the maximum amount of public goods that can be produced given  $\tau$  and  $\theta$ .

##### 3.1.1. Timing

I show the timing of events of the game. I discuss each event in more detail below.

- The first period:
  1. The type of the first-period incumbent (either type  $I$  or type  $U$ ) is realised.
  2. State  $\theta_1$  (either  $\bar{\theta}$  or  $\underline{\theta}$ ) is realised.
  3. The incumbent sets tax  $\tau_1$ .
  4. The bureaucrat produces and provides public goods  $g_1$ .
  5. Voters choose between the incumbent and a challenger in the election.
- The second period:
  1. If the challenger won the election, her type (either  $I$  or  $U$ ) is realised.
  2. State  $\theta_2$  (either  $\bar{\theta}$  or  $\underline{\theta}$ ) is realised.
  3. The second-period incumbent sets tax  $\tau_2$ .
  4. The bureaucrat produces and provides public goods  $g_2$ .

Note that the election takes place only at the end of the first period.

##### 3.1.2. Politicians

Incumbent politicians decide the budget size  $\tau$ , which is used by bureaucrats. The role of politicians in this paper is to control bureaucrats through the budget size.

Politicians are categorised as being one of two types,  $\{I, U\}$ . Type  $I$  politicians, representing 'informed', observe state  $\theta$  when it is realised, while type  $U$  politicians, representing 'uninformed', never observe it. Type  $I$  politicians, thus, can set taxes depending on state  $\theta$  while type  $U$  politicians cannot. Let  $\mu$  be the prior probability of an incumbent being type  $I$ . I assume that a challenger's type is also determined by probability  $\mu$ . An incumbent knows her own type, but voters cannot observe it.

The objective of incumbents (both types  $I$  and  $U$ ) is to maximise the probability of their winning re-election. This implies that incumbents obtain exogenous ego-rents from holding office. Since the size of ego-rents does not influence equilibrium, I simply assume that incumbents maximise their re-election probability. Note that second-period incumbents do not face an election; thus, I assume that second-period incumbents (both types) maximise voters' second-period utility.

##### 3.1.3. Honest bureaucrats

Bureaucrats decide the amount of public goods  $g$  within the budget constraint. Politicians need bureaucrats to serve as experts who actually provide public goods. Usually, bureaucrats must be responsive to multiple principals and follow multiple missions. In addition, since bureaucrats' tasks are complex, their performances are likely to be immeasurable and their actions are hard to

monitor (Tirole, 1994). These characteristics of bureaucrats entail substantial transaction costs to enforce a political contract (Dixit, 1996). I, thus, assume that politicians cannot present to bureaucrats an enforceable contract about policy implementation; in other words, bureaucrats possess discretion to choose the size of public goods within the budget.

Bureaucrats in this section are considered an ‘honest’ type, which is denoted by  $H$ . Type  $H$  bureaucrats maximise public goods provision within the budget (i.e. they choose  $\hat{g}(\tau; \theta)$  given tax  $\tau$  and state  $\theta$ ).<sup>5</sup> Such behaviours imply that type  $H$  bureaucrats do not act strategically (i.e. they do not engage in sabotage by reducing public goods provision).

### 3.1.4. Voters

Voters choose between the incumbent and a challenger at the election at the end of the first period. Voters observe tax  $\tau$  and public goods  $g$  but observe neither state  $\theta$  nor the politicians’ types. Thus, voters infer the incumbent’s type from the implemented policy,  $\tau_1$  and  $g_1$ . Voters have a per-period utility function  $u(g) - \tau$ .<sup>6</sup> Function  $u$  satisfies  $u_g > 0$  and  $u_{gg} < 0$ .

### 3.1.5. Information structure

There exist two types of information asymmetry: state  $\theta$  and the incumbent’s type. Type  $I$  politicians and bureaucrats observe the realised state  $\theta$ , but type  $U$  politicians and voters cannot observe it. The incumbent observes her own type but voters never observe it. I assume that bureaucrats also observe the incumbent’s type although this assumption does not affect equilibrium in this section.<sup>7</sup> Note that no one observes a challenger’s type at the time of the election (her type is realised after she wins the election). Note also that each player knows the other players’ payoff functions (and objectives) and observes the other players’ actions.

### 3.1.6. First-best policies

I show the first-best policy,  $(\tau^*(\theta), g^*(\theta))$ , which maximises voters’ utility given state  $\theta$ . Since the amount of public goods must be maximised within the budget, the first-best tax level is determined by

$$\tau^*(\theta) = \arg \max_{\tau} u(\hat{g}(\tau; \theta)) - \tau. \quad (1)$$

Accordingly, the first-best level of public goods is  $g^*(\theta) = \hat{g}(\tau^*(\theta); \theta)$ . Although I can show that  $g^*(\underline{\theta})$  is greater than  $g^*(\bar{\theta})$ , the relationship between  $\tau^*(\bar{\theta})$  and  $\tau^*(\underline{\theta})$  is undetermined under the general functional form  $u(\cdot)$ . To make the analysis interesting, I assume

$$\tau^*(\bar{\theta}) \neq \tau^*(\underline{\theta}). \quad (2)$$

### 3.1.7. Caveat

The model in this section can also be represented by a simpler political agency model involving only politicians and voters, where politicians choose both  $\tau$  and  $g$ . An assumption for this alternative representation is that politicians must use up the budget (i.e. they choose  $\hat{g}(\tau, \theta_1)$  given  $\tau$  and  $\theta_1$ ). Since this assumption seems strong, I examine a simple game for politicians and voters in Appendix A, allowing politicians to choose public goods less than  $\hat{g}(\tau, \theta)$ .

## 3.2. Equilibrium

The game is solved using the concept of perfect Bayesian equilibrium (PBE). I confine my analysis to pure-strategy PBEs, which are referred to as just ‘PBEs’ hereafter.

The game has a continuum of PBEs, which are categorised into three classes based on the first-period equilibrium taxes. Note that type  $I$  politicians can choose tax  $\tau_1^I(\theta_1)$  dependent on  $\theta_1$  while type  $U$  politicians choose tax  $\tau_1^U$  independent of  $\theta_1$  due to lack of information. The first class of PBEs is a pooling PBE where both types of politicians choose the same tax level for any state (i.e.  $\tau_1^I(\bar{\theta}) = \tau_1^I(\underline{\theta}) = \tau_1^U$ ). In this case, voters cannot identify incumbents’ type only by the implemented tax level. The second is a fully-separating PBE where type  $I$  and  $U$  politicians choose different taxes in each state (i.e.  $\tau_1^I(\bar{\theta}) \neq \tau_1^U$  and  $\tau_1^I(\underline{\theta}) \neq \tau_1^U$ ). Since voters can identify incumbents’ type perfectly, this class of PBEs is most informative for voters. The last is a semi-separating PBE where type  $I$  politicians choose different taxes dependent on states (i.e.  $\tau_1^I(\bar{\theta}) \neq \tau_1^I(\underline{\theta})$ ) and type  $U$  politicians choose either one of them (i.e.  $\tau_1^U = \tau_1^I(\bar{\theta})$  or  $\tau_1^U = \tau_1^I(\underline{\theta})$ ). Since voters can partially identify incumbents’ type using the implemented tax level, this PBE would be more informative than a pooling PBE but less informative than a fully-separating PBE.

Hereafter, I focus particularly on how semi-separating PBEs (and fully-separating PBEs, if any) are characterised. A focus on these classes of PBEs is reasonable because of the following reason. In this benchmark model, voters’ equilibrium payoff is maximised at a semi-separating PBE (there exists no fully-separating PBEs). Actually, at such a PBE, political accountability and electoral selection work better than at any pooling PBE. Compared with semi-separating PBEs in this section, semi-separating PBEs in the later sections highlight how strategic bureaucrats influence political accountability and electoral selection.

In particular, I examine the question of whether there exists a semi-separating (or fully-separating) PBE in which type  $I$  politicians choose the first-best tax at each state. Although type  $I$  politicians know the first-best tax level appropriate for a current

<sup>5</sup> Strategic bureaucrats who are introduced in Section 4 maximise their payoff  $g_1 + \beta g_2$ . Type  $H$  bureaucrats’ payoff can be denoted as that payoff with  $\beta = 0$ .

<sup>6</sup> Voters’ discount factor does not affect equilibrium and it is therefore omitted from this analysis.

<sup>7</sup> The assumption is relevant for the models in the later sections (see Section 4.1.1).

state, they may choose bureaucrats' preferred tax level, as Moe (2006) conjectures. Thus, I discuss whether voters can make 'type  $I$ ' politicians accountable. However, for voters' welfare maximisation, type  $U$  politicians' accountability also needs to be considered. Thus, I also discuss the PBE that maximises voters' equilibrium payoff.

### 3.2.1. Strategies in the second period

I now solve the game. Remember that the type  $H$  bureaucrat produces the maximum amount of public goods,  $\hat{g}(\tau; \theta)$ , and both types of politicians maximise voters' welfare during the second period. After observing the current state  $\theta_2$ , the type  $I$  politician sets the first-best tax  $\tau^*(\theta_2)$ , and accordingly the bureaucrat provides first-best public goods  $g^*(\theta_2)$ . However, since type  $U$  politicians cannot observe the state when setting the tax, they maximise voters' 'expected' utility. The type  $U$  politician thus sets the tax

$$\tau^{**} \equiv \arg \max_{\tau} \{p\mu(\hat{g}(\tau; \bar{\theta})) + (1-p)\mu(\hat{g}(\tau; \underline{\theta})) - \tau\}, \quad (3)$$

and accordingly the bureaucrat provides public goods  $\hat{g}(\tau^{**}; \bar{\theta})$  at  $\bar{\theta}$  and  $\hat{g}(\tau^{**}; \underline{\theta})$  at  $\underline{\theta}$ .

### 3.2.2. Strategies in the first period

First, I consider voters' strategy. Since only type  $I$  politicians will implement the first-best policy in the second period, voters prefer to elect them.<sup>8</sup> Let  $\tilde{\mu}(\tau_1, g_1)$  denote the posterior belief that the incumbent is type  $I$  when the tax level is  $\tau_1$  and the public goods level is  $g_1$ . Voters re-elect the incumbent if the posterior belief  $\tilde{\mu}(\tau_1, g_1)$  is greater than the prior belief  $\mu$  (which is the probability of challengers being type  $I$ ). For simplicity, when voters are indifferent between the incumbent and a challenger, voters re-elect the incumbent with probability 1.<sup>9</sup> Let  $\sigma$  denote the indicator function which equals 1 when voters re-elect the incumbent and equals 0 when they elect a challenger. Specifically, voters' strategy is denoted by

$$\sigma(\tau_1, g_1) = \begin{cases} 1 \\ 0 \end{cases} \text{ if } \tilde{\mu}(\tau_1, g_1) \begin{cases} \geq \\ < \end{cases} \mu. \quad (4)$$

Next, I consider politicians' strategies. Both types of politicians maximise their re-election probability, which is computed using voters' strategy  $\sigma$ . Specifically, the type  $I$  politician chooses state-contingent tax

$$\tau_1^I(\theta) = \arg \max_{\tau} \sigma(\tau, \hat{g}(\tau; \theta)),$$

and the type  $U$  politician chooses tax

$$\tau_1^U = \arg \max_{\tau} \{p\sigma(\tau, \hat{g}(\tau; \bar{\theta})) + (1-p)\sigma(\tau, \hat{g}(\tau; \underline{\theta}))\}.$$

Remember that the incumbent achieves re-election if identified as type  $I$ . Thus, type  $U$  politicians try to mimic type  $I$  politicians and then choose either  $\tau_1^I(\bar{\theta})$  or  $\tau_1^I(\underline{\theta})$ . In particular, if type  $I$  politicians select the same tax level at each state, i.e.  $\tau_1^I(\bar{\theta}) = \tau_1^I(\underline{\theta})$ , type  $U$  politicians definitely choose the same tax level. The discussion leads to the following lemma.

**Lemma 1.** *There exist no fully-separating PBEs while there exists a continuum of pooling PBEs, each of which is characterised by the size of equilibrium taxes  $\tau_1^I(\bar{\theta}) = \tau_1^I(\underline{\theta}) = \tau_1^U \in [0, \infty)$ . In any pooling PBE, voters cannot identify the incumbent's type and thus both types of incumbents win re-election at both states.*

There also exist semi-separating PBEs; in particular, there exists a PBE where type  $I$  politicians set the first-best tax. Type  $I$  politicians optimally set the first-best tax as long as voters re-elect the incumbent who implements the first-best policy. Type  $U$  politicians set a tax level that is more likely to be imposed by type  $I$  politicians; type  $U$  politicians can mimic type  $I$  politicians with a higher probability by setting the tax level. An assumption of  $p > 1/2$  implies that type  $I$  politicians more frequently set  $\tau^*(\bar{\theta})$  than  $\tau^*(\underline{\theta})$ . Type  $U$  politicians therefore choose  $\tau^*(\bar{\theta})$  optimally. Type  $U$  politicians thus can also implement the first-best policy ( $\tau^*(\bar{\theta})$ ,  $g^*(\bar{\theta})$ ) at  $\bar{\theta}$ , which implies that voters cannot identify incumbents' type, i.e.  $\tilde{\mu}(\tau^*(\bar{\theta}), g^*(\bar{\theta})) = \mu$ . However, voters can identify incumbents' type at  $\underline{\theta}$  because bureaucrats working for type  $U$  politicians set  $\hat{g}(\tau^*(\bar{\theta}); \underline{\theta})$  rather than  $g^*(\bar{\theta})$ , i.e.  $\tilde{\mu}(\tau^*(\bar{\theta}), \hat{g}(\tau^*(\bar{\theta}), \underline{\theta})) = 0$  and  $\tilde{\mu}(\tau^*(\underline{\theta}), g^*(\underline{\theta})) = 1$ . Voters therefore optimally re-elect the incumbent who implements the first-best policy.

**Proposition 1.** *There exists a semi-separating PBE in which type  $I$  politicians choose the first-best tax  $\tau^*(\theta_1)$  at each state in the first period. In this PBE, type  $U$  politicians choose  $\tau^*(\bar{\theta})$ . More generally, there exists a continuum of semi-separating PBEs, each of which is defined by the sizes of equilibrium taxes  $\tau_1^I(\underline{\theta}) \neq \tau_1^I(\bar{\theta}) = \tau_1^U \in [0, \infty)$ . In any semi-separating PBE, while type  $I$  politicians are re-elected at both states, type  $U$  politicians are re-elected only at  $\bar{\theta}$ .*

**Proposition 1** implies that in semi-separating PBEs, voters cannot make both types  $I$  and  $U$  politicians accountable. Consider the PBE in which type  $I$  politicians set the first-best tax at each state. Since type  $U$  politicians choose  $\tau^*(\bar{\theta})$ , they fail to implement the first-best policy at state  $\underline{\theta}$ . If type  $U$  politicians set  $\tau^{**}$  in Eq. (3) instead of  $\tau^*(\bar{\theta})$  (i.e. a fully-separating case), voters can make both

<sup>8</sup> This result assures that the equilibrium characteristics of this two-period model are qualitatively equivalent to those of the infinite-horizon model with a Markov perfect Bayesian equilibrium as a solution concept. Voters have the same electoral incentive in the two-period model and the infinite-period model.

<sup>9</sup> In the indifferent case, voters can randomise selection between the incumbent and a challenger. PBEs support the following mixed strategy: voters re-elect the incumbent with a probability more than  $1 - p$  when  $\tilde{\mu}(\tau, g) = \mu$ .

types of politicians accountable (and also achieve perfect electoral selection). Type  $U$  politicians aiming for re-election, however, do not care about voters' welfare and thus, do not select  $\tau^{**}$ .

**Proposition 1** also implies that electoral selection works at state  $\underline{\theta}$ . Note that the incumbent's type is perfectly revealed at this state. Thus, electoral selection works at semi-separating PBEs better than at pooling PBEs.

Finally, I briefly discuss the PBE that maximises voters' equilibrium payoff. Remember that type  $U$  politicians select the tax level that type  $I$  politicians set at  $\bar{\theta}$  in any PBE. Type  $U$  politicians' mimicking strategy must be considered for voters' payoff maximisation. Type  $I$  politicians, thus, should set the following tax level at  $\bar{\theta}$ :

$$\tau^{welf}(\bar{\theta}) = \arg \max_{\tau} \{p[u(\hat{g}(\tau; \bar{\theta})) - \tau] + (1-\mu)(1-p)[u(\hat{g}(\tau; \underline{\theta})) - \tau]\}. \quad (5)$$

Note that  $\tau^{welf}(\bar{\theta})$  takes into account not only the utility maximisation problem at  $\bar{\theta}$ , i.e.  $p[u(\hat{g}(\tau; \bar{\theta})) - \tau]$ , but also the one at  $\underline{\theta}$ , i.e.  $(1-\mu)(1-p)[u(\hat{g}(\tau; \underline{\theta})) - \tau]$ . The former describes the case where type  $U$  politicians succeed in mimicking type  $I$  politicians at  $\bar{\theta}$ ; the latter represents the case where type  $U$  politicians fail to do so at  $\underline{\theta}$ . Thus,  $\tau^{welf}(\bar{\theta})$  lies between  $\tau^*(\bar{\theta})$  and  $\tau^*(\underline{\theta})$  and can be implemented as a value for  $\tau_1^*(\bar{\theta})$  in semi-separating PBEs.<sup>10</sup> In addition, type  $I$  politicians should set the first-best tax,  $\tau^*(\underline{\theta})$ , at  $\underline{\theta}$  in the PBE since type  $U$  politicians do not select this tax level.

## 4. Model for bureaucrats' strategic motivation

### 4.1. Model

The aim of this section is to show how the degrees of political accountability and electoral selection change when bureaucrats have strategic motivation. The model in this section introduces 'strategic-type' bureaucrats denoted by  $S$ , instead of the honest (type  $H$ ) bureaucrats modelled in the last section. The strategies and payoffs of type  $I$  and  $U$  politicians and voters do not change from the last section. The timing of events and the information structure also do not change from the last section.

#### 4.1.1. Strategic bureaucrats

Type  $S$  bureaucrats have intertemporal payoff  $g_1 + \beta g_2$ , where  $\beta \in (0, 1)$  denotes their discount factor. The payoff shows that type  $S$  bureaucrats prefer a higher level of public goods provision, which implies that high public goods provision in a government's agency reveals the importance of its work and legitimises its existence.

Type  $S$  bureaucrats may strategically choose an amount of public goods less than the maximum level, i.e.  $g < \hat{g}(\tau, \theta)$ . Such strategic action means that bureaucrats do not minimise production cost (e.g. they engage in sabotage, the use of inefficient technology or the overemployment of public servants).<sup>11</sup> This is the crucial difference from type  $H$  bureaucrats' action.

Bureaucrats can observe not only the realised state but also the incumbent's type.<sup>12</sup> Bureaucrats work for politicians (particularly, presidents or prime ministers) in government. Bureaucrats and politicians communicate with each other on policy implementation. Since bureaucrats are experts in policy making, they can evaluate politicians' competence. However, bureaucrats cannot know challengers' types at the time of the election because bureaucrats have not worked with challengers.

### 4.2. Equilibrium

After the incumbent sets a tax level, the game can be described as a signalling game between the type  $S$  bureaucrat (sender) and voters (receiver). Note that the incumbent's type and the realised state are considered as the bureaucrat's private information. The intuitive criterion, thus, can be applied to this game.<sup>13</sup>

#### 4.2.1. Strategies in the second period

Type  $S$  bureaucrats maximise public goods within the budget in the second period. Type  $I$  politicians, thus, set the first-best tax while type  $U$  politicians choose  $\tau^{**}$  as in the last section.

I compute type  $S$  bureaucrats' second-period equilibrium payoff (their continuation value), which influences their choice of first-period strategy. There exist three continuation values, each of which is defined based on who the second-period politician is: the first-period type  $I$  politician (re-elected), the first-period type  $U$  politician (re-elected) and a challenger. More precisely, let  $i_1 \in \{I, U\}$  denote the first-period incumbent's type. Given the second-period PBE strategies, let  $G_2(i_1)$  denote type  $S$  bureaucrats' continuation value at the beginning of the second period when the first-period incumbent  $i_1$  wins the election:

<sup>10</sup> In other words,  $\tau^*(\underline{\theta}) < \tau^{welf}(\bar{\theta}) < \tau^*(\bar{\theta})$  when  $\tau^*(\underline{\theta}) < \tau^*(\bar{\theta})$  and  $\tau^*(\bar{\theta}) < \tau^{welf}(\bar{\theta}) < \tau^*(\underline{\theta})$  when  $\tau^*(\bar{\theta}) < \tau^*(\underline{\theta})$ .

<sup>11</sup> See Peacock (1983) for X-inefficiency in government.

<sup>12</sup> In reality, bureaucrats would not be able to observe incumbents' type perfectly. The model can be generalised as follows: bureaucrats receive an imperfect signal for the incumbent's type. In conflict-of-interest cases, the characteristics of PBEs do not change from those denoted in Lemma 3 and Proposition 2. In alignment-of-interest cases, there now exists no fully-separating PBE and politicians' re-election probability slightly change from that denoted in Proposition 3. However, I can show that when the precision of the signal approaches perfection, PBEs' characteristics in the generalised model also approach those in Proposition 3 (except the existence of fully-separating PBE). See Appendix B.10.1 in the Supplemental material for the description of the generalised model.

<sup>13</sup> The sender's 'type' in this signalling game is a possible pair drawn from  $\{I, U\} \times \{\bar{\theta}, \underline{\theta}\}$ , based on which the intuitive criterion is defined (see also footnote 16). In semi-separating PBEs, bureaucrats' choice of  $g$  reveals state  $\theta$ , but does not always reveal the incumbent's type.

$$G_2(i_i) = \begin{cases} pg^*(\bar{\theta}) + (1-p)g^*(\underline{\theta}) & \text{if } i_i = I, \\ p\hat{g}(\tau^{**}; \bar{\theta}) + (1-p)\hat{g}(\tau^{**}; \underline{\theta}) & \text{if } i_i = U. \end{cases} \quad (6)$$

In addition, let  $\tilde{G}_2 = \mu G_2(I) + (1-\mu)G_2(U)$ , which denotes bureaucrats' continuation value when a challenger wins the election.

The difference in continuation values leads to bureaucrats' induced preference regarding politicians' types. Bureaucrats prefer politicians who choose a higher tax level at the second period since bureaucrats can produce more public goods. I formally define conflict of interests and alignment of interests, the terms mentioned in the introduction. Since voters prefer type  $I$  politicians to type  $U$  politicians, conflict of interests occurs when  $G_2(I) < G_2(U)$ , which shows that type  $S$  bureaucrats prefer type  $U$  to type  $I$ . On the contrary, alignment of interests occurs when  $G_2(I) > G_2(U)$ .

Note that which case is realised depends on voters' utility function.<sup>14</sup> Suppose, for example, that the utility function is  $u(g) = g^{1-\alpha}/(1-\alpha)$  where  $\alpha > 0$ . Conflict of interests arises when  $\alpha > 1$  while alignment of interests arises when  $0 < \alpha < 1$ .<sup>15</sup>

#### 4.2.2. Strategies in the first period

First, I consider voters' strategy. Since voters prefer type  $I$  politicians to type  $U$  politicians, voters re-elect the incumbent if the posterior belief  $\tilde{\mu}$  is higher than the prior belief  $\mu$ , as in Eq. (4). A difference from the last section is how voters update their belief; voters now infer the incumbent's type using type  $S$  bureaucrats' strategic choice of  $g$ .

Next, I consider type  $S$  bureaucrats' strategy. Note that type  $S$  bureaucrats choose a public goods level depending on the incumbent's type  $i_i$ . Specifically, type  $S$  bureaucrats' strategy is

$$g_1^S(\bar{\tau}; \theta_1, i_i) = \arg \max_{g \leq \hat{g}(\bar{\tau}; \theta_1)} g + \beta \{ \sigma(\bar{\tau}, g) G_2(i_i) + [1 - \sigma(\bar{\tau}, g)] \tilde{G}_2 \}. \quad (7)$$

To explain type  $S$  bureaucrats' strategy intuitively, consider the following example of 'conflict of interests'. Suppose that the incumbent is type  $I$  and sets tax  $\bar{\tau}$ . Now, type  $S$  bureaucrats have an incentive to remove the type  $I$  incumbent since they prefer challengers to the type  $I$  incumbent as a second-period politician (i.e.  $G_2(I) < \tilde{G}_2$ ). Type  $S$  bureaucrats optimally choose maximum production  $\hat{g}(\bar{\tau}; \theta_1)$  if the voting strategy satisfies  $\sigma(\bar{\tau}, \hat{g}(\bar{\tau}; \theta_1)) = 0$ . A choice of  $\hat{g}(\bar{\tau}; \theta_1)$  enables bureaucrats to maximise public goods provision and cause the incumbent's dismissal. Suppose, instead, that  $\sigma(\bar{\tau}, \hat{g}(\bar{\tau}; \theta_1)) = 1$ . Type  $S$  bureaucrats then face a trade-off between two options: one is maximising public goods but re-electing the type  $I$  incumbent and the other is firing the incumbent but lowering current public goods provision. If the current payoff is attractive to type  $S$  bureaucrats, they choose maximum production  $\hat{g}(\bar{\tau}; \theta_1)$  even though the incumbent will be re-elected.

PBE reveals quite different characteristics between Case (I) conflict of interests and Case (II) alignment of interests because type  $S$  bureaucrats have different incentives between these cases. I classify the following discussion into these two cases.

#### 4.2.3. Case (I): Conflict of Interests

This section considers the case of conflict of interests. Type  $S$  bureaucrats want type  $U$  incumbents to win and type  $I$  incumbents to lose in the election.

First, I show that there exists no fully-separating PBE. Note that type  $S$  bureaucrats have an incentive to help type  $U$  politicians to mimic type  $I$  politicians. Type  $U$  politicians, thus, set a tax level that type  $I$  politicians choose.

**Lemma 2.** *Consider the case of conflict of interests. There exist no fully-separating PBEs while there exists a continuum of pooling PBEs as in the game with honest bureaucrats (Lemma 1).*

From here, I characterise semi-separating PBEs. The next lemma shows two incentive compatibility (IC) constraints for type  $S$  bureaucrats not to manipulate information about the incumbent's type.

**Lemma 3.** *Consider the case of conflict of interests. Strategies  $\tau_1^I(\theta_1)$ ,  $\tau_1^U$  and  $g_1^S(\bar{\tau}; \theta_1, i_i)$  are supported by a semi-separating PBE if and only if the strategies satisfy the following:*

- (i)  $\tau_1^U = \tau_1^I(\bar{\theta})$ .
- (ii)  $g_1^S(\bar{\tau}; \theta_1, i_i) = \hat{g}(\bar{\tau}; \theta_1)$  on the equilibrium path.
- (iii) Two IC constraints:

$$\hat{g}(\tau_1^I(\underline{\theta}); \underline{\theta}) + \beta G_2(I) \geq \hat{g}(\tau_1^I(\underline{\theta}); \bar{\theta}) + \beta \tilde{G}_2, \quad (8)$$

and

$$\hat{g}(\tau_1^I(\bar{\theta}); \underline{\theta}) + \beta \tilde{G}_2 \geq \hat{g}(\tau_1^I(\bar{\theta}); \bar{\theta}) + \beta G_2(U). \quad (9)$$

Property (ii) says that type  $S$  bureaucrats provide the maximum amount of public goods in PBEs; property (iii) describes

<sup>14</sup> If I additionally assume  $u_{ggg}(\cdot) \geq 0$ , I can show the following result: conflict of interests arises when  $\tau^*(\bar{\theta}) > \tau^*(\underline{\theta})$ , and alignment of interests occurs when  $\tau^*(\bar{\theta}) < \tau^*(\underline{\theta})$ . See Appendix B.10.2 in the supplemental material for the proof of the statement.

<sup>15</sup> Note that when  $\alpha$  approaches 0, voters' utility approaches type  $S$  bureaucrats' payoff; voters and type  $S$  bureaucrats have alignment of interests.

conditions under which this statement holds.<sup>16</sup> This result means that they do not strategically influence incumbents' reputation on the equilibrium path. Suppose that the incumbent is type  $I$  and the state is  $\underline{\theta}$ . The incumbent, then, sets  $\tau_1^I(\underline{\theta})$ . Note that in the PBE, voters re-elect the incumbent when bureaucrats provide  $\hat{g}(\tau_1^I(\underline{\theta}); \underline{\theta})$  while voters do not re-elect the incumbent when bureaucrats provide  $\hat{g}(\tau_1^I(\underline{\theta}); \bar{\theta})$  (i.e. voters have off-equilibrium belief  $\tilde{\mu}(\tau_1^I(\underline{\theta}), \hat{g}(\tau_1^I(\underline{\theta}); \bar{\theta})) = 0$  in the PBE).<sup>17</sup> If type  $S$  bureaucrats choose full production, they get  $\hat{g}(\tau_1^I(\underline{\theta}); \underline{\theta}) + \beta G_2(I)$  because voters re-elect the incumbent. Instead, type  $S$  bureaucrats may try to have the incumbent defeated by choosing  $\hat{g}(\tau_1^I(\underline{\theta}); \bar{\theta})$  rather than  $\hat{g}(\tau_1^I(\underline{\theta}); \underline{\theta})$ . In this case, voters are deceived into believing that the incumbent is type  $U$ , and they dismiss the incumbent.<sup>18</sup> Type  $S$  bureaucrats, then, get  $\hat{g}(\tau_1^I(\underline{\theta}); \bar{\theta}) + \beta \tilde{G}_2$ . The IC constraint (8) shows that such a deviation does not increase type  $S$  bureaucrats' total payoff.

Condition (8) is rewritten as

$$\tau_1^I(\underline{\theta}) \geq \underline{\tau} \equiv \frac{\beta(1 - \mu)[G_2(U) - G_2(I)]\bar{\theta}\underline{\theta}}{\bar{\theta} - \underline{\theta}}. \quad (10)$$

When the type  $I$  incumbent sets a higher tax level than  $\underline{\tau}$  at  $\underline{\theta}$ , type  $S$  bureaucrats need to sacrifice a large amount of public goods production to damage the incumbent's reputation. In such a case, the cost of manipulation outweighs the benefit of the regime change. In other words, type  $I$  politicians need to set a tax level higher than  $\underline{\tau}$  at  $\underline{\theta}$  to prevent type  $S$  bureaucrats from manipulating information.

If, instead, the incumbent is type  $U$ , type  $S$  bureaucrats have an incentive to ensure the incumbent's re-election at  $\underline{\theta}$ . Similar reasoning to that given above is applied to obtain IC constraint (9). The condition is also rewritten as

$$\tau_1^I(\bar{\theta}) \geq \bar{\tau} \equiv \frac{\beta\mu[G_2(U) - G_2(I)]\bar{\theta}\underline{\theta}}{\bar{\theta} - \underline{\theta}}. \quad (11)$$

Conditions (10) and (11) shows that the taxes that type  $I$  politicians can choose in semi-separating PBEs are bounded below.

**Proposition 2.** *Consider the case of conflict of interests. There exists a semi-separating PBE in which type  $I$  politicians choose the first-best tax  $\tau^*(\bar{\theta})$  at state  $\bar{\theta}$  (resp.  $\tau^*(\underline{\theta})$  at  $\underline{\theta}$ ) if and only if  $\tau^*(\underline{\theta}) \geq \underline{\tau}$  (resp.  $\tau^*(\bar{\theta}) \geq \bar{\tau}$ ). Type  $I$  politicians are always re-elected at both states while type  $U$  politicians are re-elected only at  $\bar{\theta}$ .*

Lemma 3 and Proposition 2 indicate that there exists a situation where bureaucrats' strategic motivation hinders type  $I$  politicians from setting the first-best taxes. Remember that type  $I$  politicians need to set a higher tax level than  $\bar{\tau}$  at  $\bar{\theta}$  and than  $\underline{\tau}$  at  $\underline{\theta}$  to avoid bureaucrats' information manipulation. This means that when  $\tau^*(\bar{\theta}) < \bar{\tau}$  and/or  $\tau^*(\underline{\theta}) < \underline{\tau}$ , the government becomes oversized, which is the crucial difference from the PBEs of the model without bureaucrats' strategic motivation in the last section. Moe (2006) conjectures that if bureaucrats have sufficient political power, politicians are compelled to choose policies more favourable to bureaucrats. In my context, Moe's conjecture can be rewritten as 'if bureaucrats use their political power strategically, politicians are compelled to allocate a larger budget size'. My model, thus, confirms Moe's conjecture when voters' preferred tax levels are sufficiently low. The implementable policies in this case become favourable to bureaucrats and unfavourable to voters, showing that bureaucrats' strategic motivation weakens political accountability.

Note that electoral selection in semi-separating PBEs works at the same level as in the case without bureaucrats' strategic motivation in the last section. Since type  $S$  bureaucrats do not manipulate information on the equilibrium path, voters can perfectly identify the incumbent's type at  $\underline{\theta}$ .

I now consider the PBE where voters' equilibrium payoff is maximised. First, consider the case of  $\tau^*(\bar{\theta}) > \tau^*(\underline{\theta})$ . In this case, I can show that  $\tau^{welf}(\bar{\theta})$  in Eq. (5) can be implemented as a value of  $\tau_1^I(\bar{\theta})$  in semi-separating PBEs (i.e.  $\tau^{welf}(\bar{\theta}) > \bar{\tau}$ ).<sup>19</sup> Then, voters' equilibrium payoff is maximised at the semi-separating PBE where type  $I$  politicians set  $\tau^{welf}(\bar{\theta})$  at  $\bar{\theta}$  and set  $\max\{\underline{\tau}, \tau^*(\underline{\theta})\}$  at  $\underline{\theta}$ . Note that when  $\tau^*(\underline{\theta}) < \underline{\tau}$ , the utility-maximising tax level at  $\underline{\theta}$  is higher than that obtained in the case without bureaucrats' strategic motivation in the last section; then, voters' highest equilibrium payoff is lower than that obtained in the last section.

However, when  $\tau^*(\bar{\theta}) < \tau^*(\underline{\theta})$ , voters' equilibrium payoff may not be maximised at a semi-separating PBE.<sup>20</sup> In particular, when  $\bar{\tau}$  and  $\underline{\tau}$  are sufficiently high, voters would be better off at a pooling PBE than at semi-separating PBEs. Although electoral selection works at semi-separating PBEs better than at pooling PBEs, voters suffer from the cost of an oversized government (i.e. a low level of

<sup>16</sup> Note that such a choice of  $g$  passes the intuitive criterion. For example, consider the situation where the type  $I$  incumbent selects  $\tau_1^I(\bar{\theta})$  at state  $\bar{\theta}$ . Lemma 3 denotes that bureaucrats choose  $\hat{g}(\tau_1^I(\bar{\theta}), \bar{\theta})$ . Consider an off-equilibrium public goods level  $g' < \hat{g}(\tau_1^I(\bar{\theta}), \bar{\theta})$ . Now, the sender's 'type' can be either  $(I, \bar{\theta})$ ,  $(U, \bar{\theta})$  or  $(U, \underline{\theta})$ . Condition (9) means that when the 'type' is  $(U, \underline{\theta})$ , the level  $g'$  is equilibrium dominated. Note that  $g'$  is also equilibrium dominated when the 'type' is  $(U, \bar{\theta})$ . Suppose that  $g'$  is not equilibrium dominated when the 'type' is  $(I, \bar{\theta})$ , which holds when  $g'$  is not very small. Voters thus should re-elect the incumbent when the policy  $(\tau_1^I(\bar{\theta}), g')$  is implemented. Those arguments show that bureaucrats cannot increase their payoff by choosing  $g'$ .

<sup>17</sup> Off-equilibrium belief  $\tilde{\mu}(\tau_1^I(\underline{\theta}), \hat{g}(\tau_1^I(\underline{\theta}); \bar{\theta})) = 0$  may not be intuitive since only type  $I$  politicians will set  $\tau_1^I(\underline{\theta})$ . Readers thus may think that voters should re-elect the incumbent who sets  $\tau_1^I(\underline{\theta})$ . However, based on the voting strategy, type  $U$  politicians choose  $\tau_1^I(\underline{\theta})$  instead of  $\tau_1^I(\bar{\theta})$ . Note that this voting strategy is not consistent with the newly updated belief on the incumbent's type. See the proof of Lemma 3 for a more detailed explanation.

<sup>18</sup> To dismiss the incumbent, bureaucrats must waste the amount  $\tau_1^I(\underline{\theta}) - \underline{\theta}\hat{g}(\tau_1^I(\underline{\theta}); \bar{\theta}) > 0$ . Readers may wonder whether public goods level  $\hat{g}(\tau_1^I(\underline{\theta}); \bar{\theta})$  is the minimum level required for firing the incumbent. However, Lemma 3's proof shows that checking deviation to  $\hat{g}(\tau_1^I(\underline{\theta}); \bar{\theta})$  is sufficient to derive the PBE.

<sup>19</sup> See Appendix B.10.3 in the Supplemental material for the proof of the statement and for the derivation of the PBE. Note that when  $\tau^*(\bar{\theta}) > \tau^*(\underline{\theta})$ , it also holds that  $\tau^*(\bar{\theta}) > \bar{\tau}$  because  $\tau^*(\bar{\theta}) > \tau^{welf}(\bar{\theta})$ .

<sup>20</sup> I explain why the result may differ between cases  $\tau^*(\bar{\theta}) > \tau^*(\underline{\theta})$  and  $\tau^*(\bar{\theta}) < \tau^*(\underline{\theta})$ . The differentiating point is the size of  $G_2(U) - G_2(I)$ . When  $\tau^*(\bar{\theta}) > \tau^*(\underline{\theta})$ , it holds that  $\hat{g}(\tau^*(\bar{\theta}); \bar{\theta}) < g^*(\bar{\theta}) < g^*(\underline{\theta}) < \hat{g}(\tau^*(\bar{\theta}); \underline{\theta})$ . Since  $g^*(\bar{\theta})$  is bounded below,  $G_2(I)$  is also bounded below. In addition,  $\hat{g}(\tau^*(\bar{\theta}); \underline{\theta})$  is bounded above since  $\tau^*(\bar{\theta}) < \tau^*(\underline{\theta})$ . Thus,  $G_2(U) - G_2(I)$  is relatively small. However, when  $\tau^*(\bar{\theta}) < \tau^*(\underline{\theta})$ , it holds that  $g^*(\bar{\theta}) < \hat{g}(\tau^*(\bar{\theta}); \bar{\theta}) < \hat{g}(\tau^*(\bar{\theta}); \underline{\theta}) < g^*(\underline{\theta})$ . Then,  $\tau^*(\bar{\theta})$  can be small, close to 0. In this case,  $G_2(U) - G_2(I)$  could be relatively large.



political accountability) at semi-separating PBEs.

Finally, I discuss how PBEs change when bureaucrats have another objective. If bureaucrats become less concerned about public goods provision, they would not hesitate to waste the budget to a greater extent, which implies that a more oversized government could be realised. For example, consider bureaucrats' per-period payoff  $g + \alpha(\tau/\theta - g)$ , where  $\alpha \in (0, 1)$ . Note that bureaucrats now obtain payoff from both the public goods provision  $g$  and the discretionary budget  $\tau/\theta - g$ . I can show that such bureaucrats' objective weakens political accountability and leads to a more oversized government.<sup>21</sup> As another example, bureaucrats may maximise the size of their budget.<sup>22</sup> Then, I can show that there exists no semi-separating PBE since bureaucrats do not hesitate to abandon taxation.<sup>23</sup> The result means that voters cannot make type  $I$  politicians accountable. PBEs in this case have similar characteristics to those obtained in the model in [Appendix A](#).

#### 4.2.4. Case (II): Alignment of Interests

This subsection considers the case of alignment of interests. Voters and type  $S$  bureaucrats have the same induced preference in terms of politicians' type; they prefer type  $I$  politicians to type  $U$  politicians.

In some PBEs, type  $S$  bureaucrats send a credible signal to voters regarding the incumbent's type. Since voters and bureaucrats want to re-elect type  $I$  politicians and dismiss type  $U$  politicians, bureaucrats have an incentive to perfectly inform voters of the incumbent's type. Hence, voters should believe the signal from type  $S$  bureaucrats.

Consider an example in which type  $I$  politicians choose the state-contingent first-best tax  $\tau^*(\theta_1)$  and type  $U$  politicians choose  $\tau^*(\bar{\theta})$ . Suppose that the incumbent is type  $U$  and the state is  $\bar{\theta}$ . After the type  $U$  incumbent sets  $\tau^*(\bar{\theta})$ , bureaucrats choose  $g^*(\bar{\theta}) - \epsilon$ , where  $\epsilon$  is positive and infinitesimally small. Voters then infer that the incumbent is type  $U$ . This inference is reasonable; type  $S$  bureaucrats can gain a higher payoff by deviating from full production to  $g^*(\bar{\theta}) - \epsilon$  if voters remove the incumbent. This result implies that type  $S$  bureaucrats' choice of full production fails the intuitive criterion.<sup>24</sup>

However, there exists an issue regarding the existence of the reasonable PBE that pass the intuitive criterion. Although type  $S$  bureaucrats would like to minimise the level of  $\epsilon$ , they lose a significant amount of payoff when choosing  $\epsilon = 0$ .<sup>25</sup> Thus, type  $S$  bureaucrats' most preferred level of  $\epsilon$  is undefinable. A simple solution to avoid this technical issue is that the public goods level is assumed to take a discrete value and  $\epsilon$  is the minimum level that can be changed from  $g^*(\bar{\theta})$ . In this modified setting, the PBE denoted in the next proposition satisfies the intuitive criterion. However, because this issue is not essential for the argument of this paper, I avoid discussing it further.

**Proposition 3.** *Consider the case of alignment of interests. There exist semi- and fully-separating PBEs such that type  $I$  politicians choose the first-best tax at each state; and when type  $U$  incumbents choose  $\tau^*(\bar{\theta})$ , (resp.  $\tau^*(\underline{\theta})$ ), type  $S$  bureaucrats choose  $g^*(\bar{\theta}) - \epsilon$  at state  $\bar{\theta}$ , (resp.  $g^*(\underline{\theta}) - \epsilon$  at state  $\underline{\theta}$ ). Then, while type  $I$  politicians are always re-elected, type  $U$  politicians are never re-elected at any state. More generally, there is a continuum of semi- and fully-separating (as well as pooling) PBEs, each of which is characterised by the sizes of equilibrium taxes  $\tau_1^I(\bar{\theta})$ ,  $\tau_1^I(\underline{\theta})$  and  $\tau_1^U$  (as well as the level of  $\epsilon$ ).*

The main point of this proposition is that political selection works perfectly. Even though type  $U$  politicians successfully choose the same tax level that type  $I$  politicians choose at a current state, type  $S$  bureaucrats can send voters a credible signal. Thus, voters perfectly identify the incumbent's type at all states. [Tullock \(2002\)](#) descriptively argues that bureaucrats could leak information unpleasant to incumbents to harm their reputation with very few costs. The PBE in this proposition presents the theoretical foundation of bureaucrats' information-leak strategy. Notice that the information-leak strategy works only in the case of alignment of interests. In the case of the conflict of interests, strategic bureaucrats have an incentive to manipulate information concerning the incumbent's type.

Another point of this proposition is that fully-separating PBEs exist. Since type  $U$  politicians have no means of winning the election at any state, they are indifferent among taxation levels. Thus, type  $U$  politicians may choose a tax level other than the levels that type  $I$  politicians choose.<sup>26</sup> This argument shows that voters' equilibrium payoff is maximised at the fully-separating PBE such that type  $I$  politicians choose the first-best tax at each state and type  $U$  politicians choose  $\tau^{**}$ . In this PBE, voters can make both types of politicians accountable and select their preferred type at the election.

Furthermore, it is noteworthy that type  $S$  bureaucrats cannot obtain the budget higher than the first-best level. This is because there is no conflict between type  $I$  politicians and type  $S$  bureaucrats. Thus, type  $S$  bureaucrats cannot force a concession from type  $I$  politicians. This means that voters can make type  $I$  politicians accountable, as in the case without bureaucrats' strategic motivation in [Section 3](#).

<sup>21</sup> See [Appendix B.10.4](#) in the [Supplemental material](#) for the detailed explanation. See also [Migué and Bélanger \(1974\)](#) for the discussion about organisational slack for bureaucracy.

<sup>22</sup> Following [Niskanen \(1971\)](#), previous studies use budget-maximising bureaucrats, assuming that bureaucrats use up all budget in providing public goods. Unlike the literature, I examine the case where bureaucrats can abandon taxation.

<sup>23</sup> See [Appendix B.10.5](#) in the [Supplemental material](#) for the detailed discussion.

<sup>24</sup> Note that when the incumbent is type  $I$ , type  $S$  bureaucrats do not have an incentive to deviate from  $g^*(\bar{\theta})$ .

<sup>25</sup> In other words, their payoff is not continuous at  $\epsilon = 0$ . Concretely, bureaucrats obtain payoff  $g^*(\bar{\theta}) - \epsilon + \beta\tilde{G}_2$  when they choose a positive  $\epsilon$  but they obtain payoff  $g^*(\bar{\theta}) + \beta G_2(U)$  when they choose  $\epsilon = 0$ . Then, it holds that  $\lim_{\epsilon \rightarrow 0} (g^*(\bar{\theta}) - \epsilon + \beta\tilde{G}_2) > g^*(\bar{\theta}) + \beta G_2(U)$ .

<sup>26</sup> There exists an issue of what level of taxation type  $U$  politicians should set in a reasonable PBE. The plausible tax level, at least for me, is  $\tau_1^I(\bar{\theta})$ . Consider an extended model where bureaucrats' type (either type  $H$  or type  $S$ ) is randomly determined and assume that the incumbent and voters cannot observe bureaucrats' type. Then, type  $U$  politicians should choose  $\tau_1^I(\bar{\theta})$ . This is because type  $U$  politicians can get re-elected at  $\bar{\theta}$  when bureaucrats are type  $H$ . The arguments means that the existence of fully-separating PBE would not be robust. See also footnote 12 for another example that shows a lack of robustness of fully-separating PBEs.

## 5. Political appointees

This section examines whether the political appointment system can constrain bureaucrats' strategic behaviour. Muller (2008) argues that the spoils system can mitigate bureaucrats' incentive to engage in sabotage. Since the top of the executive branch (either the president or the prime minister) appoints her preferred top bureaucrats, the bureaucrats would hold similar policy preference to the politician.<sup>27</sup>

In particular, this section studies incumbents' appointment problem concerning civil servants. In France, the members of the *grands corps*, distinctive groups of elite civil servants, are appointed to high-ranking positions in ministerial cabinets while political appointees from outside the government are relatively scarce (Suleiman, 2003; Rouban, 2004). Even if the incumbent loses an election, politically-appointed bureaucrats can return to their positions in the *grands corps*. Although most *grands corps* members do not display obvious political affiliations, they nevertheless become engaged in politics by participating in political circles and demonstrating their loyalty and competence (Suleiman, 2003). Such activity is not only required for elite civil servants to be promoted, but also is used by politicians to distinguish the type of civil servants.

### 5.1. Model

The model in this section is modified to consider the incumbent's appointment problem. Just after her type is realised (i.e. between events 1 and 2 in the first period), the incumbent appoints either a type *H* or a type *S* public servant as the top bureaucrat who chooses the amount of public goods. I assume that the incumbent knows the type of civil servants and can appoint her preferred type. Voters, however, cannot observe which type is appointed.<sup>28</sup>

Whether the incumbent wins the election, type *S* bureaucrats (who were appointed in the first period) also obtain payoff  $g_2$  in the second period; thus, their total payoff is  $g_1 + \beta g_2$ . Since both types of bureaucrats maximises the level of public goods production in the second period, only the first-period political appointment matters. (For simplicity, I assume that the first-period bureaucrat also decides the level of second-period public goods provision.)

### 5.2. Equilibrium

First, consider the case of conflict of interests. When appointing a type *H* bureaucrat, type *I* politicians no longer worry about bureaucrats engaging in sabotage to dismiss them. Remember that type *S* bureaucrats will sabotage at  $\underline{\theta}$  when the tax level is lower than  $\underline{\tau}$ . Thus, when  $\tau^*(\underline{\theta}) < \underline{\tau}$ , political appointment assists type *I* politicians in setting the first-best tax  $\tau^*(\underline{\theta})$  at  $\underline{\theta}$ . This result shows an improvement in type *I* politicians' accountability, leading to an increase in voters' payoff. However, since type *U* politicians can appoint type *S* bureaucrats, implementable tax levels at  $\bar{\theta}$  are still restricted to levels higher than  $\bar{\tau}$ . Hence, political appointees do not improve political accountability at  $\bar{\theta}$ .

**Proposition 4.** Consider the conflict-of-interests case. There exists a semi-separating PBE such that type *I* politicians choose the first-best tax at each state if and only if  $\tau^*(\bar{\theta}) \geq \bar{\tau}$ . More generally, there exists a continuum of semi-separating PBEs, each of which is characterised by  $\tau_1^l(\bar{\theta}) \in [\bar{\tau}, \infty)$  and  $\tau_1^l(\underline{\theta}) \in [0, \infty)$ . Compared with the game with bureaucrats' strategic motivation in Section 4, political appointment improves type *I* politicians' accountability and thus increases voters' payoff when  $\tau^*(\underline{\theta}) < \underline{\tau}$ .

Next, consider the case of alignment of interests. Remember that type *U* politicians cannot obtain re-election when bureaucrats are type *S*; however, they are re-elected at state  $\bar{\theta}$  when bureaucrats are type *H*. Thus, type *U* politicians appoint type *H* civil servants, set the same tax level as type *I* politicians set at  $\bar{\theta}$ , and then obtain re-election at  $\bar{\theta}$ .

**Proposition 5.** Consider the alignment-of-interest case. In PBEs, type *U* politicians appoint type *H* bureaucrats. PBEs have the same characteristics as in the game without bureaucrats' strategic motivation in Section 3 (Lemma 1 and Proposition 1). Compared with the game with bureaucrats' strategic motivation in Section 4, political appointees impede electoral selection and thus decreases voters' equilibrium payoff.

To summarise Propositions 4 and 5, the political appointment system improves political accountability and voters' payoff in the conflict-of-interest case (when  $\tau^*(\underline{\theta}) < \underline{\tau}$ ) and has negative effects on electoral selection and voters' payoff in the case of alignment of interests.<sup>29</sup>

<sup>27</sup> Suleiman (2003) shows a growing trend of the politicisation of bureaucracies in the U.S., France, Japan, the U.K., Germany and Spain.

<sup>28</sup> I assume that voters' off-equilibrium beliefs concerning the appointed bureaucrat's type are restricted as follows: voters believe the bureaucrat to be type *S* if off-equilibrium public goods are provided. The restricted beliefs are reasonable since only type *S* bureaucrats have an incentive to change public goods level. Due to the restricted beliefs, the intuitive criterion can also be applied to this game.

<sup>29</sup> I briefly discuss how PBEs change when voters observe the type of the appointed bureaucrat. The incumbent's appointment choice becomes an additional signal regarding the incumbent's type, which voters can use to evaluate the incumbent's type. Thus, voters are better off (or at least not worse off) when they observe politicians' appointment choice.

## 6. Conclusion

This paper has examined how bureaucracy affects political accountability and electoral selection. Bureaucrats' strategic motivation leads to different conclusions depending on bureaucrats' induced preferences regarding politicians' types. When voters and bureaucrats prefer different types of politicians, incumbent politicians allocate a budget larger than the first-best level to prevent bureaucrats from manipulating information and damaging her reputation. This means that voters suffer the cost of an oversized government. In contrast, when voters and bureaucrats have the same induced preferences, bureaucrats cannot obtain a concession from politicians. In the latter case, however, bureaucrats send a credible signal to voters to identify incumbents' type. Thus, voters can remove their non-preferred incumbents and thereby gain the benefit of enhanced political selection. In addition, the political appointment system can mitigate bureaucrats' strategic behaviour. In the case of conflict of interests, political appointees help politicians implement the first-best policy and thus benefits voters. However, in the case of alignment of interests, political appointees enable the incompetent government to persist longer and therefore lowers voters' welfare.

This paper leaves important extensions for future work. Bureaucrats will be motivated by their career concerns and/or intrinsically motivated for public interests (Besley and Ghatak, 2005; Prendergast, 2007). These motivations may prevent bureaucrats from strategically using their political power. A comprehensive analysis considering bureaucrats' various motivations is needed.

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## Appendix A. Simple Political Agency Model without Bureaucrats

This appendix examines a simple two-period political agency model with an incumbent politician and voters. In this appendix bureaucrats do not possess policy-making discretion and thus, are excluded from being players.

### A.1. Model

The model in this appendix changes in the following respects from the model in Section 3. Politicians choose both tax  $\tau$  and public goods  $g$ ; accordingly, the fourth event in the first and second periods denoted in Section 3.1.1 changes into the event: 'The incumbent produces and provides public goods  $g_t$ '. I assume that type  $U$  politicians know state  $\theta_t$  after they determine tax  $\tau_t$  and before they determine public goods  $g_t$ . Thus, when determining  $g_t$ , they face the budget constraint  $\tau_t \geq \theta_t g_t$ .

### A.2. Equilibrium

#### A.2.1. Strategies in the second period

Both types of politicians maximise voters' welfare during the second period. After observing the current state  $\theta_2$ , type  $I$  politicians implement the state-contingent first-best policy  $(\tau^*(\theta_2), g^*(\theta_2))$ . However, since type  $U$  politicians cannot observe  $\theta_2$  when setting the tax level, they maximise voters' expected utility. Type  $U$  politicians, thus, set tax  $\tau^{**}$  and provide public goods  $\hat{g}(\tau^{**}; \bar{\theta})$  at  $\bar{\theta}$  and  $\hat{g}(\tau^{**}; \underline{\theta})$  at  $\underline{\theta}$ .

#### A.2.2. Strategies in the first period

First, consider voters' strategy. Since voters want to re-elect only type  $I$  incumbents, voters have the same voting strategy as in Eq. (4). Note that voters here evaluate the incumbent's type, using her choice of tax  $\tau_1$  and public goods  $g_1$ .

Next, consider politicians' strategy. Since incumbents can achieve re-election if identified as type  $I$ , type  $U$  politicians try to mimic type  $I$  politicians. The next proposition shows that there exists no fully-separating PBE nor semi-separating PBE.

**Proposition 6.** *All PBEs are pooling PBEs, in which both types of politicians select the same amount of public goods at the first period and are re-elected in both states.*

No semi-separating PBEs exist.<sup>30</sup> Suppose that type  $I$  politicians choose the state-contingent first-best policy. In this case, type  $U$  politicians can always mimic type  $I$  politicians by setting tax  $\tau^*(\bar{\theta})$  and providing public goods  $g^*(\bar{\theta})$ . This is possible because even at cost  $\underline{\theta}$ , type  $U$  politicians have a sufficient amount of taxes to produce  $g^*(\bar{\theta})$  (i.e.  $g^*(\bar{\theta}) < \hat{g}(\tau^*(\bar{\theta}); \underline{\theta})$ ). These strategies however are not supported by PBEs. After observing  $(\tau^*(\bar{\theta}), g^*(\bar{\theta}))$ , voters have updated belief  $p\mu/(p\mu + 1 - \mu) < \mu$ . They thus do not re-elect the incumbent, which runs counter to politicians' optimal strategy.

<sup>30</sup> There exist 'mixed-strategy' PBEs where type  $U$  politicians select tax  $\tau_1^l(\bar{\theta})$  with probability  $p$  and then implement  $\hat{g}(\tau_1^l(\bar{\theta}); \bar{\theta})$  at both states; they select tax  $\tau_1^l(\underline{\theta})$  with the remaining probability and then implement  $\hat{g}(\tau_1^l(\underline{\theta}); \bar{\theta})$  at state  $\bar{\theta}$  and  $\hat{g}(\tau_1^l(\underline{\theta}); \underline{\theta})$  at state  $\underline{\theta}$ . See Appendix B.10.6 in the Supplemental material for the detailed explanation.

Political accountability and electoral selection do not function in this case. Although type *I* politicians know the first-best policy appropriate for a current state, they do not implement it in equilibrium. Furthermore, voters cannot identify incumbents' type and therefore cannot remove type *U* politicians. As in the literature discussed in the introduction section, politicians' strong incentive to establish a good reputation leads to an inefficient pooling equilibrium.

## Appendix B. Supplementary data

Supplementary data associated with this article can be found in the online version at <http://dx.doi.org/10.1016/j.ejpoleco.2017.03.009>.

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