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Abstract

This paper contrasts the incentives for cronyism in business, the public sector and politics within an agency problem model with moral hazard. The analysis is focused on the institutional differences between private, public and political organizations. In business, when facing a residual claimant contract, a chief manager ends up with a relatively moderate first-best level of cronyism within a firm. The institutional framework of the public sector does not allow explicit contracting, which leads to a more severe cronyism problem within public organizations. Finally, it is shown that the nature of political appointments (such that the subordinate's reappointment is conditioned on the chief's re-election) together with implicit contracting makes political cronyism the most extreme case.

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1. Introduction

Cronyism is defined as partiality to long-standing friends, especially by appointing them to positions of authority, regardless of their qualifications. Cronyism is contrary in principle to meritocracy, whereby appointments are made according to an individual's merits, such as intelligence, credentials and education, determined through evaluation or examination. Emerging empirical evidence has highlighted the practice of cronyism in both private and public sectors (Kramarz and Thesmar 2007, Martins 2010, Scoppa 2009). Notable examples of political cronyism include Warren G. Harding's nomination of long-standing friends as cabinet members and John F. Kennedy's appointment of Robert S. McNamara as Secretary of Defense.

The literature contains several formal models of cronyism and favoritism. Prendergast and Topel (1996) showed that a principal who values the power to affect his subordinate's welfare does not necessarily appoint the most competent agents. Levine et al. (2007) emphasized that if a firm owner's preferences favor specific individuals, then too many inefficient workers may be employed. Montgomery (1991) and Taylor (2000) studied cronyism in hiring in the presence of adverse selection and moral hazard problems. Egorov and Sonin (2011) showed within a principal-agent framework that in dictatorships, in order to avoid betrayal, a weak ruler will hire mediocre but loyal subordinates. Studies on family firms have investigated the trade-off between the competence of a hired manager and the loyalty of a family member generally lacking that competence (Burkart et al. 2003, Caselli and Gennaioli 2006, Chami 2001).

This paper complements the aforementioned literature by studying the cronyism problem in business, the public sector and politics. A two-tier agency problem with moral hazard is built in which a principal delegates the control of an organization to an organization leader, who in turn appoints agents to implement specific tasks within the organization. The leader can choose an efficient expert or a long-standing friend for each specific task. There is a trade-off here between efficiency and social network benefits. Experts are more efficient in performing organization tasks. Appointment of friends, however, implies certain private benefits for the leader (e.g., in terms of future job opportunities). The analysis is focused on differences in organizational structures and appointing procedures among business, the public sector and politics. The model then compares the levels of business, bureaucratic and political cronyism.

It is assumed that a top manager of a large corporation cares about her monetary payoffs. In business, therefore, when facing a residual claimant contract, a manager will appoint a first-

best number of experts within the firm. Note, however, that the first-best does not involve complete meritocracy: as long as a leader gains some private benefits from appointing friends, there will be a certain level of cronyism within the organization. In the public sector and politics, wages are usually fixed and publicly announced. The institutional structure does not allow explicit contracts with bureaucrats and politicians. A bureaucrat's main concern then is job security, while a president's main concern is re-election prospects. Both therefore seek reappointment, which happens if the overall performance of the organization exceeds a critical threshold. While under an explicit residual claimant contract a manager maximizes the expected overall performance of the firm, under an implicit contract, a bureaucrat and a politician want to guarantee that the overall performance of their organization exceeds the minimum threshold needed for reappointment. Thus, the level of bureaucratic or political cronyism will be higher than that of business cronyism.

Furthermore, political cronyism is more severe than bureaucratic cronyism. The reason lies in a particular feature of political appointments described below. Consider a newly elected president who forms her cabinet. It is common that the president nominates new ministers and rarely reappoints incumbents (regardless of their performance). This tendency might also exist in the public sector, but obviously not on the same scale as in politics. It is natural, therefore, to assume that in cabinet, reappointment of ministers is conditioned on re-election of the president. The ministers therefore realize that their reappointment depends not only on their own performance, but also on the overall cabinet performance, which decreases their incentives. As a result, a cabinet member exerts a lower effort than a lower-tier bureaucrat does. The overall cabinet performance is therefore less sensitive to a number of experts than the overall performance of a public body. It follows that cronyism is more intense in politics than in the public sector.

It must be stressed that in this framework the key difference between bureaucracy and politics is in appointment procedures for subordinates. In politics (but not in the public sector), a subordinate's reappointment is conditioned on the chief's re-election. It is assumed, however, that there is no crucial difference between bureaucrats and politicians at the top level: both are office-motivated and seek reappointment, and thus are held accountable for their past performance. Indeed, as pointed out by Maskin and Tirole (2004, p. 1036.), "the requirement that officials run for reelection is not the only form of accountability ... After all, most appointed officials are accountable to their supervisors."

The paper borrows from the literature on political agency, starting with the seminal work of Barro (1973) and followed by Ferejohn (1986), Persson et al. (1997), Austen-Smith and Banks (1989), Banks and Sundaram (1993, 1996), and others. In this approach, elections

are modeled as a disciplining device. Politicians want to be re-elected for another term, and are held accountable for their past performance at the time of election. They therefore have incentives to satisfy the principal's wishes.

The literature also contains several models of bureaucratic delegation. In a seminal paper, Rogoff (1985) emphasized the commitment benefits of appointing an independent central banker whose objective is inflation-rate stabilization. Several authors contrasted elected officials (elected regulators, politicians) with non-elected officials (appointed regulators, judges, bureaucrats) to study the allocation of decision-making powers in society (Besley and Coate 2003, Maskin and Tirole 2004, Alesina and Tabellini 2007, 2008). The appointed regulators considered by Besley and Coate and the judges investigated by Maskin and Tirole were assumed to have intrinsic motivations. The bureaucrats considered by Alesina and Tabellini are motivated by career concerns, i.e., they are concerned with the perception of their ability by their professional peers or the public at large. Section 3 includes some intuitions on how the model predictions would change if a chief bureaucrat were concerned about public perception of her leadership competence (rather than reappointment).

The remainder of the paper is organized as follows. Section 2 outlines the model. Section 3 presents the formal analysis. Finally, Section 4 concludes the paper.

2. Model

Consider an organization with an objective that implies implementation of n tasks. Think of this as a firm, a public body or a cabinet of ministers, for example. In business, the tasks might include control of human resources, monitoring of production process, innovation, and advertising of final output, among many others. In the public sector, an agency responsible for, say, delivering social security faces tasks that include healthcare provision, ensuring retirement security through the pension system, and supporting citizens with disabilities. In politics, each minister of the cabinet deals with a particular task, such as defense, interior affairs, foreign affairs, commerce, labor, transportation, education, etc.

It is assumed here that the final output of an organization is determined by aggregate task performance. Therefore, poor implementation of one task does not imply total failure by the organization. For example, an unsuccessful advertising campaign will not destroy the whole business. The social security agency might succeed in healthcare provision but fail in implementing a new pension system. Finally, ineffective measures taken by, say, the ministry of education for regulation of primary schools will not lead to cabinet removal.[1]

[1] Tasks within the organization might be complementary, and then a failure to implement one task could

The organization leader delegates the tasks to n agents. Each agent i, $i = 1, \ldots, n$, exerts an unobservable costly effort $a_i \geq 0$ to implement his corresponding task. The leader observes the performance of agent i, p_i, with independent unobservable noise $\varepsilon_i \sim N\left(0, \sigma^2\right)$:

$$p_i = a_i + \varepsilon_i.$$

The overall performance of the organization, denoted by p, equals the sum of the performances of all the agents:

$$p = \sum_{i=1}^{n} p_i.$$

The wage structure within the organization is assumed to be fixed such that each agent earns a fixed salary. Indeed, within a firm it is impossible to make every employee a residual claimant. An average manager is usually offered a fixed salary. In the public sector and government, wages are publicly known and not negotiable. Moreover, it is assumed that the contracts are temporary. An agent's concern is therefore job retention, i.e., to be reappointed to implement the task again. The agents independently choose effort levels a_i to maximize their utility, given by

$$Pr_i\left(a_i\right) - C\left(a_i\right),$$

where $Pr_i\left(a_i\right)$ is the probability that i will be reappointed to implement the task, and $C\left(a_i\right)$ denotes the cost for i of exerting effort a_i.

It is assumed that the leader's function within the organization is reduced to appointing agents to implement the tasks.[2] The leader will reappoint an agent i if his performance, p_i, exceeds a certain threshold. The leader realizes that the only alternative to reappointing agents is to appoint new ones who will exert equilibrium efforts a_i' (where a_i' denotes the leader's perception of a_i). An optimal rule for reappointing agent i is therefore a cutoff rule such that i is reappointed only if $p_i \geq a_i'$ and is dismissed otherwise. Therefore,

$$Pr_i\left(a_i\right) = P\left(\left\{p_i \geq a_i'\right\}\right).$$

Consider now a situation in which the leader appoints agents for the first time (so there are no incumbents to be reappointed). For each task, the leader can choose either an expert E or

lead to collapse of the whole organization. Analysis of such a task structure is left for future research.

[2] The organization leader not only appoints the agents, but also, more importantly, provides guidance and instructions and coordinates their work. However, the focus here is on an analysis of the problem of cronyism within the organization. This is why it is assumed that the leader's unique task is to choose agents.

a long-standing friend from her social network (a crony) F.[3] An expert has widely recognized extensive knowledge and ability based on education and experience for implementing a specific task. E is therefore more efficient in performing a task than any other individual. Formally, this is modeled in terms of the agent's cost of exerting an effort a_i: the effort is assumed to be cheaper for an expert than for a friend. The cost for friend F is given by $C^F(a_i) = \frac{a_i^2}{2}$ while the cost for expert E is given by $C^E(a_i) = \frac{a_i^2}{2c}$, where $c > 1$.

Appointment of a friend, however, implies some private benefits for the organization leader (e.g., in terms of future job opportunities). These benefits are normalized to zero and it is assumed that appointment of an expert involves an opportunity cost for the leader. Formally, appointment of $m = 0, \ldots, n$ experts generates the cost $\frac{m^2\theta}{2}$ in terms of the leader's utility, where $\theta > 0$ is a parameter of the cost function. It is reasonable to assume a convex cost in this framework; indeed, appointment of each extra expert instead of a friend will be considered increasingly less favorable in the leader's social network such that the leader could finally lose all her contacts. Alternatively, this cost could arise because of a certain synergy between the members of the same social network. For the leader, it might be easier to coordinate the actions of her friends rather than those of independent experts. This interpretation is particularly suitable in politics, in which policymakers from the same political party share similar ideological views and therefore might easily come to an agreement on a specific policy implementation.

In this simple framework, appointment of long-standing friends represents cronyism. Cronies are less efficient than experts are, but imply certain private benefits for the organization leader. Appointment of experts represents meritocracy, since appointments are made and responsibilities are assigned to individuals based on their merits, namely their widely recognized efficiency in performing tasks.

The reward for the leader, denoted by $\Pi(p)$, depends on the overall performance of the organization and varies depending on whether the leader is a chief executive of a firm, a chief bureaucrat in a public agency or a president (or prime minister). The leader decides on a number of experts to appoint, m, to maximize her net utility, which is given by

$$\Pi(\cdot) - \frac{m^2\theta}{2}.$$

The function $\Pi(\cdot)$ is defined explicitly in the following sections.

The timing of events is as follows. First, the leader appoints agents by choosing between

[3] Note that the leader will face the same problem each time she dismisses an incumbent. It can easily be shown that in equilibrium, the leader will appoint the same number of experts and cronies as she has dismissed.

experts and friends. Second, the agents exert efforts a_i. Finally, nature chooses noise ε_i, the performance p_i of the agents is observed, and the rewards are paid.

First, I solve for the efforts a_i. Second, I examine the leader's choice of a number of experts and long-standing friends within the organization.

3. Analysis

Consider a benchmark case in which the leader owns the organization. She thus cares about the expected overall performance, which implies $\Pi(p) = Ep$.

I analyze the agents' problem first. The utility of agent i is given by

$$Pr_i(a_i) - C(a_i) = P\left(\left\{p_i \geq a_i'\right\}\right) - C(a_i) = 1 - F_{\varepsilon_i}\left(a_i' - a_i\right) - C(a_i),$$

where F denotes the normal distribution function. Agent i exerts effort a_i before observing realization of noise and taking the leader's expectations a_i' as given. The first-order condition with respect to actual effort a_i is $f_{\varepsilon_i}(a_i' - a_i) - C'(a_i) = 0$, where f denotes the normal distribution density function. After imposing the equilibrium requirements $a_i' = a_i$, I obtain the equilibrium effort of an expert a^E and that of a leader's friend a^F. The result is established in the following lemma.

Lemma 1. *The equilibrium effort of an expert, a^E, and that of a leader's friend, a^F, are equal to*

$$\begin{aligned} a^E &= \frac{c}{\sqrt{2\pi}\sigma}, \\ a^F &= \frac{1}{\sqrt{2\pi}\sigma}. \end{aligned}$$

In this simple framework, the equilibrium efforts of agents do not depend on the number of experts and leader's friends in the organization. The reason is that the leader evaluates each subordinate only for his own performance, which is not affected by the performance of other agents. As expected, an expert makes a greater effort than a leader's friend does ($a^E > a^F$) since the effort is less costly for him. A greater variance σ^2 of the noise decreases the agents' efforts. Intuitively, more randomness in the observed performances p_i makes the reappointment probability less sensitive to effort, reducing the agents' incentives. To guarantee that the agents' participation constraint holds, the following condition is required: $c \leq 2\pi\sigma^2$.

I now analyze the choice of a leader who owns the organization. The leader appoints m experts and $n-m$ friends to maximize her expected utility, given by

$$Ep - \frac{m^2\theta}{2} = ma^E + (n-m)\,a^F - \frac{m^2\theta}{2} = \frac{m\,(c-1)+n}{\sqrt{2\pi}\sigma} - \frac{m^2\theta}{2}.$$

The first-order condition with respect to m yields a first-best number of experts within the organization, m^*. The following proposition summarizes the results.

Proposition 1. *The first-best number of experts within the organization is*

$$m^* = \frac{c-1}{\sqrt{2\pi}\sigma\theta}.$$

To guarantee that $m^* \leq n$, the following condition must hold: $c \leq 1 + \sqrt{2\pi}\sigma\theta n$. For simplicity, the integer problem is disregarded throughout the paper.[4]

From an efficiency point of view, only experts should be appointed to perform the tasks. However, even in the first-best equilibrium there are cronies appointed for some tasks: m^* is strictly positive. The reason is that there is always a trade-off between efficiency and social network benefits: efficiency requires the appointment of experts, while social network benefits require the appointment of cronies.

Intuitively, the more efficient the experts are (the higher c) the more experts would be appointed: $\frac{dm^*}{dc} > 0$. Moreover, the number of experts within the organization decreases with the variance σ^2 of the noise. As mentioned above, greater variance σ^2 decreases the agents' efforts and therefore the overall performance of the organization. Appointment of cronies thus becomes even more attractive to the leader. Finally, the more private benefits the leader gains by appointing friends (the higher θ is), the fewer experts and the more cronies will be chosen for task implementation: $\frac{dm^*}{d\theta} < 0$.

After considering a first-best scenario, I turn to analysis of a more realistic situation in which a principal delegates management of the organization to a leader. This is then a two-tier agency problem. First, a principal delegates to the organization leader governance of the organization and second, the leader delegates to the agents the implementation of the tasks.

In business, a principal is a firm's owner and the organization leader is the chief executive or chief manager. In the public sector, a principal is the highest-ranked public authority (or government) coordinating all public activities such as delivering social security, administering national planning or organizing national defense. The organization leader is then a chief

[4] Then $\frac{m}{n}$ can be interpreted as the probability of appointing an expert or a proportion of experts within the organization.

bureaucrat responsible for, say, social security. In politics, a principal is a representative voter who delegates to a president (or prime minister) the implementation of policies.

Regardless of the leader type, a principal's objective is to maximize the overall performance of the organization, p. The leader's reward $\Pi(\cdot)$ varies depending on whether the leader is a chief executive of a firm, a chief bureaucrat in a public agency or a president (or prime minister). In the following subsections, I present analyses for different types of organization leader (manager, bureaucrat and politician).

3.1. Cronyism in Business

This subsection considers a firm owner who delegates management of the firm to a manager. The agents' problem is identical to that in Section 3. Lemma 1 specifies the equilibrium effort of an expert and that of a manager's friend.

The manager cares about her wage w and chooses a number of experts to maximize her net utility, given by

$$w - \frac{m^2\theta}{2}.$$

I suppose that the overall performance p is contractible. It is known from contract theory that the first-best can be achieved by an optimal explicit contract rewarding the manager with a simple linear payoff based on the overall performance:

$$w = p - \phi.$$

The constant ϕ is found from the manager's ex-ante participation constraint, given by:

$$Ep - \phi - \frac{m^2\theta}{2} = \frac{m(c-1)+n}{\sqrt{2\pi}\sigma} - \phi - \frac{m^2\theta}{2}.$$

Under an optimal contract, the participation constraint will bind, yielding

$$\phi = \frac{m^M(c-1)+n}{\sqrt{2\pi}\sigma} - \frac{m^{M2}\theta}{2},$$

where m^M denotes the number of experts appointed by the manager. The following proposition summarizes the results.

Proposition 2. *A manager appoints a first-best number of experts within the organization:*

$$m^M = m^* = \frac{c-1}{\sqrt{2\pi}\sigma\theta}.$$

In business, a residual claimant contract is a powerful tool for ensuring the first-best. By making the manager a residual claimant, the firm's owner guarantees the first-best number of experts appointed for task implementation. The manager still chooses a certain number of cronies. There is no way of motivating her to appoint efficient experts to all n tasks.

3.2. Cronyism in the Public Sector

Consider now the problem of a highest-ranked public authority (or government) that delegates the governance of a public body to a bureaucrat. The agents' problem is the same as in Section 3, so the agents' equilibrium efforts are specified in Lemma 1.

I suppose that the wage in the public sector is fixed and that contracts are temporary. The chief bureaucrat is therefore concerned about her job security, i.e., she wants to retain her job and to be reappointed to govern the public organization in the future. The bureaucrat's net utility is then

$$Pr\left(p\right) - \frac{m^2\theta}{2},$$

where $Pr\left(p\right)$ denotes the probability of the bureaucrat being reappointed for public service.

The overall performance of the public organization, p, is not contractible. Indeed, rewarding public sector performance with explicit contracts is hard to imagine. The principal therefore adopts implicit contracting to motivate the bureaucrat. The bureaucrat will be reappointed if the organization performance p exceeds a certain threshold. The only alternative to reappointing the bureaucrat is to delegate the governance of the public body to another bureaucrat who will choose an equilibrium number of experts m' (where m' denotes the principal's perception of m). It follows that the bureaucrat will be reappointed only if $p \geq m'a^E + \left(n - m'\right)a^F = \frac{m'(c-1)+n}{\sqrt{2\pi}\sigma}$. The following proposition establishes the results for the number of experts appointed by the bureaucrat, m^B. (The proof of this and other propositions can be found in the Appendix.)

Proposition 3. *The number of experts appointed by the bureaucrat is given by*

$$m^B = \frac{c-1}{2\pi\sigma^2\theta\sqrt{n}}.$$

The condition $c \leq \min\left[1 + 2\pi\sigma^2\sqrt{\theta}\sqrt{n}, 1 + 2\pi\sigma^2\theta\sqrt{n^3}\right]$ ensures that the bureaucrat's participation constraint is satisfied and that $m^B \leq n$. As in the first-best case, the more efficient the experts are, the more of them will be appointed instead of cronies for task implementation: $\frac{dm^B}{dc} > 0$. A greater variance σ^2 of the noise decreases the agents' efforts and thus the number of experts within the public body. The higher the bureaucrat's opportunity cost of appointing experts (instead of friends), the fewer of them will be chosen for task implementation: $\frac{dm^B}{d\theta} < 0$.

Note, moreover, that the bureaucrat's choice is also affected by the number of tasks to be implemented. Indeed, the more tasks there are in the public organization, the fewer experts and more cronies would be appointed by the bureaucrat: $\frac{dm^B}{dn} < 0$. The reason is that

the agents' performances on task implementation are observed with independent noise ε_i. The more tasks there are to implement (the higher n is), the more randomness there is in the observed overall performance of the public body, p. This makes the chief bureaucrat's reappointment probability less sensitive to the agents' efficiency. As a result, appointment of cronies (instead of experts) becomes more attractive for the bureaucrat.

3.3. Cronyism in Politics

This subsection analyzes the delegation problem in politics when a president forms a cabinet of ministers to implement policies on behalf of a representative voter. I first consider the agents' (the ministers') problem and then address the president's choice of experts and cronies within the cabinet.

As in private and public sectors, the subordinates here want to be reappointed to implement the tasks again. In politics, however, each president usually forms a new cabinet from scratch, and appoints new ministers regardless of the incumbents' performance. It is then reasonable to assume that a minister's reappointment depends not only on his own performance, but also on the president's re-election. The representative voter is rational and thus realizes that the only alternative to re-electing the president is to elect an opponent who will choose an equilibrium number of experts m' (where m' denotes the voter's perception of m) generating an overall performance p'. Therefore, the president will be re-elected if $p \geq p'$. The probability of minister i being reappointed is thus equal to

$$Pr_i\left(a_i\right) = P\left(\left\{p_i \geq a_i'\right\} \cap \left\{p \geq p'\right\}\right).$$

The following proposition specifies the equilibrium efforts of the cabinet members.

Proposition 4. *The equilibrium effort of an expert, $\overline{a}^E$, and that of a president's friend, $\overline{a}^F$, within the cabinet of ministers are given by*

$$\begin{aligned} \overline{a}^E &= \frac{c\left(1+\sqrt{n}\right)}{2\sqrt{2\pi n}\sigma}, \\ \overline{a}^F &= \frac{1+\sqrt{n}}{2\sqrt{2\pi n}\sigma}. \end{aligned}$$

The condition $c \leq \frac{8\pi n\sigma^2}{\left(1+\sqrt{n}\right)^2}\left(\frac{1}{2}+\frac{1}{\pi}\arctan\frac{1}{\sqrt{n-1}}\right)$ guarantees that the ministers' participation constraints hold.

As intuition suggests, an efficient expert exerts a higher effort than a crony does: $\overline{a}^E > \overline{a}^F$. Moreover, the more random the observed performance is (the higher σ^2 is), the less

sensitive is the ministers' reappointment probability to effort, which decreases the ministers' incentives. Note, moreover, that the ministers' efforts decrease with a number of tasks n to be implemented. The reason is that task implementations are observed with independent noise ε_i. The more tasks there are (the higher n is), the more random the observed overall performance of the cabinet is, which makes the president's re-election probability less sensitive to the ministers' efforts. Moreover, there is a free-riding problem here. Intuitively, each minister realizes that the president's re-election depends on the overall performance of the cabinet, and would like to free-ride on his counterparts' performance and save a cost of exerting effort. The more ministers there are in the cabinet, the more severe is the free-riding problem and the less effort each minister will make.

How do the ministers' efforts compare with those of employees in the private and public sectors? The following lemma establishes the result. (The proof is straightforward.)

Lemma 2. *The cabinet members exert less effort than employees working in the private and public sectors:*

$$\begin{aligned} a^E &> \overline{a}^E, \\ a^F &> \overline{a}^F. \end{aligned}$$

As discussed above, in business and the public sector, a subordinate's reappointment is determined only by his own performance. A subordinate's reward is therefore very sensitive to his own effort. In politics, however, a minister's reappointment is possible only if the president is re-elected for a subsequent term. Each minister's reward is then affected by the performance of the entire cabinet and is less sensitive to his own effort, which reduces his incentives. A free-riding problem arises here. Each politician would like to save a costly effort and wants his counterparts to ensure successful cabinet performance and therefore the president's re-election.

I now address the president's problem of appointing cabinet members. The president's goal is to be re-elected, which occurs if the overall cabinet performance p exceeds a critical threshold. If the president is thrown out of office, a newly elected opponent will choose an equilibrium number of experts m' who generate the expected cabinet performance $p' \equiv m'\overline{a}^E + (n - m')\,\overline{a}^F$ (where m' and p' denote a voter's perception of m and p, respectively). The voter is rational and thus compares the actual cabinet performance p with the expected performance p' of a potential cabinet and votes accordingly. The president's objective function is thus given by

$$P\left(\{p \geq p'\}\right) - \frac{m^2\theta}{2}.$$

The following proposition specifies the equilibrium number of experts appointed by the president within the cabinet of ministers.

Proposition 5. *The number of experts appointed by the president within the cabinet,* m^P*, is equal to*

$$m^P = \frac{(1+\sqrt{n})(c-1)}{4\pi\sigma^2\theta n}.$$

To guarantee the president's participation constraint and that $m^P \leq n$, it is required that $c \leq \min\left[1 + \frac{4\pi\sigma^2\sqrt{\theta}n}{1+\sqrt{n}}, 1 + \frac{4\pi\sigma^2\theta n^2}{1+\sqrt{n}}\right]$. As in business and the public sector, the more efficient the experts are (the higher c is), the more of them will be appointed instead of cronies within the cabinet of ministers. A greater variance σ^2 of noise leads to more randomness in the observed cabinet performance and therefore decreases the president's re-election probability. As a result, the president will appoint more friends and fewer experts. The higher the opportunity cost of appointing experts (the higher θ is), the fewer of them will be chosen by the president in the cabinet. As the bureaucrat does, the president chooses fewer experts and more cronies the more tasks there are to implement within the cabinet: $\frac{dm^P}{dn} < 0$. As in the public sector, the agents' performances are observed with independent noise. Thus, the more tasks there are, the more random is the overall cabinet performance. This implies that the president's re-election probability decreases with the number of tasks. The president becomes even more eager to appoint friends instead of experts. Moreover, in politics, there is one more reason to appoint friends when the number of tasks increases. As was shown above, the ministers' efforts (and therefore the overall cabinet performance) decrease with the number of tasks n to be implemented. The president's re-election probability decreases and appointment of cronies (instead of experts) becomes even more appealing to the president.

3.4. Cronyism Problem

How does the number of experts appointed by a manager, chief bureaucrat or president differ from the first-best number of experts? The following lemma establishes the result. (The proof is straightforward using the condition for the agents' participation constraint $c \leq 2\pi\sigma^2$).

Lemma 3. *A manager appoints a first-best number of experts within a firm. A bureaucrat appoints fewer experts than is socially optimal in a public body. A president chooses even fewer experts for her cabinet than a bureaucrat does. Formally,*

$$m^* = m^M > m^B > m^P.$$

The cronyism problem is therefore the most severe in politics: a president appoints much more friends in her cabinet than is socially optimal. In the public sector, cronyism arises on a smaller scale than in politics. In business, powerful residual claimant contracts can solve the cronyism problem such that the number of cronies within a firm is socially optimal. Note that the first-best is referred to as a social optimum. Alternatively, it can be argued that in a social optimum there should be no cronies appointed in place of efficient experts. Indeed, why should the leader's private benefits from appointing cronies be taken into account in a society's aggregate welfare function? The most important factor is the overall organization performance. If a reader shares this viewpoint, then the model results are quite disappointing: complete meritocracy is never reached–a number of cronies would be always appointed in business, the public sector and politics.[5]

Why is business cronyism not as strong as bureaucratic or political cronyism? The leaders' preferences are the key. The manager cares about her monetary reward. When offered a residual claimant contract, she chooses the number of experts that maximizes the expected overall performance of the firm net of opportunity cost of appointing experts. The bureaucrat or politician, in turn, wants to be reappointed (re-elected), and thus appoints the minimum number of experts sufficient to ensure that the overall organization performance exceeds the threshold needed for reappointment. As a result, a manager has less tendency to appoint cronies than a bureaucrat or politician does.

How does bureaucratic cronyism compare with political cronyism? In the simple framework here, the chief bureaucrat of a public organization and a president share the same preferences–they seek reappointment. The explanation lies then in the key difference between the functioning of a public body and a cabinet of ministers. A president nominates cabinet ministers, who are appointed with legislature approval. This procedure itself implies that each new president forms her own cabinet, rarely reappointing incumbent ministers (regardless of their performance). In the public sector, there is no such practice–a new chief bureaucrat is not supposed to nominate lower-tier bureaucrats. It might obviously happen that a newly appointed chief bureaucrat will substitute some subordinates who have failed in their tasks. This scenario is in line with the model here. This core disparity between the functioning of a public organization and that of a cabinet of ministers implies different incentives between cabinet ministers and public employees. Indeed, a minister realizes that his reappointment is possible only if a president is re-elected. The minister's reappointment is thus conditioned on the president's re-election, which makes the minister's reward less

[5] In making this statement, I consider strictly positive values for the leader's opportunity cost of appointing experts, $\frac{m^2\theta}{2}$. If this cost is negligibly small, meritocracy will be achieved.

sensitive to his own effort and decreases his incentives to perform well. However, a lower-tier bureaucrat might be reappointed solely because of his good performance, regardless of his chief's reappointment or dismissal. He therefore will make more effort than a cabinet minister does. Owing to these incentives issues, the performance of a lower-tier bureaucrat in a public agency is expected to be higher than that of a cabinet member. As a result, a marginal expert within a public body increases the reappointment probability of a chief bureaucrat more than a marginal expert within a cabinet of ministers increases the re-election probability of a president. A chief bureaucrat will therefore tend to appoint more experts and fewer cronies than a president does.

It must be stressed that this model captures just one particular case of the preferences of bureaucrats and politicians–both just want to keep their jobs and be reappointed. Alternatively, a high-level bureaucrat (e.g., central bank governor) or a president (particularly in her last term) could be concerned about the perception of her leadership competence by those who might offer her alternative job opportunities.[6] Intuitively, in this simple framework, leadership competence would be evaluated in terms of the expected overall performance of the organization, Ep. It follows then that a first-best level of meritocracy, m^*, can be achieved in the public sector. It must be emphasized, however, that such preferences are not particularly relevant for a representative bureaucrat: job security concerns seem to dictate the behavior of the average bureaucrat.

Another issue disregarded here is promotion opportunities within an organization. Conditioned on successful task implementation, agents might be promoted to the position of organization leader in business or the public sector. In politics, a successful cabinet member might win the next presidential election. Intuition suggests that promotion opportunities will give extra incentives for subordinates to exert effort. However, the level of cronyism within the organization is expected to increase as the leader will tend to appoint inefficient cronies who are less likely to challenge her leadership.[7] Formal analysis of this scenario is left for future research.

4. Conclusion

This paper seeks to capture key differences between cronyism in business, the public sector and politics. I consider a two-tier agency problem with moral hazard, in which a principal

[6] Alesina and Tabellini (2007, 2008) made this assumption.

[7] Egorov and Sonin (2011) formalize a principal-agent model in which a dictator chooses a mediocre but loyal vizier to avoid treason.

delegates to the organization leader governance of the entire organization, while the leader appoints lower-tier agents to perform specific tasks. For each task, an efficient expert or a leader's long-standing friend can be chosen. Appointment of friends implies certain private benefits for the organization leader.

The analysis rests on fundamental assumptions about the leader's preferences and appointment procedures within a firm, a bureaucratic organization or a cabinet of ministers. In particular, it is assumed that a chief manager of a firm cares about her monetary payoffs, while a chief bureaucrat of a public body and a president want to be reappointed. Then, facing a residual claimant contract, a manager appoints the first-best number of experts within the firm. As for a bureaucrat and president, they choose the minimum number of experts sufficient to guarantee that the overall organization performance exceeds the threshold needed for reappointment or re-election. It follows then that the level of cronyism in business is lower than that in the public sector or politics. However, as long as an organization leader gains some private benefits from appointment of cronies, complete meritocracy will be never achieved.

I also show that political cronyism is more severe than bureaucratic cronyism, as a president tends to appoint more cronies and fewer experts within her cabinet than a chief bureaucrat within a public body. A key explanation for this result is a particular feature of political appointments, such that a new political leader prefers to form her team from scratch and rarely reappoints incumbents who served under her predecessor. It follows then that cabinet ministers have a chance of staying in office only if the president is re-elected, which happens if the overall performance of the whole cabinet exceeds a critical threshold. This in turn weakens the ministers' incentives and thus the performance of a lower-tier bureaucrat in a public body exceeds that of a member of the president's cabinet. The reward of a chief bureaucrat is thus more sensitive to the number of experts within the organization than that of a president. This leads to higher levels of political than of bureaucratic cronyism.

This paper focused on a particular organization structure with no overlap between tasks nor synergy between agents. It would be of interest to relax these assumptions and study a more general framework in which, say, owing to synergy, two long-standing friends can outperform two experts or experts are particularly efficient in performing overlapping tasks in their specific competence area. Another potential extension is to assume that the tasks are exposed to the same shock, which would imply less randomness in the observed overall performance of the organization. These extensions are left for future research.

Appendix

A. Proof of Proposition 3

The bureaucrat is reappointed if $p \geq \frac{m'(c-1)+n}{\sqrt{2\pi}\sigma}$ or $\sum_{i=1}^{n}\varepsilon_i \geq \frac{m'(c-1)+n}{\sqrt{2\pi}\sigma} - \frac{m(c-1)+n}{\sqrt{2\pi}\sigma} = \frac{(m'-m)(c-1)}{\sqrt{2\pi}\sigma}$. Denote $\sum_{i=1}^{n}\varepsilon_i$ by $\widehat{\varepsilon}$: $\widehat{\varepsilon} \equiv \sum_{i=1}^{n}\varepsilon_i$. By convolution formula, the sum of normally distributed random variables is a normally distributed random variable, so $\widehat{\varepsilon} \sim N\left(0, n\sigma^2\right)$. The bureaucrat's utility is equal to

$$P\left(\left\{\widehat{\varepsilon} \geq \frac{(m'-m)(c-1)}{\sqrt{2\pi}\sigma}\right\}\right) - \frac{m^2\theta}{2} = 1 - F_{\widehat{\varepsilon}}\left(\frac{(m'-m)(c-1)}{\sqrt{2\pi}\sigma}\right) - \frac{m^2\theta}{2}.$$

The first-order condition with respect to m, taking m' as given, is

$$f_{\widehat{\varepsilon}}\left(\frac{(m'-m)(c-1)}{\sqrt{2\pi}\sigma}\right)\frac{c-1}{\sqrt{2\pi}\sigma} - m\theta = 0.$$

Imposing the equilibrium requirement $m' = m$ yields the number of experts appointed by the bureaucrat, m^B:

$$m^B = \frac{c-1}{2\pi\sigma^2\theta\sqrt{n}}.$$

For the bureaucrat's participation constraint to be satisfied, the following condition is required to hold: $c \leq 1 + 2\pi\sigma^2\sqrt{\theta}\sqrt{n}$. Moreover, to guarantee that $m^B \leq n$, it is required that $c \leq 1 + 2\pi\sigma^2\theta\sqrt{n^3}$. ■

B. Proof of Proposition 4

The utility of minister i is given by

$$P\left(\left\{p_i \geq a_i'\right\} \cap \left\{p \geq p'\right\}\right) - C\left(a_i\right) = P\left(\left\{\varepsilon_i \geq a_i' - a_i\right\} \cap \left\{\widehat{\varepsilon} \geq p' - a_i - \sum_{j\neq i} a_j\right\}\right) - C\left(a_i\right),$$

where $\widehat{\varepsilon} \equiv \sum_{i=1}^{n}\varepsilon_i$. The density function of a bivariate normal distribution of random variables ε_i and $\widehat{\varepsilon}$, denoted by $f_{\varepsilon_i,\widehat{\varepsilon}}(x,y)$, is

$$f_{\varepsilon_i,\widehat{\varepsilon}}(x,y) = \frac{1}{2\pi\sigma^2\sqrt{n-1}}\exp\left\{-\frac{x^2}{2\sigma^2} - \frac{(y-x)^2}{2(n-1)\sigma^2}\right\}.$$

The minister i's objective function then becomes

$$\int_{a_i'-a_i}^{+\infty}\left[\int_{p'-a_i-\sum_{j\neq i}a_j}^{+\infty} f_{\varepsilon_i,\widehat{\varepsilon}}(x,y)\,dy\right]dx - C\left(a_i\right).$$

Minister i chooses effort a_i, taking a_i' and p' as given. The first-order condition is equal to

$$\int_{p'-a_i-\sum_{j\neq i}a_j}^{+\infty} f_{\varepsilon_i,\widehat{\varepsilon}}\left(a_i'-a_i,y\right)dy+\int_{a_i'-a_i}^{+\infty} f_{\varepsilon_i,\widehat{\varepsilon}}\left(x,p'-a_i-\sum_{j\neq i}a_j\right)dx-C'\left(a_i\right)=0.$$

Imposing the equilibrium requirements $a_i'=a_i$ and $p'=\sum_{j=1}^{n}a_j$ yields minister i's equilibrium effort $\overline{a}_i$, defined implicitly by:

$$\frac{1+\sqrt{n}}{2\sqrt{2\pi n}\sigma}=C'\left(\overline{a}_i\right).$$

The equilibrium probability of minister i being reappointed is equal to

$$\int_0^{+\infty}\int_0^{+\infty} f_{\varepsilon_i,\widehat{\varepsilon}}\left(x,y\right)dydx=\frac{1}{4}+\frac{1}{2\pi}\arctan\frac{1}{\sqrt{n-1}},$$

where $\arctan\left(\cdot\right)$ is the arctangent function. Therefore, the ministers' participation constraint is

$$\frac{1}{4}+\frac{1}{2\pi}\arctan\frac{1}{\sqrt{n-1}}-C\left(\overline{a}_i\right)\geq 0. \ \blacksquare$$

C. Proof of Proposition 5

The president is reelected only if $p\geq p'$ where $p'\equiv m'\overline{a}^E+\left(n-m'\right)\overline{a}^F=\frac{\left(1+\sqrt{n}\right)\left(m'\left(c-1\right)+n\right)}{2\sqrt{2\pi n}\sigma}$. The president's utility then can be rewritten as

$$P\left(\left\{\widehat{\varepsilon}\geq\frac{\left(1+\sqrt{n}\right)\left(m'\left(c-1\right)+n\right)}{2\sqrt{2\pi n}\sigma}-\frac{\left(1+\sqrt{n}\right)\left(m\left(c-1\right)+n\right)}{2\sqrt{2\pi n}\sigma}\right\}\right)-\frac{m^2\theta}{2}=$$
$$1-F_{\widehat{\varepsilon}}\left(\frac{\left(1+\sqrt{n}\right)\left(c-1\right)\left(m'-m\right)}{2\sqrt{2\pi n}\sigma}\right)-\frac{m^2\theta}{2},$$

where $\widehat{\varepsilon}\equiv\sum_{i=1}^{n}\varepsilon_i\sim N\left(0,n\sigma^2\right)$. The first-order condition with respect to m, taking m' as given, is

$$f_{\widehat{\varepsilon}}\left(\frac{\left(1+\sqrt{n}\right)\left(c-1\right)\left(m'-m\right)}{2\sqrt{2\pi n}\sigma}\right)\frac{\left(1+\sqrt{n}\right)\left(c-1\right)}{2\sqrt{2\pi n}\sigma}-m\theta=0.$$

Imposing the equilibrium requirement $m'=m$ yields the number of experts appointed by the president, m^P:

$$m^P=\frac{\left(1+\sqrt{n}\right)\left(c-1\right)}{4\pi\sigma^2\theta n}.$$

The president's participation constraint is satisfied if $c\leq 1+\frac{4\pi\sigma^2\sqrt{\theta}n}{1+\sqrt{n}}$. Moreover, to guarantee that $m^P\leq n$, it is required that $c\leq 1+\frac{4\pi\sigma^2\theta n^2}{1+\sqrt{n}}$. $\blacksquare$

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