Retention Contracts under Partial Information Electoral Competition Case Study

Zina Houhamdi
Cybersecurity Department, College of Engineering, Al Ain University, UAE
zina.houhamdi@aau.ac.ae

Belkacem Athamena
Business Administration Department, College of Business, Al Ain University, UAE
belkacem.athamena@aau.ac.ae

Ghaleb El Refae
Business Administration Department, College of Business, Al Ain University, UAE
ghalebelrefae@aau.ac.ae

Abstract: *This study copes with a class of principal-agent problems where information asymmetry represents an important characteristic. The paper examines the relationship between the principal and agents. The principal has to perform two agents' screening and discipline tasks. To complete his duties, the principal lacks complete information concerning the agents' behavior and rarely has partial information regarding the failure or success of launched tactics, alliances, rationalization, etc. We analyze the type of retention contracts (implicit) used by the principal to replace or retain agents. Consistent with literature findings, we demonstrated that agents could be extremely active in showing their competencies; the relationship between dismissal and bad performance is invalid; and occasionally, the principal dismisses qualified agents. Then we determined the rules under which electorates urge political parties to acquire information and choose optimal policies from the voter's viewpoint.*

Keywords: *Retention contracts, moral hazard, principal-agent problem, electoral competition.*

1. Introduction

Tasks' delegation is important for multiple reasons. For example, in a company, the top executive (the principal) does not have time to make decisions related to the quotidian routine. Therefore, the top executive assigns these decisions to a director (the agent). In a typical democracy, the public has a frail motivation to examine the complete implications of possible policies [7]. Thus, the public delegates policy decisions to politicians. In these two cases, it is clear that the decision-making delegation is advantageous. Nevertheless, decision delegation is problematic if the agent has different preferences than the principal. Particularly with the existence of asymmetric information. The typical problem of the principal agent is the interest conflict between the chief executive officer and the stockholders. On account of stockholders, the council has the authority to run the company. On the other hand, Directors do not possess the information and time needed for decision-making. Accordingly, the decision-making is assigned to the chief executive officer. The council's role is twofold:

1. The council should nominate and dismiss managers:
2. The council should supervise the managers' achievements and oust them whenever inevitable [13].

The challenge is that the council has to perform these two tasks based on incomplete information. The council has to adhere to norms and rules to discipline managers to discipline executives. Often adhering to rules is the unique manner to discipline managers. Usually, in a small band, human behavior is very intricate, and behavioral norms (that are culturally created and implanted overtime) play a considerable role in molding companies [7, 14]. This paper considers the exploitation of retention contracts intended to screen and discipline managers in a context where the council possesses incomplete information about the consequences of managers' decisions. The contract is implicit and indicates the circumstances under which a manager is kept or replaced. The contract is seen as a rule or norm shared by the council and the manager. For instance, a manager who has developed an exceptionally profitless project understands he will need to quit the company immediately after it becomes public. If the manager is qualified, the council finds it harsh to replace the manager; however, the council must respect the norms. Accordingly, the dismissal resulting from an awful achievement is considered disappointing yet unavoidable [7].

This paper extends the proposed model presented in [4] by examining its application in the electoral competition between two parties. For this purpose, we employ a principal-agent model in which the electorate represents the principal who keeps an eye on the agent representing the officeholder party. The voter desires the political parties to encompass two tasks: information collection and policy decision making. The tenured and opponent parties search for information about multiple policy options. However, only the tenured party is responsible for policy decision-making.

This paper identifies the rules under which electorates incite political parties to gather information and choose optimal policies from the voters' perspective by focusing on the office motivated parties' approach.

The remaining paper contains five sections. Section 2 describes the problem and some related literature. Section 3 describes the proposed model and the trade-off the council faces between screening and disciplining managers. Section 4 addresses how the council shapes the manager's behavior, considering the pessimistic contract (in which the council dismisses the manager when the value of the implemented project is not observable). Section 5 describes the application of the proposed model in the electoral competition. Section 6 summarizes the findings.

2. Problem Description

This study contributes to the councils' (board of directors) literature. Hermalin and Weisbach [10], in their survey paper, observed that "the experimental literature on councils in governmental organizations is relatively properly developed, whereas its theory remains in its childhood". Furthermore, in their survey on councils, Stiles and Taylor [15] reached a similar conclusion concerning the theory dearth. In [12], the council of directors chooses an applicant for a manager post, makes an idea on the manager's competence, and determines to keep or dismiss him. There are two significant differences with the proposed models:

1. Perception of the manager's competence depends on his communication and presentation skills in council meetings, not on his perceived organizational performance.
2. It emphasizes the unique role of the council, screening manager competitions. Consequently, the council does not have to harmonize clashing objectives. Graziano and Luporini [9] propose an identical selection model and retention-dismissal decision.

Since the council mistakenly hires an unqualified manager in the selection phase, the council can be doubtful in the appraisal phase to fire the manager because this can indicate its deficiency of ability and probably provoke its substitution.

In this study, the council utilizes the retention contract to handle the manager moral hazard problem, similar to the electorate employing its reelection approach to control politicians. This correspondence was never exploited in business governance literature for all we know. The considered contract is not explicit (tacit) and is not imposed by a third party, as per the literature on the political agency. It forms common expectations between the agent (manager, director, or minister) and the principal (council, electors, or congress) about the cases in which the current agent is kept or replaced [8]. However, Aghion and Jackson [1] and Andonie and Diermeier [2] claimed the power of replacing agents'

who tends to use their office to pursue their own goals. The main goal of our study is to determine the ideal or the best implicit contract. As mentioned previously, this type of implicit contract is seen as standard. This approach (implicit contracts) is proven to be effective in figuring out some type of relation between the council and its managers. Despite everything, just as it is difficult to measure the contribution of a foreign affairs minister to the country's wellbeing, it is also difficult to identify a manager's contribution to the company (continuation and profitability in the long-term). The easiest thing to perceive is the activism (such as state a re-structuring, signing an agreement, implementing a strategy, etc.) of the minister or the manager. Moreover, acting as a parliament writes an implicit contract without defining when a minister will be dismissed, a classic council will not specify explicitly in the contract what causes the manager's dismissal.

3. The Model

One of the literature backbones of corporate governance is that managers become builders of an empire if not controlled by certain serious kinds of governance. Also, it is continuously asserted that building such an empire indicates managers' desire for prestige, power, and status [3, 6, 11, 16]. Therefore, building Empires originated from the divergence between the board council and the managers' preferences and visibility lacking (classical moral hazard problem). Ayllon and Nollenberger [6] added another cause for growth by saying that "decisions that lead to successful increase signifies that the manager is qualified and deserves rewards. Thus, individual competence is evaluated by accomplished expansion". Such signaling is beneficial for the council, which possesses only restricted information on a manager's competence. Therefore, there are many questions: How does the council handle a possible conflict between stopping empire building and requesting information? What kind of retention approaches are available? How do they balance between the achievements of the council's goals?

A simple two-phase model is used for answering these questions. In each phase, a manager conceives a project and then must decide to implement it or not. The project represents something that has considerable and strong effects on the organization, such as reorganizing, diversifying, and purchasing. The project quality depends on external conditions and the manager's competence. The manager knows his abilities and observes the external conditions, but the council does not. The council perceives only the manager's implementation decision. Thus, the council determines, with a certain probability, the project quality only after its implementation. At the end of the first phase, in which the manager took the implementation decision,

the council chooses between retaining the manager and dismissing him. The significant property of the proposed model is that a qualified manager implements more probably a project than an unqualified one because generally, a qualified manager conceives more appropriate projects (beneficial projects even in a more hostile situation). Hence, activism expresses aptitude and qualification. Thus, activism is used for screening. Consequently, the council sometimes desires a qualified manager to implement an unprofitable project. Furthermore, the council sometimes desires an unqualified manager to desist from implementing a profitable project. Accordingly, the relation between low performance and a poor quality manager is relapsed.

After establishing the screening function, we find out that the manager's desire to preserve his position (by the love of power, compensation, prestige, etc.,) leads him to abuse this function and sometimes deform the implementation decision. The manager partially bases his decisions on the decision effects on his career. Higher is the desire for power, prestige; the more is the distortion of his decisions (building his empire). So, the usage of the implementation decision by the council for screening causes a moral-hazard problem. The council reduced this problem by firing a manager who implemented a low-quality project. Nevertheless, the signaling function of the implementation decision indicates that qualified managers particularly implement bad projects. Consequently, the council finds it hard to intentionally fire a qualified manager and replace him with a manager with anonymous quality. To surmount this problem, a council must adhere to norms or rules. Accordingly, dismissal from a low performance is usually considered unfortunate yet unavoidable.

The model summary is as follows:

- *Phase X=1*

  - The council selects the manager (qualified or unqualified), the model derives δ_1, and reveals the type and δ_1 to the manager, but hides this information to the council.
  - The manager implements or not the project, $P_1 \in \{0,1\}$, where $P_1=0$ indicates the status-quo is maintained and $P_1=1$ indicates the project implementation.
  - The council observes the manager's decision P_1. If $P_1=1$, then the council identifies the project value V_1 with a probability λ.
  - The council decides the manager is retained or dismissed.

- *Phase X=2*

  - In case the manager is dismissed in the first phase, a new manager is selected randomly (by excluding the dismissed manager), δ_2 is derived, and finally, the type and δ_2 are revealed to the new manager but remain hidden from the council.

- The new manager should decide on project implementation, $P_2 \in \{0,1\}$.

The model analysis results are shown in Figure 1. (the qualified manager decision) and Figure 2. (the unqualified manager decision). Figures 1-a), 1-b) presents the V_1 values range for which the project is implemented (not implemented) by a qualified manager in case $\beta=0$ ($\beta>0$). However, Figure 2 describes alike information but for an unqualified manager.
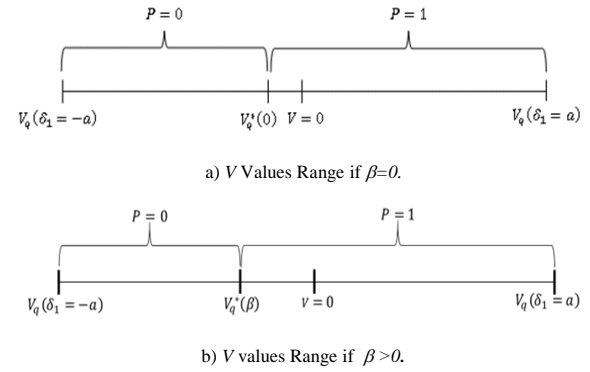

a) *V* Values Range if *β=0*.

b) *V* values Range if *β >0*.

Figure 1. Qualified manager decision.

a) *V* Values Range if *β=0*. .

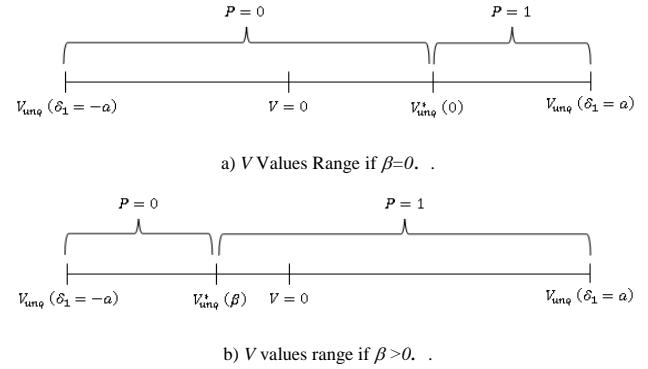b) *V* values range if *β >0*. .

Figure 2. Unqualified manager decision.

Where,

- δx: World state randomly selected from a uniform distribution on $[-a,a]$.
- $Px \in \{1,2\}$: *Agent decision about the project implementation in phase $X \in \{1,2\}$.*
- *P*: Agent's performance.
- *β*: Agent's benefits derived from his job.
- *u*: Probability that the agent is qualified, $\Rightarrow$ (1-u): Probability that the agent is unqualified.
- V_{unq}: *Project value V_X developed by an unqualified agent . $V_X = V_{unq}(\delta_X) = p + \delta_X$.*
- *Vq*: *Project value V_X implemented by a qualified agent. $V_X = Vq(\delta_X) = p + f + \delta_X$ Where f >0.*

The holding office desire expands the interval of the arguments for $P_1=1$. The manager dislikes that:

- U*nqualified agent to choose $P_1=1$ if $V_1 \in [V^*_{unq}(\beta), V^*_{unq}(0)]$.*
- *Qualified agent to choose $P_1=1$ if $V_1 \in [V^*q(\beta), V^*q(0)]$.*

The manager must also decide which action to be taken if the project value continues to be invisible. Once again, it defines the dilemma horns. The next sections examine the two types of retention contracts that are:

- Optimistic contract: If the implemented project value is invisible, the agent is retained.
- Pessimistic contract: If the implemented project value is invisible, the agent is discarded.

The optimistic contract was discussed in [5]. This study focuses on the pessimistic retention contract.

4. Pessimistic Retention Contract: 'No news is bad news.'

In short, the Pessimistic contract rejects all information till demonstrated to be true. Under a Pessimistic retention contract, the council decides to:

- Keep the manager if he implemented a project, and its observed value is bigger or equal to the threshold $V_1 \geq t$.
- Dismiss the manager in other cases (he did not implement a project, he implemented a project, and its value is unobservable or small than the threshold $V_1 < t$).

The primary interest is to determine the optimal value of the threshold t from the council's perspective. The optimal threshold value defines the extent to which a manager is disciplined and also the possibility that a qualified manager is chosen for phase 2.

As Figures 1, 2 -a), 2-b). The council decision affects the manager's decision for implementing a project in the first phase. Assume that the council select $st \in [V'q(\beta), V'_{unq}(\beta)]$. Thus, the qualified tenured decision on V_1 is affected by t. If the council notices $V_1 \leq t$, $P_1 = 1$ causes firing. Therefore, in comparison with the previous situation, where $P_1 = 1$ lead always to keep the manager, the motivation to select $P_1 = 1$ is attenuated. If the tenured in the first phase is unqualified, $t \in [V'q(\beta), V'_{unq}(\beta)]$. has no impact on the tenured implementation decision since t is no constraining. However, if the council selects $\geq V'_{unq}(\beta)$, t is constraining for a qualified and unqualified manager. u is the probability that the selected tenured is qualified.

Beware that the difference between the optimistic and pessimistic contracts resides in the council's decision in case the value of the implemented project remains not observable. With the optimistic contract, the manager is kept. This is meaningful from a selection alternative. Eventually, a qualified manager will more likely implement a project than an unqualified one. However, the optimistic contract possesses the disadvantage of provoking the manager to falsify the implementation decision hoping that a low-value project will go invisible. On the other hand, a pessimistic contract ruins such hopes. Thus, the manager will be dismissed for any implemented project leading to invisible results.

Therefore, manager activism will be considered as a qualification. Nevertheless, it remains true that a qualified manager will more likely implement a project than an unqualified one. The impact is that the council is more likely to dismiss a qualified manager than an unqualified one if the results of the implemented project are invisible.

Consider the manager's behavior if the council keeps him if and only if the results of his implemented project are observable. Assume the manager is qualified; thus, he will implement a project of value

$$V_q(\delta_1) \, V_q(\delta_1) + \beta + [\lambda(\Pi_q + \beta) + (1-\lambda)\Pi_\mu] \geq \beta + \Pi_\mu \text{ if}$$

$$V_q(\delta_1) \geq \widehat{V_q}(\beta) := -\lambda(\Pi_q - \Pi_\mu) - \lambda\beta \quad (1)$$

An unqualified manager implements a project if and only if

$$V_{unq}(\delta_1) \geq \widehat{V_{unq}}(\beta) := \lambda(\Pi_\mu - \Pi_{unq}) - \lambda\beta \quad (2)$$

Note that $\widehat{V_q}(\beta) < \widehat{V_{unq}}(\beta)$. Remember that a qualified manager chooses $P_1 = 1$ for more values of V_1 and consequently of δ_1 than an unqualified manager.

If $\beta = 0$, then Equations (1), and (2) express the ideal implementation decisions from the council's perspective; accordingly, the manager is sent home if the project results are unobserved. Since a qualified manager is dismissed with probability $(1-\lambda)$ if he implements a project, the council is not ready to accept a loss in the first phase. Similarly, the council is not prepared to waive a productive and beneficial project in the first phase to discover that the manager is unqualified: with probability $(1-\lambda)$ the manager will be replaced in any case. The comparison demonstrates that the pessimistic contract privileges a lower screening rate than the optimistic contract. The pessimistic contract advantage is that it gives weaker motivations to managers to falsify the implementation decision ($\lambda\beta$ in (1) and (2)). If the council applies a pessimistic contract, it can fully discipline a qualified manager, regardless of the benefits derived from holding office by the manager derives.

- Proposition 1: in the pessimistic contract, the council can fully discipline a qualified manager by fixing $t = \widehat{V_q}(0)$. Then, a qualified manager uses the cut-off value $\widehat{V_q}(0)$.
- *Proof:* Suppose a project with $V_q(\delta_1) < \widehat{V_q}(0)$. Thus, its implementation produces a loss (since $\widehat{V_q}(0) < 0$, according to Equation (1)), the manager will be dismissed in the first phase. In this case, choosing $P_1 = 0$ (status quo) is the best decision because the project's loss is investable.

Now consider a project with $V_q(\delta_1) \geq \widehat{V_q}(0)$. Thus $P_1 = 0$ leads to $V_q(\delta_1) + \beta + [\lambda(\Pi_q + \beta) + (1-\lambda)\Pi_\mu]$ whereas $P_1 = 0$ leads to $\beta + \Pi_u$. Thus deciding to implement the project is better because $V_q(\delta_1) \geq -\lambda(\Pi_q - \Pi_\mu) - \lambda\beta = \widehat{V_q}(0) - \lambda\beta$ is true.

Now suppose that the council desires to discipline an unqualified manager, $t \in [\widehat{V_{unq}}(0), V_{unq}(\delta_1 = a)]$. At most, the council can partially discipline an unqualified manager. Similar to the optimistic contract, if the council disciplines an unqualified manager, it also disciplines a qualified manager.

Thus, consider a pessimistic contract. When the council wants to discipline an unqualified manager, it is (feebly) an effective approach is to set t=0, thus forcing the two types of managers (both qualified and unqualified) to carry out only profitable and valuable projects in the first phase.

Here is the perception of this result. By setting $t \in [\widehat{V_{unq}}(\beta), 0)$, the council forces both manager types to implement a project only if $V_1 \geq t$. By setting $t \in [0, V_{unq}(\delta_1 = a)]$, the council forces both manager types to carry out only beneficial projects, $V_1 \geq 0$. As in both cases, either manager types apply the same implementation approach, a modification in t does not affect the probability of selecting a qualified manager. The best the council can do is force both manager types to implement only productive and beneficial projects. This is guaranteed by setting *t*=0. Precisely, the council chooses any $t \in [0, V_{unq}(\delta_1 = a)]$, hence $t = 0$ is a poorly effective approach. In the remaining, we disregard the other poorly effective approach $t \in (0, V_{unq}(\delta_1 = a)]$. Whether the council wants to discipline the qualified manager only (the selection alternative) or both types of manager (the disciplining alternative) is explained in the following proposition.

- Proposition 2: Consider a pessimistic contract. If $\beta < (\Pi_q - \Pi_{unq})$, the council has two alternatives. The council adopts the selection alternative by setting $t < \widehat{V_q}(0)$, or the council adopts the disciplining alternative by setting $t = 0$. A rise in β, or a reduction in $(\Pi_q - \Pi_{unq})$ or μ increases the parameters interval for which the council adopts the disciplining alternative. The parameter λ does not influence the choice of alternative. If rather $\beta \geq (\Pi_q - \Pi_{unq})$, the council's effective approach is to select the disciplining alternative by setting $t = 0$ (Proof in [4])

The council's choice of t, under a pessimistic contract, is a choice between emphasizing the selection or disciplining. For example, a rise in benefits β reinforces managers' incentives to falsify the implementation decision. Thus, β increase makes the disciplining alternative more important (decide *t*=0). Contrary, the high values of $(\Pi_q - \Pi_{unq})$ make more important that a qualified manager holds the bureau. Therefore, the higher is $(\Pi_q - \Pi_{unq})$ the more the council prefers to accentuate the selection alternative (decide $t = \widehat{V_q}(0)$). In terms of quality, Proposition 2 shows the impacts of λ depending on the contract type. Under the optimistic contract, a rise in λ encourages disciplining a manager. Nevertheless, the council can always discipline the

manager under a pessimistic contract. Therefore, λ does not affect the choice between the two alternatives regarding *t*.

5. Case Study: Electoral Competition

In democratic nations, decisions associated with the policies are assigned to elected political leaders. Actually, democracy is direct or representative. Direct democracy causes a severe free-rider problem regarding information collection. The rationale is straightforward: The examination of all outcomes of all policy options is expensive and complex. Usually, the citizens decide by way of a referendum, and they do not have any motivation to investigate all consequences of any policy. Moreover, the cost of information collection approximately always surpasses the profit due to the probability that the impact of the voter decision is insignificant. This is a direct consequence of the representative democracy, which assumes that deputies gather information.

This section demonstrates that, in addition to costs, the preferences polarization has an advantage since it allows each political party to defend its policies. Accordingly, political polarization encourages the political parties to gather information more than in a system where parties are fully driven by holding office. Therefore, political polarization is better than office-motivated parties, particularly if the information collection cost is higher than the office rents. We use the principal-agent model were two political parties try to win the bureau to clarify our opinion. There are two approaches: the first approach in which the two parties are motivated by their ideology, and the approach in which the unique goal of the two parties is holding office. This paper focuses on the second approach. We propose a model in which the voters want political parties to complete two roles: information collection and policy decision making. The information collection allows the political parties to justify their policy to the voters. Thus, the parties will seek a couple of arguments: a rationale to justify their policy intensification and a reason to defend their policy restriction. Note that the officeholder and the opposition parties can gather information; however, they can collect different pieces of information. The decision-making task is performed only by the officeholder party. This section examines the impact of different voting rules on the political parties, particularly in pursuing the voters' interests.

Depending on the voters' model, there are two different kinds of literature: principal-agent models of politics and spatial models of elections. In the principal-agent model, the principal, representing the voter, continuously observes the agent, representing the tenured. The voting rules define the implicit contract between the principal and the agent and model their relationship. These voting rules stipulate the constraints

under which the tenured keeps the bureau or is replaced by another one. On the other hand, in spatial models of elections, the voters compare the policies of different parties and vote for the political party having the best policy (highest expected utility). The model specifies the constraints under which the parties' policies converge in the two-party system.

This section attempts to merge the two kinds of literature on an electoral contest with two parties' system by:

1. Assigning parties many tasks.
2. Designing roles for the opposition party.
3. Examining polarization. We assume that a party with accurate information convinces voters more easily than a party with fake information. The next section describes the proposed model.

5.1. Model Description

Assume that the game is infinitely iterative. In each Iteration I, a political party decides on a government project, $P_I - \{-1, 0, 1\}$ where $P_I = -1$ defines policy restriction, $P_I = 0$ defines Status Quo, and $P_I = 1$ defines policy intensification. Assume we have two parties in each iteration: party R, party L, and a delegate voter v (midpoint). The preferences of the voter v are defined by

$$-\mathrm{E}\sum_{I=0}^{\infty}\lambda^I(P_I - \vartheta_I)^2 \qquad (3)$$

Where λ defines the discount rate ($0 < \lambda < 1$), E represents the expectations operator, and ϑ_I symbolizes the stochastic term, which contains two components: $\vartheta_I = \vartheta_{X,I} + \vartheta_{Y,I}/\vartheta_{X,I}\epsilon\{-1,0\}, \Pr(\vartheta_{X,I} = -1) = Pr(\vartheta_{X,I} = 0) = \frac{1}{2}$ and $\vartheta_{Y,I}\epsilon\{o, 1\}, \Pr(\vartheta_{Y,I} = 0) = Pr(\vartheta_{Y,I} = 1) = \frac{1}{2}$. $\vartheta_{X,I}$ and $\vartheta_{Y,I}$ are not dependent on each other and unrelated to their preceding values. The stochastic term means that the policy outcomes are unsure and doubtful. With complete information, the voter prefers $P_I = -1$ if $\vartheta_I = -1$, $P_I = 0$ if $\vartheta_I = 0$ and $P_I = 1$ if $\vartheta_I = 1$. Nevertheless, the voter ignores $\vartheta_{X,I}$ and $\vartheta_{Y,I}$. With missing information regarding the stochastic term, the voter chooses $P_I = 0$. Accordingly, the voter needs the policy to be dependent of ϑ_I.

Before the policy selection by the governing party, the two parties compile information regarding the consequences of the policy. Assume that C_1 is the cost of learning $\vartheta_{X,I}$ or $\vartheta_{Y,I}$ and C_2 is the cost of learning $\vartheta_{X,I}$ and $\vartheta_{Y,I}$. In a debate on policy, the collected information about policy outcomes can be communicated. The information structure arguments with a probability against ($\vartheta_{X,I} = -1$) or in favor ($\vartheta_{Y,I} = 1$) the existence of policy intensification. Costs must be paid to seek arguments. If parties provide arguments, then clearly, these parties attempted to search arguments. However, if the parties do not provide any argument, it cannot be deduced that they have gathered information. It could be that $\vartheta_{X,I}=0$ and/or $\vartheta_{Y,I} = 0$. We assume that each party

receives leases from the holding bureau regarding the parties' goals. Thus, the party L preferences are given by:

$$U_L = \mathrm{E}\sum_{I=0}^{\infty}\lambda^I(d_I\delta - C_{I,L}) \qquad (4)$$

where $d_I = 1$ if party L is tenured in iteration I and $d_I = 0$ otherwise, δ indicates the holding bureau value, and $C_{I,L} \in \{0, C_1, C_2\}$.

Similarly, the party R preferences are calculated by

$$U_R = \mathrm{E}\sum_{I=0}^{\infty}\lambda^I((1 - d_I)\delta - C_{I,R}) \qquad (5)$$

where $C_{I,R}\epsilon\{0, C_1, C_2\}$.

Now, if the parties are motivated by their ideology, the party L preferences are represented by

$$U_L = \mathrm{E}\sum_{I=0}^{\infty}\lambda^I[-(P_I - (-1 + \vartheta_I)^2 - C_{I,L}] \qquad (6)$$

and the party R preferences are calculated by

$$U_R = \mathrm{E}\sum_{I=0}^{\infty}\lambda^I[-(P_I - (1 + \vartheta_I)^2 - C_{I,R}] \qquad (7)$$

Equation (4). Shows that party L chooses $P_I = -1$ in case of missing information about ϑ_I and chooses $P_I = 0$ only if L discovers that $\vartheta_I = 1$. Equation (7) shows that party R chooses $P_I = 1$ in case of missing information about ϑ_I, and chooses $P_I = 0$ only if $\vartheta_I = -1$. At the end of iteration I, the voter decides to reelect or not the current officeholder. Usually, the voter uses a basic retroactive rule by reelecting tenured based on the results of the current iteration. At the voting time, the voter watches the selected policy by the tenured party and observes if parties possess arguments for policy intensification ($\vartheta_{Y,I} = 1$) or policy restriction ($\vartheta_{X,I} = -1$). The voting rule motivates the tenured party to choose the maximizing policy Equation (3) and motivates parties to gather information.

We summarize each iteration of the proposed model as follows:

1. The winning party in iteration $(I - 1)$ election holds the bureau.
2. Nature selects $\vartheta_{X,I}$ and $\vartheta_{Y,I}$.
3. The parties decide to know them both $\vartheta_{X,I}$ and $\vartheta_{Y,I}$ values, or only one of them or none of them.
4. The parties disclose their collected information.
5. The officeholder party chooses a policy.
6. The election is organized.

5.2. Office-Motivated Parties

Now, we will determine the situations in which the voter induces parties to meet their goals in the event parties are completely motivated by holding office. From the viewpoint of the voter, the optimal case is reached if P_I, using available information about both $\vartheta_{X,I}$ and $\vartheta_{Y,I}$, maximizes Equation (3). In this case, the tenured party is not motivated to choose a policy that goes in opposition to the voter's interest. Therefore, we presume that the tenured party will always select the maximizing policy Equation (3). Under existing

information regarding ϑ_I. The only remaining problem is to develop a voting rule that motivates the parties to acquire complete information.

The voting rule aims to reward worthy behaviors and punish outrageous behaviors. Obliviously, complete information collection is worthy, and the non-collection of information is awful. Note that the voter cannot always assert that parties certainly collected information since a party that collected information can find arguments against or/and in favor of policy intensification.

Voting rules are noteworthy through two attributes: the target party and the demanding level. The first attribute defines the party on which the voting rule is applicable. For instance, if the target party is the tenured party, then the voting rule provides what this party needs to do in order to be reelected. The second attribute defines how demanding the voting rule is. Let us discuss voting rules having the tenured party as a target and are extremely demanding. Then we will examine voting rules that are less demanding or partially emphasize the opposition party.

- *Voting rule 1*: the tenured party is reelected if and only if it revealed that $\vartheta_{X,I} = -1$ and $\vartheta_{Y,I} = 1$.

To investigate this voting rule outcome, we determine when this voting rule compels the tenured to gather complete information. Remember that if the tenured gather complete information, the voter reaches the optimal situation. Therefore, collecting complete information is the ideal response to this rule. Thus, this is the game equilibrium. Assume that in each iteration, the tenured gather complete information. Thus, the tenured is not motivated to distort, and the collection of biased or incomplete information is not the best reply to this voting rule. Biased or incomplete information collection is expensive and will never lead to tenured reelection. The collection of incomplete information is affected by no-collection of information. Consequently, if the tenured distorts, it does not collect information, and its payoff is:

$$\delta + V_{I+1}^D \qquad (8)$$

V_{I+1}^D represents the equilibrium value if the tenured is dismissed. In case the tenured gather complete information, this rule indicates that the tenured will be kept with probability $\frac{1}{4}$. Accordingly, the payoff of complete information collection is:

$$\delta - C_2 + \frac{1}{4}V_{I+1}^K + \frac{3}{4}V_{I+1}^D \qquad (9)$$

Where V_{I+1}^K defines the equilibrium value for the tenured if it is kept. According to Equations (6), and (7), it is clear that the tenured chooses to collect complete information if

$$C_2 \le \frac{1}{4}(V_{I+1}^K - V_{I+1}^D) \qquad (10)$$

- *Lemma 1*: Under voting rule I and $C_2 \le \frac{1}{4}(V_{I+1}^K - V_{I+1}^D)$ with $V_{I+1}^K - V_{I+1}^D = \frac{2\lambda}{2+\lambda}(\delta - C_2)$ *(see appendix)*, the tenured party gathers complete information, and the opposition party gathers no information.

Mainly the above Lemma claims that if the tenured party cares about the holding bureau, the collection information cost is quite low, and voting rule I results in the optimal condition for the voter.

- *Voting rule 2*: keep the tenured party if it demonstrates that $\vartheta_{X,I} = -1$ *and* $\vartheta_{Y,I} = 1$, *or* $\vartheta_{X,I} = -1$, *or* $\vartheta_{Y,I} = 1$.

Note that voting rule 2 is less demanding than voting rule 1. Analogously to Equation (6). We conclude that the tenured prefers to collect complete full information if:

$$C_2 \le \frac{3}{4}(V_{I+1}^K - V_{I+1}^D) \qquad (11)$$

It is clear that the condition in Equation (8). Is stronger than a condition in Equation (11). Because if the tenured party gathers complete information, it will be kept with probability 3/4. Thus, the advantages of complete information collection are upper under voting rule 2 than under voting rule 1. However, voting rule 2 has a disadvantage in that the tenured party prefers collecting partial information since this later is enough for the party reelection. If the tenured party gathers incomplete information in iteration I, the expected payoff is:

$$\delta - C_1 + \frac{1}{2}V_{I+1}^K + \frac{1}{2}V_{I+1}^D \qquad (12)$$

And the collection of partial information leads to a lower payoff than complete information if

$$C_2 - C_1 \le \frac{1}{4}(V_{I+1}^K - V_{I+1}^D) \qquad (13)$$

- *Lemma 2*: under voting rule 2, $C_2 \le \frac{3}{4}(V_{I+1}^K - V_{I+1}^D)$, and $C_2 - C_1 \le \frac{1}{4}(V_{I+1}^K - V_{I+1}^D)$ with $V_{I+1}^K - V_{I+1}^D = \frac{2\lambda}{2+\lambda}(\delta - C_2)$, then the tenured party gathers complete information, and the opponent gathers no information.

Inequality (8) is stronger than inequalities (9) and (11). Consequently, voting rule 1 results in collecting complete information to a smaller extent than voting rule 2. In other words, voting rule 2 predominates over voting rule 1.

Voting rules 1 and 2 concentrates on the tenured party, and similar voting rules are utilized for opposition parties.

- *Voting rule 3*: the opposition party will be elected if it demonstrates that $\vartheta_{X,I} = -1$ *and* $\vartheta_{Y,I} = 1$, *or* $\vartheta_{X,I} = -1$, *or* $\vartheta_{Y,I} = 1$.

The party collecting complete information will search for $\vartheta_{X,I}$ and $\vartheta_{Y,I}$ at the same time. If the information collection by a political party is sequential, then voting rule 3 induces this party to stop collecting information when it finds one piece of information ($\vartheta_{X,I}$ or $\vartheta_{Y,I}$), it is clear that under voting rule 3, the tenured party is not motivated to continue collecting information.

- *Lemma 3*: under voting rule 3, $C_2 \leq \frac{3}{4}(V_{I+1}^K - V_{I+1}^D)$, and $C_2 - C_1 \leq \frac{1}{4}(V_{I+1}^K - V_{I+1}^D)$ with $V_{I+1}^K - V_{I+1}^D = \frac{2\lambda}{2+\lambda}(\delta - C_2)$ the tenured gathers no information, and the opponent gathers complete information.

Comparing voting rules 2 and 3. Lemma 2 and 3 indicate that holding office following voting rule 2 is less attractive than under voting rule 3, if $2C_2 > \lambda\delta$ because under voting rule 3, the opponent pays the information gathering costs, whereas the tenured party takes advantage of the holding bureau. Thus, the benefits from the holding bureau rise as the cost of collecting complete information rises. Under voting rule 2, the contrary is right. By comparing Lemma 2 and Lemma 3, we conclude that voting rule 3 masters voting rule 2. Therefore, the Lemma 2 conditions are stronger than the Lemma 3 conditions. Consequently, the motivations for collecting information are enhanced if the tenured benefits from his position while the opposition parties incur the information cost.

Eventually, we present a voting rule that concentrates on two parties simultaneously.

- *Voting rule 4*: The opposition party will be appointed if it proves that $\vartheta_{Y,I} = 1$, while the tenured party cannot show $\vartheta_{X,I} = -1$.

Voting rule 4 has multiple versions. For instance, the voting rule requires that the opposition party shows that $\vartheta_{Y,I} = 1$. The alternative version elects the opposition party if the tenured party reveals that $\vartheta_{X,I} = -1$. Easily, we can show that all versions generate identical conditions for collecting complete information. Be aware that under rule 4, the tenured will be reelected if both the tenured and opposition parties collect information. Thus, under voting rule 4, the tenured and the opposition parties are motivated to gather incomplete information.

In the begging, we examine conditions forcing the tenured party is not motivated to opt-out. Partial information collection payoff is

$$\delta - C_1 + \frac{3}{4}V_{I+1}^K + \frac{1}{4}V_{I+1}^D \qquad (14)$$

The no collection of information payoff is:

$$\delta + \frac{1}{2}V_{I+1}^K + \frac{1}{2}V_{I+1}^D \qquad (15)$$

It is straightforward to perceive that no information collection leads to a lower payoff than incomplete information collection if

$$C_1 \leq \frac{1}{4}(V_{I+1}^K - V_{I+1}^D) \text{ with } V_{I+1}^K - V_{I+1}^D = \frac{2\lambda}{2+\lambda}\delta \qquad (16)$$

The same inequality is obtained for the opposition party.

- *Lemma 4*: Under voting rule 4 and $C_1 \leq \frac{1}{4}(V_{I+1}^K - V_{I+1}^D)$ with $V_{I+1}^K - V_{I+1}^D = \frac{2\lambda}{2+\lambda}\delta$, the opposition party searches for information regarding $\vartheta_{Y,I}$ value and the tenured party searches for information concerning $\vartheta_{X,I}$.

By comparing Lemmas 3 and 4, we conclude that extra information concerning C_1 and C_2 is mandatory to decide if voting rule 3 governs voting rule 4. If C_2 is far greater than C_1, one party needs to avoid the other party collecting complete information. However, if C_2 is approximately equal to C_1, voting rule 3 masters voting rule 4. Thus, voting rule 4 governs voting rule 3. The key findings are summarized in the following proposition.

- *Proposition 3*: if the political parties are entirely motivated by holding office, then the voting rules that only induce the tenured party to acquire information (rules 1 and 2) are governed by voting rules that oblige the opposition parties to collect information (rule 3). In case $C_1 \leq \frac{1}{3}C_2$, the best voting rule convinces all parties to gather incomplete information.

Hitherto, we were interested in voting rules leading to collecting complete information. In case there is no voting rule which induces to collecting of complete information, the voters prefer the tenured party always to set $\vartheta_I = 0$. To understand the reason, assume the equilibrium where only one party gathers information concerning $\vartheta_{X,I}$, and all parties do not collect information about $\vartheta_{Y,I}$. Thus, the model's parameters are so that the voters weakly prefer $\vartheta_I = 0$, regardless $\vartheta_{X,I}$ value. Consequently, if only one parameter is examined, we should avoid that the collected information affects the policy. Accordingly, from the voter's viewpoint, the voting rule that induces not collecting information is at worst comparable to voting rule that induces collecting incomplete information. Therefore, if voting rules 3 and 4 are breached, the ideal voting rule is the reelection of the tenured party if it selects $\vartheta_I = 0$.

6. Conclusions

The Board council has restricted information that it uses for disciplining and screening the managers of its organization. This paper analyzed a simple model showing the resulting difficulties. The desire to preserve the manager to enhance the company's future benefits incites the manager to become extremely active and demonstrate his competencies and skills.

The council can address this bias by firing a manager who implements projects destroying the business value. Furthermore, the council can dismiss the manager if he implements a project, but its outcomes are not observed. Therefore, both decisions decrease the attraction to implementing projects that generate losses. However, regrettably, the dismissing decision on either ground leads to the council deduction that the expected qualification of the new manager is lower than the fired manager.

This study considers the pessimistic retention contract known as 'no news is bad news, where the council dismisses the manager if the manager implements a project, but the project value remains unobservable. We have demonstrated under what circumstances the selection alternative is preferred over the disciplining option. In future work, we will investigate the pessimistic retention contract known as 'no news is bad news, where the manager is fired if the council cannot perceive the project value.

Although poorly informed, the prosed model considers the manager as an agent and the council as principal. It will be better to substitute this strategy with another in which a manager affects the council composition and negotiates its compensation. The manager would have more leeway if he performed well in the past. Thus, the managerial power model can be considered a complementary approach to the standard principal-agent model. Again, council members (who relish significant salary and reputation due to their position) are not likely to come into action and rock the boat until some extreme and evident bad issue cannot be denied anymore.

This paper discussed how the voter inspires political parties to gather information concerning their policies outcomes and choose the optimal policy. A model has been proposed in which the tenured party specifies the policy. However, the policy outcomes are doubtful and unsure. The two parties (tenured and opposition) gather information to minimize this doubtfulness. There are two different cases regarding parties' preferences: policy motivated and office motivated. We investigate the office motivation situation and demonstrate that the party chooses a policy that promotes voter interest based on the collected information. We derive three main findings:

1. Voting rules encouraging the opposition party to gather information are at least equivalent to voting rules stimulating the tenured party to gather information. The insight here is that forcing the opponent to search for information enhances the bureau value,
2. Voting rules need to concentrate on information collection because the tenured party does not focus on the policy and always chooses the policy wanted by voters.

3. Voting rules that exclusively focus on the tenured act at worst as well as the voting rules that concentrate on both parties (tenured and opposition).

For future work, it is worth investigating the policy-motivated parties where the voter does not induce parties to gather information and compare the outcomes of the two situations.

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Zina Houhamdi received her Ph.D. in Software Engineering in 2004. She is a Professor at the Department of Cybersecurity, College of Engineering, Al Ain University, United Arab Emirates. Her research work has been published in several academic journals and presented at scientific conferences. Her main research interest is in the Internet of Things, Artificial Intelligence, particularly in Multi-Agent Systems Modelling, Testing and Applications. She is published several papers in journals and international peer-reviewed conferences.

Belkacem Athamena holds a Ph.D. in System Analysis and Applications. He is a Professor at the Department of Business Administration, College of Business, Al Ain University, United Arab Emirates. His main research interest is in system modeling and analysis, multi-agent, fuzzy logic, software testing, Petri nets, formal methods, data quality, and fault diagnosis. He has published many refereed journal articles, contributed chapters, and presented papers at conferences.

Ghaleb El Refae is a Professor in Financial Economics with expertise in higher education management, risk management in higher education institutions and university corporate governance. He endeavoured in researches that cover many themes including higher education quality, international higher education, diversity and education, risk management in higher education institutions, university corporate governance, asymmetric information in higher education as well as topics pertaining to financial economics and industrial organisation.

Appendix

This appendix determines the office's present discounted value. Assume that in iteration I the party L is the tenured party. π Represents the probability of the tenured reelection in iteration $(I+1)$ and V_{I+1}^K is the equilibrium value for the elected party in iteration I and V_{I+1}^D is the equilibrium value for the dismissed party in iteration I. The probability that party L is the tenures party in iteration I is:

$$\rho_{I+1} = \pi\rho_I + (1-\pi)(1-\rho_t) = (2\pi-1)\rho_I + (1-\pi) \quad (17)$$

The solution of equation (17) is

$$\rho_I = x(2\pi-1)^I + \frac{(1-\pi)}{1-(2\pi-1)} = x(2\pi-1)^I + \frac{1}{2} \quad (18)$$

Where x is a random constant. Remember that in iteration I=1, L is the tenured party which implies that for I=1, $\rho_1 = 1$. Thus, $x = \frac{1}{2(2\pi-1)}$ and equation (18) solution is:

$$\rho_I = \frac{1}{2}(2\pi-1)^{I-1} + \frac{1}{2} \quad (19)$$

We compute V_{I+1}^K

$$V_{I+1}^K = \sum_{I=0}^{\infty} \lambda^I (\frac{1}{2}(2\pi-1)^{I-1} + \frac{1}{2})(U - U')$$
$$= \frac{(1-\pi\lambda)\lambda}{(1-\lambda)(1-2\pi\lambda+\lambda)}(U - U') \quad (20)$$

Where U defines the received utility by the tenured party and U' defines the received utility by the opposition party.

Now assume that in iteration I=0, L is dismissed. Then, in iteration I+1 party R will be tenured, then $\rho_1 = 0$. Since $x = -\frac{1}{2(2\pi-1)}$ and the equation solution is:

$$\rho_I = -\frac{1}{2}(2\pi-1)^{I-1} + \frac{1}{2} \quad (21)$$

We compute V_{I+1}^D in iteration I=0 as

$$V_{I+1}^D = \sum_{I=0}^{\infty} \lambda^I (-\frac{1}{2}(2\pi-1)^{I-1} + \frac{1}{2})(U - U') \quad (22)$$
$$= \frac{(\lambda-\pi\lambda)\lambda}{(1-\lambda)(1-2\pi\lambda+\lambda)}(U - U')$$

We deduce that

$$V_{I+1}^K - V_{I+1}^D = \frac{\lambda}{1-2\pi\lambda+\lambda}(U - U') \quad (23)$$