Reputation Management and Seniority Systems in Firms∗

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Abstract

This paper extends the results of Ando and Kobayashi (2008) to demonstrate the role of a seniority system in a firm. The firm chooses either a farsighted or a shortsighted action in each period. The former corresponds to keeping or rebuilding a good reputation, and the latter corresponds to cheating consumers. We assume that even if the firm chooses the farsighted (shortsighted) action, it may get a bad (good) reputation with positive probability. In this situation, we show that an efficient seniority system helps to maintain a good reputation in the sense that the farsighted action profile is sustainable in equilibrium.

JEL classification numbers: C72, C73, D82, J31, M14.

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1 Introduction

Recently, we have observed that a considerable numbers of Japanese firms have cheated consumers and some of these misconduct cases are brought to light by in-house whistle-blowers. Examples include the beef-mislabeling scam (Yukijirushi Foods, Co., Ltd., Nippon Meat Packers. Inc., and Hannan Foods Group), a mass food-poisoning case (Snow Brand Milk Products Co., Ltd.), and the cases of falsifying production/best-before dates (Ishiya Co., Ltd., and Akafuku Co., Ltd.).

The aim of this paper is to study why these firms have chosen such shortsighted business strategies and the role of management styles as preventative measures against such a misconduct behavior.

We study an organization that consists of two overlapping generations (young and old). The organization plays a repeated prisoners’ dilemma game. In each period, the organization chooses a farsighted action $C$ or a shortsighted action $D$. The action $C$ stands for Cooperation and $D$ stands for Defection.

The organization has either a good or a bad reputation ($G$ or $B$). The current profit of the organization depends on both current reputations and current actions, and it is allocated among the current members. Therefore examples of organizations studied in this paper include labor-managed firms and traditional Japanese firms.

The current action determines the reputation. We assume that, even if the organization chooses the farsighted action (the shortsighted action), it may get a bad reputation (a good reputation) with positive probability. Specifically, choosing $C$ yields the good reputation with probability $1 - \varepsilon$ and the bad reputation with probability $\varepsilon$; choosing $D$ yields the bad reputation with probability $1 - \mu$ and the good reputation with probability $\mu$.

In this situation, the old generation desires an immediate profit by choosing the shortsighted action $D$, whereas the young generation has an incentive to invest for future profits (i.e., he is willing to choose the farsighted action $C$). We demonstrate in this paper that an efficient seniority system solves these conflicts of interest in the sense that the organization can sustain the farsighted action profile in equilibrium. Here the seniority system means that the young generation person is the decision-maker of the organization under a low-powered reward scheme while the old generation person is the residual claimant.
There have been some theoretical explanations of the positive relationship between seniority and wages. Two famous explanations of this relationship are the specific human capital theory and the incentive theory. The former was introduced by Becker (1962), who emphasized that on-the-job training increases workers’ firm-specific productivity. Wages also increase with increases in productivity. Lazear (1979, 1981) described a model of a deferred compensation scheme as an incentive device. He concluded that the principal should keep part of the compensation for a worker as a deposit to prevent the worker from shirking. Moreover, this compensation scheme reduces the frequency and the costs of monitoring activities.¹

These two theories are tested by empirical data in some works. The specific human capital theory is not well supported by empirical data (see, for example, Kotlikoff and Gokhale 1992 and Levine 1993). On the other hand, the incentive theory is supported by data (see Barth 1997 and Bayo-Moriones et al. 2004).

The work most closely related to the present study is Ando and Kobayashi (2008). This paper studied the role of seniority systems (seniority-based profit allocation rule and the seniority-based task allocation rule) in organizations. They showed that the seniority system helps to maintain a good reputation in the sense that the farsighted action profile is sustainable in equilibrium.

As in their paper, the present paper examines the relationship between seniority systems and management styles in organizations. However, their paper assumed that \( \varepsilon = \mu = 0 \) and tried to implement a one-period memory trigger strategy, but the present paper assumes positive values of \( \varepsilon \) and \( \mu \) and tries to implement a reputation-free cooperation strategy (we call this the always-\( C \) strategy). In this respect, our analysis differs from Ando and Kobayashi (2008).

Dickson and Shepsle (2001) studied a repeated public goods game in an overlapping generations (OLG) environment and showed that there are three types of equilibria, including the seniority equilibrium. In the seniority equilibrium, young generations contribute to public goods provision, while old generations do not. This can be interpreted as a seniority-based task allocation system, because in this equilibrium the young generations exert

¹Other explanations are studied in Salop and Salop (1976) and Harris and Holmstrom (1982). The former introduced a model of self-selection, and the latter introduced a model of insurance for risk averse workers who are uncertain about their own productivity.
effort, but they do not exert effort when they get older. Moreover, it is similar to our paper in that profit is distributed from the young generations to the old generations. This may be interpreted as a seniority-based profit allocation system. However, there are considerable differences between us in the motivation and results.

First, in the Dickson and Shepsle paper, the task allocation and the resulting profit allocation are endogenously determined as the consequences of members’ equilibrium behavior. On the other hand, our paper assumes that the task and profit allocation rules are exogenously given from the viewpoint of members. This modeling enables us to analyze the relationship between the seniority-based profit allocation rule and the seniority-based task allocation rule explicitly.

Moreover, in the present paper, we focus the situation where the current action choice by an organization has an intertemporal effect (i.e., the current action affects the organization’s current profit and the reputation, and consequently, the set of possible profits in the next period). In addition, in our framework, deviation increases the current total profit of the firm. As a result, our framework has many applications (including the study of corporation reputation management), which cannot be analyzed in the game of public goods provision.

Muthoo and Shepsle (2004) studied the allocation of agenda-setting (or bargaining) power in organizations under an OLG setting, examining the properties of the optimal organizational structure and the conditions for sustaining the dynamically optimal outcome in equilibrium. Although the motivation of this paper is similar to ours, the models are quite different from each other. In Muthoo and Shepsle, there are two overlapping generations of players, young and old, and it is assumed that the number of periods any particular player participates is endogenously determined by his or her past performance. Therefore, the United States Senate, in which legislators have staggered terms of office, is a good example of the organization studied in their paper.

The rest of the paper is organized as follows. Section 2 describes the model. Section 3 describes the main results. Section 4 concludes.
2 The Model

We consider the following situation. Time is discrete, and periods are indexed by $t$ ($t = 0, 1, \ldots$). There is an organization that consists of two overlapping generations. We call them Young and Old. An individual enters the organization at some date $t$, and after two periods he retires from the organization and is replaced by a new entrant. We call the entrant at period $t$ “agent $t$.” The organization therefore consists of agents $\{t-1,t\}$ at period $t$. We introduce the agent $-1$, who enter the organization at the beginning of period zero.

<table>
<thead>
<tr>
<th>$r_{t-1}$</th>
<th>$a_t$</th>
<th>$C$</th>
<th>$D$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$G$</td>
<td>$1$</td>
<td>$1+g$</td>
<td></td>
</tr>
<tr>
<td>$B$</td>
<td>$-\ell$</td>
<td>$0$</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: The payoffs

<table>
<thead>
<tr>
<th>$a_t$</th>
<th>$r_{t-1}$</th>
<th>$G$</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$C$</td>
<td>$1-\varepsilon$</td>
<td>$\varepsilon$</td>
<td></td>
</tr>
<tr>
<td>$D$</td>
<td>$\mu$</td>
<td>$1-\mu$</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: The reputation

The organization has either a good or a bad reputation. The reputation in the beginning of period $t$ is $r_{t-1} \in \{G, B\}$. We assume that the initial reputation is $G$, i.e., $r_{-1} = G$. In each period, the organization chooses the current action $a_t \in \{C, D\}$. The action $C$ stands for Cooperation and $D$ stands for Defection. The payoffs $\pi_t(r_{t-1}, a_t)$ are given in Table 1, where the row indicates the organization’s reputations, and the column indicates the current actions. The numbers $g$ and $\ell$ in the table are strictly positive.

Here, we assume the following:

Assumption 1. $\ell > g$

Assumption 1 means that the gain from deviation is less than the cost to rebuild a good reputation. Thus, the organization plays a kind of infinitely repeated prisoners’ dilemma game.

The current action determines the reputation. We assume that, even if the organization chooses the farsighted (shortsighted) action, it may get
a bad (good) reputation with positive probability. As described in Table 2, choosing $C$ yields the good reputation with probability $1 - \varepsilon$ and the bad reputation with probability $\varepsilon$; choosing $D$ yields the bad reputation with probability $1 - \mu$ and the good reputation with probability $\mu$. In this environment, it is natural to assume the following:

**Assumption 2.** $1 - \mu > \varepsilon$

Assumption 2 means that choosing $D$ yields a bad reputation with higher probability, compared to choosing $C$.

In this situation, there is a conflict between generations. The old generation desires to get an immediate profit, whereas the young generation takes account of future profits. Therefore, our question is whether cooperative action is sustainable in equilibrium.

We assume that each agent acts as the decision-maker of the organization only once in his life. The old generation agent will not remain in the game in the next period, so he is not appropriate for the decision-maker. Therefore, the decision-maker should be always the member of the young generation.

The profit obtained in period $t$ is assumed to be allocated among the current members by an exogenously given and time-invariant allocation rule. We denote the proportion for Old by $\lambda$ and that for Young by $1 - \lambda$, where $\lambda \in [0, 1]$.

In this paper, we restrict our attention only to the proportional allocation rule. We denote the proportion for Old by $\lambda$ and that for Young by $1 - \lambda$, where $\lambda \in [0, 1]$.

To summarize, the generation assigned the task of decision-making and the profit allocation rule characterize the organizational structure. We assume that the structure is exogenously determined and is common knowledge among the agents.

When each Young agent chooses his action, he can choose his action depending only on the current reputation $r_{t-1}$. Given the organizational structure and the reputation, agent $t$ chooses his action to maximize his discounted sum of lifetime payoffs:

$$u_t = (1 - \lambda)\pi_t(r_{t-1}, a_t) + \delta \lambda \pi_{t+1}(r_t, a_{t+1}),$$

where $\delta \in [0, 1]$ is a common discount factor.

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2We assumed that the present profit (or loss) cannot be carried over to the following periods.
3 Analysis

3.1 The firm’s optimal strategy

In this subsection, we study the firm’s optimal strategy under the situation where the firm is operated by an infinitely lived decision-maker. The one step deviation principle of DP tells us that there are four strategies that are the candidates of the most profitable strategy: the always-C strategy, the always-D strategy, the trigger strategy, and the alternating strategy (see Table 3). For example, the alternating strategy is the following: if the reputation is $G$, the firm chooses $D$ and if the reputation is $B$, the firm chooses $C$.

<table>
<thead>
<tr>
<th>Strategy$r_{t-1}$</th>
<th>$G$</th>
<th>$B$</th>
</tr>
</thead>
<tbody>
<tr>
<td>The always-C</td>
<td>$C$</td>
<td>$C$</td>
</tr>
<tr>
<td>The always-D</td>
<td>$D$</td>
<td>$D$</td>
</tr>
<tr>
<td>The trigger</td>
<td>$C$</td>
<td>$D$</td>
</tr>
<tr>
<td>The alternating</td>
<td>$D$</td>
<td>$C$</td>
</tr>
</tbody>
</table>

Table 3: The strategies

Firstly, we describe the expected payoffs of these four strategies. The expected payoff of the always-C strategy is

$$\frac{1 - \delta \varepsilon (1 + \ell)}{1 - \delta}.$$

the expected payoff of the always-D strategy is

$$\frac{(1 + g)(1 - \delta (1 - \mu))}{1 - \delta},$$

and the expected payoff of the trigger strategy is

$$\frac{1 - \delta (1 - \mu)}{(1 - \delta)(1 - \delta(1 - \varepsilon - \mu))}.$$ 

The expected payoff of the alternating strategy is

$$\frac{(1 + g)(1 - \delta \varepsilon) - \delta \ell (1 - \mu)}{(1 - \delta)(1 + \delta (1 - \varepsilon - \mu))}.$$

Secondly, we compare the expected payoffs between the always-C strategy and each of the other strategies. The condition under which the always-C strategy is better than the always-D strategy is the following.

$$\ell < \frac{1 - \varepsilon - \mu}{\varepsilon} - \frac{1 - \delta (1 - \mu)}{\delta \varepsilon} g.$$ (1)
Similarly, the condition under which the always-$C$ strategy is better than the trigger strategy is

$$\ell < \frac{\delta(1 - \varepsilon - \mu)}{1 - \delta(1 - \varepsilon - \mu)},$$  \hspace{1cm} (2)

and the condition under which the always-$C$ strategy is better than the alternating strategy is

$$\ell > \frac{g}{\delta(1 - \varepsilon - \mu)} - 1.$$  \hspace{1cm} (3)

When inequalities (1)–(3) are satisfied, it is better for the firm to use the always-$C$ strategy than the other strategies. So we obtain the following.

**Lemma 1.** *If the firm is operated by an infinitely lived decision-maker, the firm uses the always-$C$ strategy if and only if inequalities (1)–(3) are satisfied.*

Figure 1 depicts the relationship among the values of $g$ and $\ell$ and the area in which the always-$C$ strategy is the most profitable strategy for the infinitely lived firm.

![Figure 1: The always-$C$ strategy is optimal](image-url)
3.2 The sustainability of the cooperative action

In the rest of this section, we study the firm with OLG structure and consider whether cooperative action is sustainable in equilibrium. More precisely, we will answer the question, “under which type of organizational structure is the cooperative action profile sustainable?” We will show that under the seniority system, the agents can sustain the cooperative action by using a reputation-free cooperation strategy, the always-C strategy. Under the always-C strategy, the decision-maker chooses C irrespective of the current reputation $r_{t-1}$. First, we define the notion of sustainability of the cooperative action.

**Definition 1.** The organization can sustain the cooperative action profile if there exist an organizational structure (i.e., a pair of a task allocation rule and a profit allocation rule) and members’ strategies that satisfy the following.

1. The members’ strategies constitute an equilibrium.
2. The decision-maker has strict incentives to choose C in equilibrium.

Now, let us explain the reason we impose the second condition in the above definition. In our overlapping generations environment, if we do not require the second condition, we can easily achieve the cooperative outcome in equilibrium. For example, consider the following organizational structure. The task allocation is that the old agent is the decision-maker. The profit allocation is that the young agent obtains all of the profit or loss, and the old agent obtains zero for any $\pi_t$. Under this structure, the cooperative outcome is achieved by the always-C strategy. Obviously, if all other members choose this strategy, no one can gain from deviation. However, the above equilibrium is not stable in the sense that each decision-maker only has weak incentives to choose C. Therefore, we require strict incentives for choice of the cooperative action in equilibrium.

3.3 The seniority systems

In this subsection, we will show that the always-C strategy constitutes an equilibrium, if the decision-maker is the young generation agent. First, we describe the incentive compatibility conditions for the decision-maker (i.e., Young). The condition under which choosing C is better than
When \( r_{t-1} = G \) is

\[
1 - \lambda + \delta \lambda(1 - \varepsilon) - \delta \lambda \varepsilon \ell > (1 - \lambda)(1 + g) + \delta \lambda \mu - \delta \lambda(1 - \mu)\ell
\]

\[
\Leftrightarrow \lambda > \frac{g}{g + \delta(1 + \ell)(1 - \varepsilon - \mu)}. \tag{4}
\]

Similarly, the condition under which choosing \( C \) is better than \( D \) when \( r_{t-1} = B \) is

\[
-(1 - \lambda)\ell + \delta \lambda(1 - \varepsilon) - \delta \lambda \varepsilon \ell > \delta \lambda \mu - \delta \lambda(1 - \mu)\ell
\]

\[
\Leftrightarrow \lambda > \frac{\ell}{\ell + \delta(1 - \varepsilon(1 + \ell))}. \tag{5}
\]

Under Assumption 1, we can easily conclude that the condition (4) holds if \( \lambda \) satisfies the condition (5).

Next, we describe the participation constraints. The participation condition when \( r_{t-1} = G \) is

\[
1 - \lambda + \delta \lambda(1 - \varepsilon) - \delta \lambda \varepsilon \ell \geq 0
\]

\[
\Leftrightarrow \lambda \leq \frac{1}{1 - \delta(1 - \varepsilon(1 + \ell))}. \tag{6}
\]

Similarly, the participation condition when \( r_{t-1} = B \) is

\[
-(1 - \lambda)\ell + \delta \lambda(1 - \varepsilon) - \delta \lambda \varepsilon \ell \geq 0
\]

\[
\Leftrightarrow \lambda \geq \frac{\ell}{\ell + \delta(1 - \varepsilon(1 + \ell))}. \tag{7}
\]

The condition under which the right hand side of inequality (7) is less than 1 is \( \varepsilon < 1/(1 + \ell) \). Therefore, we assume this inequality.

**Assumption 3.**

\[
\varepsilon < \frac{1}{1 + \ell}.
\]

Under Assumption 3, inequality (6) is always satisfied. Therefore, the value of \( \lambda \) has to satisfy the conditions (5) and (7).

To sum up, we obtain the following result.

**Proposition 1.** Under Assumptions 1–3, the organization can sustain the cooperative action profile by the always-C strategy for any \( \delta > 0 \) if the decision-maker is the young generation and if

\[
\lambda > \max \left\{ \frac{\ell}{\ell + \delta(1 + \ell)(1 - \varepsilon - \mu)}, \frac{\ell}{\ell + \delta(1 - \varepsilon(1 + \ell))} \right\}. \tag{8}
\]
We obtain the following implication from Proposition 1. When a firm consists of two (or more) generations, the firm can employ a type of “seniority system” as an organizational structure. The seniority system satisfies the following properties: the young worker who knows the detail of frontline business is the decision-maker of the firm, and he faces a low-powered incentive scheme, whereas an old generation agent is the residual claimant.

Under this system, the agent who has the real authority (i.e., the young generation agent) has no incentive to deviate from the equilibrium path because it decreases his expected profit in the next period through the punishment behavior (i.e., the action aimed at rebuilding a good reputation) of the following generation. Moreover, once the deviation occurs, the next decision-maker has a strict incentive to choose $C$. Consequently, this kind of seniority system can solve the intergenerational conflict in the organization.

### 3.4 Multiple equilibria

In this subsection, we first describe the values of $\lambda$ under which the firm can implement the trigger, the always-$D$, and the alternating strategies. Then, we show that the unique equilibrium is constituted by the always-$C$ strategy.

First, we describe the incentive compatibility conditions for the decision-maker to implement the always-$D$ strategy. The condition under which choosing $D$ is better than $C$ when $r_{t-1} = G$ is

\[
(1 - \lambda)(1 + g) + \delta \lambda \mu (1 + g) - \delta \lambda > 1 - \lambda + \delta \lambda (1 - \varepsilon)(1 + g)
\]

\[
\Leftrightarrow \lambda < \frac{g}{g + \delta (1 + g)(1 - \varepsilon - \mu)}. \tag{9}
\]

Similarly, the condition under which choosing $D$ is better than $C$ when $r_{t-1} = B$ is

\[
\delta \lambda \mu (1 + g) > -(1 - \lambda)\ell - \delta \lambda (1 - \varepsilon)(1 + g)
\]

\[
\Leftrightarrow \lambda < \frac{\ell}{\ell + \delta (1 + g)(1 - \varepsilon - \mu)}. \tag{10}
\]

Under Assumption 1, we can conclude that the condition (10) is always satisfied if the condition (9) holds. Obviously, the participation constraints hold under the always-$D$ strategy.

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If $\ell/(1 + \ell) > (\ell)\mu$, $\frac{\ell}{\ell + \delta (1 + g)(1 - \varepsilon - \mu)} < (>)\frac{\ell}{\ell + \delta (1 + g)(1 - \varepsilon - \mu)}$. 

11
Next, we describe the incentive compatibility conditions for the decision-maker to implement the trigger strategy. The condition under which choosing $C$ is better than $D$ when $r_{t-1} = G$ is

$$1 - \lambda + \delta \lambda (1 - \varepsilon) > (1 - \lambda)(1 + g) + \delta \lambda \mu$$

$$\Leftrightarrow \lambda > \frac{g}{g + \delta (1 - \varepsilon - \mu)}. \tag{11}$$

Similarly, the condition under which choosing $D$ is better than $C$ when $r_{t-1} = B$ is

$$\delta \lambda \mu > - (1 - \lambda) \ell + \delta \lambda (1 - \varepsilon)$$

$$\Leftrightarrow \lambda < \frac{\ell}{\ell + \delta (1 - \varepsilon - \mu)}. \tag{12}$$

Under Assumption 1, we can choose the values of $\lambda$ that satisfy the conditions (11) and (12). Obviously, the participation constraints hold under the always-$D$ strategy.

Lastly, we describe the incentive compatibility conditions for the decision-maker to implement the alternating strategy. The condition under which choosing $D$ is better than $C$ when $r_{t-1} = G$ is

$$(1 - \lambda)(1 + g) + \delta \lambda \mu (1 + g) - \delta \lambda (1 - \mu) \ell > 1 - \lambda + \delta \lambda (1 - \varepsilon)(1 + g) - \delta \lambda \varepsilon \ell$$

$$\Leftrightarrow \lambda < \frac{g}{g + \delta (1 - \varepsilon - \mu)(1 + g + \ell)}. \tag{13}$$

Similarly, the condition under which choosing $C$ is better than $D$ when $r_{t-1} = B$ is

$$-(1 - \lambda) \ell + \delta \lambda (1 - \varepsilon)(1 + g) - \delta \lambda \varepsilon \ell > \delta \lambda \mu (1 + g) - \delta \lambda (1 - \mu) \ell$$

$$\Leftrightarrow \lambda > \frac{\ell}{\ell + \delta (1 - \varepsilon - \mu)(1 + g + \ell)}. \tag{14}$$

Obviously, the conditions (13) and (14) are incompatible and therefore the firm cannot implement the alternating strategy under Assumption 1.

We will describe the relationship among the values of $\lambda$ under which each strategy is implementable. The maximum value of $\lambda$ that satisfy the condition (9) is less than the minimum value that satisfy the condition (11). The positional relationship between the minimum value of $\lambda$ that satisfy the condition (8) and each of the threshold values is depending on the parameters. The relationships are depicted in Figure 2.

Therefore, we obtain the following.
The always-D strategy constitute the unique equilibrium under sufficiently large values of $\lambda$

**Proposition 2.** The unique equilibrium is constituted by the always-C strategy,\(^4\) if

$$
\lambda > \left\{ \frac{\ell}{\ell + \delta(1 - \varepsilon - \mu)} \cdot \frac{\ell}{\ell + \delta(1 - \varepsilon(1 + \ell))} \right\}.
$$

(15)

3.5 The firm can implement the optimal always-C strategy

Under sufficiently large values of $\lambda$, the firm can achieve the cooperative action profiles when the always-C strategy is the most profitable strategy.

**Proposition 3.** The firm can implement the always-C strategy under a broader area in the $(g, \ell)$ plane, compared to the area under which the firm’s optimal strategy is the always-C strategy.

**Proof.** When $\lambda = 1$, the minimum value of $\ell$ that satisfy the condition (15) is $1/\varepsilon - 1$ and this relationship is equivalent to $\varepsilon < 1/(1+\ell)$ (i.e., Assumption 3). We can show that $1/\varepsilon - 1 > \delta(1 - \varepsilon - \mu)/(1 - \delta(1 - \varepsilon - \mu))$ (See Figure 3).

4 Conclusion

In this paper, we studied the situation where a firm is infinitely lived, while its composition changes, and there are intergenerational conflicts of interest. Under this situation, we showed that the seniority system solves these

\(^4\)If $\mu > (\varepsilon)\varepsilon\ell$, $\frac{\ell}{\ell + \delta(1 - \varepsilon - \mu)} > (\varepsilon)\frac{\ell}{\ell + \delta(1 - \varepsilon(1 + \ell))}$. 
conflicts in the sense that the farsighted action profile is sustainable in equilibrium. Here the seniority system means that the young generation person is the decision-maker of the firm and faces a low-powered reward scheme, whereas the old generation person is the residual claimant. This means that a separation of decision-making and profit allocation may be optimal in some situations.

To conclude the paper, we make three comments. First, in the present paper, we assumed for simplicity that each individual lives two periods and acts as the decision-maker of the organization only once in his or her life. In the real world, however, managers typically work for many years. The result of the paper can be carried over to the situation where the firm consists of more than two generations. The insights of our model are that the manager must not be of the old generation and the rewards for the managers must be sufficiently low-powered.

Second, we assumed that there is a generation assigned the task of decision-making. We assumed this to simplify the analysis, and we can extend the present model to the situation of decision by a majority if the
firm consists of more than two generations. In such a situation, it is necessary for the generations other than the oldest person to choose $C$ to sustain the farsighted action profile in equilibrium.

Finally, we also assumed that the firm chooses an action in each period and the current profit depends on both current reputations and actions. Moreover, we assumed that the current profit or loss cannot be carried over to the following periods. We can extend the present model to the situation where the firm can accumulate a part of the current profit. The author plans to study this topic in another paper.

References


