Game Analysis on Managerial Entrenchment and Enterprise Investment Myopia

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Abstract. We analyse the effect of managerial entrenchment on myopic investment behaviour and the corresponding response of shareholders using a two-stage signaling game model. From the dimensions of capability and job-switching costs, we categorize managers into three types: talented managers with high job-switching costs ($M_{TH}$), talented managers with low job-switching costs ($M_{TL}$) and untalented managers ($M_{U}$). We determine a pooling equilibrium in which all types of managers prefer to select short-run projects under managerial entrenchment motivation. The results reveal that managerial entrenchment motivation and action will contribute to investment myopia. Furthermore, a partially separating equilibrium in which $M_{TL}$ select short-run projects but $M_{TH}$ and $M_{U}$ select short-run projects emerges if the optimal subsidy is given to managers. Meanwhile, shareholders decide whether or not to retain incumbent managers according to the project yield.

Keywords: Managerial entrenchment; Investment myopia; Signaling game equilibrium

1. Introduction

The existing literature has reached an understanding of corporate investment myopia and interprets it as such that enterprises select projects that pay off quickly over projects that maximize firm value; alternatively, they choose projects that inflate current earnings at the expense of longer-term benefits (see Jenson, 1986; Knoeber, 1986; Stein, 1988; Lunstrum, 2002; Bolton et al., 2006; Laux, V., 2012). With the development of corporate governance, scholars in China have recently paid more attention to whether managerial entrenchment derives from the position holding of managers. Their studies show that managerial entrenchment is broadly connected to economic issues. For example, the relationship between managerial entrenchment and R&D (Research and Development) investment (Bingxiang Li et al., 2017), project selection (Bingxiang Li et al., 2019), the speed of capital structure adjustment (Hailong Zhang, 2014).

Since managerial entrenchment and myopia investment adapt to the context of the Chinese market, we find it meaningful to analyze the causes of myopia from the perspective of managerial entrenchment. Adopting the signaling game model, this paper reveals different types of choices for long-term and short-term investment projects made by entrenched managers from the perspective of managerial entrenchment. We analyze whether there is a potential Bayesian equilibrium in which capable managers and low-competency managers all choose short-term investment projects to protect their own interests. However, when subsidies are offered to managers, those with high capabilities will select long-term investment rather than short-term one; at this time, a partially separating equilibrium exists. Our result provides a new perspective for explaining managers’ inclination for myopic investments.
2. Propositions

In this section, the assumptions are categorized into two types. One is that managers play a decisive role in enterprise investment decisions. Since managers always occupy the key positions to dominate and control the company’s operation, and thus, their decision-making and management power will exceed that of the board of directors. Therefore, we assume that corporate managers have a decisive role in corporate investment decisions.

The other is assumptions based on project characteristics and manager type. Managers have decision-making authority in companies and implement projects where the return value can be observed. The revenue of short-term projects is represented as a function $R_{tSj}$, where $t = \{1, 2\}$ reflects the project implementation period, $j = \{h, l\}$ represents the level of income, and $S$ indicates short-term projects. Due to the influence of feasibility, if a long-term project fails after the first phase, the company will go bankrupt. $L_f$ indicates that a long-term project fails after the first phase, while $L_s$ indicates that a long-term project succeeds after the first phase and will bring benefits to the company. The low income obtained by a long-term project in the second phase is denoted as $R_{Ls}$, while the high yield achieved in the second phase of a long-term project is represented as $R_{Lh}$. As we all know, long-term projects can maximize the value of a company.

All hired managers are risk neutral. Shareholders can judge which type of manager they hired only based on project performance after one period. In the manager market, the remuneration of competent managers is represented as $W_T$, while that of incompetent managers is denoted as $W_U$, where $W_T > W_U$. Shareholders change the salary of managers according to their judgment of the managers’ ability. When managers are fired, they have to start a new career, which will incur a certain cost $C_i$, where $i = \{H, L\}$. Competent managers who find it easier to find a new job or have found a new job will have a lower job-switching cost $C_L$. Vice versa, the cost will be $C_H$ due to the high expense of switching jobs for incompetent managers. Combining job-switching costs with the competency of managers, we classify managers into three types: managers who are competent and incur a high cost of switching jobs, denoted by $M_{TH}$; managers who are competent and incur a low cost of switching jobs, denoted by $M_{TL}$; and managers who are incompetent and incur a high cost of switching jobs, denoted by $M_{UH}$ or $M_U$. $M_T$ is used as the general term for competent managers. Accordingly, we propose the following assumptions:

(1) For short-term projects, regardless of the type of manager, managers will obtain high or low yields, but the probability of high returns created by competent managers is higher. For long-term projects, incompetent managers are less likely to succeed or create high returns, while competent managers are more likely to succeed. This assumption can be expressed as follows: $p_S > q_S; p_L > q_L$.

(2) Any type of manager performs well with regard to short-term projects; that is, short-term projects are more likely to succeed. This assumption can be expressed as follows: $p_s > q_s; q_s > q_l$.

(3) Shareholders expect that the net income brought by competent managers will definitely exceed that brought by incompetent managers.

$$R_{s_t}(M_f) - W_f > R_{s_t}(M_u) - W_u \geq 0; R_{s_t}(M_f) - W_f > R_{s_t}(M_u) - W_u \geq 0, t = \{1, 2\}$$

where $R_{s_t}(M_f)$ represents the gross return to shareholders from the successful execution of long-term projects by competent managers; $R_{s_t}(M_u)$ denotes the gross return to shareholders from incompetent managers who execute long-term projects; $R_{s_t}(M_f)$ indicates the gross return to shareholders from capable managers who execute short-term projects; and $R_{s_t}(M_u)$ shows the gross return to shareholders from incompetent managers who execute short-term projects. Under this assumption, we conclude that if shareholders hire an incompetent manager to execute a short-term project in the first period, the manager will be fired by the shareholders in the second period.
The returns brought by an incompetent manager who successfully runs a long-term project are lower than those brought by a competent manager who runs two short-term projects. The largest benefits for shareholders should be from employing TL\(M\) to run long-term projects; in contrast, TH\(M\) and UH\(M\) should run short-term projects.

\[
\sum_{i=1}^{n} R_i(M_{LT}) > \sum_{i=1}^{n} R_i(M_T) > \sum_{i=1}^{n} R_i(M_L) > R_i(M_{SU}) .
\]

3. Modelling and Analysis

Without knowing the type of manager, we use the a priori probability to denote three types of managers: \(f_{LT}, f_{TL}, f_{TH}, f_{HT}, f_{UH}, f_{HU}\). \(\sigma, \tau \in (M_{LT}, M_{TL}, M_{TH})\) is expressed as a strategy function of managers selecting a project and is a binomial distribution function that takes the value of either 1 or 0. When managers opt for short-term projects, the value equals 1; otherwise, 0. Another strategy function and binomial distribution function \(\beta(\theta) = (R_{aS}, R_{aL}, R_{uT}, R_{uL})\) is used to represent the firing strategy of shareholders. When shareholders decide to terminate the current manager, \(\beta(\theta)\) is set to 1; otherwise, 0.

After one period of project implementation, shareholders have a clearer understanding of the manager’s ability according to the project returns. Thus, we use the posterior probability \(a_{iS}\) to represent the correction of shareholders’ previous judgment, where \(i = \{S, L\}\) indicates whether the project duration is short or long. If \(i = S\), \(j = \{h, l\}\) indicates whether the project returns are high or low. If \(i = L\), \(j = \{s, f\}\) indicates whether a long-term project succeeds or fails. According to Bayes’ Rule, the posterior probability can be expressed as follows:

\[
a_{S} = \frac{(\alpha_{TL} f_{TL} + \alpha_{TH} f_{TH}) p_{S}}{(\alpha_{TL} f_{TL} + \alpha_{TH} f_{TH}) p_{S} + \alpha_{UH} f_{UH} q_{S}} ; \quad a_{L} = \frac{(\alpha_{TL} f_{TL} + \alpha_{TH} f_{TH})(1 - p_{S})}{(\alpha_{TL} f_{TL} + \alpha_{TH} f_{TH})(1 - p_{S}) + \alpha_{UH} f_{UH} (1 - q_{S})} ;
\]

\[
a_{s} = \frac{[(1 - \alpha_{TL}) f_{TL} + (1 - \alpha_{TH}) f_{TH}) p_{L}}{[(1 - \alpha_{TL}) f_{TL} + (1 - \alpha_{TH}) f_{TH}) p_{L} + (1 - \alpha_{UH}) f_{UH} q_{L}} ; \quad a_{f} = \frac{[(1 - \alpha_{TL}) f_{TL} + (1 - \alpha_{TH}) f_{TH})(1 - p_{L})}{[(1 - \alpha_{TL}) f_{TL} + (1 - \alpha_{TH}) f_{TH})(1 - p_{L}) + (1 - \alpha_{UH}) f_{UH}(1 - q_{L})} .
\]

Theorem 1. There is no completely separating equilibrium in the manager market, and shareholders cannot determine the type of manager purely via the manager’s project selection signals.

Proof. If there is a completely separating equilibrium, then the project selection signals can clearly separate the types of managers, and the shareholders can clearly know the type of manager from the signals and decide what to do next about the manager.

Scenario 1: In this case, competent managers always choose short-term projects, while incompetent managers opt for long-term projects; additionally, shareholders retain competent managers and fire incompetent managers. If such an equilibrium exists, the posterior probability that shareholders will believe that managers are competent will be \(a_{S} = 1, a_{LT} = 1, a_{L} = 0,\) and \(a_{UH} = 0\), and the rational payment function of shareholders is expressed as follows:

\[
w(e) = \begin{cases} 
  p_{S} a_{S} W_f + (1 - p_{S}) a_{lt} W_f = W_f & i = S \\
  q_{L} (1 - \alpha_{LT}) W_f + (1 - q_{L}) (1 - a_{LT}) W_f = W_f & i = L
\end{cases}
\]

Competent managers choose short-term projects, and shareholders pay them based on the equilibrium price in the market; thus, short-term projects are the best choice for managers. Regarding shareholders, as indicated in assumption (3), their earnings increase as the manager’s ability improves; thus, keeping the manager in his or her position is their optimal strategy. For incompetent managers, if long-term projects are their best strategy, then the equation \(W_f = \max w(U)\) holds.
However, the truth is quite different because if managers disguise their incompetency and send a signal that they are capable, then the payment strategy of shareholders is as follows:

\[ p_s[\alpha_{\text{sh}} W_T + (1 - \alpha_{\text{sh}}) W_U] + (1 - p_s)(\alpha_{\text{sl}} W_T + (1 - \alpha_{\text{sl}}) W_U) \]

In addition, by inserting the equation above into the posterior probability function, we obtain the following equation:

\[ p_s[\alpha_{\text{sh}} W_T + (1 - \alpha_{\text{sh}}) W_U] + (1 - p_s)(\alpha_{\text{sl}} W_T + (1 - \alpha_{\text{sl}}) W_U) = W_T \]

Clearly, \( W_T > W_U \), which suggests that \( W_T \) is not the optimal income for managers and that long-term projects are not their best choice. If shareholders change their strategy to retain incompetent managers, which would contradict assumption (3), they will lose the largest benefits. Consequently, shareholders will fire an incompetent manager when there are clear signals that the current manager is of low ability. Therefore, incompetent managers will not let this happen, and at the same time, there is no equilibrium in scenario 1.

Scenario 2: Competent managers always choose long-term projects, while incompetent managers opt for short-term projects; additionally, shareholders retain competent managers and fire incompetent managers. If such an equilibrium exists, the posterior probability that shareholders will believe that managers are competent will be \( a_{\text{sh}} = 0 \), \( a_{\text{sl}} = 0 \), \( a_s = 1 \), and \( a_t = 1 \), and the rational payment function of shareholders is expressed as follows:

\[ w(\epsilon) = \begin{cases} q_s(1 - \alpha_{\text{sh}}) W_U + (1 - q_s)(1 - \alpha_{\text{sh}}) W_U = W_U & i = S \\ p_s \alpha_{\text{sh}} W_T + (1 - p_s) \alpha_{\text{sh}} W_T = W_T & i = L \end{cases} \]

Similarly, we can also prove that the equilibrium does not exist in Scenario 2. The reasoning underlying the results of these two scenarios indicates that incompetent managers will not signal that they are incompetent in the process of project selection; rather, they will duplicate the choice of competent managers so that they will not be fired, which suggests that statement 1 is true.

Theorem 2. There is a refined Bayesian equilibrium; that is, all types of managers choose short-term projects, and shareholders dismiss managers based on the profits of short-term projects.

Proof. All types of managers choose short-term projects; thus, their decision function is \( \alpha_{\text{sh}} = 1 \), \( \alpha_{\text{sl}} = 1 \), and \( \alpha_{\text{sh}} = 1 \). The posterior probability that shareholders will believe managers are capable is expressed as follows:

\[ a_{\text{sh}} = \frac{(f_{\text{sc}} + f_{\text{sc}}) p_s}{f_{\text{sc}} + f_{\text{sc}} p_s + f_{\text{sc}} q_s}, \quad a_{\text{sl}} = \frac{(f_{\text{sc}} + f_{\text{sc}})(1 - p_s)}{f_{\text{sc}} + f_{\text{sc}}(1 - p_s) + f_{\text{sc}}(1 - q_s)} \]

Thus, shareholders will retain managers who choose short-term projects and fire those who select long-term projects. The validation process will be displayed in 5 scenarios to check whether managers will contradict theorem 2.

Scenario 1. Incompetent managers pursue managerial entrenchment to keep their positions regardless of the fact that the net present value of long-term projects is greater than that of short-term projects in maximizing the value of the company. According to the posterior probability of shareholders, when an incompetent manager is regarded as capable, his or her entrenched income \( R_{\text{sh}} \) will be equal to expected salary \( EW^*(S \mid U) \) minus the expected job-switching cost \((1 - q_s) C_{\text{sh}} \). We set the following:

\[ EW^*(S \mid U) = q_s W(X_{\text{sh}}) + (1 - q_s) W(X_{\text{sh}}) \]

\[ W(X_{\text{sh}}) = \alpha_{\text{sh}} W_T + (1 - \alpha_{\text{sh}}) W_U \]

\[ W(X_{\text{sh}}) = \alpha_{\text{sh}} W_T + (1 - \alpha_{\text{sh}}) W_U \]

Then, inserting equations (2) and (3) into equation (1), we can obtain \( R_{\text{sh}} \):

\[ R_{\text{sh}} = q_s[\alpha_{\text{sh}} W_T + (1 - \alpha_{\text{sh}}) W_U] + (1 - q_s)[\alpha_{\text{sh}} W_T + (1 - \alpha_{\text{sh}}) W_U] - (1 - q_s) C_{\text{sh}} \]
If managers do not engage in entrenched behavior but choose long-term projects, their revenues will be the expected salary minus the actual job-switching cost \( H \).

\[
EW^2(L \mid U) = q_L [ \alpha_i W_T + (1 - \alpha_i) W_U ] + (1 - q_L) [ \alpha_i W_T + (1 - \alpha_i) W_U ]
\]

Inserting the posterior probability \( a_{i_u} = 0 \) and \( a_{i_s} = 0 \) into equation (5), we obtain the following equation:

\[
EW^2(L \mid U) = q_L W_U + (1 - q_L) W_U = W_U .
\]

Thus, the payoff function will be \( W_U - C_H \).

Equation (4) can be simplified as follows:

\[
EW^2(S \mid T) = p_S W(X_{S_T}) + (1 - p_S) W(X_{S_S})
\]

\[
EW^2(L \mid T) = p_L [ \alpha_i W_T + (1 - \alpha_i) W_U ] + (1 - p_L) [ \alpha_i W_T + (1 - \alpha_i) W_U ]
\]

We substitute posterior probabilities \( a_{i_u} \) and \( a_{i_s} \) with 0. The revenue function without entrenchment is shown as \( W_U - C_H \). Similarly, also \( R_M \) strictly obeys the following inequalities:

\[
W_U - C_H \leq EW^2(S \mid T) - C_H \leq W_T - C_H .
\]

We conclude from the derivation result above that competent managers with high job-switching costs will not deviate from choosing long-term projects due to the high expense of changing jobs and the benefits of keeping their position and obtaining entrenched benefits. Additionally, for competent managers with low job-switching costs, \( R_M \) under entrenchment is always greater than that not under entrenchment. We have proven that all types of managers choose short-term projects instead of contradicting their rational strategies. Now, we will examine whether shareholders will stray from their expected decision.

Scenario 2. Competent managers with high job-switching costs prefer short-term projects as a entrenched action to stay in their current position for a long period of time due to their high job-switching costs; thus, the revenues from their entrenched behavior are expressed as follows:

\[
R_M = EW^2(S \mid T) -(1 - p_S) C_H
\]

\[
EW^2(S \mid T) = p_S W(X_{S_T}) + (1 - p_S) W(X_{S_S})
\]

\[
EW^2(L \mid T) = p_L [ \alpha_i W_T + (1 - \alpha_i) W_U ] + (1 - p_L) [ \alpha_i W_T + (1 - \alpha_i) W_U ]
\]

We conclude from the derivation result above that competent managers with high job-switching costs will not deviate from choosing long-term projects due to the high expense of changing jobs and the benefits of keeping their position and obtaining entrenched benefits. Additionally, for competent managers with low job-switching costs, \( R_M \) under entrenchment is always greater than that not under entrenchment. We have proven that all types of managers choose short-term projects instead of contradicting their rational strategies. Now, we will examine whether shareholders will stray from their expected decision.

Scenario 3. Shareholders dismiss managers who choose long-term projects. Scenario 4. Shareholders choose to retain managers who have high returns from the execution of short-term projects. Scenario 5. Shareholders dismiss managers whose short-term projects bring low profits. Due to space limitations, we have omitted the proof process.

This deduction indicates that the equilibrium here is a stable Nash equilibrium. All types of managers opt for short-term projects, which can be explained as follows: for incapable managers and \( M_{TH} \), short-term projects can not only cause them to obtain higher entrenched revenues but also contribute to keeping their positions and presenting good performance in the manager market; for \( M_{TH} \), short-term projects can produce returns quickly and easily, and therefore, everyone will prefer short-term project decisions. This is the radical reason for short-sighted investment.
4. Partially Separating Equilibrium when Giving Appropriate Subsidies to Managers

Theorem 3. There is a positive real number \( \varepsilon \in R^+ \) such that when \( C_H > \varepsilon(W_T - W_U) > C_L \) holds, a partially separating equilibrium emerges. Specifically, \( M_{TL} \) choose long-term projects, while \( M_{TH} \) and \( M_{UH} \) choose short-term projects. In this case, shareholders fire managers whose short-term projects yield little or whose long-term projects fail.

Proof. In this equilibrium, managers’ decision function values are \( \sigma_{TL} = 1 \), \( \sigma_{TH} = 0 \), and \( \sigma_{UH} = 1 \), and shareholders’ dismissal function values are \( \beta(R_{sh}) = 0, \beta(R_{s}) = 1, \beta(R_{u}) = 0, \beta(R_{v}) = 1 \). The posterior probability of shareholders with regard to managers is expressed as follows:

\[
\alpha_{sh} = \frac{f_{TH} p_s}{f_{TH} p_s + f_{UH} q_s}, \quad \alpha_{s} = \frac{f_{TH}(1 - p_s)}{f_{TH}(1 - p_s) + f_{UH}(1 - q_s)}; \quad \alpha_{s} = 1, \quad \alpha_{v} = 1
\]

It is expected that \( M_{TL} \) will not deviate from their presumed decision only if managers gain much more from long-term projects than from short-term projects. In this instance,

\[
EW^2(L|T) - (1 - p_s)C_L > EW^2(S|T) - (1 - p_s)C_L \quad \text{(8)}
\]

Inserting equations (6) and (7) and shareholders’ posterior probability into inequality (8), we obtain

\[
(W_T - W_U)[1 - (p_s\alpha_{sh} + (1 - p_s)\alpha_{s})] + W_U - (1 - p_s)C_L .
\]

This equation can be simplified and processed as follows: \( (W_T - W_U)[1 - (p_s\alpha_{sh} + (1 - p_s)\alpha_{s})] > (p_s - p_s)C_L \). We set \( \varepsilon = \frac{1 - (p_s\alpha_{sh} + (1 - p_s)\alpha_{s})}{p_L - p_S} \in R^+ \); thus, the equality can be simplified as follows: \( \varepsilon (W_T - W_U) > C_L \).

Similarly, it is expected that the decisions of \( M_{TH} \) are consistent with theorem 3 only if managers gain much more from short-term projects than from long-term projects. That is,

\[
EW^2(S|T) - (1 - p_s)C_H > EW^2(L|T) - (1 - p_s)C_H \quad \text{(9)}
\]

Inserting equations (6) and (7) and shareholders’ posterior probability, i.e., \( \alpha_{s} = 1 \) and \( \alpha_{v} = 1 \), into equation (9), we can obtain: \( \varepsilon (W_T - W_U) < C_H, \varepsilon = \frac{1 - (p_s\alpha_{sh} + (1 - p_s)\alpha_{s})}{p_L - p_S} \in R^+ \).

If \( M_{UH} \) do not deviate from their presumed decision-making, as with \( M_{TH} \), we must ensure that the entrenched benefits they receive from short-term projects are greater than those from long-term projects:

\[
EW^2(S|U) - (1 - q_s)C_H > EW^2(L|U) - (1 - q_s)C_H \quad \text{(10)}
\]

After simplification, this equation is as follows: \( (q_T - q_U)[1 - (q_s\alpha_{sh} + (1 - q_s)\alpha_{s})] \).

If \( \varepsilon = \frac{1 - (q_s\alpha_{sh} + (1 - q_s)\alpha_{s})}{q_L - q_S} \in R^+ \), then the inequality can be presented as follows:

\( \varepsilon (W_T - W_U) < C_H \). Where \( \varepsilon = \text{Max}(\varepsilon_s, \varepsilon_v) \), which is in accordance with our expectations. We will examine whether shareholders will deviate from their presumed decision.

Scenario 1. Shareholders keep managers whose short-term projects bring high returns in their position. If shareholders retain the current manager, the expected net income of the project at the end of phase 2 is as follows:

\[
[E^2(R_s|T) - W_T]q_{sh} + [E^2(R_s|U) - W_U](1 - \alpha_{sh}) \quad \text{(11)}
\]

If shareholders deviate from their rational decision and dismiss the current manager, the expected net income in the second period is as follows:

\[
[E^2(R_s|T) - W_T](f_{TH} + f_{UH}) + [E^2(R_s|U) - W_U]f_{UH} \quad \text{(12)}
\]

\[
a_{sh} = \frac{f_{TH} p_s}{f_{TH} p_s + f_{UH} q_s}; \quad f_{UH} = 1 - f_{TH} - f_{UH}
\]
Comparing these rewards, shareholders will not deviate from the presumed decision unless the returns from the second period of the project due to the retention of the manager are greater than those from dismissing the manager.

By inserting equation (12) into equation (10) and equation (11), then equation (10) subtracting equation (11), we obtain the following:

\[
\frac{(E^2 (R_s | T) - W_r)}{f_{th} p_s + f_{th} q_s} \frac{(f_{th} + f_{tl})(f_{th} p_s + f_{th} q_s)}{f_{th} p_s + f_{th} q_s} + \frac{(E^2 (R_s | U) - W_u)}{f_{th} p_s + f_{th} q_s} \frac{(f_{th} + f_{tl})(f_{th} p_s + f_{th} q_s)}{f_{th} p_s + f_{th} q_s}
\]

(13)

Additionally, because \([E^2 (R_s | U) - W_u]\) and \([E^2 (R_s | T) - W_r]\) are greater than 0, only if

\[
\frac{f_{th} p_s - (f_{th} + f_{tl})(f_{th} p_s + f_{th} q_s)}{f_{th} p_s + f_{th} q_s} > 0 \quad \text{and} \quad \frac{f_{th} q_s - (f_{th} + f_{tl})(f_{th} p_s + f_{th} q_s)}{f_{th} p_s + f_{th} q_s} > 0
\]

hold at the same time will the deduction result be in accordance with our expectations. These two inequalities can be simplified as

\[
q_s > \frac{f_{th}}{f_{th} + f_{tl}}
\]

which is obviously established and corresponds with our expectations. Therefore, we conclude that equation (13) is always greater than 0, implying that shareholders will definitely not deviate from their presumed decision and will keep the current manager.

Scenario 2. Shareholders dismiss managers whose short-term projects bring low returns. Due to space limitations, we have omitted the proof process.

Thus far, we have proven that theorem 3 is true and that there exists a refined Bayesian equilibrium when \(C_u > q(W_r - W_u)\) and \(q_s > \frac{f_{th}}{f_{th} + f_{tl}}\) are satisfied. The economic explanation of this theorem is as follows: if shareholders offer MTL proper subsidies that are less than the job-switching costs of \(M_u\) and \(M_t\), \(M_t\) can be distinguished from other managers, which is conducive to the company choosing long-term investment projects and achieving sustainable development.

5. Conclusion

This paper uses a two-period dynamic game analysis model. The results are summarized as follows. First, managers who engage in managerially defensive behavior prefer to implement short-term projects due to their quick returns, and shareholders can directly make judgments on their abilities. Second, \(M_u\) and \(M_t\) are more entrenched in project decision-making than \(M_t\), which is due to the high job-switching costs for these two types of managers. They benefit more from implementing short-term projects. In addition, the existence of information asymmetry with regard to shareholders and the pursuit of defensive behavior can improve these managers’ awareness in the manager market, reduce the risk of being fired by the company, and help them enjoy the benefits of incumbency. Third, if shareholders provide managers who make the correct choice of projects with enough compensation such that the formula \(C_u > q(W_r - W_u)\) is satisfied and competent managers with low job-switching costs will gain a much higher net income of investment from long-term projects than from short-term projects, then there will exist a refined Bayesian equilibrium, differentiating \(M_t\) from other managers and thus reducing the agency cost caused by management defense.

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