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Delaying Promotion to Persuade Overconfident Employees

Fumi Kiyotaki and Toshiji Miyakawa

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Faculty of Economics, Kinki University
3-4-1 Kowakae, Higashi-Osaka, Osaka 577-8502, Japan.

近畿大学
KINKI UNIVERSITY

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Fumi Kiyotaki*and Toshiji Miyakawa †

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Abstract

This paper examines the promotion decision with overconfident employees and provides a new rationale for a delay. We relax the usual assumption that the employer and employees know the common distribution function concerning the employees' productive ability and allow that both have different prior beliefs. We show that employees' overconfidence is a necessary condition for delayed promotion and the attractiveness of a later promotion versus an early promotion increases as the precision of the employer's prior brief increases.

JEL Classification: D82; D83; J41

*K*eywords: delayed promotion, overconfidence, learning

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*Faculty of Economics, Kindai University, 3-4-1 Kowakae, Higashiosaka, Osaka 577-8502, Japan. Tel:+81 6 6721 2332; Fax:+81 6 6726 3213; E-mail: kiyotaki@eco.kindai.ac.jp. This paper is financially supported by KAKEN 24530208

†Department of Economics, Osaka University of Economics, 2-2-8 Osumi, Higashiyodogawa-ku, Osaka 533-8533, Japan. Tel: +81 6 6328 2431. E-mail: miyakawa@osaka-ue.ac.jp

1 Introduction

When workers enter the labor market, both the firms and employees are uncertain about the employee's productive abilities. As the employment relationship develops, both learn gradually and the employer determines a promotion to assign employees to upper-level jobs. The current employer can observe signals such as employees' performance or supervisory evaluations. The employer updates beliefs concerning employees' abilities at each period and uses it for promotion decisions. Employees also observe some signals, such as directly via supervisor evaluations or indirectly through job assignments or wage contracts. Therefore, both the employer and employee update the initial briefs during the relationship, but they may have different beliefs despite observing the same signals. An employee observing a negative signal may consider the failure a result of bad lack rather than a sign of low ability because people tend to be overconfident about their own ability. The purpose of this paper is to study the promotion decision with overconfident workers and provides a new rationale for delayed promotion.

Many models of promotion and job-assignment focus on the symmetric or asymmetric learning between the current and potential employers[1].When learning is asymmetric between the current and potential employer, the promotion serves a signal that the market values the worker's ability highly. Our model does not consider wage competition among firms but rather how the information difference between the employer and employees affects the promotion decision. We relax the usual assumption that the employer and

[1]For example, Gibbons and Waldman (1999) analyzes job assignments under symmetric learning and Waldman (1984), Bernhardt (1995), and Zabojinik and Bernhardt (2001) analyze it under asymmetric learning.

employees know the common distribution function related to the employees' productive ability and allow both parties to hold different prior beliefs. There is no private information between the employer and employees, and both observe the same signals at each learning period and update their beliefs, but with the result that they have different beliefs. Overconfident employees have an optimistic distribution function and their subjective beliefs are higher than the employer's objective belief.

Overconfidence is a psychological finding with substantial evidence. For example, Mayer (1975) found that 85 percent of employees were rated lower by their managers than they rated themselves based on data from General Electric. When the employer applies an early promotion policy, a sufficiently overconfident employee disagrees with the employer's promotion decision if he/she is declined a promotion. The employee then leaves the firm because of the belief that he/she deserved the promotion and will get another chance with a different employer. The promotion delay decision affects both the job assignment and the employees' resignation behavior. Because able employees stay at a lower job longer, the employer loses the gain now, but achieves a more efficient job assignment in the future because the learning periods are longer and the employer can know the employee's ability more precisely. Higher firmness of beliefs creates a slower learning speed. Therefore, a single period is not sufficient to improve the employee's brief. A late promotion achieves more efficient job assignments from the long-term view when the prior expected ability is low and the firmness of beliefs is high. On the other hand, employees also take longer to learn about their own abilities, and thus to lower their beliefs when they receive a sequence of negative signals. Thus, the employer can persuade employees not to quit by delaying the promotion decision. We show that the employer never chooses a late promotion policy if the employee declined an early promotion does not leave the firm. Therefore, employees' overconfidence is a necessary condition for a late promotion policy in our model. We show that the present value of the profit from a late promotion is larger than for early promotion when employees are sufficiently overconfident and the employer's prior brief is low, or the firmness of the beliefs is high.

The remainder of the paper is structured as follows. In Section 2, we provide a brief review of the related literature. In Section 3, we present the model and compare the late and early promotion policies in Section 4. Finally, we provide conclusions in Section 5.

2 Related literature

We show that a late promotion can be better than an early promotion. There are several theoretical works related to delayed promotion. Prendergast (1992) examined the impact of delayed promotion on incentives to collect firm-specific human capital with a model where the employer has private information about an employee's promotion prospects and a delayed promotion means that the employer does not reveal the promotion prospect (their ability) to employees before training. A late promotion policy induces all workers to collect skills and take inefficient job assignments. Prendergast (1992) showed that the lower the cost of training, the greater the benefits from delayed promotion, and explained the Japanese promotion policy. Waldman (2013) identified a problem in this model by stating that, "even though there are no promotions early in careers in Japan, many young white -color workers in Japan do seem to have a clear sense of long-term career prospects". [2] Although we do not analyze the incentive problem, the learning process and belief updates are more consistent with the evidence. In our model, both the employer and employees are uncertain about the employee's ability, but both update their briefs during the relationship.

Owan (2004) analyzed the existence of an early-promotion equilibrium and a late-promotion equilibrium. In that model, workers vary not only on their ability but also in the match between worker and firm. The key assumption is that ability is revealed to the employer and worker after the first period, and the match reveals itself to the employer and employee after the second period [3]. The market can observe neither abilities nor matches. In an early-promotion equilibrium, high-ability employees are promoted after the employer learns of their ability but before they learn the match. In a late-promotion equilibrium, promotion occurs after the employer learns about the employee's abilities and matches. Owan (2004) shows that there is no turnover or income dispersion in the late-promotion equilibrium. The information gap between the current firm and potential employers are important to consider in a strategic promotion policy, which we do not include in our mode, but that Owan explains well in terms of the differences between Japanese and American labor markets.

Ishida (2004) extended Waldman's (1984) asymmetric learning model and

[2] Uehara (2009) found that there is the potential for job assignment (job-rotation) disparity before the promotion using data from a Japanese General Trading Company that adopted a late promotion pattern.

[3] Waldman (2013) points out that "Owan's (2004) model-although interesting- relies on an ad hoc assumption concerning job-match information being revealed later to firms than information about worker abilities."

added workers signaling behavior and showed that signaling is more likely to improve welfare when skills are more general because the current employer has a stronger incentive to conceal its information when skills are general. When the skills are specific, signaling behavior does not work and the employer can delay the promotion.

Our paper is also related to models that study overconfidence. Fang and Moscarini (2005) also assumed that neither party knows the true value of employees' abilities and allows both the employer and employee to hold different prior beliefs about the employees' ability because employees are overconfident. However, that study assumed that the signal is privately observed by the employer. Therefore, employees might infer the signal from the wage contract. Fang and Moscarini show that overconfidence is a necessary condition that leads to a non-differential wage policy. There are several other papers[4] that analyze how overconfidence affects the incentive contract, but the literature has not considered how overconfidence affects the job assignment and promotion policy.

In our model, the employer and employees observe positive and negative signals during the learning period and update their briefs about the employee's ability according to the beta distribution. The precision of the information affects the promotion policy. Viscusi (1980) also uses the beta distribution to update beliefs about productivity in a risky job with a model wherein the worker can choose a riskless job or a risky job, and shows that the attractiveness of the risky job increases as precision of the worker's initial distribution decreases. This is because imprecise prior information imply that learning is fast and the worker can quit after an unfavorable outcome.

[4]See, for example, Santos-Pinto (2008) and de la Rosa (2011).

In our model, the employee determines resignation behavior based on the updated belief, which is similar to Viscusi (1980), but the employer also updates their belief and decides the promotion policy. Yildiz (2004) uses the beta distribution to update the belief about the probability of being a proposer in a sequential bargaining model that allows for different probability distributions for different players. Both players are optimistic about the probability of being a proposer, and the results from that study show that the delay becomes shorter as the player's initial belief become firmer (more precise). This is the opposite result. The difference between the bargaining model and our job-assignment model is that the surplus is constant in a bargaining model, though our model potentially leads to an increased surplus due to the delay.

3 The Model

Workers are hired by the firm at period 0 and work for three periods. Both the employer and employees are risk neutral and have a common discount factor δ. There are two jobs, job 1 and job 2, in the firm. All employees are assigned to job 1 at period 0 and we call the movement from job 1 to job 2 a promotion. The output of job 1 is constant regardless of who is assigned, at a value of V_1. On the other hand, the productivity of job 2 depends on the employees' ability. Suppose that, if the employee whose ability is θ $(0 \leq \theta \leq 1)$ engages in job 2, the probability of success is θ. The output is V_2 if the project is successful and zero otherwise.

Neither the employee nor the employer knows the employee's productive ability ex ante. Both the employee and employer observe signals about the employees' productive ability in every learning period[5]. The signal is either positive or negative and both of the employees and employer update their beliefs about the employees' ability before a promotion decision.

We denote (m, t) for the history in which the employee received m positive signals and $t - m$ negative signals at the beginning of period t. We assume that the employer's briefs about the employee's ability are drawn from a beta distribution. We define the following complete beta function:

$$B^p(\hat{\theta}(m,t)) \equiv \int_0^{\hat{\theta}} \theta^{\alpha^p+m-1}(1-\theta)^{n-\alpha^p+(t-m)-1}d\theta,$$

where $1 < \alpha^p \leq n - 2$. The density function f_β^p is given by

$$f_\beta^p(\theta;(m,t)) \equiv \frac{1}{B^p(m,t)}\theta^{\alpha^p+m-1}(1-\theta)^{n-\alpha^p+(t-m)-1}.$$

When the employer update her brief according to $B^p(t, m)$, she estimates the expected ability

$$\theta_t(m) = \frac{\alpha^p + m}{t+n}. \tag{1}$$

Therefore, the prior belief (the expected value at period 0) is

$$\theta_0(0) = \frac{\alpha^p}{n}. \tag{2}$$

The parameter α^p indicates that the belief is different from that of employees, as we will see below. We keep the mean α^p/n constant and increase n. Figure 1 shows that the dispersion of θ decreases with n, implying that n measures the firmness of beliefs. Let $k \equiv \alpha/n$. It follows that $\theta_0(0) = k$,

[5]For example, supervisors assess the employees, and the resulting evaluations are considered the signal.

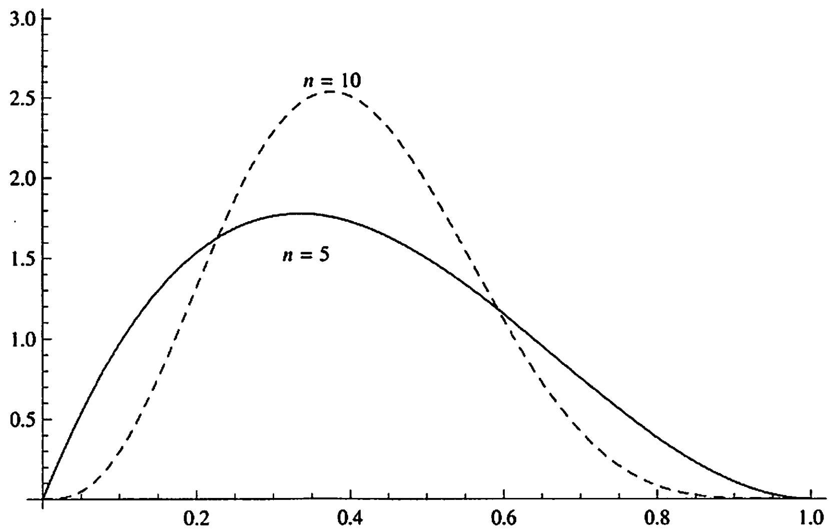

Figure 1: $k = \frac{2}{5}$

$\theta_1(1) = (nk+1)/(n+1)$ and $\theta_1(0) = (nk)/(n+1)$. We then have

$$\frac{\partial\theta_1(1)}{\partial n} = \frac{k-1}{(n+1)^2} < 0$$

and

$$\frac{\partial\theta_1(0)}{\partial n} = \frac{k}{(n+1)^2} > 0,$$

which implies that firmer prior beliefs are revised less in either direction. Therefore, the information is firmer and the learning speed is longer[6].

The employee also updates the brief according to a beta distribution, but assigns a higher value than the employer due to overconfidence. The beta function is given by

$$B^a(m,t) \equiv \int_0^1 \theta^{\alpha^a+m-1}(1-\theta)^{n-\alpha^a+(t-m)-1}d\theta,$$

[6] $\frac{(\partial\theta_1(1)-\theta_0(0))}{\partial n} = \frac{k-1}{(n+1)^2} < 0$

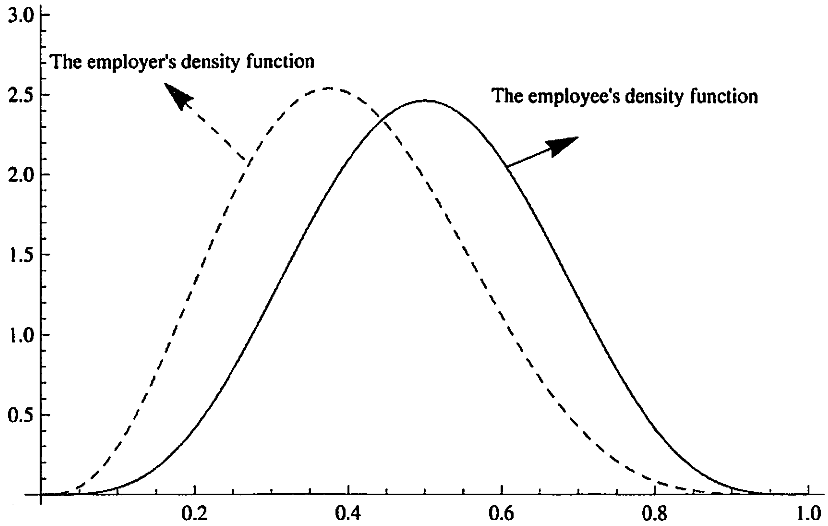

Figure 2: Overconfident density function ($\alpha^p = 4, \alpha^a = 5, n = 10$)

At history(t, m), the employee believes their ability to be

$$\theta_t^a(m) = \frac{\alpha^a + m}{t + n}. \tag{3}$$

Assumption 1. $1 < \alpha^p < \alpha^a \leq n - 2.$

$\alpha^p < \alpha^a$ means that the employee has a more optimistic belief than the employer[7]. The employee's density function is to the right of the employer's density function, as we can see in Figure 2. They observe the same signals but their briefs diverge because the employee is overconfident. Let the employee's prior k^a, $k^a \equiv \alpha^a/n$. We then have $k^a > k$ from $\alpha^a > \alpha^p$.

At period 0, all employees are assigned to job 1. We call a decision an early promotion if the decision is made in period 1. We call the decision a

[7]We assume that employees are overconfident. Hvide (2002) models strategic belief formation and shows overconfidence endogenously by assuming that the current employer knows the employee's ability, but the employees form their own briefs to maximize their own utility, which is called a pragmatic belief. Although Hvide showed that pragmatic beliefs exceeded true ability, that study did not analyze the learning process and belief updates.

late promotion if the decision is made in period 2. The employer chooses the promotion policy at the beginning of period 0 and can commit to the policy. Before the promotion decision, employees receive either a positive or negative assessment in each period. The employer and the employee can acquire the information and update their beliefs, thus learning occurs only for one period if the employer opts for early promotion, but learning occurs for two periods if the employer opts for late promotion.

The employees' utility is $U = W_j - C_j$, where W_j is the wage and C_j is the cost to the employees at job $j = 1, 2$. We assume that the employees' costs are normalized to zero when they engage in job 1, $C_1 = 0$, but they bear the cost $C_2 = C$ when they engage in job 2 because job 2 is a responsible position that requires extra effort for success. To focus on the learning process inside the firm, we omit the incentive problem and wage competition between firms[8]. We suppose that employees' reservation utilities are normalized to zero, and thus wages are determined to satisfy the employees' participation constraint at each job.

$$W_1 \geq 0, \tag{4}$$

$$W_2 - C \geq 0, \tag{5}$$

From (4) and (5),

$$W_1 = 0 \quad W_2 = C$$

When the history is (m, t), the efficient job assignment requires a promo-

[8]Waldman(1984) shows that the promotion conveys the information to the market that the worker is capable, and thus must increase the wage. This makes the job assignment inefficient.

tion of the employee to job 2 if

$$\theta_t(m)V_2 - C \geq V_1.$$

Solving this for $\theta_t(m)$,

$$\theta_t(m) \geq \frac{V_1 + C}{V_2}.$$

To ensure that learning is essential for the promotion decision, we make the following assumption.

Assumption 2.

$$\theta_0(0) \leq \frac{V_1 + C}{V_2}.$$

This assumption means that all employees should be assigned to job 1 at period 0.

We assume that the employer cannot lay off employees, but an employee who disagrees with the promotion decision will leave with the belief that promotion is possible with a different employer. Because employees are overconfident, there is a case wherein employees believe that they have sufficient ability to engage in job 2, though the employer determines that the employee is suited to job 1 and stops learning.

The employee who believes

$$\theta_t^a(m) > \frac{V_1 + C}{V_2}$$

quits if the promotion decision is made at $t = 1$ and he declines the promotion. If the promotion decision is made at $t = 2$, the employee does not quit because there is no chance for promotion, even with a different employer because Assumption 2 indicates that at least one period is required for learning and the time remaining is only one period

Assumption 3.

$$\theta_0(0) \leq \frac{1}{2}.$$

This assumption makes the two-period learning interesting. If this assumption is violated, then the employer can understand that the employee that received a negative signal at period 0 should be assigned to job 1, and further learning is of no value[9].

Assumption 4.

$$\theta_1(1) \geq \frac{V_1 + C}{V_2}.$$

This assumption ensures that the employee receiving a positive assessment at period 0 should be promoted to job 2 at period 1 from the point of the job assignment. We will show in the next section that there is a delay in the promotion decision, even under Assumption 4, and the employer uses a late promotion policy.

[9]When $\theta_0(0) > 1/2$, then $\theta_2(1) < \theta_0(0)$ and the employee should be assigned to job 1 based on Assumption 2.

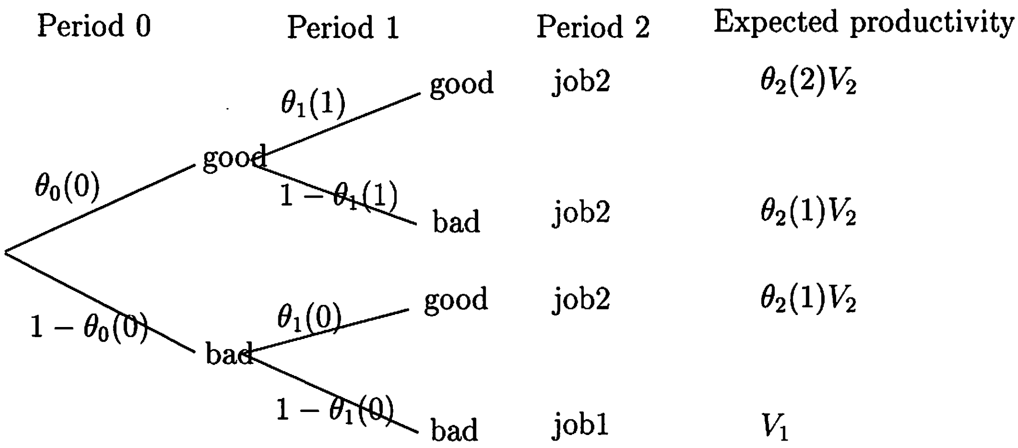

Figure 3: Probability tree for late promotion

4 Choice of promotion policy

In this section, we adopt the following assumption.

Assumption 5.

$$\theta_2(1) \geq \frac{V_1 + C}{V_2}.$$

This condition implies that an employee with at least one positive signal during the learning period is promoted to job 2 under the late promotion policy. Figure 3 shows a tree diagram of the state of the late promotion policy.

The employer's expected profit at period 0 is

$$\begin{aligned}\pi^L = V_1 + \delta V_1 + \delta^2 [\theta_0(0) \{\theta_1(1)\theta_2(2)V_2 + (1-\theta_1(1))\theta_2(1)V_2 - C\} \\ + (1-\theta_0(0)) \{\theta_1(0)(\theta_2(1)V_2 - C) + (1-\theta_1(0))V_1\}] \qquad (6)\end{aligned}$$

When the employer adopts the late promotion policy, no one is promoted at period 1 and the profit is V_1. The probability that the signal in both the first and second period is positive is $\theta_0(0)\theta_1(1)$, and the updated expected ability

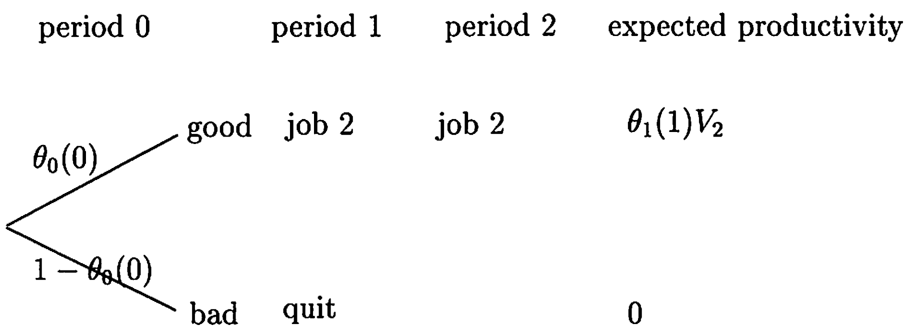

Figure 4: Probability tree for early promotion with employee turnover

is $\theta_2(2)$. The probability that the first signal is positive and the second signal negative is $\theta_0(0)(1-\theta_1(1))$, and the updated expected ability is $\theta_2(1)$. The probability that the first signal is negative and the second signal positive is $(1-\theta_0(0))\theta_1(0)$, and the updated expected ability is $\theta_2(1)$. Since the employee that received at least one positive signal is promoted to job 2 from Assumption 5, the employee is promoted to job 2. The probability that both signals are negative is $(1-\theta_0(0))(1-\theta_1(0))$, and the employee is assigned to job 1.

When the employer adopts an early promotion policy, the expected profit depends on whether the employee who is declined the promotion quits. When $\theta_1^a(0) > (V_1+C)/V_2$, the employee quits at the beginning of period 1. When $\theta_1^a(0) \leq (V_1+C)/V_2$, the employee remains at the current firm and engages in job 1 in periods 1 and 2.

We first consider a case in which an employee who is declined the promotion leaves at the beginning of period 1. Figure 4 provides a tree diagram of the state of the early promotion policy when the declined employee quits

When the employer adopts an early promotion policy, the learning period is one period and the belief is updated once. The employee is promoted with a probability of $\theta_0(0)$, and the updated expected ability is $\theta_1(1)$. The employee quits with a probability of $1-\theta_0(0)$. Therefore, the expected profit from the early promotion policy with employee turnover π^E is

$$\pi^E = V_1 + \delta\theta_0(0)\{\theta_1(1)V_2 - C\} + \delta^2\theta_0(0)\{\theta_1(1)V_2 - C\}. \tag{7}$$

From (3), it follows that

$$\begin{aligned}&\theta_1(1)\theta_2(2) + (1-\theta_1(1))\theta_2(1) - \theta_1(1)\\ &\quad = \frac{nk+1}{n+1}\frac{nk+2}{n+2} + \frac{nk+1}{n+2} - \frac{nk+1}{n+1}\frac{nk+1}{n+2} - \frac{nk+1}{n+1} = 0\end{aligned} \tag{8}$$

From (6), (7) and (8),

$$\begin{aligned}\pi^L - \pi^E &= \delta\left[V_1 - \theta_0(0)\{\theta_1(1)V_2 - C\}\right] + \delta^2\left[(1-\theta_0(0))\theta_1(0)\{\theta_2(1)V_2 - C\}\right.\\ &\qquad \left.(1-\theta_0(0))(1-\theta_1(0))V_1\right]\\ &= \delta\left[V_1 - k\left\{\frac{kn+1}{n+1}V_2 - C\right\}\right] + \delta^2\left[(1-k)\frac{kn}{n+1}\left\{\frac{kn+1}{n+2}V_2 - C\right\}\right.\\ &\qquad \left. +(1-k)(1-\frac{kn}{n+1})V_1\right]\end{aligned} \tag{9}$$

The first term of (9) represents the difference in profits in period 1 and the second term of (9) represents the difference in profit in period 2. We can easily find that the second term is positive. Therefore, the employer can earn higher profits under a late promotion at period 2. Late promotion has two positive effects on the profit in period 2. One is the learning effect: since the employer learns for two periods, she now have a better determination of the employee's productivity and can increase the efficiency in job assignments in period 2. Another is the persuasion effect. If the employee declined the promotion at period 1, then the employee resigns and the employer cannot profit from the lost labor, but no one quits under the late promotion policy and the employer can get V_1 in period 2.

On the other hand, the sign of the first term is ambiguous. There are two opposite effects: the job assignment effect and the persuasion effect. From Assumption 4 the employee whose history is (1,1) should be promoted to job 2. Therefore, the early promotion achieves more efficient job assignment at period 1 than a late promotion. However, employees might leave with a probability of $1 - \theta_0(0)$. With a late promotion, the job assignment is inefficient at period 1 but no one leaves and the employer can earn V_1 with certainty. If $\theta_0(0)\{\theta_1(1)V_2 - C\} < V_1$, the first term of (9) is positive, and we obtain the following lemma.

Lemma 1. *If $\theta_0(0)\{\theta_1(1)V_2 - C\} \leq V_1$, a late promotion can achieve higher expected profit than an early promotion with employee turnover.*

From Lemma 1, employers never choose early promotions with turnover when the ex-ante expected ability $\theta_0(0) = k = \alpha^p/n$ is sufficiently low.

If $V_1 < \theta_0(0)\{\theta_1(1)V_2 - C\}$, the sign of (9) is ambiguous because the first term is negative and the second term is positive, but using the following lemma, we can say that when n is large, a late promotion strategy is optimal.

Lemma 2. *The difference between the employer's expected profits from a late promotion policy and early promotions with turnover increases with n.*

Proof. Differentiating (9) with respect to n yields

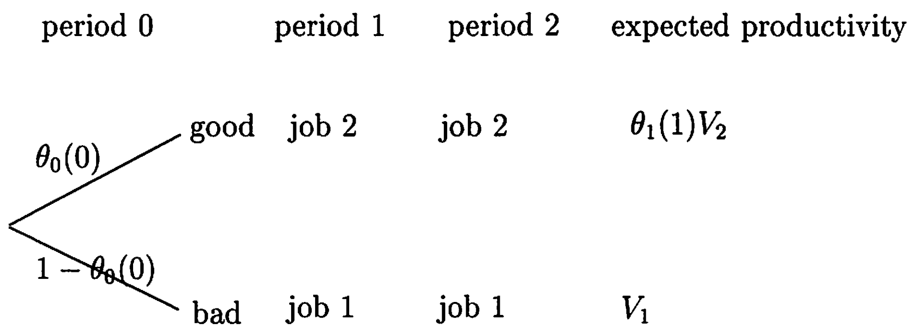

Figure 5: Probability tree for early promotion without employee turnover

$$\begin{aligned}\frac{\partial(\pi^L-\pi^E)}{\partial n} &= \delta\frac{(1-k)k}{(n+1)^2}V_2+\delta^2\frac{(1-k)kn(2k+n+1)}{(n+1)(n+2)^2}V_2\\ &+\delta^2\frac{(1-k)k}{(n+1)^2}\left\{\frac{kn+1}{n+2}V_2-C-V_1\right\}\end{aligned} \tag{10}$$

From $\theta_2(1)V_2-C>V_1$, it follows that $\frac{kn+1}{n+2}V_2-C-V_1>0$. Thus, we have $\partial(\pi^L-\pi^E)/\partial n>0$. □

A large n decreases the learning speed. The employee's belief has not declined sharply, even when the first signal is negative. The employer believes that there is a valued employee among them and the second learning period is more important. Thus, it increases the profit from a late promotion policy.

Next, we consider the case where $\theta_1^a(0)<(V_1+C)/V_2$. This condition means that all employees remain with the current employer in periods 1 and 2. Figure 5 provides a tree diagram of the state of the early promotion policy when the declined employee does not quit.

The expected profit from the late promotion policy remains the same and it is given by (6). The expected profit from an early promotion strategy is

$$\pi^E = V_1 + \delta\left[\theta_0(0)(1+\delta)(\theta_1(1)V_2 - C) + (1-\theta_0(0))(1+\delta)V_1\right] \tag{11}$$

From (6), (8) and (11),

$$\begin{aligned}\pi^L - \pi^E &= \delta\theta_0(0)\left\{V_1 - (\theta_1(1)V_2 - C)\right\} \\ &\quad + \delta^2\left[(1-\theta_0(0))\theta_1(0)\left\{(\theta_2(1)V_2 - C) - V_1\right\}\right]\end{aligned} \tag{12}$$

From $\theta_0(0) < \theta_1(1)$, it follows that $\theta_0(0) > (1-\theta_0(0))\theta_1(0)$. From $\theta_2(1) < \theta_1(1)$, it follows that $(\theta_1(1)V_2 - C) - V_1 > (\theta_2(1)V_2 - C) - V_1$. Thus, $\pi^L - \pi^E < 0$ and we arrive at the next lemma.

Lemma 3. *If the employees who are declined the promotion at period 1 do not leave the firm, the employer's expected profit under the early promotion policy is higher than that under the late promotion policy.*

Lemma 3 implies that the promotion delay never occurs when the employee agrees to engage in job 1 if the first signal is negative. Therefore, overconfidence is a necessary condition for late promotion. From Lemma 1 to Lemma 3, we have the following Proposition.

Proposition.

1. If $\theta_1^a(0) = \frac{k^a n}{n+1} > \frac{V_1 - C}{V_2}$ and $k\{\frac{kn+1}{n+1}V_2 - C\} < V_1$, the employer always chooses late promotion.
2. If $\theta_1^a(0) = \frac{k^a n}{n+1} > \frac{V_1 - C}{V_2}$, the employer chooses late promotion when n is sufficiently large.

3. If $\theta_1^a(0) = \frac{k^a n}{n+1} \geq \frac{V_1 - C}{V_2}$, the employer always chooses early promotion.

Employers choose late promotion when $\theta_1^a(0)$ is sufficiently large and the employer's prior belief k is low or the firmness of beliefs is high. The necessary condition for the late promotion policy $\frac{k^a n}{n+1} > \frac{V_1 - C}{V_2}$ is satisfied when the employee's overconfidence α^a is large or the firmness of the belief n is high. If α^a is large and the employee's prior belief k^a is high, then one negative signal is not sufficient to accept delayed promotion and the employee leaves under the early promotion strategy. Similarly, when n is large, learning takes more time and one negative signal does not decrease the employee's belief sufficiently to give up the promotion. The employer does not want employees to leave because they produce V_1 at a minimum. An overconfident employee will disagree that they do not deserve a promotion based on only one negative evaluation. To persuade employees that they are disqualified for a promotion, the employer has to wait. The cost of the late promotion policy is delaying the promotion for an employee who received a positive initial signal. However, there are able employees among those who received a negative first signal. Therefore, the late promotion policy results in inefficient job assignments in period 1, but can achieve more efficient job assignments in period 2 compared to the early promotion policy. The attractiveness of late promotion increases with n because slower learning makes a longer learning period more profitable.

5 Conclusion

This paper provides a theoretical explanation for why Japanese firms apply a late promotion policy. The Proposition says that the attractiveness of late promotion increases with the firmness of prior beliefs. The variance of productive ability is considered smaller in Japan than in the U.S.. Since Japanese firms need multi-skilling and make more use of job rotation in comparison, the learning speed is considered slower in Japanese firms than in U.S. firms. We can say that the pace of promotion is slower in Japan because beliefs are firmer in Japanese firms.

There is substantial evidence that turnover rates are lower in Japanese firms. In our model, sufficiently overconfident employees who disagree with the employer's promotion decision leave under an early promotion policy, though they will stay under a late promotion policy. Therefore, the turnover rate is lower under the late promotion strategy, consistent with the evidence herein.

This article does not consider wage competition between the current employer and the market, or incentives to collect firm-specific human capital. These are important factors in promotion decisions and will be left for future research.

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