E C O N O M I C S B U L L E T I N

Severance pay and the accuracy of judgment

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Abstract

We show that the severance pay scheme can serve as bond and improve the welfare. When the authority appropriately adjudges the worker's effort, the increase in a severance payment reduces the shirker's expected benefit, so that the severance pay works as a bond, which is warranted by the authority.

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1 Introduction

Generally, there are two standard ways of thinking about the problem of worker shirking: namely, bonding models as in Lazear (1979) and efficiency wage models as in Shapiro and Stiglitz (1984). In the former, workers are disciplined by the prospect of losing their bond, whereas in the latter they are disciplined by the prospect of unemployment. Efficiency wage models then deal with the remainder after bonding has reached its limit. That is, unemployment is needed to discipline workers only in those circumstances where no bonding mechanism can be effectively employed. However, since there is no authority responsible for enforcing Lazear-style implicit contracts, the firm is tempted to renege: this limits the applicability of such contracts. In this paper, we consider an alternative bonding mechanism for the circumstances where Lazear's bonding does not apply.

It is often the case that there is an authority that decides if severance pay is warranted, even when there is no authority required to enforce Lazear's contracts. In many countries, employment protection legislation requires firms to compensate workers with severance pay when fired for economic reasons[1]. However, firms have no obligation to pay the compensation to workers for disciplinary reasons. Whether the reasons for dismissal are cogent is judged by the authority when the fired worker complains. This paper shows that government-mandated severance pay can serve as a bond, but only if it can be accurately judged whether the worker shirked.

Gardón-Sánchez and Güell (2003) introduced dismissal conflicts between firms and workers, and studied the effect on the level of employment through the increase in severance pay. They concluded that the increase in severance pay reduces the level of employment: severance pay deteriorates welfare. However, this depends on the assumption that the worker wins the case with equal probability regardless of the level of effort exerted. That is, there is no link between the worker's effort and the probability of winning the case. Under this assumption, the increase in the severance pay always gives workers an incentive to shirk. The firm must therefore raise wages to deter shirking, and the level of employment falls.

In this paper, we reason that the level of effort chosen by workers influences the judgment (i.e. the probability the worker wins the case), and examine the effect of severance pay. We show that severance pay schemes can serve as a bond and improve welfare. Importantly, this result depends on the link between worker effort and the judgment. When the authority appropriately adjudges the worker's effort, the increase in severance pay reduces the shirker's expected benefit, such that the severance pay works as a bond, and is then warranted by the authority.

The paper is organized as follows. Section 2 constructs the shirking model with government-mandated severance pay scheme in the circumstances where Lazear's bonding

[1]Firms in the US, for example, may voluntarily pay severance payments. This paper considers an economy where the severance payment is mandated by an external authority, as is the case in some European countries.

does not work, and characterizes the solutions. Section 3 examines the welfare analysis for severance pay. Section 4 includes some concluding remarks.

2 The Model

Assume, the risk-neutral, homogeneous worker's instantaneous utility is $u(w, e) = w - d(e)$, where w is the wage level. $d(e)$ denotes their cost of providing effort, where $d(0) = 0$, $d'(e) > 0$ and $d''(e) > 0$. The firm pays the wage to workers, and requires them to make an effort $\overline{e} > 0$ in each period. The firm can observe workers' efforts with a rate of q. If the firm observes $e < \bar{e}$, it views the worker as a shirker and can dismiss him for neglect of duty. The firm also fires the worker without reason for redundancy with a rate b. These implies that the worker is fired with b when he chooses $e \geq \overline{e}$ and with $b + q$ when he chooses $e < \overline{e}$. Therefore, the worker's problem is to choose $e = \{0, \overline{e}\}$.

When the fired worker brings a lawsuit against the firm, the authority judges whether the dismissal is fair or unfair. If the dismissal is regarded as unfair, the firm must incur severance pay $C > 0$. If the dismissal is regarded as fair, the firm can dismiss the worker without additional costs. The judgment is stochastic, because the authority has imperfect information for the level of effort the worker chooses. The worker wins the case with probability p_N if the worker chooses $e = \overline{e}$, and a probability $p_S (< p_N)$ if the worker exerts no effort $e = 0$[2]. Under these circumstances, the firm may be able to save C when the firm always fires for disciplinary reasons, and the worker may be able to obtain C when he asserts unfair dismissal. As a result, whenever the firm fires workers, conflicts between the firm and workers take place[3].

Let us define V^N and V^S respectively as the expected lifetime utility of an employed no-shirker ($e = \bar{e}$) and an employed shirker ($e = 0$). The fundamental asset equation V^N and V^S satisfies:

$$rV^N = w - d(\bar{e}) + b(V_U^N + p_N C - V^N), \tag{1}$$
$$rV^S = w + (b + q)(V_U^S + p_S C - V^S), \tag{2}$$

where r is discount rate and V_U^N (V_U^S) is the reservation utility of an employed no-shirker (an employed shirker). V_U^N and V_U^S satisfies the following equations:

$$rV_U^N = w_c + a(V^N - V_U^N), \tag{3}$$
$$rV_U^S = w_c + a(V^S - V_U^S), \tag{4}$$

[2]Probability p_N approaches 1 (p_S approaches 0) as the authority has more information on the effort exerted by the worker, whereas p_N is equal to p_S if the authority has no information.

[3]To simplify the analysis, we assume each party has no cost of litigation. If the litigation cost is sufficiently high, the worker may not necessarily take the firm to the authority. Litigation costs also affect the structure of the net expected gain from the conflict for each party.

where w_c is unemployment compensation (for simplicity we set $w_c = 0$), and a is the job acquisition rate[4]. From (3) and (4), we find that V_U^N is equal to V_U^S when $V^N = V^S$.

If $V^N \geq V^S$ is satisfied, the workers exert effort $\bar{e}$. Using (1)–(4), the incentive compatibility condition can be written as:

$$\hat{w} \geq \alpha d(\bar{e}) + \beta T \equiv \hat{w}_I(\bar{e}), \tag{IC}$$

where $\hat{w} \equiv w + bp_N C$, $\alpha \equiv (r + a + b + q)/q > 1$, $\beta \equiv (r + a + b)/q > 1$ and $T \equiv \{(b + q)p_S - bp_N\}C$. $\hat{w}$ is the average payment of all employees including currently fired persons. The value of T is the difference in the expected severance pay between a shirker and no-shirker before they are fired. The value of T may be small when the authority has more information on workers' efforts[5].

The participation condition, $V^N \geq V_U^N$ is written as:

$$\hat{w} \geq d(\bar{e}) \equiv \hat{w}_P(\bar{e}). \tag{PC}$$

The firm solves the following problem subject to (IC) and (PC):

$$\max_{w,\bar{e},L} \; g(\bar{e}L) - \hat{w}L,$$

where L is the level of employment and $g(\bar{e}L)$ is the production function with $g'(\bar{e}L) > 0$ and $g''(\bar{e}L) < 0$. Note that the outputs depend on the quantity of effective labor $\bar{e}L$. The firm therefore wishes to hire effective labor as cheaply as possible.

As shown by Solow (1979), this maximization problem is solved in the following two steps. First, the required level of effort $\bar{e}$ and the average payment $\hat{w}$ are determined by minimizing the unit cost of effective labor $\hat{w}/\bar{e}$ subject to (IC) and (PC). Second, the level of employment L is determined by equalizing the marginal productivity and unit cost of effective labor as minimized in the first step:

$$g'(\bar{e}L) = \frac{\hat{w}}{\bar{e}}. \tag{5}$$

From (IC), we see that the minimum $\hat{w}$ that satisfies (IC) is large when the value of T is high. This implies that only constraint (IC) binds and conversely only constraint (PC) binds when the value of T is very small. The problem's solution is characterized by the following three cases.

Case 1 Only (PC) is binding: First, we consider the case in which the value of T is sufficiently small. In this case, only (PC) binds. Solving (PC) with equality, the

[4]We assume that the job acquisition rate is exogenous, while Shapiro and Stiglitz (1984) assume it is endogenous. However, this particular assumption does not affect the basic results

[5]If the authority has perfect information ($p_N = 1$ and $p_S = 0$), the value of T is equal to $-bC/q < 0$. If the authority has no information ($p_N = p_S = p$), the value of T is $pC > 0$ (as in Gardón-Sánchez and Güell (2003)).

firm's problem becomes one of minimizing the unit cost of effective labor $w_P(\overline{e})/\overline{e}$ over $\overline{e}$. The optimal required level of effort $\overline{e}_P^*$, therefore, satisfies:

$$d'(\overline{e}_P^*)\overline{e}_P^* = d(\overline{e}_P^*), \tag{6}$$

which states that the increase in disutility in adding the required level of effort must be equal to the unit cost of effective labor. The optimal average payment is $\hat{w}_P^* = d(\overline{e}_P^*)$. Given $\overline{e}_P^*$ and $\hat{w}_P^*$, the optimal level of employment L_P^* is determined by (5).

Case2 Both constraints are binding: When both (PC) and (IC) bind, it implies that the optimal required level of effort $\overline{e}_B^*$ is determined by $w_P(\overline{e}_B^*) = w_I(\overline{e}_B^*)$, that is:

$$d(\overline{e}_B^*) + T = 0. \tag{7}$$

In this case, the value of T must be negative since $d(\overline{e}_B^*)$ is strictly positive. The optimal average payment of labor is $\hat{w}_B^* = d(\overline{e}_B^*) = \alpha d(\overline{e}_B^*) + \beta T$. Given $\overline{e}_B^*$ and $\hat{w}_B^*$, the optimal level of employment L_B^* is determined by (5).

Case3 Only (IC) is binding: Finally, consider the case in which the value of T is sufficiently high, *i.e.* only (IC) is binding. Solving (IC) with equality, the firm's problem is one of minimizing $w_I(\overline{e})/\overline{e}$. The optimal required level of effort $\overline{e}_I^*$ satisfies the following:

$$\alpha d'(\overline{e}_I^*)\overline{e}_I^* = \alpha d(\overline{e}_I^*) + \beta T. \tag{8}$$

The average labor payment is then $\hat{w}_I^* = \alpha d(\overline{e}_I^*) + \beta T$. Given $\overline{e}_I^*$ and $\hat{w}_I^*$, the optimal level of employment L_I^* is determined by (5).

There exists a T_1 which satisfies $\overline{e}_P^* = \overline{e}_B^*$, that is $d(\overline{e}_P^*) + T_1 = 0$, so that only (PC) must be binding if $T < T_1$. Also, there exists a T_2 which satisfies $\overline{e}_B^* = \overline{e}_I^*$, that is $d(\overline{e}_I^*) + T_2 = 0$. Only (IC) must be binding if $T > T_2$. If $T_1 \leq T \leq T_2$, both constraints must be binding. Note that T_2 is a negative value since $\overline{e}_B^* > 0$ and T_2 satisfies (7).

The value of T is the difference in expected severance pay between a shirker and a no-shirker before they are fired. When the no-shirker can be recognized through their effort by the authority, the value of T is small and (IC) is not binding.

3 Welfare analysis of severance pay

In this section, we study the welfare analysis of severance pay. We define welfare as the sum of firm and workers' benefits. The planner with perfect information maximizes the sum of workers' and firm's utility as follows:

$$\max_{\bar{e},L} g(\bar{e}L) - d(\bar{e})L.$$

The Pareto-optimal solution is satisfied by the following:

$$d'(\bar{e})\bar{e} - d(\bar{e}) = 0, \tag{9}$$

$$g'(\bar{e}L) = \frac{d(\bar{e})}{\bar{e}}. \tag{10}$$

We now investigate the effects of severance pay on welfare in each case. Note that the sign of $T_C \equiv \partial T/\partial C = (b+q)p_S - bp_N$ is important for the perspective of comparative statics. In case 3, T_C may be positive or negative, while in case 1 and case 2 it is always negative.

Case 1

From (5) and (9), we find that the solution is a Pareto optimum. When the value of T is sufficiently small ($T < T_1$), the authority can make a relatively accurate judgment on whether the dismissal was fair or unfair. This implies that workers' efforts are likely to be recognized. The severance pay scheme, therefore, gives workers a strong incentive to exert effort. In this case, the government-mandated severance pay serves as a bond, which is warranted by the authority. As a result, the problem of worker shirking can be eliminated and the solution is a Pareto optimum. Since it is no longer important to provide workers with a no-shirking incentive, the optimal solution does not depend on severance pay.

Case 2

In this case, the value of T lies in the interval $[T_1, T_2]$. From (7), we can see that the required level of effort $\bar{e}_B^*$ is equal to $\bar{e}_P^*$, when $T = T_1$, then the solution is Pareto optimal. When $T_1 < T \leq T_2$, the required level of effort $\bar{e}_B^*$ is smaller than $\bar{e}_P^*$, and the level of effective labor $\bar{e}_B^*\bar{L}_B^*$ is also smaller than the level of Pareto optimality, so the solution is Pareto inefficient. When the value of T increases, from (7):

$$\frac{d\bar{e}_B^*}{dC} = -\frac{T_C}{d'(\bar{e}_B^*)}.$$

Since $T_C < 0$, the increase in severance pay raises the required level of effort. The unit cost of effective labor $\hat{w}_B^*/\bar{e}_B^*$ is as follows:

$$\frac{d(\hat{w}_B^*/\bar{e}_B^*)}{dC} = \frac{1}{(\bar{e}_B^*)^2}[d'(\bar{e}_B^*)\bar{e}_B^* - d(\bar{e}_B^*)]\frac{d\bar{e}_B^*}{dC}. \tag{11}$$

Since $\bar{e}_B^* \leq \bar{e}_P^*$, the sign of the square bracket of (11) is negative[6]. Hence, (11) is negative and is equal to 0 only when $T = T_1$. The effective labor $\bar{e}_B^* L_B^*$ increases. Since

[6]We already know that $\bar{e}_P^*$ does not depend on T. When $T = T_1$, $\bar{e}_P^*$ is equal to $\bar{e}_B^*$, and subsequently, $\bar{e}_B^*$ falls as T increases. Therefore $\bar{e}_B^* \leq \bar{e}_P^*$ is always satisfied. This means that $d'(\bar{e}_B^*)\bar{e}_B^* \leq d(\bar{e}_B^*)$ holds from (6).

$\overline{e}_B^*$ increases, the effect on the level of employment is ambiguous when C increases. This implies that severance pay gives an insufficient incentive to exert effort. The increase of the severance pay can then improve the welfare.

Case 3

In this case, the value of T is sufficiently high ($T_2 \leq T$). We see that the optimal effort $\overline{e}_I^*$ in case 3 is smaller than $\overline{e}_B^*$ in case 2. Therefore, the solution is Pareto inefficient. From (8), the required level of effort is affected as follows:

$$\frac{d\overline{e}_I^*}{dC} = \frac{\beta T_C}{\alpha d''(\overline{e}_I^*)\overline{e}_I^*} > 0.$$

Thus, the increase in severance pay raises the required level of effort if $T_C > 0$ and lowers it if $T_C < 0$. The increase in T has a positive effect on the unit cost of effective labor $\hat{w}_I^*/\overline{e}_I^*$ using the envelope theorem. When $T_C > 0$, the unit cost increases and the effective labor then $\overline{e}_I^* L_I^*$ decreases. Therefore the level of employment falls since $\overline{e}_I^*$ increases. On the other hand, the unit cost of effective labor decreases and the effective labor decreases when $T_C \leq 0$. Then L_I^* increases since $\overline{e}^*$ decreases. When $T_C < 0$, the increase in severance pay cannot give workers sufficient incentive to exert effort, such that the increase in severance pay improves welfare. When $T_C > 0$, severance pay discourages workers from exerting effort such that the increase in severance pay deteriorates their welfare.

4 Concluding Remarks

This paper reexamines the efficiency wage model of Shapiro and Stiglitz (1984) with government-mandated severance pay in circumstances where Lazear's implicit contracts do not work. We showed that severance pay can serve as a bond when the authority that decides if severance pay is warranted can know when workers really shirked. The reasoning is as follows. When workers' employment contracts are canceled the firm, workers have right of severance pay. However, workers are only entitled to payment if they are laid off, not if they are fired for just cause. Workers fired for shirking then have an incentive to claim that they were merely laid off, and firms wanting to lay off workers have an incentive to claim that the workers were shirking. If the authority can discern when there was shirking and when there was not, the link between effort and pay is strong. Workers are accordingly disciplined by the prospect of losing severance pay. On the other hand, a shirking worker has some chance of severance payment after being fired, while a no-shirking worker has some chance of not receiving payment after being laid off if the authority discerns incorrectly. In this instance, severance pay does not work as a bond, and this discourages workers from exerting effort.

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