Managers, Workers, and Corporate Control

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Abstract

If the private benefits of control are high and management owns a small equity stake, managers and workers are natural allies. Two forces are at play. First, managers can transform employees into a "poison pill" through generous longterm labor contracts and thereby reduce the firm's attractiveness to a raider. Second, employees act as "white squires" for the incumbent managers: to protect their high wages, they resist hostile takeovers, by refusing to sell their shares to the raider or by lobbying against the takeover. The model is consistent with available empirical findings, and also yields new predictions.

Keywords: Corporate control, private benefits, takeovers, ESOPs, employment protection

JEL Classifications: G34, K22, K42

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1 Introduction

Labor economists view industrial relations as shaped by the conflict between workers and management. Financial economists view corporate governance as the outcome of the diverging interests of shareholders and management. Actually, these two conflicts are present simultaneously and interact. We show that the conflict in corporate governance, when particularly acute, can soften the clash in industrial relations. In companies where control confers high private benefits and where management has only a small equity stake, managers have an incentive to pay high wages, and not to monitor workers too strictly. Non-controlling shareholders are those who bear most of the costs of such an employment policy.[1]

One would expect the market for corporate control to prevent such behavior. In fact, this is not the case. Incumbent managers have an interest in a generous employment policy, precisely to defend against hostile takeovers. There are two distinct but complementary reasons. First, long-term contracts at high wages effectively transform employees into a "poison pill": their high wages make the firm unattractive to raiders. Second, to the extent that they are not protected by long-term contracts against the risk of a wage cut by the raider, employees will act as "white squires"[2]: to protect their high salaries, they will fight hostile takeovers by lobbying, demonstrating, threatening strikes against the raider, etc. Both these implicit anti-takeover defenses are available even when explicit defenses are forbidden or limited by the law.

The idea that workers and incumbent managers are natural allies against non-controlling shareholders and potential raiders (the shareholders' own natural ally) was put forward by Hellwig (2000). He argued that this "natural alliance" actually extends beyond manager-worker relations, pointing out that "Incumbent managers who try to buttress their positions will regularly find allies in the political system, labor, the media, the judiciary, and even the universities" (p. 122) against outside shareholders. In the same spirit, Pagano and Volpin (2000) analyze the circumstances in which at the political level managers (or controlling shareholders) and workers may converge on a platform that limits the protection accorded to non-controlling shareholders.

Here we show how such a labor-management "alliance" can arise at the level of

[1] Very few studies investigate the relationship between labor contracts and corporate control. Shleifer and Summers (1988) propose a view of hostile takeovers as breaching implicit contracts between incumbent managers and workers. Garvey and Gaston (1998) formalize this view, but – like Shleifer and Summers themselves – do not explain why incumbents have an incentive to stick to labor contracts that raiders have the incentive to breach. More recently, Chemla (2000) investigates the impact of takeover threats on long-term labor relations, and particularly stakeholders' investment. Others have studied the connection between labor-management relations and corporate governance in particular contexts, such as German codetermination (Gorton and Schmid, 2000), Japanese lifetime employment practices (Gilson and Roe, 1999) or employee-owned corporations (Hansmann, 1996) .

[2] A "white squire" denotes "a friendly company or investor that purchases an interest in the target of a hostile bid", possibly to deter the takeover (Gaughan, 2002, p. 601). It differs from a "white knight", who is a friendly investor that takes over a company instead of the raider.

individual firm, and explain why this alliance – or implicit contract – is "natural", that is, fully incentive-compatible. In particular, we explain why managers do not seek to renege on their generous wage concessions even if the takeover threat does not materialize. Unlike the implicit-contract setting of Shleifer and Summers (1988), our model makes generous wages the managers' preferred policy even ex post, while wage-cutting is the raider's preferred course of action.

This difference in preferred policies is rooted in the different stakes that the incumbent and the raider hold in the company. The incumbent management has a smaller stake in the company than the raider would have upon taking over, because the raider must gain control on the market. As a result, the incumbent manager motivates employees by generous wage settlements more than strict monitoring. Most of the cost of the wage settlement is borne by other shareholders, that of monitoring entirely by the manager himself. In contrast, a successful raider with a large stake in the company prefers a "hard-nosed" strategy: cut wages as much as possible, and step up monitoring to maintain the work incentive. Workers therefore prefer the incumbent manager to the raider, and they can trust him, as his pledged employment policies are in his own best interest.

The model carries several empirical predictions. First, employment policy is likely to be used to deter hostile takeovers in companies where incumbents have a small stake and enjoy large private benefits of control and where potential raiders have small toeholds. Large private benefits make control desirable for incumbents, small toeholds make it unassailable.

Second, in companies where the controlling party's equity stake is small, employees should earn relatively high wages and not be too strictly supervised. If a takeover does succeed, the new management will cut the salaries as much as possible, and will introduce more intensive monitoring of workers. The company's share price will rise in proportion to the share of employees with renegotiable contracts in the total wage bill.

Third, employment policy can be used as takeover deterrent only if the law affords a sufficient degree of protection to employees, by limiting a raider's ability to renegotiate the labor contracts already in being. Hence, hostile takeovers should be less frequent in countries with high employment protection.

However, even where the lack of employment protection makes the long-term labor contract an ineffective takeover deterrent, the incumbent management can count on employees to act in their defense against raiders. Such defense will be particularly effective when employees hold an equity stake, since their response to a raider's bid will directly determine the takeover's chances of success. The model predicts that managers will set up an employee share ownership plan (ESOP) as a defensive device when they themselves have only a small stake in the company and their private benefits of control are high – the same circumstances in which they would use employment policy as a takeover deterrent, if this were possible.

Finally, even when they have no shares in the company, workers can take industrial or political action to oppose takeovers or limitations on the current management's

control. We show that in some cases employees' lobbying against a change in control is aligned with the management's interest, but this need not be the case. Workers may also oppose friendly takeovers, which occur when the incumbent's private benefits of control are outweighed by his increased security benefits under the acquirer.

The two mechanisms that we analyze in this paper differ in the degree of workers' activism that is assumed. While the "poison pill" mechanism does not require any collective action by workers (managers themselves offer to overcompensate them), the role of "white squires" does require an active role, the capacity for coordinated action, whether in voting as shareholders or lobbying and demonstrating against a takeover.

The two mechanisms also complement one another, the effectiveness of each being determined by the degree of employment protection. If they enjoy high employment protection, workers on long-term contracts are effective as a "poison pill", since the raider cannot renegotiate their salaries. But by the same token they have little incentive to be "white squires" and actively oppose the takeover. Conversely, if the law affords little protection under the new management, the "poison pill" mechanism becomes ineffective, but the "white squires" mechanism is strengthened, as employees know that a hostile takeover would threaten their wages.

The paper is organized as follows. Section 2 lays out the structure of the model. In Section 3 we solve for the equilibrium, identify the circumstances in which labor contracts are used as "poison pill", derive testable predictions, and consider how these predictions change depending on the degree of employment protection and the availability of other anti-takeover devices. In Section 4 we extend the model by assuming that workers can play an active role in deterring a takeover, acting as "white squires", and compare the resulting predictions with the available evidence. Section 5 concludes.

2 The model

Consider a firm with dispersed shareownership and contestable control. Full control requires a stake $\overline{\beta}$ (for example, 50 percent). The incumbent manager holds a smaller fraction β of the shares. The company is under a takeover threat by a "raider" who can gain control by acquiring a stake $\beta_R \geqslant \overline{\beta}$. By taking over the company, the raider obtains private benefits of control B_R, which equal $\overline{B}_R > 0$ with probability b, and 0 otherwise. The probability b can be interpreted as a measure of the company's contestability. The raider has a toehold ω, which is a random variable distributed according to some distribution $F(\omega)$ with support $[0, \overline{\beta}]$. The toehold ω indicates the stake that the raider can amass without affecting the market price.

The sequence of events, which is illustrated in Figure 1, comprises four stages.

At $t = 0$, the incumbent receives a signal on the size of the private benefits of control and the toehold of the potential raider. For simplicity, we assume that the signal has no noise, so that he learns their exact values B_R and ω. He can then

choose (or modify) the firm's employment policy. The employees, whose number is standardized to 1, may have either long-term or short-term contracts. Long-term contracts cannot be renegotiated, short-term contracts can be renegotiated at $t = 2$. The incumbent manager chooses the fraction of long-term workers, λ, and sets their wage w_L. We assume that he has complete control over wage policy, because outside shareholders are dispersed.

At $t = 1$, the raider can take over the firm by acquiring the additional stake $\overline{\beta} - \omega$ with a take-it-or-leave-it, conditional and unrestricted tender offer to dispersed shareholders, as in Burkart, Gromb and Panunzi (1998). A public offer involves setting a price p at which all shares tendered are bought, subject to a final holding of at least $\overline{\beta}$. Dispersed shareholders decide non-cooperatively whether to tender their shares, and none regards himself as pivotal to the success of the takeover.

At $t = 2$, the party in control (the incumbent manager or the raider) can renegotiate the contracts with short-term workers, setting their wage w.

At $t = 3$, workers choose their effort level. With no effort, their individual productivity is y. If they exert effort at a private cost c_e, their productivity rises to $y + \Delta$. As in Calvo and Wellisz (1978), workers can be motivated by wage incentives and by monitoring. Management randomly verifies effort for a fraction q of employees, and can replace those caught shirking with new low-productivity workers, hired at the competitive wage $\overline{w}$.[3] The probability of detection q depends on the manager's monitoring cost, which is assumed to be linear: $c(q) = c_m q$. Since the manager has to monitor many workers, the marginal cost of his effort exceeds that of workers: $c_m \geqslant c_e$, which guarantees an interior optimum for q. If the takeover succeeds, the raider replaces the management and monitors workers directly, using the same monitoring technology.[4] The management cannot fire workers without "just cause", i.e. unless demonstrated shirking.

Finally, at $t = 4$, each employee produces output y or $y + \Delta$, depending on his effort level, and receives his salary. Shareholders earn the firm's profits, amounting to the difference between output and wage bill. The party in control receives a non-monetary benefit, which equals B for the incumbent and B_R for the raider.

We impose three restrictions on the model's parameters:

Assumption 1. As stated, the incumbent management owns a fraction $\beta < \overline{\beta}$ of the company's shares. Since a successful raider has at least the control stake $\overline{\beta}$, this implies that the raider supervises workers more strictly and pays them less than the incumbent. The parameter β is determined at a prior stage by the incumbent's need to fund the initial cost of the company. The budget constraint of the company, together with the participation constraint of investors, determines the incumbent's

[3] The workers leaving the firm at this stage can obtain the reservation wage $\overline{w}$ elsewhere. Therefore, rather than firing the workers caught shirking, the manager may equivalently renegotiate their salary down to the competitive level $\overline{w}$.

[4] This implies that in our model the raider has no intrinsic advantage in monitoring workers. If he were assumed to be a more effective monitor, our results would be reinforced.

stake β as a residual. In general, the higher the initial investment cost, the lower this stake.

Assumption 2. $\Delta \gg 2\sqrt{c_e c_m}$, that is, the productivity gain deriving from the workers' investment in effort is much greater than the cost of eliciting that effort. In fact, the right-hand side of the inequality is the minimum cost of inducing effort.[5] As we shall see below, the incumbent manager wants workers to exert effort if his stake β exceeds the threshold $4c_e c_m/\Delta^2$. By Assumption 2, this threshold is negligibly low, implying that workers' effort is ex-post efficient for the incumbent manager, except for values of β in the neighborhood of zero.[6]

Assumption 3. $\overline{B}_R - \sqrt{\overline{\beta} c_e c_m} > 0$: the maximum private benefit of the raider, net of his monitoring costs, is positive. This inequality ensures the contestability of control. It requires that at least one raider with private benefits has a positive expected net gain from the takeover. If this condition is not met, nobody has an incentive to bid for the company.

Under these assumptions, the incumbent manager can reduce the probability of a takeover by offering long-term labor contracts, against the interests of the non-controlling shareholders. This is the central result of the next section.

3 Workers as poison pills

To solve the model, we proceed by backward induction. The first step is the worker's moral hazard problem and the monitoring game. The second is the takeover game, i.e. determining the conditions under which a raider will try to gain control, and the price he will pay. Finally, we consider whether the incumbent is able (and wishes) to prevent a takeover by using employment policy.

3.1 The monitoring game

Suppose for the moment that the manager wants to induce workers to exert effort.[7] Then, the wage w and the monitoring level q are chosen so as to satisfy the workers' incentive compatibility constraint.

If a worker invests effort in his job, his utility is $w - c_e$: the wage less the cost of

[5] As we show below, the total cost of inducing effort is $qc_m + w - \overline{w}$, i.e. the sum of the monitoring cost to the manager (qc_m) and the efficiency wage to the worker ($w - \overline{w}$). From the manager's and workers' incentive constraints, this total cost equals $\sqrt{\beta c_c c_m} + \sqrt{c_c c_m/\beta}$, which reaches its minimum value $2\sqrt{c_c c_m}$ for $\beta = 1$.

[6] If β were so small as to fall below this threshold, the manager would have no interest in eliciting effort. However, even in this region he would want to protect his private benefits from a raider and thus seek to to use employment policy as a takeover deterrent. Therefore, the basic logic of our analysis applies also to this case, although its specifics are different.

[7] We will show that under assumption 2 this is true for all β strictly bounded away from zero.

effort. If the worker invests no effort, his utility is $q\overline{w} + (1-q)w$: with probability q he is caught shirking and gets the reservation wage $\overline{w}$; with probability $1-q$, he obtains the wage w because he cannot be distinguished from a high-productivity worker. Hence, the worker's incentive compatibility constraint is

$$q(w - \overline{w}) \geqslant c_e. \tag{1}$$

Workers provide effort either if the probability q of being caught shirking is high or if the wage loss $w - \overline{w}$ from dismissal is large, compared to their cost of effort c_e. The level of supervision, q, and the wage, w, depend on two factors: (i) who controls the firm from period 2 onwards (the incumbent or the raider) and (ii) whether workers are under a long-term or a short-term contract.

If a worker is hired on a long-term contract, his wage is already set by the labor contract signed at $t = 0$. (Its level, w_L, will be determined when analyzing the initial stage of the game.) At $t = 3$ the manager chooses only the probability of detection q. Incentive compatibility requires this to be $q_L = c_e/(w_L - \overline{w})$. In this case, the wage being preset, the intensity of supervision is independent of the identity of the management.

If instead the worker's contract can be renegotiated at $t = 2$ (when the employee was hired on a short-term contract at $t = 0$), the wage and the level of monitoring are chosen so as to maximize the utility of the party in control, subject to the workers' incentive compatibility constraint: $w \geqslant \overline{w} + c_e/q$. The monitoring intensity q depends on the identity of the party in control. If the incumbent is still in charge, q is chosen to maximize his utility u_I:

$$\max_{q \in [0,1]} \quad u_I = \beta\,(y + \Delta - w) - q c_m, \tag{2}$$

subject to the worker's participation constraint (1) and to the manager's own incentive compatibility constraint:

$$u_I \geqslant \beta(y - \overline{w}),$$

where the right-hand side is the manager's utility if workers are given no incentive to exert effort.

From the first-order condition ($\beta c_e/q^2 = c_m$), which is necessary and sufficient for a maximum, one obtains the intensity of monitoring chosen by the incumbent:

$$q_I = \sqrt{\beta c_e / c_m} \tag{3}$$

which is strictly positive. It is lower than the optimal intensity of supervision, which would prevail under sole ownership of the firm ($\beta = 1$). Hence, the separation of ownership and control induces under-monitoring.

The wage that the incumbent pays is therefore:

$$w_I = \overline{w} + \sqrt{c_e c_m / \beta}. \tag{4}$$

It is decreasing in β and increasing in c_m, because a smaller stake and higher monitoring costs reduce the probability of detection and so increase the wage premium necessary (wage incentives and monitoring being substitutes). It is increasing in c_m, because the wage premium must compensate workers for their investment in human capital. When q and w are set according to equations (3) and (4), the manager's incentive compatibility constraint is met if $\beta(\Delta - \sqrt{c_e c_m/\beta}) > \sqrt{\beta c_e c_m}$. This holds by assumption 2, as it is equivalent to the condition $\beta > 4c_e c_m/\Delta^2$.

Similarly, if the raider acquires control of the firm with a stake $\beta_R \geqslant \overline{\beta}$, he will choose a monitoring intensity of

$$q_R = \sqrt{\beta_R c_e/c_m} \tag{5}$$

and a wage of

$$w_R = \overline{w} + c_e/q_R. \tag{6}$$

Since $\overline{\beta} > \beta$ by assumption, also $\beta_R > \beta$, so that the incumbent manager monitors workers less intensively than a successful raider:

$$q_I < q_R$$

and pays them higher wages:

$$w_I - w_R = \sqrt{c_e c_m/\beta} - \sqrt{c_e c_m/\beta_R} \equiv \delta(\beta_R) > 0, \tag{7}$$

where the difference $\delta(\beta_R)$ is increasing in c_e, c_m and β_R, and decreasing in β. The incumbent behaves in this way because with his smaller equity stake, he internalizes the costs of his wage policy less than the raider.

3.2 The takeover game

At $t = 1$, the raider designs his best strategy to gain control and decides to attempt the takeover only if it is profitable. At this time he has a toehold stake ω, whose value is drawn from the distribution $F(\omega)$. To buy the remaining $\overline{\beta} - \omega$ shares, he must launch a tender offer. In Lemma 1 we consider his optimal bidding strategy.

Lemma 1 (Optimal bidding) *In order to acquire $\beta_R - \omega$ via a successful tender offer, the raider must bid*

$$p(\beta_R) = y + \Delta - (1-\lambda)\sqrt{c_e c_m/\beta_R} - \lambda\sqrt{c_e c_m/\beta}. \tag{8}$$

His optimal bid is $p = p(\overline{\beta})$, at which a fraction $\overline{\beta} - \omega$ of the shares will be tendered.

Proof. See Appendix.

The intuition for this result is simple. Recall that to gain control the raider must end up with a total stake $\beta_R \geqslant \overline{\beta}$. Dispersed shareholders will tender their shares only if the raider offers them at least the after-takeover price. To minimize the cost

of the takeover, the raider offers exactly the after-takeover price p. The latter is increasing in the final holding of the raider, as is shown by equation (8), since the wage w_R that he will pay to workers after a successful takeover is decreasing in his after-takeover stake β_R. Therefore, the raider faces an upward-sloping supply curve for the company's shares, exactly as in Burkart, Gromb and Panunzi (1998), and for this reason will buy just the minimum number of shares needed to gain control, that is, $\beta_R = \overline{\beta}$.

A change in control creates shareholder value because it reduces the firm's wage bill: it increases the firm's profit by $(1-\lambda)\delta(\beta_R)$, that is, by the lower wages for the workers hired at $t=0$ under a short-term contract. The raider's gain accrues only on his toehold, since on any remaining $\overline{\beta}-\omega$ shares necessary to acquire control the raider pays the full post-takeover price. Hence, the successful raider's gain in utility is:

$$G_R = \omega(1-\lambda)\delta(\overline{\beta}) + B_R - [(1-\lambda)\sqrt{\overline{\beta}c_e/c_m} + \lambda q_L]c_m. \tag{9}$$

If the raider succeeds, the net change in his expected utility is the expected gain on his toehold $\omega(1-\lambda)\delta(\overline{\beta})$ *plus* his private benefit B_R, net of his monitoring cost. The raider will monitor the workers on short-term contracts at a cost $(1-\lambda)q_R c_m$, and those on long-term contracts at a cost $\lambda q_L c_m$. Hence, the raider attempts the takeover if and only if $G_R > 0$, that is:

$$B_R > q_L c_m - (1-\lambda)[\omega\delta(\overline{\beta}) - (q_R - q_L)c_m]. \tag{10}$$

3.3 Takeover deterrence

At $t=0$, the manager chooses the wage of the workers on the long-term contract, w_L, and the fraction of such workers, λ.

Let us first consider the wage. The manager's maximization problem is identical to the problem (2) that he will face at $t=2$ with a short-term worker, except that now w_L is the only choice variable. As seen above, the intensity of monitoring to be chosen at $t=2$ is dictated by the incentive compatibility constraint $q_L = c_e/(w_L - \overline{w})$. Hence, $w_L = w_I$ and $q_L = q_I$. The incumbent pays the same wage to workers hired under short- or long-term contracts, and monitors them with the same intensity.

Next, let us consider the fraction λ of long-term workers that the incumbent wishes. His utility is:

$$u_I(\lambda) = \beta[(y+\Delta-w_I) + \pi(\lambda)(1-\lambda)\delta(\overline{\beta})] + [1-\pi(\lambda)](B - \sqrt{\beta c_e c_m}), \tag{11}$$

where $\pi(\lambda)$ is the probability of a takeover, which is 1 if condition (10) is satisfied and 0 otherwise. The first term in (11) is the manager's portion of the verifiable profits. This is the sum of the profits under the incumbent manager, $y+\Delta-w_I$, plus the wage savings brought by the raider, $(1-\lambda)\delta(\overline{\beta})$, which materialize with probability

$\pi(\lambda)$. The second term is the private benefit of control, B, net of the monitoring cost, $\sqrt{\beta c_e c_m}$, that accrues to the incumbent if there is no takeover, that is, with probability $1-\pi(\lambda)$.

Since in some cases the incumbent can use his employment policy to prevent a takeover, we must first characterize the raider's incentives. A raider is more determined the larger his private benefits B_R and his toehold ω:

Lemma 2 (Raider's incentives) *The raider's private benefits B_R and toehold ω define three regions: (i) if $B_R = \overline{B}_R$, the raider takes over the firm, irrespective of the incumbent's policy; (ii) if $B_R = 0$ and $\omega \leqslant \overline{\omega}$, where*

$$\overline{\omega} \equiv \overline{\beta}\sqrt{\beta}/\left(\sqrt{\overline{\beta}} - \sqrt{\beta}\right), \tag{12}$$

the raider has no incentive to take over the firm; (iii) if $B_R = 0$ and $\omega > \overline{\omega}$, the raider has an incentive to take over the firm, but the incumbent can prevent the takeover by choosing

$$\lambda \geqslant \overline{\lambda} \equiv 1 - \frac{\beta\sqrt{\overline{\beta}}}{\left(\sqrt{\overline{\beta}} - \sqrt{\beta}\right)\left(\omega - \sqrt{\beta\overline{\beta}}\right)}. \tag{13}$$

This case requires $\overline{\omega} < \overline{\beta} \Leftrightarrow \beta < \overline{\beta}/4$.

Proof. See Appendix.

Given the raider's incentives, the incumbent's optimal choice of the fraction of long-term workers, λ^*, is characterized as follows:

Proposition 1 (Optimal employment policy) *(i) If $B_R = \overline{B}_R$, the employment policy cannot prevent a takeover and $\lambda^* = 0$. (ii) If $B_R = 0$ and $\omega \leqslant \overline{\omega}$, the employment policy is irrelevant because the takeover never occurs: $\lambda^* \in [0,1]$. (iii) If $B_R = 0$ and $\omega > \overline{\omega}$, employment policy can prevent a takeover. In this case, $\lambda^* \geqslant \overline{\lambda}$ provided $B \geqslant \widehat{B}(\beta)$, where*

$$\widehat{B}(\beta) = \sqrt{\beta c_e c_m}\left(2 - \sqrt{\beta/\overline{\beta}}\right), \tag{14}$$

and $\lambda^* = 0$ otherwise.

Proof. See Appendix.

A sketch of the proof may help the reader's intuition. In case (i), the incumbent manager cannot prevent the takeover anyway. He will not hire long-term workers, because this would simply decrease his security benefits by reducing the cost-cutting effects of a takeover, without protecting his private benefits. In case (ii), there is no

takeover threat, so the incumbent is indifferent about λ. In case (iii), however, employment policy does affect the probability of a takeover, by affecting the raider's expected gain. However, even here the incumbent may not want to prevent a takeover. He will do so only if the implied change in his utility is positive:

$$\left(B - \sqrt{\beta c_e c_m}\right) - \beta\delta(\overline{\beta}) \gtrless 0, \tag{15}$$

as is shown in the appendix. Expression (15) shows that the incumbent's attitude towards the potential takeover turns on the relative size of his security benefits $\beta\delta(\overline{\beta})$ and his net private benefits $B - \sqrt{\beta c_e c_m}$. Long-term contracts are costly, because they reduce the manager's security benefits, but by reducing the contestability of control they protect his private benefits.

Equating expression (15) to zero, one obtains the locus of the combinations (β, B) for which the incumbent is indifferent between instituting the poison pill and not. As stated in the proposition, if his private benefits exceed the threshold $\widehat{B}(\beta)$, he will entrench himself by offering long-term employment contracts.

Figure 2 depicts the function $\widehat{B}(\beta)$ in the space (β, B). The area above the $\widehat{B}(\beta)$ locus and to the left of $\overline{\beta}/4$ is the "poison pill region", where the incumbent attempts to deter the raider. The raider's toehold is large enough that he would like to take over the company ($\omega > \overline{\omega}$), but the incumbent opposes the takeover and so chooses $\lambda \geqslant \overline{\lambda}$. This deters all raiders with no private benefits, but not those with private benefits $\overline{B}_R$. Hence, in this region takeovers happen with probability b, which is the probability that $B_R = \overline{B}_R$.

For values of β to the right of $\overline{\beta}/4$, we are in the "infrequent takeover region", where an outsider with no private benefits has no incentive to attempt the takeover. Since a raider with private benefits $\overline{B}_R$ will take it over in any event, the poison pill is unnecessary here, and the probability of a takeover is b. Intuitively, in this area the incumbent's stake is "too similar" to the raider's post-takeover stake, so that the expected wage savings are too small to motivate the raider.

The area below the $\widehat{B}(\beta)$ locus is the "friendly takeover region". Since the incumbent manager's private benefits are small compared to his monetary benefits from a takeover, he wants the takeover to occur. To favor this outcome, he sets $\lambda = 0$. As a result, the takeover probability is $1-(1-b)F(\overline{\omega})$ and is thus higher than in the other regions. The additional takeover frequency is an increasing function of the raider's average toehold, since this increases the probability that the toehold will exceed the threshold $\overline{\omega}$. Since amassing a larger toehold requires a more opaque market, this result carries the natural implication that takeovers will be more frequent in less transparent security markets. To summarize, the employment policy of the incumbent manager, combined with the raider's incentives, translates into the following prediction about the probability of a takeover:

Corollary 1. *The takeover probability is weakly decreasing in the incumbent manager's private benefits B, and is increasing with the average toehold $E(\omega)$.*

This prediction is consistent with the evidence in Betton and Eckbo (2000), who find that larger toeholds are associated with a significantly greater probability of successful takeover. They also report that the target management's resistance is less likely when the bidder has a larger toehold, precisely as in our model where the incumbent manager chooses to use the employment-based poison pill only if the raider's toehold ω is smaller than the threshold value $\overline{\omega}$.

The model also predicts a cross-sectional relationship between the concentration of ownership and the employment policy pursued by the controlling shareholder:

Corollary 2. *In a cross-section of firms, the size of the controlling party's stake β is negatively related with the wage and positively related with the manager's monitoring intensity.*

This static prediction results directly from the incentive constraints of the incumbent manager and of the raider, as shown by equations (4), (6), (3) and (5).

Finally, the model yields a dynamic prediction about the employment policy of firms undergoing a change in control:

Corollary 3. *After a takeover, the new management negotiates lower wages with the employees who have short-term contracts and monitors them more intensively.*

Consistent with this prediction, Rosett (1990) reports that a wealth transfer from workers to shareholders accounts for 10 percent of the hostile-takeover premium within 18 years after the takeover, and Becker (1995) finds that hostile takeovers are associated with a significant reduction in union wage premiums. Bhagat, Shleifer and Vishny (1990) document a small decrease in the average compensation of the target companies' employees.

3.4 Extensions

In the above model, the incumbent manager can entrench himself by issuing long-term labor contracts that are binding on the raider as well. The two essentials in our story are that: (i) whoever is in control of the firm cannot fire long-term workers or renegotiate their wages (strong employment protection), and (ii) the incumbent manager has no defenses other than employment policy (weak anti-takeover defenses). In this section, we explore the consequences of relaxing these two assumptions, first one at a time and then together.

In Section 3.4.1, we find that weakening employment protection reduces the takeover deterrence of long-term labor contracts. That is, decreasing employment protection diminishes the *power* of long-term labor contracts as a poison pill.

In Section 3.4.2, we show that the availability of alternative, legal defenses can substitute for long-term labor contracts if the incumbent wants to prevent hostile

takeovers. In this sense, anti-takeover legislation reduces the *need* for long-term labor contracts as a poison pill.

Finally, in Section 3.4.3, we ask what happens in a setting where the law does not protect long-term workers against renegotiation but does protect incumbent management against raiders. In this scenario, long-term labor contracts have no power as a poison pill, but their impact on takeover frequency – and, less obviously, on managers' monitoring activity and wage setting policies – is effectively replaced by anti-takeover legislation. As a result, managers will behave in the same fashion as in our basic model.

3.4.1 The role of employment protection

So far we have assumed that the long-term labor contracts signed at $t = 0$ remain legally binding at $t = 2$. Suppose instead that at $t = 2$, the party in control is bound to keep (at least) a fraction μ of the employees with long-term contracts. The fraction of "protected workers" μ measures the degree of employment protection. We will show that the lower μ is, the less effective long-term employment contracts will be as a poison pill.

At $t = 2$ the raider, but not the incumbent manager, will find it optimal to renegotiate with the workers that can be laid off, by making a "take-it-or-leave-it" wage offer at the optimal wage for the raider w_R. As a result, after a takeover, the firm's profit increases by $[(1-\lambda)+\lambda(1-\mu)]\delta(\overline{\beta}) = (1-\lambda\mu)\delta(\overline{\beta})$, that is, by the wage reduction inflicted on the $1-\lambda$ short-term workers and on the $\lambda(1-\mu)$ long-term workers that can be fired.

Hence, the raider's decision whether to launch the takeover bid is modified simply by replacing $1-\lambda$ with $1-\lambda\mu$ in our earlier analysis. A takeover is worthwhile if and only if:

$$B_R > q_L c_m - (1-\lambda\mu)[\omega\delta(\overline{\beta}) - (q_R - q_L)c_m]. \tag{16}$$

The analysis of the raider's incentives is as in Lemma 2, except for case (iii). Now the fraction of long-term contracts that deters a raider with toehold ω is

$$\lambda \geqslant \overline{\lambda}(\mu) \equiv \frac{1}{\mu}\left[1 - \frac{\beta\sqrt{\overline{\beta}}}{\left(\sqrt{\overline{\beta}} - \sqrt{\beta}\right)\left(\omega - \sqrt{\beta\overline{\beta}}\right)}\right], \tag{17}$$

where the threshold $\overline{\lambda}(\mu)$ is decreasing in μ. The intuition is that the less employment protection, the less effective this "poison pill". Hence, a larger dose is needed; that is, a larger fraction of long-term contracts is signed. However, the fraction $\overline{\lambda}(\mu)$ cannot exceed one. The condition $\overline{\lambda}(\mu) = 1$ implicitly determines the toehold above which the poison pill is rendered ineffective by the lack of employment protection:

$$\omega(\mu) \equiv \sqrt{\beta\overline{\beta}} + \frac{\beta\sqrt{\overline{\beta}}}{\left(\sqrt{\overline{\beta}} - \sqrt{\beta}\right)(1-\mu)}. \tag{18}$$

The poison pill is effective only if $\omega \leqslant \omega(\mu)$. The following proposition characterizes the optimal employment policy as a function of the degree of employment protection. The only amendment to Proposition 1 comes in the "poison pill region":

Proposition 2 (Effect of employment protection) *The optimal employment policy is the same as in Proposition 1 except for the case where $B_R = 0$, $\omega > \overline{\omega}$ and $B \geqslant \widehat{B}(\beta)$. In this case, the incumbent manager prevents a takeover by setting $\lambda^* \geqslant \overline{\lambda}(\mu)$ only if $\omega \leqslant \omega(\mu)$. The fraction $\overline{\lambda}(\mu)$ of long-term contracts is decreasing in the degree of employment protection μ. If $\omega > \omega(\mu)$, the firm offers no long-term contracts ($\lambda^* = 0$).*

It is important to notice that the toehold ω cannot exceed the control stake $\overline{\beta}$ by assumption. Hence, the employment protection μ imposes an additional constraint on the incumbent manager's problem only if

$$\omega(\mu) \leqslant \overline{\beta}. \tag{19}$$

Substituting (18) into (19), we obtain a threshold below which lack of employment protection attenuates the power of the poison pill:

$$\mu \leqslant 1 - \left(\frac{\sqrt{\beta}}{\sqrt{\overline{\beta}} - \sqrt{\beta}} \right)^2. \tag{20}$$

If this condition holds, there is a set of raiders of positive measure (with toehold $\omega \in (\omega(\mu), \overline{\beta}]$) who can no longer be deterred by the poison pill. Therefore the incumbent manager is unable to entrench himself as well as in the case analyzed in the previous section. In other words, a low degree of employment protection thwarts the use of long-term labor contracts as a "poison pill" and therefore increases the frequency of changes in control.

The results in Proposition 2 can be rephrased in terms of predictions about the probability of a takeover, taking an ex-ante perspective (that is, considering ω and B_R as unknown). This is done in Figure 3. Given the degree of employment protection μ, from condition (20) the poison pill becomes less effective for sufficiently low β, and correspondingly the takeover probability is inversely related to the incumbent's stake β. The critical value of β is that for which condition (20) holds with equality. For higher values of β, the condition is violated, and the probability of a takeover is b, as in the friendly takeover area. For lower values, the condition is met, and the probability of a takeover rises to $1 - (1 - b)F(\overline{\omega})$.

Conversely, taking the incumbent's stake β as given, an increase in the degree of employment protection μ expands the region where the probability of a takeover is comparatively high. Thus the model yields the following prediction:

Corollary 4. *The probability of a hostile takeover is decreasing in the degree of employment protection, μ.*

This prediction is consistent with empirical data for the OECD countries. Pagano and Volpin (2000) show that the number of mergers and acquisitions (normalized by population and averaged over 1990-97) is negatively correlated with the OECD measure of employment protection.

3.4.2 The role of anti-takeover legislation

So far we have assumed that the incumbent management can only defuse a takeover threat by using an employment policy that decreases the raider's gain. In many countries, however, the law allows the controlling party to institute other anti-takeover devices, such as classical poison pills, supermajority rules, staggered boards, etc. Moreover, in some cases the controlling party does not even have to include such clauses in the corporate by-laws, because the law itself provides blanket protection. For instance, a 1984 anti-takeover statute in Delaware requires bidders holding more than 15 percent of a company's stock to wait three years to complete the takeover, unless they buy at least 85 percent of the target's shares (or two-thirds of the shareholders approve the acquisition). Similarly, the law discourages hostile takeovers in Germany and in other EU countries, with the exception of the UK; the EU Commission has recently failed to introduce a takeover-friendly directive.

We capture the anti-takeover provisions allowed by the law by assuming that a hostile takeover has a cost K. The higher K, the stronger the anti-takeover defences afforded by the law. The only change in the analysis is that the raider attempts the takeover only if $G_R > K$, where G_R is the gain from the takeover as defined by expression (9). Recall that the region defined in case (iii) of Lemma 2 is defined by the condition that a raider with no private benefits wants to acquire the firm if $\lambda = 0$. This condition now becomes:

$$G_R - K = \omega\delta(\overline{\beta}) - \sqrt{\overline{\beta} c_e c_m} - K > 0, \tag{21}$$

which determines the minimum toehold for a raider to wish to acquire the company. Using the expression for (7), this minimum toehold can be written as:

$$\overline{\omega}(K) = \overline{\omega} + K \frac{\sqrt{\beta\overline{\beta}/(c_e c_m)}}{\sqrt{\overline{\beta}} - \sqrt{\beta}}, \tag{22}$$

where $\overline{\omega}$ is given by (12). Expression (22) shows that the higher the takeover cost K, the larger the minimum toehold necessary to prompt the raider to make a takeover bid, and accordingly the less the need for the incumbent to deter takeovers via an employment policy of hiring some long-term workers.

Proposition 3 characterizes the optimal employment policy as a function of the anti-takeover protection afforded by the law. Again, the only amendment to Proposition 1 comes in the "poison pill region":

Proposition 3 (Effect of anti-takeover laws) *The optimal employment policy is the same as in Proposition 1 except for the case where* $B_R = 0$, $\omega > \overline{\omega}$ *and* $B \geqslant \widehat{B}(\beta)$.

In this case, the incumbent manager prevents a takeover by setting $\lambda^* \geqslant \overline{\lambda}$ *if* $\omega > \overline{\omega}(K)$*, where the threshold* $\overline{\omega}(K)$ *is increasing in the degree of anti-takeover protection* K*. If instead* $\omega \leqslant \overline{\omega}(K)$*, employment policy is irrelevant since there is no takeover threat.*

Intuitively, legal anti-takeover protection partially "crowds out" the employment-based poison pill analyzed in this paper, possibly making it unnecessary. Such an employment policy is still needed if $\omega > \overline{\omega}(K)$, but this region shrinks as K increases. Recalling that by assumption the toehold ω cannot exceed the control stake $\overline{\beta}$, then when $\overline{\omega}(K) > \overline{\beta}$ anti-takeover legislation eliminates all need for takeover-deterring employment policy. Substituting (22) into this inequality, we obtain a critical β above which there is no need for long-term contracts as a poison pill:

$$\widehat{\beta}(K) = \left(\frac{\overline{\beta}\sqrt{c_e c_m}}{2\sqrt{\overline{\beta} c_e c_m} + K} \right)^2 . \tag{23}$$

The threshold $\widehat{\beta}(K)$ defines the new right-hand boundary of the "poison pill region" in Figure 4. It replaces the boundary $\overline{\beta}/4$ in Figure 2, to which it collapses for $K = 0$. Since the threshold $\widehat{\beta}(K)$ is decreasing in the takeover cost K, the "poison pill region" is smaller in Figure 4 than in Figure 2 to an extent that depends on the magnitude of K. This illustrates the substitutability between anti-takeover protection and the employment-based poison pill.

The "friendly takeover region" remains unaffected, since K weighs only on hostile takeovers. Note that for very high K even the raiders with large private benefits can be discouraged, so that the frequency of takeovers in the "hostile takeover area" is lower than in the baseline case.

3.4.3 Weak employment protection and strong anti-takeover defences

Now we jointly take into account both of the extensions examined above. We consider a setting where employees have little protection (focusing for simplicity on the polar case $\mu = 0$), while companies are allowed to set up powerful anti-takeover defences ($K > 0$)

Without employment protection, all labor contracts are renegotiable and are thus tantamount to short-term contracts. In this setting, incumbent managers can exploit the anti-takeover law to resist hostile bids but cannot use employment policy as a poison pill. The only action the incumbent manager needs to take at $t = 2$, when the raider materializes, is thus to announce whether the offer is friendly or hostile. If it is hostile, the raider is successful only if he pays the cost K.

It is easy to show that the analysis is exactly as in Section 3.4.2 except that now in the former "poison pill area" of Figure 4 the incumbent cannot prevent a takeover, since employment policy no longer has any deterrent power. In that area, the probability of takeovers is reduced only by the takeover cost K. Figure 5 shows

that the takeover frequency in this area is $1-(1-b)F(\overline{\omega}(K))$, which is lower than when there are no takeover defenses, $1-(1-b)F(\overline{\omega})$, as can be seen by setting $K=0$ in (22). However, if employment policy could be used as an additional deterrent, the takeover frequency would be lower still, since $1-(1-b)F(\overline{\omega}(K)) > b$. This shows that where available, employment policy can make an independent contribution to takeover deterrence.

Though in this setting employment policy cannot operate as a poison pill, the incumbent manager will still pay higher wages and monitor less intensively, insofar as his stake is smaller than that of the raider. Moreover, since he will retain control more often, the incidence of generous employment policies will be greater in a legal system with stronger anti-takeover defenses. The evidence of Bertrand and Mullainathan (1999) is consistent with this prediction: in the US, the introduction of state-level anti-takeover legislation in the 1980s was associated with an increase in the average company wages. Annual wages for firms incorporated in states passing anti-takeover laws rose by between 1 and 2 percent more than in a control group. Bertrand and Mullainathan (2000) repeat this test on plant-level data and find that blue-collar workers' wages rise by about 0.5 percent and white-collar by about 4 percent in protected plants. They conclude that these results fit a quiet-life model in which entrenched managers avoid difficult or costly efforts and appease workers by paying them high wages.

4 Workers as white squires

So far, we have assumed that employees do not play an active role in fighting corporate raiders. It is the incumbent management that designs their employment contracts so as to make the company a less alluring takeover target. Actually, however, employees can take an active role, coming to the rescue of incumbent managers as a "white squire" – a friendly investor who helps fend off a raider, without himself taking control. First, if workers own shares they can reduce the chances of the takeover's success by their own response to the bid. Hence, by setting up Employee Stock Ownership Plans (ESOPs), managers can protect their own control. Second, workers may lobby against hostile takeovers, by demonstrating, mobilizing politicians and appealing to the media. Naturally, the latter is likely only if workers already constitute an organized pressure group, led for instance by trade unions.

These two forms of support for the incumbent management are not equivalent, however. An ESOP is no safeguard against a raider with very high private benefits of control, who can lure workers by offering a high takeover premium. By contrast, lobbying is not sensitive to the money put on the table by the raider. On the other hand, such anti-takeover lobbying can backfire against the incumbent, in that workers may also oppose takeovers that management would welcome. This will not happen with ESOPs, which can be fine-tuned to protect management only against unwanted takeovers.

4.1 ESOPs

Surveys have found that about 20 percent of U.S. adults own shares in the company for which they work, mainly through employee stock ownership plans (ESOPs). An ESOP is a vehicle whereby the employer can make tax-deductible pension contributions of cash or stock into a trust. Participants are not taxed on the contributions they receive until they withdraw them from the plan, and are required to invest in the employer's stock.

ESOPs have grown dramatically in number., from 1,601 in 1974 to 11,500 in 2000 (Gaughan, 2002). Their popularity was due not only to tax benefits but also to their usefulness as an anti-takeover device in the mid-1980s. Managers realized that employees were stable shareholders and would not be likely to sell out in the context of a hostile takeover, largely to protect their jobs. As Gaughan (2002) notes, "a target corporation may use the ESOP as a white squire by placing stock in the plan" (p. 374). The anti-takeover potential of ESOPs was greatly enhanced by the 1984 Delaware anti-takeover statute discussed in Section 3.4.2. A company incorporated in Delaware can prevent a hostile takeover simply by putting more than 15 percent of its stock in an ESOP. This strategy – first used by Polaroid to successfully counter a hostile takeover by Shamrock Holdings – was imitated by many other companies.

4.1.1 A model of defensive ESOPs

Here, we modify the model presented in Section 2 by allowing the manager to set up an ESOP at $t = 0$, selling a stake β_W to employees. We assume that this does not significantly dilute existing shareholders, since workers pay a price close to the market price. We will show that this mechanism is at least as effective in deterring takeovers as the employment-based poison pill analyzed in Section 3. Accordingly we ignore the possibility that the manager may also sign long-term labor contracts with some employees.

To find the subgame perfect equilibrium of the model, we start with the monitoring game at $t = 3$. This is as described in Section 3.1.[8] Workers prefer the incumbent manager to a raider because the latter would be tougher in monitoring and would reduce their wages from w_I to $w_I - \delta(\beta_R)$, where $\delta(\beta_R)$ is given by (7). It is this dislike for the takeover that makes employees effective allies for the incumbent, once they are given a sufficient equity stake.

Consider now the takeover game at $t = 2$. If the shares on the market were enough to acquire control, that is, if $1 - \beta - \beta_W \geqslant \overline{\beta}$, the raider could take over the company by buying from dispersed shareholders at a price equal to $p(\overline{\beta})$. In this case employees would not be pivotal to the outcome of the takeover. But if $1-\beta-\beta_W < \overline{\beta}$,

[8] For simplicity, we ignore the possible beneficial incentive effects of the ESOP. The presence of such effects (or of tax benefits) may help managers persuade initial shareholders to approve the ESOP, which otherwise results in a net loss for them, as shown below.

the raider can acquire control only if workers sell their stake to him.[9] To be induced to do so, employees must receive at least a price p_W that compensates them for the lower wage that the raider will pay to them. We assume that at this price (plus an infinitesimal gain) they will indeed sell to the raider – that is, the raider creams off all the bargaining surplus by making a take-or-leave-it offer. This scenario is the least favorable to the takeover deterrence of the ESOP, and our results are easily generalized to cases where workers obtain a part of the bargaining surplus. The workers' utility if they do not tender is the same as under the incumbent's control:

$$U_W(\text{no tender}) = \beta_W(y + \Delta - w_I) + w_I, \tag{24}$$

that is, the value of their equity stake $\beta_W(y + \Delta - w_I)$ plus their wage w_I. If they tender, the takeover succeeds and their utility under the raider's control becomes:

$$U_W(\text{tender}) = \beta_W p_W + w_R, \tag{25}$$

that is, the value of their equity stake $\beta_W p_W$ plus their wage w_R. Therefore, they tender only at a price that makes them indifferent between selling and not selling:

$$p_W = (y + \Delta - w_I) + \delta(\beta_R)/\beta_W, \tag{26}$$

where $\beta_R \geqslant \overline{\beta}$ is the raider's final holding. Naturally, the price p_W is higher than the post-takeover price $p(\beta_R) = y + \Delta - w_R$: workers extract a control premium from their block sale.

If the sum of the raider's toehold ω and the workers' stake β_W falls short of the control stake $\overline{\beta}$, the raider makes a tender offer on the market at the price $p(\overline{\beta})$, and his final holding will be $\overline{\beta}$. If instead the sum of the raider's toehold ω and the workers' stake β_W exceeds the control stake $\overline{\beta}$, the raider acquires the workers' entire stake β_W at p_W (it is easy to show that this is optimal for the raider, since it maximizes the value of his toehold). In this case, the raider's final stake is $\omega + \beta_W > \overline{\beta}$. Hence, the raider's post-takeover stake is $\beta_R = \max(\overline{\beta}, \omega + \beta_W)$.

Given this outcome, the raider has no interest in the takeover if the premium to workers, $\beta_W[p_W - p(\beta_R)]$, exceeds the net private benefits of control, $B_R - \sqrt{\beta_R c_e c_m}$, plus the capital gain on the toehold, $\omega\delta(\beta_R)$. Since the premium on the workers' stake is $(1 - \beta_W)\delta(\beta_R)$, the raider's net gain from a takeover is:

$$G_R(\text{ESOP}) = B_R - \sqrt{\beta_R c_e c_m} + \omega\delta(\beta_R) - (1 - \beta_W)\delta(\beta_R) \tag{27}$$

It follows immediately that if the raider has no private benefits ($B_R = 0$), this expression is negative, since $\omega < 1 - \beta_W$. If instead he draws private benefits from

[9] In principle, the raider could also buy the shares he needs from the incumbent manager, provided this is enough to acquire control ($1 - \beta_W > \overline{\beta}$). In this case, the raider could pitch the incumbent manager against the workers in the tendering game since both are pivotal. We assume that this does not happen either because the incumbent manager is not pivotal ($1 - \beta_W < \overline{\beta}$) or because his private benefits B are so high as to make his reservation price higher than that of workers.

control ($B_R = \overline{B}_R$), he will still attempt a takeover when his toehold is sufficiently large, that is, when

$$\omega > 1 - \beta_W - \frac{\overline{B}_R - \sqrt{\beta_R c_e c_m}}{\delta(\beta_R)}. \tag{28}$$

This case should be compared with that in which there was no ESOP in place. Then, as in the previous sections, the raider's net gain from the takeover is

$$G_R(\text{no ESOP}) = B_R - \sqrt{\overline{\beta} c_e c_m} + \omega\delta(\overline{\beta}). \tag{29}$$

Recall that in this case a raider with positive private benefits ($B_R = \overline{B}_R$) would always launch a takeover bid, whereas one with no private benefits ($B_R = 0$) does so if $\omega > \sqrt{\overline{\beta} c_e c_m}/\delta(\overline{\beta})$.

What is left to determine is when the manager will arrange the ESOP at $t = 0$.[10] The foregoing discussion implies that the ESOP matters in two scenarios: (i) for $B_R = 0$, the ESOP is needed only when $\omega > \sqrt{\overline{\beta} c_e c_m}/\delta(\overline{\beta})$, otherwise no takeover threat would exist; and (ii) for $B_R = \overline{B}_R$, a takeover threat always exists but the ESOP can deter it only if $\omega \leqslant 1 - \beta_W - \left(\overline{B}_R - \sqrt{\beta_R c_e c_m}\right)/\delta(\beta_R)$. In both scenarios, the ESOP is an effective takeover deterrent. In all other cases, it is either ineffective or superfluous.

In cases (i) and (ii), the manager's utility with the ESOP is

$$u_I(\text{ESOP}) = \beta[y + \Delta - w_I] + (B - \sqrt{c_e c_m \beta})$$

and without the ESOP is

$$u_I(\text{no ESOP}) = \beta[y + \Delta - w_I + \delta(\overline{\beta})].$$

Thus his gain from forming the ESOP is

$$u_I(\text{ESOP}) - u_I(\text{no ESOP}) = B - \sqrt{c_e c_m \beta} - \beta\delta(\overline{\beta})$$

This is the same as the condition (15) under which he would use long-term labor contracts to deter a takeover, if he could. In conclusion:

Proposition 4 *The manager sets up a defensive ESOP (selling a stake $\beta_W > 1 - \overline{\beta} - \beta$ to workers) only if his private benefits B exceed the threshold $\widehat{B}(\beta)$ given in (14).*

Graphically, the equilibrium outcome is as in the previous figures. In the area below the concave function $\widehat{B}(\beta)$, the incumbent manager does not create an ESOP;

[10] If an ESOP is to be effective, the stake β_W must exceed $1 - \beta - \overline{\beta}$, as noted above. Any ESOP with a lower value of β_W, being ineffective, leaves the manager indifferent: we break this tie by assuming that there is a small cost for the manager to arrange an ESOP, so that rather than an ineffective ESOP he will prefer to have none.

above it, he does and thereby reduces the probability of a takeover. The only difference by comparison with the employment-based poison pill lies in the implied takeover probabilities. As is shown in Figure 2, the takeover probability induced by the employment-based poison pill is b in the whole area above the $\widehat{B}(\beta)$ locus; while with an ESOP, it is b for low values of β but gradually declines towards 0 as β increases. This is because the security gains from a takeover decrease as β increases, reducing the probability that even a raider with large private benefits will launch a takeover bid. Therefore, the effectiveness of ESOPs as takeover deterrent is slightly superior to that of long-term labor contracts.

Like employment-based poison pills, ESOPs reduce the value of the firm by reducing the probability of a value-enhancing takeover. This yields the following empirical prediction:

Corollary 5. *The adoption of ESOPs reduces the takeover probability and the value of the firm.*

In the next section we discuss evidence relevant to this prediction.

4.1.2 Evidence

There is a large body of evidence that companies with ESOPs have more stable management, and are less likely to be taken over, in accordance to Corollary 5. Chaplinsky and Niehaus (1994) and Beatty (1995) find that ESOPs reduce the likelihood of takeover attempts. The former also show that their deterrent effect is greater than that of poison pills. In fact, Park and Song (1995) report that companies that adopted or expanded ESOPs relied less frequently on other anti-takeover defenses.

ESOPs tend to damage the company's initial shareholders, who suffer a dilution of equity and actually pay for a wealth transfer to employees, if these receive shares at a price below their current market value. Chaplisky and Niehaus (1994) report that in 48.2 percent of the firms the ESOPs led to an increase in employees' compensation. Finally, ESOPs damage original shareholders by reducing the contestability of the firm, as is suggested by their effect on stock prices (Park and Song, 1995, and Chang, 1990). Again, this is consistent with the prediction of Corollary 5.

Though primarily used by U.S. corporations, defensive ESOPs are not unknown in Europe. In 1999, the fashion company Gucci faced a hostile takeover bid by its French competitor LVMH. Gucci's management created an ESOP, with the intent of diluting the LVMH stake and of enlisting employees' support against the bid. Workers agreed to invest their severance pay fund in Gucci's stock, and the takeover was defeated, although an Amsterdam court later declared the bid void. To reward employees for their loyalty, management distributed a bonus, in cash to non-Italian residents and in shares sold below market price to Italian residents. In exchange for this financial benefit, the company asked that the shares not be sold for three years and that the workers form an association of Gucci owner-employees.

4.2 Employees' lobbying

Even when they do not own shares, workers may still deter hostile takeovers by lobbying against the raider. There have been a number of instances of such action by employees, sometimes openly solicited by the incumbent management. Employee lobbying was successful where it struck a sympathetic chord in local media and politicians, unsuccessful otherwise. In this section, we show how workers' anti-takeover lobbying can be integrated into the model presented in Section 2, and briefly describe three cases in which the employees of a target firm tried to block a hostile takeover.

4.2.1 A model of anti-takeover lobbying

To embed the possibility of employees' lobbying into the model of Section 2, we modify its assumptions only by positing that at $t = 1$, workers' lobbying activity can reduce the probability of a raider's success by a fraction ε at a cost $l(\varepsilon)$. The lobbying cost is assumed to be an increasing, differentiable and convex function of the reduction in probability ε.

As above, workers with short-term contracts prefer to deal with the incumbent rather than a raider, because the latter cuts their wages from w_I to $w_I - \delta(\overline{\beta})$. Naturally, short-term workers will not engage in a costly lobbying activity if the manager has already chosen $\lambda \geqslant \overline{\lambda}$, since in this case there will be no takeover. In other words, if the "poison pill" is operational, there is no need for workers to engage in lobbying.

Suppose instead that $\lambda = 0$. In this case, workers would face a wage cut in the event of a takeover and thus have the incentive to reduce its probability from 1 to $1 - \varepsilon$: their expected wage $w_I - (1 - \varepsilon)\delta(\overline{\beta})$ is increasing in ε. Hence, their decision problem is:

$$\max_{\varepsilon} \; w_I - (1 - \varepsilon)\delta(\overline{\beta}) - l(\varepsilon). \tag{30}$$

From the first order condition $l'(\varepsilon^*) = \delta(\overline{\beta})$, the solution ε^* is strictly increasing in the prospective wage cut $\delta(\overline{\beta})$. Workers will fight harder if a takeover would be very damaging to their wage income. Recalling the expression for $\delta(\overline{\beta})$ in (7), one can immediately establish that the reduction in the probability of the takeover's success ε^* is decreasing in the incumbent's equity stake β. Intuitively, workers fight the takeover the harder, the softer their current manager (due to his small stake). The following proposition summarizes these results:

Proposition 5 *If $\lambda \geqslant \overline{\lambda}$, employees do not lobby against takeovers, being protected by the employment-based poison pill. If $\lambda = 0$ (or if weak employment protection makes λ irrelevant), employees do lobby against a takeover, reducing its probability of success by an amount that is decreasing in the incumbent's stake β.*

Now, let us consider how the two mechanisms – the employment-based poison pill chosen by managers and lobbying chosen by workers – interact. We will see that

when a takeover is hostile, they tend to complement one another, making separate contributions to takeover deterrence. But when the takeover is friendly, the workers' activism conflicts with the interest of the incumbent management.

To see this, recall from Section 3 that hostile takeovers occur in the area above the $\widehat{B}(\beta)$ locus in Figure 2. In this case, the incumbent manager wants to prevent the takeover, and will succeed by setting $\lambda \geqslant \overline{\lambda}$ only if the raider has no private benefits. In this case, workers need not worry, since the takeover is already deterred by employment policy. If, however, the raider has private benefit $B_R = \overline{B}_R$, then the incumbent will choose $\lambda = 0$ to maximize his security benefits. In this situation, workers – being unprotected by the manager's choice of λ – must take matters into their hands and lobby against the raider. This obviously has a positive externality for the incumbent manager.

Conversely, in the area below the $\widehat{B}(\beta)$ locus, the manager favors the takeover and so sets $\lambda = 0$. Employees will fight this friendly takeover; here, their activism runs counter to the interest of the incumbent manager.

4.2.2 Cases of anti-takeover lobbying

We now present three cases in which employees actively lobbied politicians and struck against a takeover with varying outcome. In the case of Thyssen, lobbying was successful: Krupp's hostile bid for the company was withdrawn. In the case of Mannesmann, employees were unable to defeat the hostile bid by Vodafone. Finally, in the case of Daewoo, after a long war of attrition, employees were able to make a deal with the acquirer, General Motors, to secure some post-takeover employment guarantees.

For brevity we describe only these three cases, but there have been other recent ones. For example, in the US in November 2000 Weyerhaeuser launched a hostile takeover of its competitor Willamette Industries, the Oregon-based wood and paper company. The target's management mobilized the support of employees and local media. Thanks also to other defences (a poison pill and a staggered board), the acquisition was delayed until January 2002, when it went through as a friendly deal. Another recent case is the hostile bid for the German ball bearing producer FAG Kugelfischer by INA, a privately owned competitor. At the announcement of the bid in September 2001, management and employees' representatives made a public statement opposing the deal as potentially destroying the firm with the loss of many jobs. INA was able to win over management and employees, by raising its bid price and signing an agreement with the trade unions that it would respect all existing labor contracts. After these concessions, INA managed to acquire control by the end of October.

Thyssen In mid-March 1997, the German steel producer Krupp-Hoesch announced plans for a hostile takeover of its main competitor, Thyssen AG (see Franks and Mayer, 1998, and Hellwig, 2000). It offered DM 15 million, DM 3 million above the current market value. The management of Thyssen said it would fight the takeover,

which threatened the jobs of tens of thousands of its 111,000 remaining workers and that it would seek partners in the battle.

Meanwhile, in a statement signed by Thyssen's management, board chairman Dieter Vogel, supervisory board chairman Heinz Kriwet and works council head Georg Bongen declared that to give investors an adequate return on a takeover bid, a buyer would have to consume all of Thyssen's capital reserves and make deep rationalization cuts. They stated "This has nothing to do with a planned, responsible management strategy that is equally oriented toward the workers' interests as well as capital. These are Wild West methods that are incomprehensible in view of the current problems in Germany and in North Rhine-Westphalia". These words were echoed by the Minister of Labor, Norbert Blüm, who declared that hostile takeovers are not part of the "language of a social market economy but of the language of the Wild West".

This argument was very successful. In the next two weeks politicians, union leaders and the media all joined the protest campaign and Krupp decided to defer its bid. Executives from both companies were summoned by state premier Rau, and chancellor Kohl urged them to find a "reasonable solution" in the interests of all Germans. Meanwhile, protests by the employees at both companies continued. More than 10,000 Thyssen workers gathered in Duisburg to discuss action against the takeover. According to the employees' factory committee, workers at Krupp-Hoesch also held a work stoppage.

On March 24, Krupp-Hoesch retracted the hostile takeover bid, and the two firms issued a joint public statement in Düsseldorf, guaranteeing that there would be no further hostile takeover attempts and announcing that talks on merging steel production were in progress. Despite the retraction, IG Metall went ahead the next day with its demonstration of more than 30,000 workers in the banking centre in Frankfurt, marching in front of the headquarters of Deutsche Bank, which had been prepared to approve a large loan to Krupp-Hoesch to finance the takeover.

As Hellwig (2000) notes, the only losers were Thyssen's shareholders: "The stock market capitalization of Thyssen returned to the level of DM 12 billion, where it had been before the tempest started," depriving them of DM 3 billion (p. 211).

Mannesmann In some other cases, the employees of a hostile takeover bid have been equally vocal but less successful. On 11 March 2000, the British company Vodafone Airtouch succeeded in taking control of Mannesmann, one of Germany's largest companies, sealing a $183 billion deal, then the largest of all time. The deal concluded months of rancorous negotiations, in a bitter battle that once again mixed lobbying by big business, politics and union protest.

The financial press hailed the deal as a sign of a climate more favorable to hostile takeovers in continental Europe, where they had been traditionally discouraged (as the Thyssen episode showed). Clearly, the changed political climate was one reason why the protests of Mannesmann's employees were not successful: though reluctantly and after initially criticizing it, Chancellor Gerhard Schroeder eventually lauded the deal, in sharp contrast to Helmut Kohl's active involvement in blocking the Thyssen

takeover.

Unsurprisingly, this time the winners were the target's shareholders, who were given 58.964 shares in the merged company Vodafone Airtouch for each Mannesmann share, a 10 percent improvement on the original offer of 53.7 shares.

Daewoo Motor In May 2001 General Motors (GM) offered to buy Korea's ailing Daewoo Motor, one of the country's largest corporations, on the condition that Daewoo layoff 5,000 employees. Interestingly, this followed substantial restructuring of labor contracts within the company: on February 16, the bankrupt Daewoo Motor had already eliminated 1,750 jobs and replaced permanent positions with temporary jobs. This had clearly increased the scope for further post-takeover layoffs or wage cuts by GM.

The layoffs at Daewoo led to mass nationwide strikes protesting the loss of jobs and working conditions (Koreans work six days a week, for 50 hours at $4.33 an hour, and have no unemployment benefits.) On June 2, 10,000 workers marched through Seoul and a detachment of 1,000 workers demonstrated at GM's Korean offices. The demonstrations met with violent police repression. The hostility of Daewoo workers may have reflected their recollection of the tough labor policies that GM had imposed from 1978 to 1992 when Daewoo was a GM subsidiary. In 1991 the typical work week at Daewoo was 73 hours, and safety standards were abysmal.

Nevertheless, some of Daewoo's employees supported the takeover – about 7,000 auto workers and almost all of the 3,800 unionized employees, as of June 2001. And although GM enjoyed the backing of the South Korean government, the employees played a key role in the outcome of the deal. "GM's takeover of Daewoo Motor will entirely depend on the company workers' attitude towards restructuring," GM Asia-Pacific President Rudy Shlais told a press conference in Bangkok in April 2001. Although in September 2001 GM officially acquired 67 percent of Daewoo from the creditors, "without agreement with labour there was no deal".

The conflict with the employees and the unions continued until April 2002, when an agreement was finally reached. The spokesman of the union told the press: "If GM carries out the mutual agreement then we will cooperate with them. It seems that GM is afraid of the union too much. Tell them not to be scared of us. We are not gangsters! As they have seen, we have conceded on most particulars. We are committed to dialogue."

5 Conclusions

We have shown that if the private benefits of control are large and management's equity stake is small, then managers and workers are natural allies against hostile takeovers. Managers offer high wages to guard against raiders, and workers are willing to take action to protect those wages.

There are two forces at play. First, in companies where management has a small

equity stake and large private benefits and where potential raiders have small toeholds, incumbents can turn employees into a "poison pill" through generous long-term labor contracts that make the firm less attractive. Second, employees act as "white squires" for the incumbent managers, resisting hostile takeovers to protect high wages and lax supervision. Unlike existing models of implicit contracts, this model provides a rational basis for the convergence of interests between workers and incumbent managers.

Our model offers a number of testable predictions. First, the average employee compensation (or the fraction of long-term contracts) is predicted to correlate negatively with the controlling shareholder's equity stake, other factors being equal. Second, if a takeover succeeds, the new managers will cut the salaries of short-term employees and, as far as the law allows, those of long-term employees, and will increase the intensity of monitoring, while the share price will rise in proportion to the fraction of employees with renegotiable contracts. Third, to be an effective takeover deterrent, employment policy requires a certain degree of protection to employees vis-à-vis a potential raider, which implies that hostile takeovers should be less frequent in countries with strong employment protection. Finally, when employment policy is not an effective deterrent, managers with a small equity stake and large control benefits can trust employees to oppose hostile takeovers, either by refusing to sell their shares to a raider or by lobbying against the takeover. In these circumstances, management will try to arrange an ESOP to vest workers with equity rights. For some of these predictions, existing studies already provide evidence that is consistent with the model. Other predictions still await empirical testing.

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Appendix

Proof of Lemma 1. The raider's utility from the takeover equals

$$u_R = \beta_R[y + \Delta - (1-\lambda)w_R - \lambda w_I] - [(1-\lambda)q_R + \lambda q_I]c_m + B_R - (\beta_R - \omega)p \quad \text{(A1)}$$

where β_R is the raider's holding after the tender offer, ω is the raider's toehold, p is the price paid, $w_R = \sqrt{c_e c_m/\beta_R}$ and $q_R = \sqrt{\beta_R c_e/c_m}$.

From Grossman and Hart (1980) we know that in equilibrium existing shareholders will accept only bids at least as high as the post-takeover price. In our model, that price is:

$$p(\beta_R) = y + \Delta - (1-\lambda)w_R - \lambda w_I = y + \Delta - (1-\lambda)\sqrt{c_e c_m/\beta_R} - \lambda\sqrt{c_e c_m/\beta}, \quad \text{(A2)}$$

which is reported in the text as equation (8). Notice that p is an increasing function of the final holding β_R. Since the raider will not pay more than p for a final holding β_R, he will pick a point on the upward-sloping supply curve $p(\beta_R)$.

For $p = p(\beta_R)$, the raider's utility (A1) simplifies to

$$u_R(\beta_R) = \omega[y + \Delta - (1-\lambda)w_R - \lambda w_I] - [(1-\lambda)q_R - \lambda q_I]c_m + B_R. \quad \text{(A3)}$$

The choice of the raider is therefore

$$\max_{\beta_R} \quad u_R(\beta_R) \quad \text{s.t.} \quad \beta_R \geqslant \overline{\beta} \quad \text{(A4)}$$

where $u_R(\beta_R)$ is given in (A3). To solve the problem (A4), notice that the unconstrained optimum is $\beta_R = \omega$. However, the raider's problem is constrained by the condition $\beta_R \geqslant \overline{\beta}$ and by assumption $\omega \leqslant \overline{\beta}$. Therefore, $\beta_R = \overline{\beta}$. ■

Proof of Lemma 2. The proof characterizes the region of the parameters where the raider wants to take over the firm and within this region identifies the cases in which the incumbent manager can discourage the takeover.

To analyze the raider's incentives, one must distinguish three possible cases, depending on ω and B_R.

(i) First, consider a raider with large private benefits: $B_R = \overline{B}_R$. In this case, the incumbent cannot prevent the takeover even if he chooses $\lambda = 1$. To see why, notice that substituting from equations (7), (3) and (5) into expression (10), the takeover happens if:

$$\overline{B}_R > \sqrt{\beta c_e c_m} - (1-\lambda)\sqrt{c_e c_m/(\beta\overline{\beta})}\left(\sqrt{\overline{\beta}} - \sqrt{\beta}\right)\left(\omega - \sqrt{\beta\overline{\beta}}\right). \quad \text{(A5)}$$

Since the right-hand side is linear in λ, the inequality above always holds if it is true for its extreme values $\lambda = 0$ and $\lambda = 1$. If $\lambda = 0$, the inequality reduces to $\overline{B}_R \geqslant \sqrt{\overline{\beta} c_e c_m} - \omega\sqrt{c_e c_m/(\beta\overline{\beta})}\left(\sqrt{\overline{\beta}} - \sqrt{\beta}\right)$ which holds since by assumption 3

$\overline{B}_R \geqslant \sqrt{\overline{\beta} c_e c_m}$ and $\overline{\beta} > \beta$. If $\lambda = 1$, the inequality becomes $\overline{B}_R \geqslant \sqrt{\beta c_e c_m}$, which again follows from assumption 3 and $\overline{\beta} > \beta$.

(ii) If the raider has no private benefits of control ($B_R = 0$), expression (10) becomes:

$$0 > \sqrt{\beta c_e c_m} - (1-\lambda)\sqrt{c_e c_m/(\beta\overline{\beta})}\left(\sqrt{\overline{\beta}} - \sqrt{\beta}\right)\left(\omega - \sqrt{\beta\overline{\beta}}\right). \qquad \text{(A6)}$$

Whether this inequality holds depends critically on the size of the raider's toehold ω. For ω at or below the threshold value $\overline{\omega} = \overline{\beta}\sqrt{\beta}/\left(\sqrt{\overline{\beta}} - \sqrt{\beta}\right)$ the raider has no incentive to take over the firm since the right-hand side of (A6) is positive for any value of λ. To see this, notice that the right-hand side is linear in λ, and therefore the inequality (A6) is always violated if it does not hold for its extreme values $\lambda = 0$ and $\lambda = 1$. If $\lambda = 0$, the right-hand side of inequality (A6) is increasing in ω and equals zero for $\omega = \overline{\omega}$. Hence, it is always positive. If $\lambda = 1$, the right-hand side of inequality (A6) is $\sqrt{\beta c_e c_m}$ which is positive.

(iii) If the raider has no private benefits of control ($B_R = 0$) and $\omega > \overline{\omega}$, the inequality (A6) may hold or not, depending on the value of λ. Since the right-hand side of the inequality is strictly increasing in λ, there is a cutoff value $\overline{\lambda}$ above which the inequality is violated: $\overline{\lambda} = 1 - \beta\sqrt{\overline{\beta}}/\left[\left(\sqrt{\overline{\beta}} - \sqrt{\beta}\right)\left(\overline{\omega} - \sqrt{\beta\overline{\beta}}\right)\right]$. This case can arise only if $\beta < \overline{\beta}/4$. The reason is that the toehold $\omega \leqslant \overline{\beta}$ by assumption, and therefore also the critical toehold $\overline{\omega} \leqslant \overline{\beta}$. From the definition (12), this requires $\beta < \overline{\beta}/4$. ■

Proof of Proposition 1. The proof characterizes the optimal employment policy λ of the incumbent manager in the three regions identified in Lemma 2.

In case (i), the takeover cannot be prevented irrespective of λ. The optimal λ is zero since the incumbent manager's utility is $u_I(\lambda) = \beta[(y + \Delta - w_I) + (1-\lambda)\delta(\overline{\beta})]$ which is strictly decreasing in λ.

In case (ii), the takeover never happens. The incumbent manager is indifferent about the size of λ since his utility $u_I(\lambda) = \beta(y+\Delta-w_I)+(B-\sqrt{\beta c_e c_m})$ is unaffected by λ.

In case (iii), one must compare the utility of the manager with and without takeover prevention. If $\lambda \geqslant \overline{\lambda}$, the takeover is prevented and his utility is as in case (ii). If $\lambda < \overline{\lambda}$, the takeover is allowed and the incumbent's utility is as in case (i). As in that case, the optimal λ equals 0. The incumbent is indifferent between the two policies if

$$\begin{aligned} B &= \sqrt{c_e c_m \beta} + \beta\delta(\overline{\beta}) \\ &= \sqrt{\beta c_e c_m}\left(2 - \sqrt{\beta/\overline{\beta}}\right) \equiv \widehat{B}(\beta), \end{aligned}$$

which is equation (14) in the text. The incumbent manager chooses $\lambda \geqslant \overline{\lambda}$ if $B \geqslant \widehat{B}(\beta)$, and $\lambda = 0$ otherwise. ■

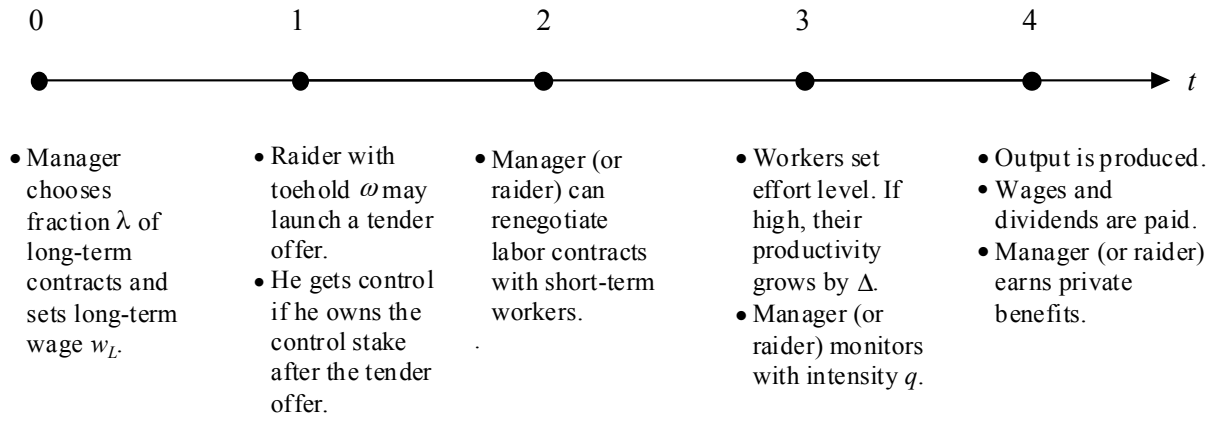

Figure 1. Time Line

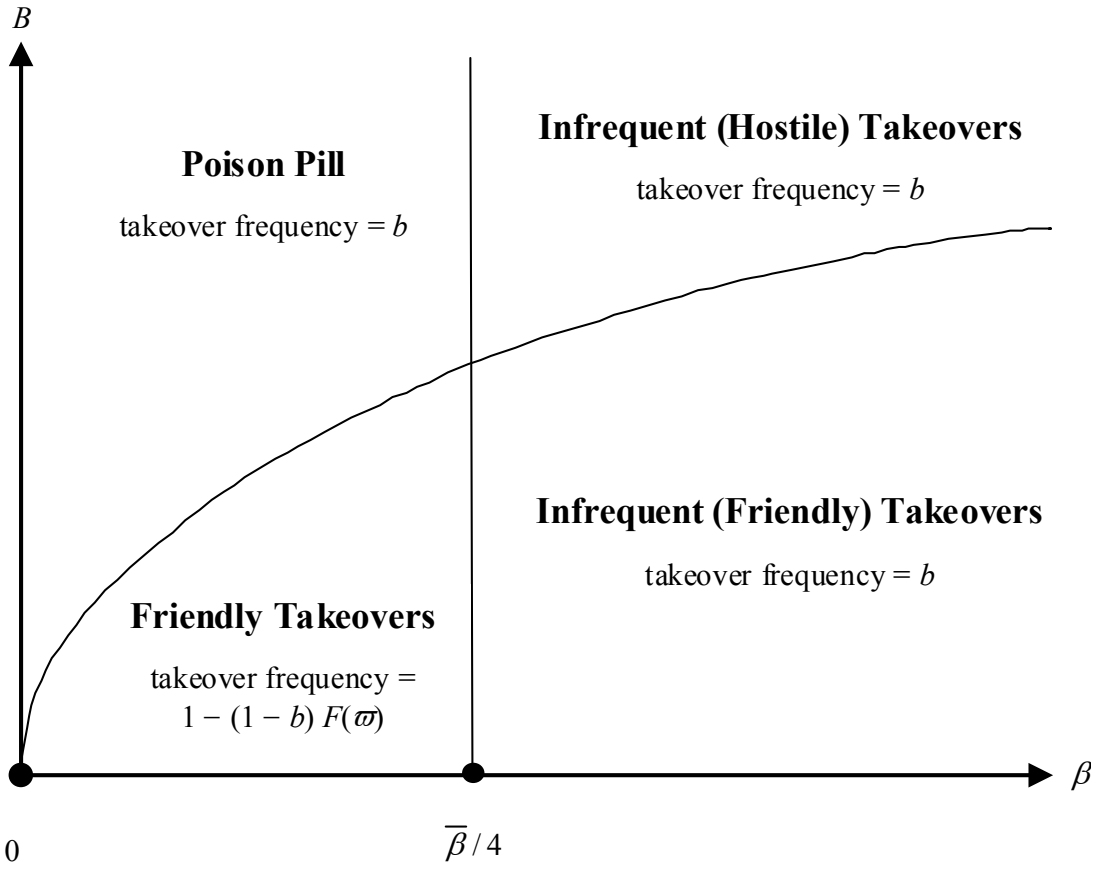

Figure 2. Optimal Employment Policy

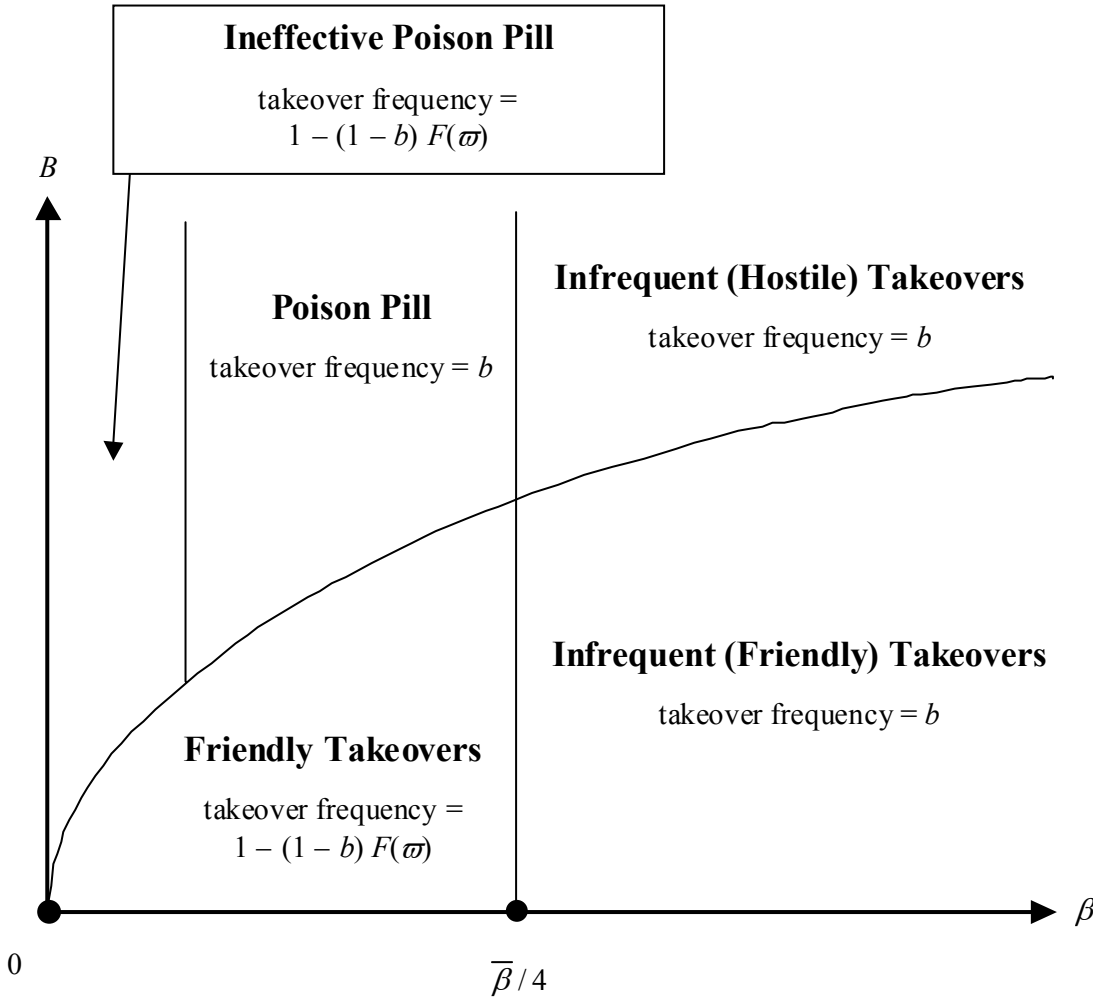

Figure 3. Effect of Employment Protection

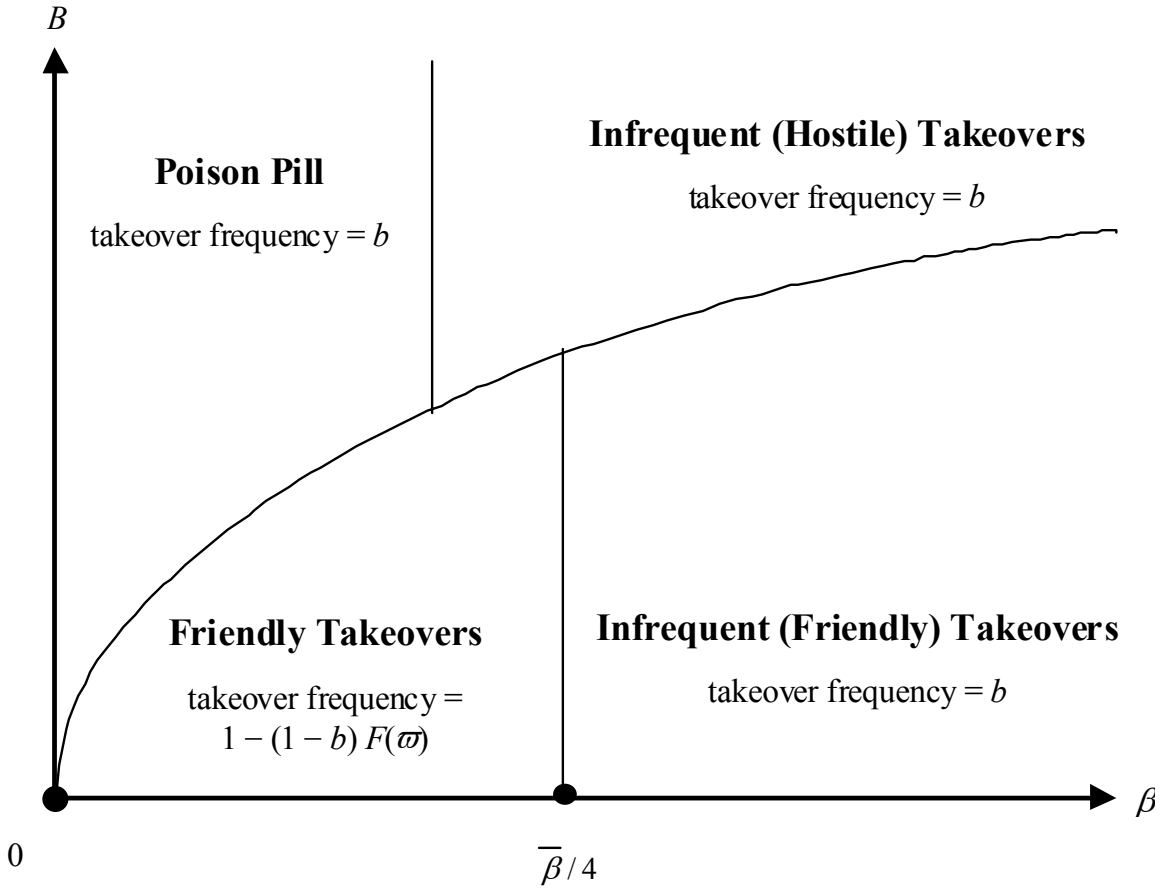

Figure 4. Effect of Anti-Takeover Legislation

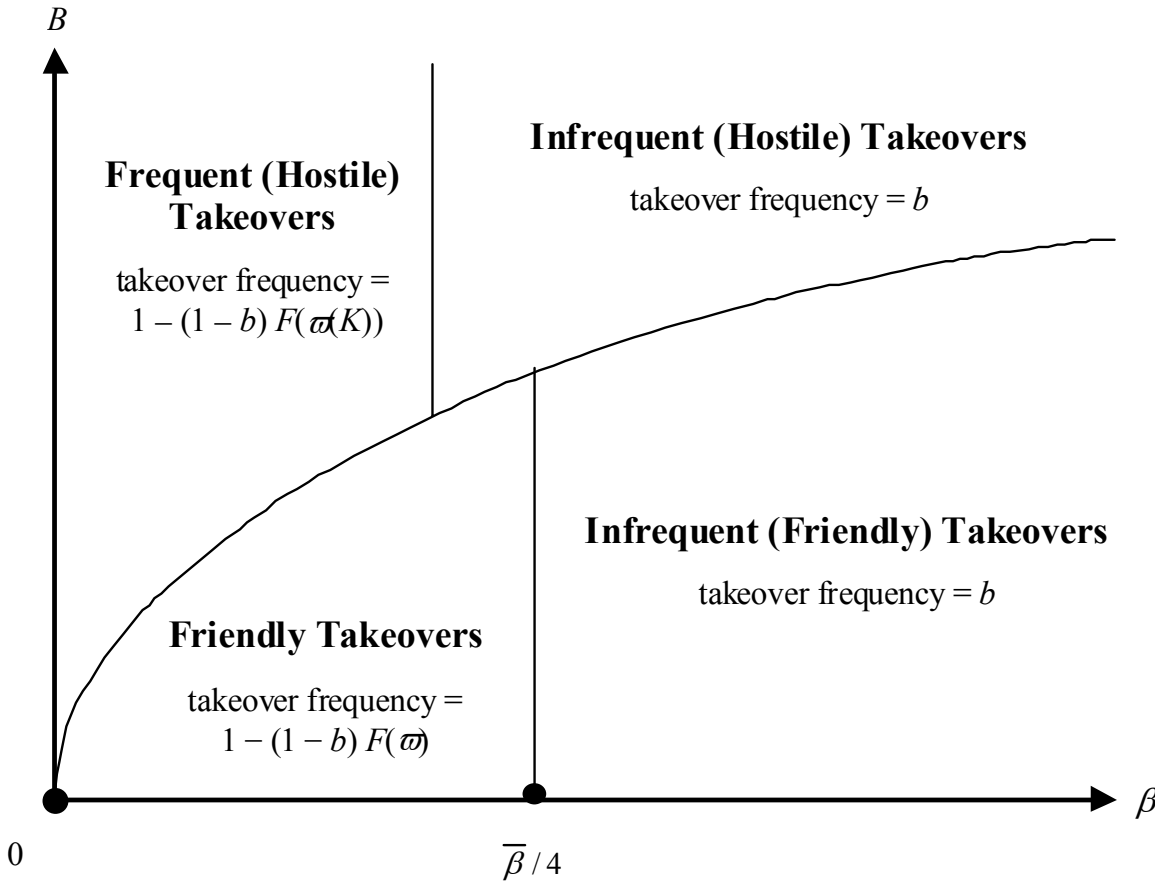

Figure 5. No Employment Protection and Strong Anti-Takeover Defenses

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