WORKING PAPER NO. 75

Managers, Workers, and Corporate Control

Marco Pagano and Paolo Volpin

December 2001

This version: January 2004

Managers, Workers, and Corporate Control

Marco Pagano[*] and Paolo Volpin[**]

Abstract

\noindent \noindent If management has high private benefits and owns a small equity stake, managers and workers are natural allies against a takeover threat. Two forces are at play. First, managers can transform employees into a "shark repellent" through long-term labor contracts and thereby reduce the firm's attractiveness to a raider. Second, employees can 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 predicts that wages are inversely correlated with the incumbent's equity stake, and decline after a takeover.

[*] Marco Pagano, Università di Napoli, CSEF, Università di Salerno, and CEPR

[**] London Business School and CEPR

Table of contents

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. Managers who place a great value on control and own only a small equity stake 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 managerial 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 employment contracts effectively transform employees into a "shark repellent": the inability to renegotiate their wages makes 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 and demonstrating against the raider and, if they own shares in the company, will vote against the takeover. 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 stressed 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 (2001) 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 firm level, and explain why this alliance – or implicit contract – is 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: by monitoring employees intensively, he forgoes the private benefits of a "quiet life". 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.

We endogenize the ownership structure and show that it is optimal to assign a low stake to the appointed manager when the cost of providing him with incentives via inside equity exceeds the benefits in terms of increased managerial effort. We also show that even when the founder can choose the raider's toehold, there are cases in which incumbents entrench themselves and do not exert high monitoring. This happens when both the takeover cost and private benefits are so high compared with the gains from managerial effort that neither the market for corporate control nor internal incentive schemes are cost-effective.

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 potential raiders have small toeholds. A small inside stake makes control (and the implied quiet life) more valuable for incumbents, small toeholds make control unassailable.

Second, in companies where the controlling party's equity stake is small, employees should earn relatively high wages and not be too strictly monitored. 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. Employees' lobbying against a change in

control is complementary to long-term contracts as a takeover deterrent: the two anti-takeover defenses are more effective when used jointly than individually.

The main point made in this paper – that employment policy can serve as anti-takeover device – can be extended to other policies that reduce a firm's attractiveness to a raider. Examples include generous long-term contracts with suppliers, as well as long-term commitments to support environmental or philanthropic organizations, as discussed in Cespa and Cestone (2002). These initiatives reduce contestability by impairing the raider's ability to generate a profit from the takeover. These arrangements also create stakeholder constituencies that support the incumbent management, like the employees in our model.

The paper is organized as follows. Section I lays out the structure of the model. In Section II we solve for the equilibrium, identify the circumstances in which labor contracts are used as "shark repellent", derive the optimal ownership structure, and consider several extensions. In Section III we modify the model by assuming that workers can play an active role in deterring a takeover, acting as "white squires" either by refusing to sell their shares to the raider or by lobbying against the takeover. Section IV concludes.

I. The Model

Consider a firm fully owned by its founder. At the time of taking the company public, the founder designs its ownership structure and appoints its manager. Control of the firm is contestable if the manager's stake β is lower than the controlling stake $\overline{\beta}$ (for example, 50 percent). In this case, a "raider" can gain control by acquiring a stake $\beta_R \geqslant \overline{\beta}$. The raider has a toehold $\tau < \overline{\beta}$, which is the stake that he can amass without affecting the market price. Initially, we treat the toehold as exogenous, but later will analyze the case in which the founder can choose also the toehold as part of the initial sale.

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

[Insert Figure 1]

At $t = 0$, the founder of the company sells a fraction $1 - \beta$ of his shares to outside shareholders, and appoints a manager to whom he confers the remaining fraction β. He chooses this ownership structure so as to maximize the value of his proceeds. In the baseline case, the manager has no wealth nor debt capacity to acquire equity in the firm, and the equity stake β is the only available managerial incentive. In Section II.E.5, we examine how the results are affected if the manager has positive wealth and if alternative incentive mechanisms such as options or bonuses are available.

At $t = 1$, the incumbent manager learns the toehold τ of the potential raider. He can then choose (or modify) the firm's employment policy. The employees, whose

– 3 –

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 $t = 3$. The incumbent chooses the fraction of long-term workers, λ, and sets their wage w_L. We assume that he has complete control over wage policy.

At $t = 2$, the raider can take over the firm by acquiring the additional stake $\overline{\beta} - \tau$ 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 $\overline{\beta}$. The raider also bears a fixed cost c to cover the legal and advisory fees necessary to launch the bid. Dispersed shareholders decide non-cooperatively whether to tender their shares, and none regards himself as pivotal to the success of the takeover. The insider's stake β and the toehold τ are public knowledge.

At $t = 3$, the party in control (the incumbent manager or the raider) can renegotiate the contracts with short-term workers, setting their wage w. He also chooses the monitoring technology, which determines the fraction q of workers whose effort will be verified at $t = 4$. The monitoring intensity q can be set at a low level q_0 or at a high level q_1. The manager's choice of monitoring technology shapes the company's organizational design and its use of human resources: allocation of supervisory and reporting tasks, hiring and firing decisions, closure or restructuring of inefficient plants. By choosing a low monitoring intensity the manager enjoys a (non-observable) private benefit b, which is the monetary equivalent of his effort saving. Insofar as less monitoring makes for a softer management style (with greater tolerance for shirking and less frequent firing decisions), the benefit b may include also the manager's pleasure from being popular with the firm's employees. To capture both possible interpretations, we refer to b as the benefit of a "quiet life".

At $t = 4$, workers choose their effort level. Output is proportional to workers' effort. With no effort, their individual productivity y equals y_0. If they exert effort at a private cost c_e, their productivity rises to y_1. We denote the productivity gain by $\Delta y \equiv y_1 - y_0$. As in Calvo and Wellisz (1978), workers' individual effort and output are non-contractible, but can be verified by the manager. 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] If the takeover succeeds, the raider replaces the management and monitors workers directly. In the baseline version of the model, he is assumed to use the same monitoring technology as the incumbent. In an extension, we consider how the model's results change if the raider can choose a more effective monitoring technology than the incumbent.

Finally, at $t = 5$, each employee produces output y_0 or y_1, depending on his effort level, and receives his salary. Shareholders earn the firm's profits, amounting to the difference between output and wage bill. To guarantee that the firm is viable even when workers exert no effort, we assume that $y_0 > \overline{w}$.

We impose three restrictions on the model's parameters:[4]

Assumption 1. It is efficient to elicit workers' effort even when they are subject to low monitoring, because their additional productivity exceeds the rent needed to incentivize them: $\Delta y > c_e/q_0$.

Assumption 2. A manager who owns the control stake in the company has the incentive to exert high monitoring, because the implied monetary benefit exceeds the benefit of a quiet life: formally, $\overline{\beta}\delta > b$, where $\delta \equiv c_e(q_1 - q_0)/q_0q_1$ will be shown to be the gain from high monitoring.

Assumption 3. The gain from high monitoring exceeds the cost of a takeover: $\overline{\beta}\delta > c$. This inequality ensures the contestability of control: $\overline{\beta}\delta$ is the maximum gain accruing to the raider, which reflects his increased monitoring, while c is the takeover's cost.

II. Workers as Shark Repellent

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. Thirdly, we consider whether the incumbent is able (and wishes) to prevent a takeover by using employment policy. Finally, we determine the optimal ownership initially chosen by the founder.

A. Wage Setting and Monitoring

To induce workers to exert effort, the wage w and the monitoring level $q \in \{q_0, q_1\}$ are chosen so as to satisfy the workers' incentive compatibility constraint. Managers always want to induce workers' effort, because by Assumption 1 this is efficient even under low monitoring (which is costless for managers).

If a worker invests effort in his job, his utility is $w - c_e$: the wage less the cost of effort. If the worker exerts 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 intensity of supervision, q, and the wage, w, depend on two factors: (i) whether workers are under a long-term or a short-term contract and (ii) who controls the firm from period 2 onwards (the incumbent or the raider).

If a worker is hired on a short-term contract, his wage is set at $t = 3$ so as to satisfy the workers' incentive compatibility constraint with equality: $w = \overline{w} + c_e/q$. If

instead a worker is on a long-term contract, his wage cannot be lower than the level w_L set by the labor contract signed at $t = 1$.[5] The firm's total wage bill is the sum of the wages paid to short-term and long-term employees, weighted by their respective proportions: $(1 - \lambda)w + \lambda w_L$.

The monitoring intensity q is chosen by the party in control at $t = 3$, and therefore it depends on his identity and incentives. If the incumbent is still in charge, q is chosen to maximize his utility u_I:

$$\max_{q \in \{q_0, q_1\}} u_I = \beta \left\{ y_1 - [(1 - \lambda)w + \lambda w_L] \right\} + b \cdot I_{q=q_0} \tag{2}$$

where the wage of short-term workers $w = \overline{w} + c_e/q$ and the indicator function $I_{q=q_0}$ equals 1 if $q = q_0$ and 0 otherwise. If the raider is in control, he maximizes the same utility function, with the only difference that his equity stake is β_R rather than β.

Comparing the value of the incumbent's utility u_I if $q = q_0$ with its value if $q = q_1$, it is immediate that the intensity of monitoring chosen by the incumbent is:

$$q_I = \begin{cases} q_0 & \text{if } \beta < b/(1 - \lambda)\delta \\ q_1 & \text{if } \beta \geqslant b/(1 - \lambda)\delta \end{cases} \tag{3}$$

where $\delta \equiv \overline{w} + c_e/q_0 - (\overline{w} + c_e/q_1) = c_e(q_1 - q_0)/q_0 q_1$ is the wage savings from high monitoring. Therefore, the incumbent chooses high monitoring if and only if he has a sufficiently large equity stake, since he internalizes only a fraction β of the gains from monitoring. The corresponding wage is $w_I = \overline{w} + c_e/q_I$.

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

$$q_R = \begin{cases} q_0 & \text{if } \beta_R < b/(1 - \lambda)\delta \\ q_1 & \text{if } \beta_R \geqslant b/(1 - \lambda)\delta, \end{cases} \tag{4}$$

and the corresponding wage is $w_R = \overline{w} + c_e/q_R$.

If control is contestable, the incumbent's stake is smaller than the stake of a successful raider, since $\beta < \overline{\beta}$ and $\beta_R \geqslant \overline{\beta}$. This implies that a successful raider tends to monitor workers more intensively than the incumbent, and to pay lower wages to short-term employees. The raider behaves in this way because with his larger equity stake, he internalizes the costs of his wage policy more than the incumbent.

B. Takeover Game

At $t = 2$, 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 τ. To buy the remaining $\beta_R - \tau$ shares, he must launch a tender offer. In Lemma 1 we consider his optimal bidding strategy.

Lemma 1 (Optimal Bidding) *To acquire $\beta_R - \tau$ via a successful tender offer, the raider must bid*

$$p(\beta_R) = y_1 - [(1 - \lambda)(\overline{w} + c_e/q_R) + \lambda w_I], \qquad (5)$$

where q_R depends on β_R as described by (4). His optimal bid is $p = p(\overline{\beta})$, and his post-takeover stake is

$$\beta_R \in \begin{cases} [\overline{\beta}, b/(1-\lambda)\delta] & \text{if } \overline{\beta} < b/(1-\lambda)\delta \\ [\overline{\beta}, 1] & \text{if } \overline{\beta} \geqslant b/(1-\lambda)\delta. \end{cases} \qquad (6)$$

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 weakly increasing in the final holding of the raider, as is shown by equation (5), since the monitoring level q_R after a successful takeover is increasing in his after-takeover stake β_R as described in (4). Therefore, the raider faces a supply curve for the company's shares that is weakly upward sloping. More specifically, it is an increasing stepwise function, with a discontinuity at $\beta_R = b/(1 - \lambda)\delta$, above which the raider steps up his monitoring activity. As a result, the raider is indifferent between $\overline{\beta}$ and values immediately above it.

Now we can describe more precisely when the change in control creates shareholder value, by reducing the firm's labor costs. The raider monitors workers at the high intensity q_1 if $\overline{\beta} \geqslant b/(1 - \lambda)\delta$, from Lemma 1; instead, the incumbent monitors workers at the lower intensity q_0 if $\beta < b/(1 - \lambda)\delta$, from equation (3). This implies that the takeover is followed by increased monitoring and a wage cut only when

$$\beta < b/(1 - \lambda)\delta \leqslant \overline{\beta}. \qquad (7)$$

In the remaining cases, the raider and the incumbent monitor workers at the same level. Specifically, when $\overline{\beta} < b/(1-\lambda)\delta$, they both choose q_0, while if $\beta \geqslant b/(1-\lambda)\delta$, they both choose q_1. Under condition (7), the change in control increases the firm's profits by $(1-\lambda)\delta$, that is, by the wage cut inflicted to the firm's short-term employees. The raider's fraction of these profits depends only on his toehold, since the raider pays the full post-takeover price on any remaining $\beta_R - \tau$ shares necessary to acquire control.

The raider's incentives to launch a takeover bid depend on two factors: the takeover gains on his toehold τ or, alternatively, the benefit of a quiet life, b. These two gains are mutually exclusive because the raider generates takeover gains precisely

when he gives up a quiet life as a manager. More precisely, the raider's incentives are as follows:

Lemma 2 (Raider's Incentives) *The raider's gain from the takeover is:*

$$
G_R = \begin{cases} 0 & \text{if } b/(1-\lambda)\delta \leqslant \beta, \\ \tau(1-\lambda)\delta & \text{if } \beta < b/(1-\lambda)\delta \leqslant \overline{\beta}, \\ b & \text{if } \overline{\beta} < b/(1-\lambda)\delta. \end{cases} \tag{8}
$$

The raider attempts the takeover only if $G_R > c$.

This lemma describes the three possible cases. In the first case, the benefit of a quiet life is so low that even the incumbent monitors the firm's employees intensively, so that the raider cannot generate any wage savings. Since in this case he would not enjoy a quiet life either, he does not attempt a takeover. In the intermediate case, condition (7) is satisfied, so that the takeover generates an increase in monitoring intensity and an attendant increase in firm value. The successful raider's utility gain is the appreciation of his toehold $\tau(1-\lambda)\delta$ net of the cost of organizing the takeover c. In the last case, the benefit of a quiet life is so valuable that even the raider chooses the low monitoring intensity, just as the incumbent. In this case, the takeover does not generate an increase in the firm's value, but the raider may still bid for the firm if his private benefit b exceeds the takeover's cost c.

C. Takeover Deterrence

At $t = 1$, the manager chooses the wage of the workers with long-term contracts, w_L, and the fraction of such workers, λ.

Let us first consider the wage. The manager knows that the level of monitoring will be chosen at $t = 3$ according to equation (3). Since eliciting effort from workers is efficient (by Assumption 1), the wage w_L is chosen so as to satisfy the long-term employees' incentive compatibility condition $w_L = \overline{w} + c_e/q_I$. Since this condition is identical to that for short-term employees, the incumbent pays the same wage to both types of employees.

Next, let us consider the fraction λ of long-term workers that the incumbent wishes. Given the raider's incentives described by Lemma 2, the incumbent's optimal choice of the fraction of long-term workers, λ^*, is characterized as follows:

Lemma 3 (Optimal Employment Policy) *The optimal fraction of long-term employees is $\lambda^* = 1 - c/\tau\delta > 0$, if $\beta < b/\delta$ and $\tau \in (c/\delta, c\overline{\beta}/b)$. Otherwise, $\lambda^* = 0$.*

Proof: See Appendix.

Intuitively, the condition $\beta < b/\delta$ implies both that the incumbent is unwilling to monitor and that he wants to prevent a takeover: the value b of a quiet life exceeds

the monetary gains $\beta\delta$ from monitoring (whether effected by the incumbent himself or by the raider). To assess the incumbent's ability to deter the takeover, it is worth distinguishing between two cases, depending on the size of the takeover cost: $c \geqslant b$ and $c < b$.

If the takeover cost is relatively high ($c \geqslant b$), the incumbent can always deter the takeover by using employees as a shark repellent, that is, by setting $\lambda^* = \min(1 - c/\tau\delta, 0)$. With this fraction of long-term employees, the raider can never make a net gain from the takeover, since the gain from wage-cutting G_R falls short of the takeover cost c, whatever the size of his toehold τ. In fact, if the raider's toehold is low enough ($\tau\delta \leqslant c$), the incumbent does not even need a shark repellent and therefore chooses $\lambda^* = 0$.

If instead the takeover cost is relatively low ($c < b$), the incumbent can deter the raider only when his toehold is low enough ($\tau < c\overline{\beta}/b$). Otherwise, the raider cannot be stopped. To see why, imagine that the incumbent chooses $\lambda^* = 1 - c/\tau\delta$, so as to annihilate the raider's security gains. This also discourages the raider from monitoring if it makes the attendant gain $\overline{\beta}(1 - \lambda^*)\delta$ smaller than the private benefit b. Substituting out λ^*, this occurs if $\tau \geqslant c\overline{\beta}/b$. In this case, the very attempt to use employment policy as shark repellent has the side-effect of inducing a successful raider to opt for a "quiet life". But the benefit of a "quiet life" b exceeds the takeover cost c, by assumption. Hence, in this case the raider cannot be deterred.

Finally, if $\beta \geqslant b/\delta$, the incumbent himself chooses high monitoring, so that the raider cannot increase the firm's value and there is no takeover threat. Hence, the incumbent is indifferent about λ, and under our tie-breaking assumption he will set $\lambda^* = 0$.

We can therefore restate the results in Lemma 3 in terms of the anti-takeover policy chosen by the incumbent:

Proposition 1 (Optimal Takeover Deterrence) *Takeovers are blocked by the incumbent's employment policy if $\beta < b/\delta$ and $\tau \in (c/\delta, c\overline{\beta}/b)$. They cannot be blocked if $\beta < b/\delta$ and $\tau \geqslant c\overline{\beta}/b$, and never occur otherwise.*

Figure 2 illustrates the four possible cases in the space (β, τ). The area to the left of b/δ, where the incumbent does not want a takeover, comprises three regions, depending on the size of the raider's toehold. For low values of τ, even though the incumbent effects low monitoring, there is no takeover threat because the raider would capture too little a fraction of the takeover gains: the shark repellent is unnecessary in this "low monitoring/no takeover region". For intermediate values of τ, we are in the "shark repellent region", where the incumbent deters the raider by choosing a sufficiently large fraction of long-term employees. For very high values of τ, the raider's toehold is large enough that he will take over the company anyway ("hostile takeover region"). The area to the right of b/δ is the "high monitoring/no takeover

region", where an outsider has no incentive to attempt the takeover because the incumbent is already monitoring employees intensively.[6]

[Insert Figure 2]

Figure 2 is drawn under the assumption that $b > c$, that is, the private benefits of control exceed the cost of takeover. It may appear puzzling that in this case a takeover can be prevented. The solution to the puzzle is that in equilibrium the benefit b fails to materialize for a raider: having acquired a large stake in the company, he will never want to enjoy a "quiet life". Under the alternative assumption that $b \leqslant c$, the "hostile takeover region" in Figure 2 would disappear, and the "shark repellent region" would expand correspondingly.

Proposition 1 has testable implications for the relationship between wages and the ownership structure of companies. These can be seen by considering again Figure 2. Wages are comparatively high in the two areas of the figure where the incumbent has a low equity stake and takeovers do not occur (either because they are prevented by shark repellent or because the raider has an insufficient toehold). As a result, an exogenous increase in the incumbents' stake β tends to shift companies outside of the high-wage region, producing a reduction of their labor costs. By the same token, an exogenous increase in the raider's toehold τ tends to shift the company into the takeover area, producing a wage cut. Summarizing these empirical predictions:

Corollary. *In firms that are not takeover targets, wages are negatively correlated with the size of the incumbent's stake. In companies whose incumbent has a low equity stake, wages are cut in the wake of a takeover.*

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. The prediction that large toeholds are associated with successful takeovers is consistent with the evidence in Betton and Eckbo (2000). 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 shark repellent only if the raider's toehold τ is smaller than the threshold $c\overline{\beta}/b$.

Proposition 1 implies also that an exogenous increase of the takeover's cost c tends to shift the company into the shark-repellent area, producing a wage increase. 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 (2003) repeat this test on plant-level data and find that in protected plants wages rise by about 0.5 percent for blue-collar workers and by about 4 percent for white-collar ones. 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.

D. Ownership Structure

At $t = 0$, the founder chooses the stake β for the incumbent manager and sells the remaining shares on the market. Hence, he chooses β to maximize his utility $u_F = (1 - \beta)V$, where the value of the firm V depends on β via the monitoring incentives provided by the inside equity ownership:

$$V = \begin{cases} V_0 = y_1 - \overline{w} - c_e/q_0 & \text{if } \beta < b/\delta \text{ and } \tau < \overline{\beta}c/b, \\ V_1 = y_1 - \overline{w} - c_e/q_1 & \text{otherwise.} \end{cases} \tag{9}$$

Note that $V_1 - V_0 = \delta$ is the increase in firm's value arising from high monitoring. From expression (9), it is immediate that there are two cases to be considered, depending on the size of the outsider's toehold.

If $\tau \geqslant \overline{\beta}c/b$, the incumbent cannot entrench himself via his employment policy. Hence, the firm's value is unaffected by β and equals V_1. In this case the founder chooses $\beta^* = 0$: it is cheaper to produce good management via the market for corporate control than via internal incentives.

If instead $\tau < \overline{\beta}c/b$, control is not contestable, because the incumbent will entrench himself via employment policy. In this case, the choice of β can only affect the manager's monitoring incentives: the manager will exert low monitoring if $\beta < b/\delta$, and high monitoring otherwise. Since the owner wishes to minimize the cost of incentives, he will choose $\beta = 0$ in the first case, and $\beta = b/\delta$ in the second case. In the first case, the founder's utility is $u_F = V_0$, while in the second it is $u_F = (1 - b/\delta)V_1 = V_1 - (b/\delta)V_1 = V_0 + \delta - (b/\delta)V_1$. Hence the founder chooses to incentivize the manager with a stake $\beta = b/\delta$ if the implied wage saving, δ, exceeds the incentive's cost, $(b/\delta)V_1$, and chooses $\beta = 0$ otherwise. In the latter case, he accepts managerial entrenchment as the best possible solution.

Summarizing this argument:

Proposition 2 (Optimal Ownership Structure) *The optimal ownership structure is:*

$$\beta^* = \begin{cases} 0 & \text{if } \tau \geqslant \overline{\beta}c/b & \text{(contestable control)}, \\ b/\delta & \text{if } \tau < \overline{\beta}c/b \text{ and } (b/\delta)V_1 \leqslant \delta & \text{(internal incentives)}, \\ 0 & \text{if } \tau < \overline{\beta}c/b \text{ and } (b/\delta)V_1 > \delta & \text{(entrenchment)}. \end{cases} \tag{10}$$

This proposition explains why in this model managers may entrench themselves, even after allowing for an optimal design of the ownership structure by the firm's founder. The initial owner may assign no equity to the firm's manager if this incentive scheme is too expensive, even if he reckons that as a result the manager will entrench himself. This will in fact occur if the market for corporate control is relatively ineffective, because outsiders have too low toeholds or face large takeover costs. This initial choice by the founder explains why the incumbent's stake β may be lower than the raider's stake β_R, and why their managerial incentives may differ correspondingly.

E. Extensions

In the above model, the incumbent manager and the raider have the same monitoring technology (q_0 or q_1) and the same taste for a quiet life (b). In this section we extend the model to the case where the raider is a more efficient monitor than the incumbent or places a lower value on a quiet life. We show also that weakening employment protection reduces the takeover deterrence of long-term labor contracts. Moreover, we investigate the consequence of letting the company's founder choose the potential raider's toehold τ, beside the manager's stake β. Finally, we examine how the results are affected if the manager has a positive wealth and if alternative incentive mechanisms are available.

E.1 Differential Monitoring Technology

So far we have assumed that the raider and the incumbent share the same monitoring technology: both of them can choose between a "quiet life" strategy – low monitoring intensity q_0 and private benefit b – and the "hard-nosed" strategy – high monitoring q_1 and no private benefit. Anecdotal evidence on professional raiders, such as Carl Icahn, Frank Lorenzo and Victor Posner, suggests that raiders may have a better monitoring technology than the average manager (see, for instance, Holderness and Sheehan, 1985). In other words, they became raiders because they had a comparative advantage in restructuring tasks like cost-cutting, asset-stripping, and negotiation with suppliers and employees.

To capture this feature, we modify the model presented in Section I by assuming that a raider exerting high monitoring detects low-productivity workers with a probability q_1^R higher than the incumbent's: $q_1^R > q_1$. This implies that, if the incumbent's monitoring intensity is low (because $\beta < b/\delta$), the potential wage savings from a takeover are larger than before:

$$c_e(q_1^R - q_0)/q_0 q_1^R \equiv \delta_R > \delta. \tag{11}$$

This result has two implications for the optimal employment policy chosen by the incumbent.

First, the raider has a greater incentive to bid for the company because the gain on his toehold is larger: $\tau \delta_R > \tau \delta$. Hence, he will bid for the company whenever his

toehold exceeds c/δ_R (rather than c/δ), in the absence of shark repellent ($\lambda = 0$). To counter this increased threat, the incumbent will use employment policy as an anti-takeover device also in situations for which he would not have done so according to Proposition 1. Specifically, he will use the shark repellent also for values of the raider's toehold $\tau \in (c/\delta_R, c/\delta]$. The shark-repellent region will expand accordingly in Figure 2.

Second, for any value of β larger than b/δ_R, the incumbent himself wishes the raider to take over the company, since the security benefits that he gets from the takeover exceed his private benefits of control. Intuitively, he recognizes that the raider is a better monitor than himself. As a result, the area where $\beta \geqslant b/\delta_R$ becomes a "friendly takeover region", reflecting the greater alignment of the raider's and the incumbent's interests. This region replaces the "high monitoring/no takeover region" of Figure 2, and reduces the other regions.

E.2 Differential Private Benefits

If raiders have a lower appetite for a quiet life than the incumbent ($b_R < b$), the shark-repellent region in Figure 2 widens to include levels of the raider's toehold $\tau \in [c\overline{\beta}/b_R, c\overline{\beta}/b)$ where the raider could not be deterred in the basic model. To understand the intuition for this result, consider that long-term contracts discourage a successful raider from monitoring workers, thus eliminating his security benefits from the takeover, but leave the door open to a takeover motivated only by the private benefits of control (if $b_R > c$). The lower the raider's private benefits, the less important is this alternative reason for taking over the company, and therefore the more effective are long-term contracts in shutting out the raider, thus expanding the "shark-repellent region".

In the limiting case where the raider's taste for a quiet life is so low as to be offset by the takeover's costs ($b_R \leqslant c$), the "shark repellent region" extends to the entire area, and the "hostile-takeover region" disappears. In this case, the only enticement to take over the company can arise from the implied security gains. But the incumbent can eliminate any such gains by choosing a sufficiently high fraction of long-term contracts.

E.3 Role of Employment Protection

So far the long-term labor contracts signed at $t = 1$ were assumed to remain legally binding at $t = 3$. Suppose instead that at $t = 3$, 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 shark repellent.

In this new setting, the manager in control at $t = 3$ can replace $1 - \lambda\mu$ workers, so that 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. From Proposition 1 we know that the manager uses long-term contracts as shark repellent whenever he dislikes the takeover ($\beta < b/\delta$) and the shark repellent is necessary to deter the takeover ($\tau > b/\delta$). In the previous section, the shark repellent consisted in setting the fraction of long-term workers λ equal to $1 - c/\tau\delta$. Now that the effective fraction of long term workers is $\lambda\mu$, the shark repellent amounts to setting $\lambda = (1 - c/\tau\delta)/\mu$. Following the same steps as in Lemma 3, it can be seen that now the shark repellent is effective against raiders with a toehold

$$\tau < \frac{c}{\delta(1 - \mu + \mu b/\overline{\beta}\delta)}. \tag{12}$$

This cut-off value for τ is increasing in μ, that is, employment protection tends to strengthen the effect of the shark repellent. In Figure 2, this corresponds to an increase of the "shark repellent region". Conversely a reduction of employment protection makes the region shrink down to the limiting case of $\mu = 0$: with no employment protection, long-term contracts cannot be used to deter takeovers.

The flip side of a decrease in employment protection is an expansion of the "takeover region", consistent with evidence for the OECD countries. Pagano and Volpin (2001) 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.

E.4 Endogenous Toehold

In the model presented in Section I, the founder initially chooses the stake β of the incumbent manager and sells the remaining shares. However, the founder may affect also the size of the raider's toehold τ by selling a stake to a large blockholder, who may later become a raider or sell to a raider.

To address this possibility, in this section we consider the extreme case in which the founder can choose both β and τ to maximize his utility $u_F = (1 - \beta - \tau)V + \tau p_R$, where p_R denotes the price charged by the founder to the potential raider at $t = 0$. Recall that the value of the firm V depends both on β and τ via the takeover game and the monitoring incentives, as shown by equation (9). Since both β and τ are common knowledge, the founder can face the raider with a price schedule $p_R = p_R(\beta, \tau)$. Assuming competition among potential raiders, the founder will drive $p_R(\beta, \tau)$ up to the level where raiders are indifferent whether to buy the toehold or not.

Under these assumptions, it is easy to show that:

Proposition 3 (Optimal Toehold) *The optimal ownership structure is:*

$$(\beta^*, \tau^*) = \begin{cases} (0, \overline{\beta}c/b) & \textit{if } b > c & \textit{(contestable control)}, \\ (b/\delta, 0) & \textit{if } b \leqslant c \textit{ and } (b/\delta)V_1 \leqslant \delta & \textit{(internal incentives)}, \\ (0, 0) & \textit{otherwise} & \textit{(entrenchment)}. \end{cases} \quad (13)$$

Proof: See Appendix.

In contrast to the basic model, now the founder has the opportunity to choose between two different incentive schemes: the internal equity stake of the incumbent (β) and the market for corporate control (τ). Proposition 3 states that if the cost of takeovers is low relative to the private benefits of incumbents ($b > c$), the optimal governance mechanism relies on toeholders, because an active market for corporate control is cheaper than an internal incentive scheme. If instead the cost of hostile takeovers is high compared to the private benefits of incumbents ($b \leqslant c$), it is cheaper to incentivize the existing management, provided the cost of these internal incentives does not exceed the implied value improvement ($(b/\delta)V_1 \leqslant \delta$). Otherwise, the best alternative is simply to accept managerial entrenchment.

This result fits the evolution of US corporate governance in the last two decades. The 1980s featured a large wave of hostile takeovers and restructuring activity, while the 1990s saw a dramatic increase in executive performance-related compensation schemes and a virtual disappearance of hostile takeovers. Holmström and Kaplan (2001) argue that this shift from market-based to internal incentive schemes was driven by changes in regulation that made hostile takeovers more costly. This is precisely what Proposition 3 predicts as a result of an increase of the parameter c.

Proposition 3 also shows that even when we endogenize the choice of τ, there are cases in which incumbents entrench themselves and do not exert high monitoring. This happens when both the takeover cost and private benefits are so high compared with the gains from managerial effort that neither the market for corporate control nor internal incentive schemes are cost-effective: the founder will find it optimal to set $\beta^* = 0$ and $\tau^* = 0$ when $b \leqslant c$ and $(b/\delta)V_1 > \delta$.

E.5 Managerial Wealth and Alternative Incentive Mechanisms

So far we have assumed that managers have no wealth and no debt capacity, and that the only managerial incentive mechanism is their equity stake in the company. If either assumption is relaxed, it becomes easier to realign the manager's objective with that of external shareholders, and therefore to prevent managerial entrenchment. We show this result for $\tau < \overline{\beta}c/b$, since with a larger toehold the agency problem is solved at no cost for the founder by the hostile takeover mechanism.

Consider first the case when at $t = 0$ managers have positive wealth A. Assume that the founder can select the firm's manager from a group of identical and

competing candidates. He will want to extract the largest possible payment for the manager's stake β, the only limit being its market price βV. If the manager is sufficiently rich, the founder will set $\beta \geqslant b/\delta$, since this elicits high monitoring and therefore maximizes the firm's value. Hence, the agency problem disappears if $A \geqslant (b/\delta)V_1$.

If the manager's wealth falls short of this threshold, the founder chooses whether selling the stake b/δ to the manager at a discount or giving him a zero stake, any other option being dominated because it would not incentivize the manager. The discount must equal at least the difference between the market value of the stake $(b/\delta)V_1$ and the manager's wealth A. The founder will compare this discount with the capital gain from monitoring δ: he will sell the stake b/δ to the manager for a price A only if $(b/\delta)V_1 - A \leqslant \delta$. Otherwise, he will give no shares to the manager. Hence, the optimal managerial equity stake becomes:

$$\beta^* = \begin{cases} b/\delta & \text{if } A \geqslant (b/\delta)V_1 - \delta, \\ 0 & \text{otherwise.} \end{cases} \tag{14}$$

Expression (14) shows that the impact of managerial wealth A is to expand the parameter region where the founder incentivizes the manager. This reduces the region in which the manager receives a zero stake and therefore is induced to entrench himself via the employment policy.

The foregoing argument neglects the possibility that the manager may leverage his wealth A to acquire shares from the founder. But even if the manager is allowed to borrow, in this model moral hazard sets an endogenous limit to his debt capacity. A lender must consider that, if the manager is to make a debt repayment D, his incentive constraint becomes:

$$\max\left(0, \frac{b}{\delta}V_1 - D\right) \geqslant \max\left(0, \frac{b}{\delta}V_0 - D\right) + b. \tag{15}$$

In words, the manager's net worth with high monitoring must exceed his net worth with low monitoring (if positive) plus his private benefit. This constraint is satisfied only if $D \leqslant (b/\delta)V_0$. Assuming a zero interest rate, the manager's debt capacity is $(b/\delta)V_0$, so that the maximal sum that he can invest in the firm at $t = 0$ is $A + (b/\delta)V_0$. Therefore, the manager can acquire the stake b/δ at market prices only if $A + (b/\delta)V_0 - (b/\delta)V_1 = A - b \geqslant 0$, that is, if his wealth exceeds his private benefit. Hence, taking into account that debt capacity expands the resources available to the manager at $t = 0$, his optimal equity stake becomes:

$$\beta^* = \begin{cases} b/\delta & \text{if } A \geqslant \min[(b/\delta)V_1 - \delta, b], \\ 0 & \text{otherwise.} \end{cases} \tag{16}$$

Comparing this expression with (14), it is immediate that the parameter region where the agency problem persists shrinks.

Clearly, even borrowing on the market does not solve the problem completely. However, the founder can solve it completely by using any of the following equivalent mechanisms:

(i) providing debt at a discount $b - A$ to enable the manager to buy the stake b/δ or sell the stake to the manager at the same discount;

(ii) giving to the manager options with strike price V_0 that entitle him to a stake b/δ, in exchange for a initial payment A;

(iii) entitling the manager to a bonus b conditional on the company being worth at least V_1, in exchange for a initial payment A.

All of these mechanisms entail the same cost $b - A$ and the same gain δ for the founder. Since $b < \delta$ by Assumption 2, they all produce a net gain for the founder, independently of the manager's wealth. Although these incentive schemes solve the agency problem and thus prevent managerial entrenchment in this setting, they all have costs that could be captured in a more general model: leverage and options may induce excess risk-taking, while incentive compensation schemes and options may lead to accounting frauds. The recent cases of Enron, Worldcom, and Global Crossing shows that these shortcomings severely limit these incentive schemes' effectiveness in maximizing share value. The recent cases of Enron, Worldcom, and Global Crossing shows that these shortcomings severely limit these incentive schemes' effectiveness in maximizing share value. Precisely with reference to these cases, the Economist (Nov. 30, 2002, p. 59) writes: "Given generously in the 1990s in the hope that they would align managers' interests with those of shareholders, [share options] in effect motivated the unscrupulous to massage their company's figures and persuade their auditors to go along with them. ... Insiders exercised their options before accounting deceits were revealed and share prices collapsed." However, taking explicitly into account the limitations of these alternative incentive mechanisms is beyond the scope of this paper.

III. Workers as White Squires

So far, employees were taken not to 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.[7]

A. ESOPs

Many employee pension funds invest some resources in own company stock. Meulbroek (2003) estimates that this occurs in 31 percent of US public companies. 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 business combination statute implemented in Delaware in 1987. This law stipulates that if a bidder purchases more than 15% of a firm's stake, the bidder may not complete the takeover for three years unless: (i) the bidder purchases as much as 85% of the target's shares; (ii) two-thirds of the shareholders approve the acquisition (excluding the bidder's shares); (iii) the board of directors and the shareholders decide to exempt themselves from the provisions of the law. Under this statute, an ESOP with at least 15 percent of the shares can successfully counter a hostile takeover. This strategy – first used by Polaroid against a hostile bid by Shamrock Holdings – was imitated by many other companies, as documented by Rauh (2003), who finds that the business combination statutes of the late 1980s had positive effects on employee ownership.[8]

Here, we modify the model presented in Section I by allowing the manager to set up an ESOP at $t = 1$, 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 shark repellent analyzed in Section II. 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 stage at $t = 4$. This is as described in Section II.A.[9] If $\beta < b/\delta$, 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 $w_I - \delta$. It is this dislike for the takeover that makes employees effective allies for the incumbent, once they are given a sufficient equity stake. In what follows we focus on the case in which $\beta < b/\delta$: the alternative case in which $\beta \geqslant b/\delta$ is uninteresting because in that case workers are indifferent between the incumbent and the raider.

Consider now the takeover game at $t = 3$. 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 $1-\beta-\beta_W < \overline{\beta}$, the raider can acquire control only if workers sell their stake to him. 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 they will indeed sell to the raider – that is, the raider creams off all the bargaining surplus by making a take-it-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:

$$U_W(\text{no tender}) = \beta_W(y_1 - w_I) + w_I, \tag{17}$$

that is, the value of their equity stake $\beta_W(y_1 - w_I)$ plus their wage w_I. If they tender, the takeover succeeds and their utility under the raider's control becomes:

$$U_W(\text{tender}) = \beta_W p_W + w_I - \delta, \tag{18}$$

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

$$p_W = (y_1 - w_I) + \delta/\beta_W. \tag{19}$$

Naturally, the price p_W exceeds the post-takeover price $p = y_1 - w_I + \delta$: workers extract a control premium from their block sale. If the sum of the raider's toehold τ 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, and his final holding is $\beta_R \geqslant \overline{\beta}$.

Given this outcome, the raider has no interest in the takeover if the premium to workers, $\beta_W(p_W - p)$, exceeds the capital gain on the toehold, $\tau\delta$. Using equation (19) the premium on the workers' stake $\beta_W(p_W - p) = (1 - \beta_W)\delta$. Hence, the raider's net gain from a takeover is:

$$G_R^E = \tau\delta - (1 - \beta_W)\delta, \tag{20}$$

the superscript E indicating that an ESOP is assumed to be in place. This expression is always negative, since $\tau < 1 - \beta_W$, so that an ESOP always discourages a takeover. This outcome should be compared with the case with no ESOP. Then, as in the previous sections, the raider's net gain from the takeover is

$$G_R = \tau\delta. \tag{21}$$

What is left to determine is when the manager will arrange the ESOP at $t = 1$.[10] The foregoing discussion implies that the ESOP matters only if $\tau\delta > c$ and $\beta < b/\delta$: indeed, if $\tau\delta \leqslant c$, there is no takeover threat; and if $\beta \geqslant b/\delta$, employees are indifferent

between the raider and the incumbent. If $\tau\delta > c$ and $\beta < b/\delta$, the manager's utility with the ESOP is

$$u_I^E = \beta(y_1 - w_I) + b \tag{22}$$

and without the ESOP is

$$u_I^E = \beta(y_1 - w_I + \delta). \tag{23}$$

Thus his gain from arranging the ESOP is $b - \beta\delta$. This is the same condition under which he would use long-term labor contracts to deter a takeover, as stated in Proposition 1. In conclusion:

Proposition 4 (Defensive ESOPs) *The manager sets up a defensive ESOP (selling a stake $\beta_W > 1 - \overline{\beta} - \beta$ to workers) only if his stake $\beta < b/\delta$ and the raider's toehold $\tau > c/\delta$.*

Graphically, the equilibrium outcome is similar to the one represented in Figure 2. In the area on the right of $\beta = b/\delta$, the incumbent does not create an ESOP. In the area on the left of $\beta = b/\delta$, the incumbent creates an ESOP if $\tau > c/\delta$, thereby reducing the probability of a takeover; instead, he does not if $\tau \leqslant c/\delta$, because in this case there is no takeover threat. The only difference by comparison with long-term labor contracts lies in the differential effectiveness of the two anti-takeover devices: the effectiveness of ESOPs as takeover deterrent is superior to that of long-term labor contracts. As shown in Figure 2, long-term contracts prevents the takeover only if $\tau < \overline{\beta}c/b$. The ESOP instead deters takeovers even when $\tau \geqslant \overline{\beta}c/b$: the "hostile takeover" region disappears. This is because workers extract from the raider all the takeover gains, acting as a single strategic seller.[11]

Proposition 4 predicts that an ESOP will be put in place only when takeover costs are relatively low ($c < \tau\delta$), since otherwise the takeover would not be a real threat. This is consistent with US evidence. Drawing on a 13-year panel of defined contribution asset allocation data, Rauh (2003) finds that when a state introduces anti-takeover legislation, employee ownership of firms incorporated in that state declines relative to other firms. He estimates that the validation of the poison pill through Delaware case law in the mid-1990s brought a statistically significant reduction of employee share ownership, ranging between 0.3 and 1.7 percentage points depending on the model used.

The model also predicts that ESOPs reduce company value by preventing value-enhancing takeovers, and that they substitute for other anti-takeover schemes. These predictions are consistent with a large body of evidence. First, Chaplinsky and Niehaus (1994) and Beatty (1995) show that ESOPs tend to reduce the likelihood of takeover attempts. Park and Song (1995) and Chang (1990) document a negative stock price reaction to ESOPs. Second, Chaplinsky and Niehaus (1994) and Park

and Song (1995) show that ESOPs tend to substitute for other anti-takeover schemes. This may be related to their greater deterrence effect: in contrast with poison pills, which are found to be ineffective by Comment and Schwert (1995), Rauh (2003) estimates that, controlling for endogeneity, the deterrence effect of ESOPs is up to 2 percentage points per additional percent of the firm owned by employees.

B. Employees' Lobbying

Even when they do not own shares, workers may still deter hostile takeovers by lobbying against the raider. There have been several instances of such action by employees, sometimes openly solicited by the incumbent management. Examples occurred in the context of the attempted takeover of Thyssen AG by Krupp-Hoesch[12] and of the bid for Daewoo by GM.[13] More examples are discussed in Pagano and Volpin (2002).

In this section, we show how workers' anti-takeover lobbying can be integrated into the model presented in Section I. To this purpose, we modify the model's assumptions by positing that at $t = 2$ workers' lobbying can increase the cost of takeover from c to $c(1 + \varepsilon)$ at a cost εl, where ε is the lobbying intensity chosen by workers and l is a positive constant.

As in Section II, if $\beta < b/\delta$ and $\lambda \leqslant 1 - b/\overline{\beta}\delta$, 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 $w_I - \delta$. Naturally, short-term workers will not engage in a costly lobbying activity if $\tau < c\overline{\beta}/b$, since in this case there will be no takeover anyway. In other words, if the "shark repellent" is operational, there is no need for workers to engage in lobbying.

Suppose instead that $\tau \geqslant c\overline{\beta}/b$. In this case, the long-term contracts offered by the incumbent *alone* would not be sufficient to deflect the takeover threat. However, we shall see that, combined with employees' lobbying, long-term contracts may recover their effectiveness in preventing takeovers. The raider's net gain from the takeover is

$$G_R - (1 + \varepsilon)c = (1 - \lambda)\tau\delta - (1 + \varepsilon)c. \qquad (24)$$

Workers can deter the takeover by setting $\varepsilon = [(1 - \lambda)\tau\delta - c]/c$. They choose to do so only if the benefit of deterring the takeover, δ, exceeds the cost of lobbying, $l\varepsilon$. That is, workers can deter raiders whose toehold is

$$\tau \leqslant c(l + \delta)/[l(1 - \lambda)\delta]. \qquad (25)$$

To find whether workers choose to lobby politicians, we have to compare this condition with the initial restriction $\tau \geqslant c\overline{\beta}/b$, under which the raider is not already deterred by long-term labor contracts. Workers lobby politicians only if $c\overline{\beta}/b \leqslant \tau \leqslant c(l + \delta)/[l(1 - \lambda)\delta]$. This interval is not empty only if

$$l \leqslant \delta b/[\overline{\beta}(1 - \lambda)\delta - b], \qquad (26)$$

implying that workers lobby politicians only when the implied cost is sufficiently low compared to the benefit δ.

Now we turn to the choice of employment policy made by the incumbent at $t = 1$. In setting λ, the incumbent takes into account the subsequent lobbying decision by workers. He will try to induce lobbying by choosing λ so as to satisfy condition (26): the incumbent can prevent a takeover by choosing $\lambda \leqslant 1 - c(l+\delta)/\tau l\delta$. Recall that λ cannot exceed $1 - b/\overline{\beta}\delta$, lest the raider chooses low monitoring (and workers become indifferent between him and the incumbent). Hence, the combination of long-term contracts and lobbying deters raiders with a toehold:

$$\tau < c\overline{\beta}(l+\delta)/bl. \tag{27}$$

Notice that this condition is weaker than the condition in Proposition 1 that considers only the takeover deterrence of long-term contracts. In other words, the two mechanisms – long-term contracts offered by managers and lobbying by workers – reinforce each other. The following proposition summarizes these results:

Proposition 5 (Lobbying) *Takeovers are blocked by the incumbent's employment policy if $\beta < b/\delta$ and $\tau \in (c/\delta, c\overline{\beta}/b)$. They are blocked by a combination of long-term contracts and lobbying if $\beta < b/\delta$ and $\tau \in [c\overline{\beta}/b, c\overline{\beta}(l+\delta)/bl)$. They cannot be blocked if $\beta < b/\delta$ and $\tau \geqslant c\overline{\beta}(l+\delta)/bl$, and never occur otherwise.*

While the foregoing argument highlights the strategic complementarity of long-term contracts and lobbying, it should be noticed that employees' lobbying activity can deter takeovers also in the absence of long-term contracts. This can be seen by setting $\lambda = 0$ in condition (26): if $l \leqslant \delta b/(\overline{\beta}\delta - b)$, then workers still deter raiders with a toehold $\tau \in [c\overline{\beta}/b, c(l+\delta)/l\delta)$. This is particularly important in settings where low employment protection makes long-term contracts ineffective as anti-takeover device, as explained in Section II.E.3.

IV. Conclusions

We have shown that if management owns a small equity stake and values greatly the benefits of a quiet life, managers and workers are natural allies against a takeover threat. Managers offer long-term contracts to guard against raiders, and workers are willing to take action to protect their high wages.

There are two forces at play. First, in companies where potential raiders have small toeholds, incumbents can turn employees into a "shark repellent" through 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, average employee compensation is predicted to correlate negatively with the controlling shareholder's equity stake, in companies that are not takeover targets. Second, after a takeover the new managers cut wages and increase the intensity of monitoring, while the share price rises correspondingly. 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.

Appendix: Proofs

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

$$u_R = \beta_R[y_1 - (1-\lambda)(\overline{w} + c_e/q_R) - \lambda w_L] + b \cdot I_{\beta_R(1-\lambda)\delta < b} - (\beta_R - \tau)p \qquad \text{(A1)}$$

where β_R is the raider's holding after the tender offer, τ is the raider's toehold, p is the price paid, $I_{\beta_R(1-\lambda)\delta < b}$ is an indicator that equals 1 if $\beta_R(1-\lambda)\delta < b$ and 0 otherwise, and q_R is given by (4).

>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:

$$p(\beta_R) = y_1 - (1-\lambda)(\overline{w} + c_e/q_R) - \lambda w_L, \qquad \text{(A2)}$$

where p is a function of β_R because q_R is given by (4). Notice that p is a weakly 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

$$u_R(\beta_R) = \tau[y_1 - (1-\lambda)(\overline{w} + c_e/q_R) - \lambda w_L] + b \cdot I_{\beta_R(1-\lambda)\delta < b}. \qquad \text{(A3)}$$

The choice of the raider is therefore

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

where $u_R(\beta_R)$ is given in (A3). To solve the problem (A4), notice that

$$u_R = \begin{cases} \tau[y_1 - (1-\lambda)(\overline{w} + c_e/q_0) - \lambda w_L] + b & \text{if } \beta_R < b/(1-\lambda)\delta \\ \tau[y_1 - (1-\lambda)(\overline{w} + c_e/q_1) - \lambda w_L] & \text{if } \beta_R \geqslant b/(1-\lambda)\delta \end{cases} \qquad \text{(A5)}$$

The difference between these two values is $\tau(1-\lambda)\delta - b$. Hence, the unconstrained optimum is $\beta_R < b/(1-\lambda)\delta$ if $\tau(1-\lambda)\delta < b$ and $\beta_R \geqslant b/(1-\lambda)\delta$ if $\tau(1-\lambda)\delta \geqslant b$. However, the raider's problem is constrained by the condition $\beta_R \geqslant \overline{\beta}$ and by assumption $\tau \leqslant \overline{\beta}$. Therefore, $\beta_R \in [\overline{\beta}, b/(1-\lambda)\delta]$ if $\overline{\beta} < b/(1-\lambda)\delta$, and $\beta_R \in [\overline{\beta}, 1]$ if $\overline{\beta} \geqslant b/(1-\lambda)\delta$. In both cases, the optimal bidding price is $p(\overline{\beta})$. ∎

Proof of Lemma 3: We solve for the incumbent's optimal choice of λ at $t = 1$, taking into account the raider's optimal response at $t = 2$. After determining the incumbent's utility in each of the three regions of Lemma 2, we derive the optimal employment policy by comparing these utility levels:

(i) If $\beta \geqslant b/(1-\lambda)\delta$, there is no takeover threat. Since the incumbent pays and monitors equally both short-term and long-term employees, he is indifferent about

the value of λ. Under our tie-breaking assumption he will set $\lambda = 0$ and his utility is $\beta(y_1 - \overline{w} - c_e/q_1)$.

(ii) If $\overline{\beta} \geqslant b/(1 - \lambda)\delta > \beta$, then λ can be used to deter takeovers in certain cases. First, we show that the incumbent wishes to deter takeovers in this region, and then we determine the cases in which he can do so. The incumbent's utility in this region is:

$$u_I = \begin{cases} \beta(y_1 - \overline{w} - c_e/q_0) + b & \text{if no takeover occurs} \\ \beta[(y_1 - \overline{w} - c_e/q_0) + (1 - \lambda)\delta] & \text{if a takeover occurs} \end{cases} \tag{A6}$$

Comparing the two lines of this expression, it is immediate that the incumbent wishes to deter the takeover if $b > \beta(1 - \lambda)\delta$, which holds by assumption in this region. He can deter the takeover and enjoy utility level $\beta(y_1 - \overline{w} - c_e/q_0) + b$ by choosing λ so as to make $G_R \leqslant c$ in (8). This amounts to setting $\lambda \geqslant 1 - c/\tau\delta$. Therefore, if $\tau \leqslant c/\delta$, the incumbent can deter the takeover even with $\lambda = 0$. If instead $\tau > c/\delta$, preventing the takeover requires a positive λ: $\lambda = 1 - c/\tau\delta > 0$, which is consistent with the boundaries of this region only if $c/\tau \geqslant b/\overline{\beta}$. Otherwise, the takeover cannot be prevented. Since the incumbent's utility conditional on a takeover is decreasing in λ, in the latter case, the incumbent chooses $\lambda = 0$, enjoying a utility level $\beta(y_1 - \overline{w} - c_e/q_1)$.

(iii) If $b/(1 - \lambda)\delta > \overline{\beta}$, the raider's gain is not affected by λ. If $b > c$, the takeover occurs and the incumbent's utility is $\beta(y_1 - \overline{w} - c_e/q_0)$, which is lower than in case (ii). If $b \leqslant c$, the takeover does not occur and the incumbent's utility is $\beta(y_1 - \overline{w} - c_e/q_0) + b$.

Hence, by choosing the firm's employment policy, the incumbent can choose between $\beta(y_1 - \overline{w} - c_e/q_0) + b$ and $\beta(y_1 - \overline{w} - c_e/q_1)$. (The dominated alternative that obtains when $b/(1-\lambda)\delta > \overline{\beta}$ and $b > c$ can be ruled out by setting $\lambda \geqslant 1 - b/\overline{\beta}\delta$.) The comparison between the two utility levels depends on the sign of $\beta - b/\delta$. If $\beta \geqslant b/\delta$, the incumbent chooses to be in case (i) where he exerts high monitoring. Hence, takeovers are not value-increasing and $\lambda^* = 0$, under our tie-breaking assumption. If $\beta < b/\delta$, the incumbent chooses to be in case (ii) where he exerts low monitoring and wants to deter the takeover. As seen above, he can do so by setting $\lambda^* = 0$ if $\tau \leqslant c/\delta$ and $\lambda^* = 1 - c/\tau\delta$ if $\tau \in (c/\delta, c\overline{\beta}/b)$. Otherwise, for $\tau \geqslant c\overline{\beta}/b$, the incumbent cannot prevent the takeover and therefore chooses $\lambda^* = 0$. ∎

Proof of Proposition 3: In solving the founder's maximization problem, we build on the results obtained in Proposition 2. As shown in Section II.D, there are three cases:

(i) $\tau \geqslant \overline{\beta}c/b$ and $\beta = 0$, where $u_F = (1 - \tau)V_1 + \tau p_R(\beta, \tau)$;[14]

(ii) $\tau < \overline{\beta}c/b$ and $\beta = b/\delta$, where $u_F = (1 - b/\delta - \tau)V_1 + \tau p_R(\beta, \tau)$;

(iii) $\tau < \overline{\beta}c/b$ and $\beta = 0$, where $u_F = (1 - \tau)V_0 + \tau p_R(\beta, \tau)$.

The comparison among the three cases depends on the toehold's price, $p_R(\beta, \tau)$. Recall that this price is determined competitively. Hence, $p_R(\beta, \tau) = V - c/\tau$ if the

toeholder is anticipated to take over the company (which happens if $\tau \geqslant \overline{\beta}c/b$) and needs to be compensated for the takeover cost c. The price is $p_R(\beta, \tau) = \underline{V}$ if the toeholder is anticipated not to bid for the company (which happens if $\tau < \overline{\beta}c/b$).

Assuming that the founder sells the smallest possible stake to the raider when indifferent, the three cases and the associated levels of the founder's utility are:

(i) $\tau = \overline{\beta}c/b$ and $\beta = 0$, so that $u_F = V_1 - c$ (contestable control);

(ii) $\tau = 0$ and $\beta = b/\delta$, so that $u_F = (1 - b/\delta)V_1$ (internal incentives);

(iii) $\tau = 0$ and $\beta = 0$, so that $u_F = V_0$ (entrenchment).

The comparison between the three cases depends on whether c is greater or smaller than b.

If $c < b$, case (i) is feasible and dominates (iii) because $\delta > c$ by Assumption 3. It also dominates case (ii), since the takeover cost c is smaller than the cost of incentivizing the incumbent, $(b/\delta)V_1$. To see why, note that $V_1 > \delta$, so that $(b/\delta)V_1 > b$.

If instead $c \geqslant b$, case (i) is not feasible. The ranking between (ii) and (iii) depends on whether the cost of incentivizing the incumbent, $(b/\delta)V_1$, is smaller or greater than the implied benefit, δ. ∎

References

Beatty, Carol A., 1995, The cash flow and informational effects of employee stock ownership plans, *Journal of Financial Economics* 38, 211-240.

Becker, Brian E., 1995, Union rents as a source of takeover gains among target shareholders, *Industrial and Labor Relations Review* 49, 3-19.

Bertrand, Marianne, and Sendhil Mullainathan, 1999, Is there discretion in wage setting? A test using takeover legislation, *RAND Journal of Economics* 30, 535-554.

Bertrand, Marianne, and Sendhil Mullainathan, 2003, Enjoying the quiet life? Corporate governance and managerial preferences, *Journal of Political Economy* 111, 1043-1075.

Betton, Sandra, and B. Espen Eckbo, 2000, Toeholds, bid jumps, and expected payoffs in takeovers, *Review of Financial Studies* 13, 841-882.

Bhagat, Sanjai, Andrei Shleifer and Robert Vishny, 1990, Hostile takeovers in the 1980s: The return to corporate specialization, *Brookings Papers on Economic Activity: Microeconomics*. Reprinted in R. Romano, ed., *Foundations of Corporate Law*, 1993 (Oxford University Press, Oxford, UK).

Burkart, Mike, Denis Gromb, and Fausto Panunzi, 1998, Why higher takeover premia protect minority shareholders, *Journal of Political Economy* 106, 172-204.

Calvo, Guillermo, and Stanislaw Wellisz, 1978, Supervision, loss of control, and the optimum size of the firm, *Journal of Political Economy* 86, 943-952.

Cespa, Giovanni, and Giacinta Cestone, 2002, Stakeholder activism, managerial entrenchment and the congruence of interests between shareholders and stakeholders, Universitat Pompeu Fabra Working Paper No. 634.

Chang, Saeyoung, 1990, Employee stock ownership plans and shareholder wealth: An empirical investigation, *Financial Management* 19, 48-58.

Chaplinsky, Susan. and Gregory R. Niehaus, 1994, The role of ESOPs in takeover contests, *Journal of Finance* 49, 1451-70.

Chemla, Gilles, 2000, Hold-up, stakeholders and takeover threats, Working Paper, University of British Columbia, May.

Comment, Robert, and G. William Schwert, 1995, Poison or placebo: Evidence on the deterrence and wealth effects of modern antitakeover measures, *Journal of Financial Economics* 39, 3-43.

Franks, Julian, and Colin Mayer, 1998, Bank control, takeovers, and corporate governance in Germany, *Journal of Banking and Finance* 22, 1385-1403.

Garvey, Gerald T., and Noel Gaston, 1997, A theory of the optimal cost barrier to corporate takeovers, *International Economic Review* 38, 657-675.

Gaughan, Patrick A., 2002, *Mergers, Acquisitions, and Corporate Restructurings*, 3rd edition, John Wiley & Sons, Inc.: New York, U.S.A.

Gilson, Ronald J., and Mark J. Roe, 1999, Lifetime employment: Labor peace and the evolution of Japanese corporate governance, *Columbia Law Review* 99, 508-540.

Gordon, Lilli A., and John Pound, 1990, ESOPs and corporate control, *Journal of Financial Economics* 27, 525-555.

Gorton, Gary, and Frank A. Schmid, 2000, Class struggle inside the firm: A study of German codetermination, NBER Working Paper No. 7945, October.

Grossman, Sanford J., and Oliver Hart, 1980, Takeover bids, the free-rider problem, and the theory of the corporation, *Bell Journal of Economics* 11, 42-64.

Hansmann, Henry, 1996, *The Ownership of Enterprise* (The Belknap Press of Harvard University Press, Cambridge, Massachusetts, USA).

Hellwig, Martin, 2000, On the economics and politics of corporate finance and corporate control, in *Corporate Governance: Theoretical and Empirical Perspectives*, edited by X. Vives (Cambridge University Press, Cambridge, UK).

Holderness, Clifford G., and Dennis P. Sheehan, 1985, Raiders or saviours? The evidence on six controversial investors, *Journal of Financial Economics* 14, 555-579.

Holmström, Bengt R., and Steve N. Kaplan, 2001, Corporate governance and merger activity in the U.S.: Making sense of the 1980s and the 1990s, *Journal of Economic Perspectives* 15, 121-144.

Meulbroek, Lisa, 2003, Company stock in pension plans: How costly is it? MIT, unpublished manuscript, March.

Pagano, Marco, and Paolo F. Volpin, 2001, The political economy of corporate governance, CEPR Discussion Paper No. 2682.

Pagano, Marco, and Paolo F. Volpin, 2002, Managers, workers, and corporate control, CEPR Discussion Paper No. 3649.

Park, Sang Y., and Moon H. Song, 1995, Employee stock ownership plans, firm performance, and monitoring by outside blockholders, *Financial Management* 24, 52-65.

Rauh, Joshua D., 2003, Own company stock in defined contribution pension plans: A takeover defense? MIT, unpublished manuscript, May.

Rosett, Joshua G., 1990, Do union wealth concessions explain takeover premiums? *Journal of Financial Economics* 27, 263-282.

Shleifer, Andrei, and Lawrence H. Summers, 1988, Breach of trust in hostile takeovers, in *Corporate Takeovers: Causes and Consequences*, edited by A. Auerbach, 33-56 (University of Chicago Press, Chicago, Illinois, USA).
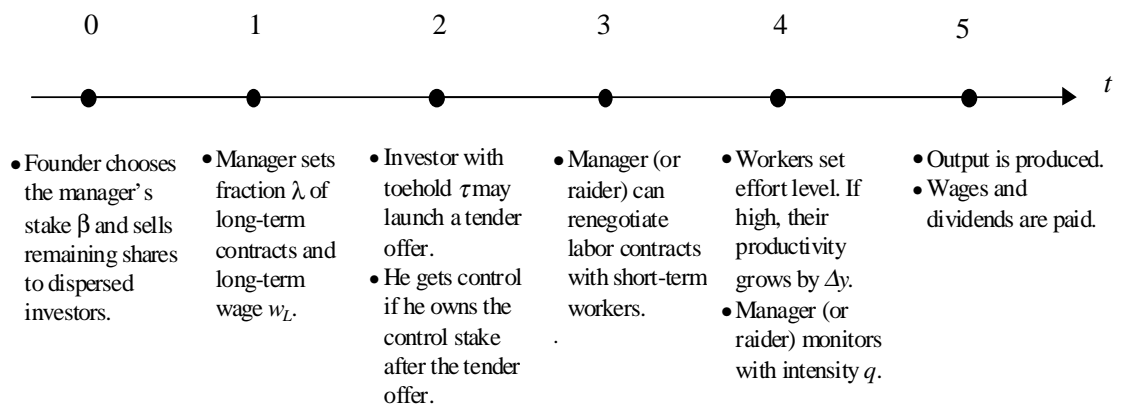
0	1	2	3	4	5

t

- Founder chooses the manager's stake β and sells remaining shares to dispersed investors.

- Manager sets fraction λ of long-term contracts and long-term wage w_L.

- Investor with toehold τ may launch a tender offer.
- He gets control if he owns the control stake after the tender offer.

- Manager (or raider) can renegotiate labor contracts with short-term workers.
  .

- Workers set effort level. If high, their productivity grows by Δy.
- Manager (or raider) monitors with intensity q.

- Output is produced.
- Wages and dividends are paid.
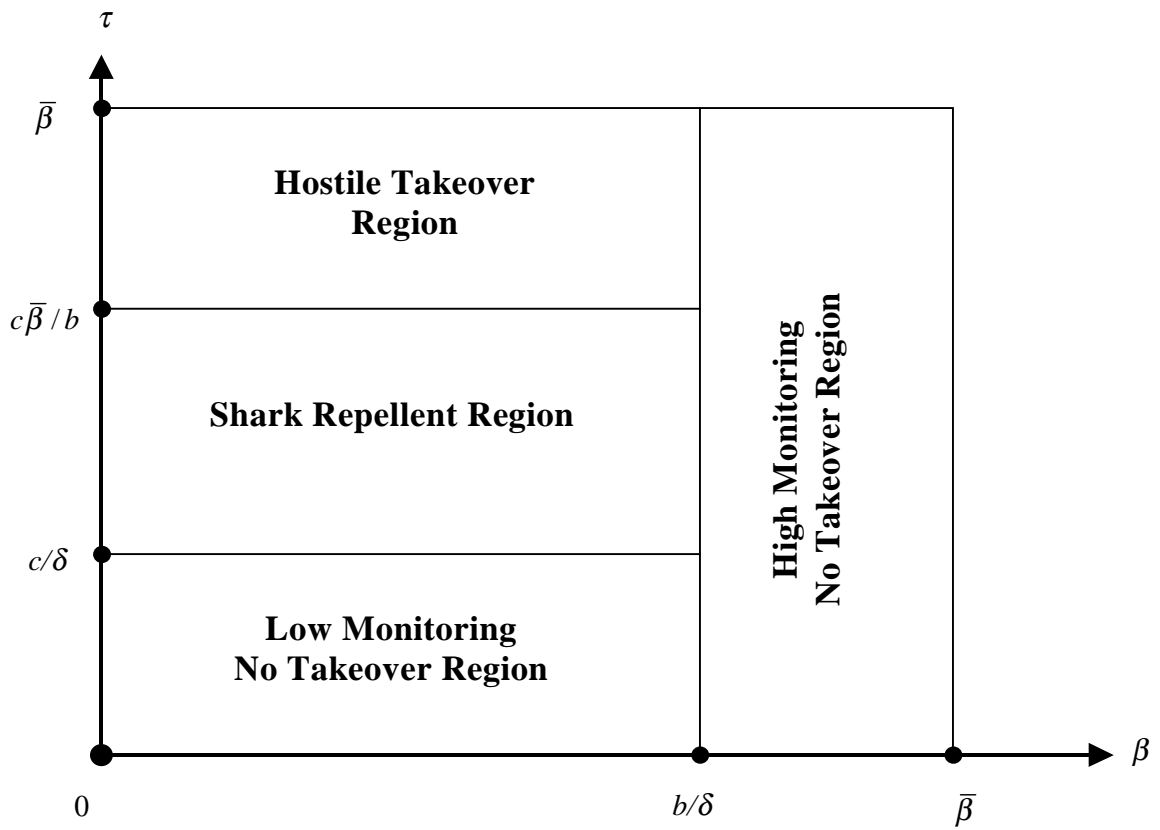
Figure 1. Time Line

Figure 2. Optimal Employment Policy

Notes

[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.

[3]The management cannot fire workers without "just cause", i.e. unless demonstrated shirking. 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]Without loss of generality, we also introduce the following tie-breaking assumptions: when indifferent, (i) the raider does not bid for the company; (ii) shareholders respond to a tender offer by selling their shares; (iii) the incumbent prefers relinquishing control than retaining it; (iv) the incumbent chooses the lowest fraction of long-term employees λ; (v) both the incumbent and the raider want workers to exert effort; (vi) they both choose high rather than low monitoring; and (vii) workers prefer to exert effort.

[5]In principle, the wage w_L set at $t = 1$ by the incumbent may be too low to satisfy the worker's incentive compatibility condition (1). In that case, the current manager can increase the wage to satisfy this constraint. However, we shall see below that the wage w_L will meet this constraint with equality if the incumbent retains control, and with slack if the raider gains control.

[6]Notice that, even if he had any wealth, the incumbent would have no incentive to defend his control by increasing his equity stake β above b/δ, thereby moving into the "high monitoring/no takeover region". Such an increased stake would induce the incumbent himself to exert high monitoring. Since the stock price would reflect the increased monitoring, the incumbent would gain $\beta\delta$ (the appreciation of his initial stake) and lose b (his private benefits). This would amount to a net loss, his initial stake being $\beta < b/\delta$.

[7]A countervailing factor may be at work if the viability of the firm is at stake. In this case, a raider may find some support among workers insofar as he offers better job security, even though he pays lower wages. This possibility does not arise in our model, because we rule out bankruptcy.

[8]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.

[9]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.

[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 he prefers no ESOP to an ineffective one.

[11] Also in this case one can endogeneize β and characterize the optimal ownership structure chosen by the firm's founder. As discussed in the text, now the choice is between two regions only (irrespective of the toehold τ): the low-monitoring region ($\beta < b/\delta$) and the high-monitoring region ($\beta \geqslant b/\delta$). In the first region, it is optimal to give the manager a zero stake; in the second region, he should be given a stake b/δ, to incentivize him at the minimum cost. The choice between the two regions depends on whether the cost of incentivizing the manager $(b/\delta)V$ exceeds the implied wage savings δ.

[12] In 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). The management of Thyssen claimed that the takeover threatened thousands jobs and that it would seek partners in the battle. In the next two weeks politicians, unions and media joined the protest. Krupp withdrew its hostile bid and eventually negotiated a friendly deal.

[13] In May 2001 General Motors' (GM) bid for Korea's ailing Daewoo Motor, on the condition that Daewoo layoff 5,000 employees. This led to mass nationwide strikes and demonstrations. Although GM had the backing of the South Korean government, the employees played a key role in the outcome of the deal. The conflict with the employees continued until April 2002, when an agreement was finally reached.

[14] This case is possible only if $b > c$, because by assumption $\tau < \overline{\beta}$.