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CORPORATE GOVERNANCE EXTERNALITIES

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ABSTRACT

Corporate Governance Externalities*

We argue that the choice of corporate governance by a firm affects and is affected by the choice of governance by other firms. Firms with weaker governance give higher payoffs to their management to incentivize them. This forces firms with good governance to also pay their management more than they would otherwise, due to competition in the managerial labour market. This externality reduces the value to firms of investing in corporate governance and produces weaker overall governance in the economy. The effect is stronger the greater the competition for managers and the stronger the managerial bargaining power. While standards can help raise governance towards efficient levels, market-based mechanisms such as (i) the acquisition of large equity stakes by raiders and (ii) the need to raise external capital by firms can help too, and we characterize conditions under which this happens.

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1. Introduction

It is a commonly held view that corporate governance regulation is needed to solve a commitment problem. As argued by Tirole (2006) among others, entrepreneurs face *topsy-turvy* incentives when raising capital. They would like to promise high corporate governance standards at the IPO stage to raise more and cheaper capital. However, after they have raised capital, if they can, they will weaken the governance standards to extract more private benefits of control from their captive shareholders. Because of entrepreneurs' incentive to renege on their promises, investors would require a higher cost of capital and restrict funding ex ante. In such setting, regulation can help because it provides the means to entrepreneurs to commit to high governance standards.

This approach to corporate governance has been very successful in explaining the cross-country differences in corporate finance (see La Porta, Lopez-de-Silanes, Shleifer and Vishny, 2000, for a survey). Differences in investor protection are a very important determinant of differences in ownership structure, financial development, dividend policy, mergers and acquisitions.

However, recent literature shows that individual companies can choose corporate governance arrangements beyond what is required by laws and regulation and that these corporate rules have a deep impact on valuation. Black (2001) finds that Russian companies with good corporate governance ratings are 100-times more valuable than companies with poor corporate governance ratings. Gompers, Ishii and Metrick (2003) develop a corporate governance index for US firms and find that better governed companies perform better on the stock market. Durnev and Kim (2005) show that the positive relation between individual firm governance quality and valuation is systematic across a large set of countries and firms.

How do firms choose their individual corporate governance rules? Two facts emerge from the recent empirical literature. First, firms seem to choose very similar governance standards within countries. Bergman and Nicolaievsky (2007) show that listed companies in Mexico do not improve corporate governance beyond what is required by the law. Doidge, Karolyi and Stulz (2007) find that, after controlling for country characteristics, firms do not differ much in their corporate governance levels.¹ Second, there is some (more direct) evidence of a positive externality in the choice of corporate governance by firms. Bris and Cabolis (2007) find that when a firm in a given industry is acquired by firms from countries with stronger corporate governance practices (and better accounting standards), there is a significant increase in the value of such industry, as measured by the industry's Tobin's Q.

¹ See also Bruno and Claessens (2007) and Chhaochharia and Laeven (2007) on this point.

This evidence suggests a different approach to thinking about corporate governance regulation. Specifically, even if firms can commit to corporate governance standards, firms may choose inefficiently low levels of governance because they do not internalize the benefit that corporate governance has on competitors. Hence, market-based mechanisms that force firms to internalize this externality and possibly also some regulatory standards may be desirable. This is the approach we explore in this paper.

In our model, managers can be incentivized to behave in the interest of their shareholders through a combination of incentive contracts and corporate governance. With weak governance, shareholders must pay their managers highly generous compensation packages that act as efficiency wages to solve the agency problem. With strong governance, shareholders can pay lower wages because they have good auditing and monitoring to punish managers if they misbehave. If they were not in competition for managers with other firms, shareholders would simply choose corporate governance by trading off its benefits (in terms of lower wages) and its costs (to set up auditing and monitoring technology). This basic trade-off captures the governance problem recently studied by Bebchuk and Fried (2004), recognizing that pay for performance may be a symptom of poor corporate governance rather than an indicator of good corporate governance.²

However, if the firm is competing for managerial talent with other companies, the choice of corporate governance in one firm is affected by the corporate governance quality of its competitors. The reason is that manager's outside option is to work for competitors. If competitors have poor corporate governance, they will pay managers more. This makes manager's outside option more valuable and thus the first company will be forced to pay higher wages as well. Because of this externality, the marginal benefit from better corporate governance and the chosen level of corporate governance are lower. The under-investment in corporate governance is larger the greater the competition for managers and the managerial bargaining power.

What causes some firms to have weak corporate governance? We argue that the governance externality may ultimately be an externality arising in the choice of ownership structures. Diffused shareholders may lack incentives to incur costs of implementing governance, and may also not possess the best governance technology. Dispersed ownership of some firms may thus weaken the ability of firms with concentrated ownership to implement efficient governance.

We show that this view of governance and ownership of firms can help rationalize some of the recent developments in the governance implementation. First, given that companies may under-invest in corporate governance if left to their own choices, regulatory standards (such as the

² Falhenbracht (2006) reports direct evidence that CEO compensation is a substitute for other corporate governance mechanism. In a large sample of US companies, he finds that there is more pay for performance in firms with weaker corporate governances, as measured by less board independence, more CEO-Chair duality, longer CEO tenure, and less ownership by institutions.

Sarbanes Oxley Act in the United States) can potentially help raise governance towards efficient levels. However, setting regulatory standards appropriately would require intimate knowledge of the nature and extent of governance externality, and it is possible that regulators may not have the incentives or a relative advantage in acquisition of such knowledge (again, Sarbanes Oxley Act may be a case in point in terms of “over-regulating” governance).

Thus, market-based mechanisms that enable firms to internalize the governance externality may be a more desirable outcome. Indeed, the gains to be made from improving upon firms’ governance choices should create a market for “activism” whereby agents such as private equity houses³ and hedge funds⁴, who have a relative advantage in implementing governance, “raid” firms through acquisition of large equity stakes and effect governance changes. As we explain below, our framework can also explain why these activist agents are structured and organized in the specific forms they are.

Raiders can profit from taking over companies and increasing their corporate governance provided they are able to capture a sufficiently large fraction of the surplus created. However, in order to unlock such profits, raiders must be experts relative to current owners of firms in implementing governance. Furthermore, they must have a relative advantage in holding concentrated ownership stakes which are required for them to have appropriate incentives but expose them to significant idiosyncratic risk. The first requirement can be achieved by raiders investing resources in monitoring (for example, through more intense engagement with firm management) and the second requirement can be met by organizing in the form of large funds that trade off the diversification across target firms with the incentives required to generate value from acquiring targets. This latter result helps understand why the activists are organized in the form of private equity funds and hedge funds, that simultaneously work on a number of different targets and yet take sufficiently concentrated stakes, and as institutional block holders like pension funds (Hermes, for example, in the United Kingdom)⁵ who have access to sufficient diversification.⁶ Importantly, the raiders generate a positive externality for competing firms because they reduce the outside option for managers in terms of rents earned. This, in turn, increases the marginal value of corporate governance and leads non-target companies to choose greater corporate governance as well.

3 See, for example, the seminal work of Jensen (1989) and Kaplan (1989).

4 The incidence and evidence on activism by hedge funds is more recent and documented in Brav, Jiang, Partnoy and Thomas (2006).

5 For a detailed case study of activist behaviour of a focused part Hermes pension fund, see Becht, Franks, Mayer and Rossi (2006).

6 The private equity funds are generally larger in size (largest ones being now over 30 billion dollars) and take higher stakes (over 60% to 70% of firm’s equity) whereas hedge funds are relatively smaller in size (a few billion dollars at a maximum) but also take smaller stakes (between 5% and 15% of firm’s equity).

A market-based mechanism in the form of firms' need to raise external capital can help too. If firms need capital to invest (for example, existing firms doing a seasoned offering or new firms doing an initial offering), then to meet investors' demand, they are forced to choose a high level of corporate governance. Explained simply, higher governance level lowers the firm's cost of capital. The limitation is that for this to work firms should not have financial slack, or in other words "permanent capital", and should not be competing in the managerial labor market with firms that have such financial slack. This potentially helps understand why targets of leveraged buyouts by private equity funds are generally companies that have stable cash flows, whereby the need to access external capital, and, in turn, governance discipline, is lower.

Our overall approach to corporate governance is no different from the traditional economic approach to regulation (Stigler, 1971 and Peltzman, 1976, being leading examples). In this literature, there is an externality arising from some choice of firms, for example, carbon emissions, that imposes a cost on others in the economy, for example, in the form of pollution. In our setting, weak governance of a firm manifests itself as excessive managerial rents, and through the labor market competition, it raises compensation costs for other firms too, lowering their incentives to invest in better governance. In other words, there is a "market failure" in corporate governance choices of firms in our model, and mechanisms such as takeovers, market discipline and regulatory standards address this failure. This is much in the same vein as environmentally conscious customers and taxes on pollution can help address the issue of inefficiently high carbon emissions.

Our approach also fits conceptually well with the recent work of Hermalin and Weisbach (2006), who provide a framework for assessing corporate governance reforms from a contracting standpoint and suggest that "[A] set of necessary conditions under which governance reform can be welfare-improving [are] : 1) There is asymmetric information at the time of contracting; or 2) Governance failures impose externalities on third parties; or 3) The state has access to remedies or punishments that are not available to private parties." Our approach formalizes the second point of Hermalin and Weisbach by relying on competition for managers as the channel through which (wage-related) externality of firm-level corporate governance arises.

The structure of the paper is as follows. Section 2 introduces the model in the case where there is no competition for managerial talent. Section 3 shows that competition for managerial talent generates an externality in the choice of corporate governance. In Section 4, we consider the role of firm ownership structure. Section 5 explores solutions to the under investment in corporate governance. Section 6 concludes.

2. Basic model

A simple agency model is useful to grasp the basic intuition of our argument. To start with consider one firm operating for one production period (subdivided into 5 event dates) and hiring one manager with a reservation utility of \bar{u} . We assume universal risk neutrality and no discounting.

2.1. Sequence of events

The timeline of the model is shown in Figure 1. At $t=1$, the (controlling) shareholders choose the level of corporate governance $g \in [0,1]$ paying a quadratic cost $Kg^2/2$. The measure of corporate governance g is the probability that shareholders have enough information/power to intervene and fire the manager.

At $t=2$, shareholders offer a wage contract to a manager, which can be conditional on verifiable outcomes. The manager accepts the offer or rejects it.

At $t=3$, the manager chooses between two non-verifiable actions, $A \in \{M, S\}$. Action M is preferred by the manager: it produces a private benefit $B > 0$ for the manager and zero profit for shareholders. Action S is preferred by shareholders: it produces profits Y with probability $e > 0$ (and 0 otherwise), and no private benefits of control for the manager.

At $t=4$, shareholders learn (with probability g) the action chosen by the manager and can fire him if he has chosen action M. If a manager is fired, he will lose any private benefits of control.

At $t=5$, the output and private benefits are produced and the wage is paid. Output is verifiable.

Assumption 1: There is an internal solution: $K \geq B \geq \bar{u}$.

Assumption 2: Action S is socially optimal: $B < eY$.

Assumption 3: The manager has limited liability and no initial wealth.

2.2. Solution

Given assumption 3, shareholders pay a wage 0 if output is 0 and pay a positive wage w otherwise. If the manager chooses action S, he will be paid with probability e . If he chooses action M, he will

enjoy a private benefit of control but only if he is not fired, that is only with probability $1 - g$.

Hence, the incentive compatibility constraint for the manager is:

$$ew \geq (1 - g)B. \quad (1)$$

The manager's participation constraint requires that his utility exceeds its outside option (\bar{u}) or

$$ew \geq \bar{u} \quad (2)$$

Therefore, shareholders choose g and w to minimize their costs subject to the incentive compatibility constraint (1) and the participation constraint (2), or:

$$\begin{aligned} \min_{w,g} ew + kg^2 / 2 \\ \text{subject to (1) and (2)} \end{aligned} \quad (3)$$

Given this setup, we obtain the following result:

Proposition 1: The choice of governance is:

$$g^* = \begin{cases} B / K \equiv g_H & \text{if } \bar{u} \leq (K - B)B / K \\ 1 - \bar{u} / B \equiv g_L & \text{if } \bar{u} > (K - B)B / K \end{cases} \quad (4)$$

Proof: Consider first the case in which the participation constraint is not binding, that is

$$\bar{u} \leq (1 - g)B / e. \quad (5)$$

In this case, problem (3) simplifies to:

$$\min_g (1 - g)B + Kg^2 / 2, \quad (6)$$

where the wage is substituted out using the incentive compatibility condition (1). From the first order conditions (which are necessary and sufficient because the objective function is strictly convex), one obtains that:

$$g^* = B / K. \quad (7)$$

By replacing g using (7) into (5), one obtains that the inequality (5) becomes:

$$\bar{u} \leq (K - B)B / K. \quad (8)$$

If the inequality (8) is not satisfied, the participation constraint is binding. The problem then becomes:

$$\begin{aligned} \min_g \bar{u} + Kg^2 / 2 \\ \text{s.t. } \bar{u} > (1 - g)B \end{aligned} \quad (9)$$

Given that the objective function in (8) is strictly increasing in g , the solution is that the incentive compatibility constraint is met with equality and thus: $g^* = 1 - \bar{u} / B$. ■

Figure 1 illustrates the two cases in the space (g, w) . Shareholders' indifference curves are bell-shaped curves (Figure 1 shows just one of them as an example). They represent the trade-off between executive compensation and corporate governance. The incentive compatibility constraint (IC) is a downward-sloping line with slope $-B/e$ crossing the y-axis at $w = B/e$ and the x-axis at $g = 1$. The participation constraint (P) is the horizontal line drawn at $w = \bar{u}/e$.

In Panel A, the participation constraint P is not binding. Hence, shareholders choose the optimal level of corporate governance along the incentive compatibility constraint IC. The chosen level of corporate governance (g_H) is at the point where the IC curve is tangent to the indifference curves.

In Panel B, the participation constraint P is binding, that is, the tangency point corresponds to a level of wage lower than \bar{u}/e . Hence, the chosen level of corporate governance (g_L) is at the intersection between the incentive compatibility constraint IC and the participation constraint P. It is easy to see that $g_L < g_H$. Also, assumption 1 ensures that $g_H \leq 1$ and $g_L \geq 0$.

So far, we have assumed that shareholders want their manager to choose action S at any cost. However, this may not be true. The firm value if the manager chooses S is $e(Y - w) - Kg^2/2$. This must be compared with the value if the manager exerts low effort. In that case shareholders do not need to pay any wage and exert any governance. Hence, the value of the firm is 0. The participation constraint for shareholders is satisfied if $e(Y - w) \geq Kg^2/2$ or if $w \leq Y - Kg^2/2e$. In Figure 1, shareholders' participation constraint is a curve parallel to the indifference curve crossing the y-axis at $w = Y$. Since the incentive compatibility constraint is crossing the y-axis in $w = B/e$, assumption 2 implies that the shareholders' participation constraint is always met.

3. Model with externality

The trade off in our basic model with a single firm is simple. Firms face a cost of investing in governance, for example, in setting up auditing and monitoring technologies, and benefit in the form of reduction in managerial wages that have to be paid for incentive purposes. With more than one firm, the reservation utility offers an obvious link if it is determined as the outcome of competition amongst firms in hiring managers. In particular, in presence of other firms competing for managerial talent, the wage offered to a manager no longer depends just on firm's own governance but potentially also on governance of other firms. To explore this, we extend the model by assuming that there are two firms that make offers to two managers. Firms can hire one or two managers each of whose productivity is as in the basic case described above. What is crucial is that

there is greater capacity to absorb managers (four positions overall) compared to the available pool of talented managers (two).

3.1. Timeline

At $t=1$, the two firms choose non-cooperatively the quality of their corporate governance $g \in [0,1]$ at a quadratic cost $Kg^2/2$.

At $t=2$, the market for managerial talent is open. Figure 3 describes the sequence of events. Each manager is randomly matched to a firm. Each firm makes a take-it-or-leave-it offer to its manager. If the manager rejects the offer, one of three mutually exclusive things can happen: (i) With probability π , the manager is matched to the other firm and receives a take-it-or-leave-it offer from it; (ii) With probability μ (where $\pi + \mu \leq 1$), the manager himself can make a take-it-or-leave-it offer; and, (iii) In all other cases (with probability $1 - \pi - \mu$), the original firm makes a second take-it-or-leave-it offer. If the second offer is also rejected, then the manager and the firms obtain a reservation utility normalized to 0.

The parameter μ captures the bargaining power of the manager. If $\mu = 0$, the manager has no bargaining power. The parameter π measures the severity of the externality, where $\pi = 0$ is the case with no externality.

The rest of the game is as before: at $t=3$, each manager chooses action $A \in \{M, S\}$, as described before; at $t=4$, the shareholder can fire the manager with probability g ; and at $t=5$, the output and private benefits are produced and the wage is paid.

3.2. Solution

Let g and \bar{g} be the levels of governance chosen by firm 1 and firm 2, respectively. Consider first the manager initially matched with firm 1 and the take-it-or-leave-it offers between these players. The model is solved by backward induction starting from the second round of labor negotiations, that is, starting with the point at which the manager has rejected the firm's offer in the first round.

Given that after the second round the manager's and the firm's reservation utilities are zero, (each) firm will choose a wage at the second round that satisfies the incentive compatibility constraint with equality ($w = (1 - g)B/e$ and $\bar{w} = (1 - \bar{g})B/e$). The manager will instead bid for the entire surplus eY .

Hence the expected reservation utility for the manager as relevant for stage 1 of the labor negotiations is given by

$$\bar{u} = \pi(1 - \bar{g})B + \mu eY + (1 - \pi - \mu)(1 - g)B. \quad (10)$$

where the three terms correspond to the second-round take-it-or-leave-it offer being made by the firm 2, the manager, and the firm 1, respectively. It is important to notice that \bar{u} is strictly decreasing in \bar{g} .

The stage 1 problem is similar to the basic case with the reservation utility now being an outcome of stage 2 negotiations. Specifically, each firm chooses w and g to minimize $ew + Kg^2/2$ subject to the incentive compatibility constraint (1) and the participation constraint (2), where \bar{u} is given in (10).

We can show that firms choose a lower level of corporate governance than optimal (hence, governance will be inefficiently low) because they do not internalize the effect that the choice of corporate governance has on the wage paid by other firms.

Proposition 2: When managers have the option to work for competing firms, the choice of governance is:

$$g^* = \begin{cases} (1 - \pi - \mu)B / K \equiv g^* & \text{if } \bar{g} < (1 - \pi - \mu)(\pi + \mu)B / (\pi K) + \mu(eY - B) / (\pi B) \\ B / K \equiv g_{FB} & \text{if } \bar{g} > (\pi + \mu)B / (\pi K) + \mu(eY - B) / (\pi B) \\ \pi \bar{g} / (\pi + \mu) - (\mu / B)(eY - B) / (\pi + \mu) & \text{otherwise} \end{cases}. \quad (11)$$

Proof: If the participation constraint is not binding, that is, if

$$(1 - g)B > \pi(1 - \bar{g})B + \mu eY + (1 - \pi - \mu)(1 - g)B, \quad (12)$$

then the firm's problem simplifies to:

$$\min_g (1 - g)B + Kg^2 / 2 \quad (13)$$

The solution of problem (13) is simply $g = B / K$. After replacing $g = B / K$ into (12), the latter inequality simplifies to $\bar{g} > B / K + \mu(eY - B) / (\pi B)$.

If the participation constraint is binding, that is if

$(1 - g)B < \pi(1 - \bar{g})B + \mu eY + (1 - \pi - \mu)(1 - g)B$, then the firm's problem becomes:

$$\min_g (1 - \pi - \mu)(1 - g)B + Kg^2 / 2 \quad (14)$$

The solution of problem (14) is $g = (1 - \pi - \mu)B / K$.

For intermediate values of \bar{g} companies choose to meet the participation constraint with equality: $g = \pi \bar{g} / (\pi + \mu) - (\mu / B)(eY - B) / (\pi + \mu)$. ■

Proposition 2 offers interesting predictions. First, the choice of governance is (weakly) increasing in the quality of corporate governance in competing firms. Hence, companies with good corporate governance create a positive externality on other firms. Second, firms choose inefficiently low levels of corporate governance. Corporate governance is at the first best level only if $\bar{g} < (1 - \pi - \mu)(\pi + \mu)B / (\pi K) + \mu(eY - B) / (\pi B)$. Third, efficiency is restored only if there is no competition for managers ($\pi = 0$) and managers have no bargaining power ($\mu = 0$). In all other cases, corporate governance is inefficiently low and it is decreasing with the severity of the competition for managers (π) and the managerial bargaining power (μ).

It is useful to consider the equilibrium where companies are symmetric (ex-ante identical). One can easily see that if $\bar{g} = g$, the only solution becomes $g = (1 - \pi - \mu)B / K$.

Corollary of Proposition 2: If the two companies are identical, the only equilibrium features corporate governance $g^* = (1 - \pi - \mu)B / K$.

Proof: It follows from Proposition 2 once one assumes that the two firms are identical. This can be seen graphically in Figure 4. The figure plots the reaction curve of each firm to the choice of corporate governance in the other firm as derived from Proposition 2. The equilibrium is determined by the intersection of the two curves, which is obtained for $g = (1 - \pi - \mu)B / K$.⁷ ■

4. The Role of Ownership Structure

The model presented in the previous section assumes that the costs of setting up a corporate governance system are shared by all shareholders who decide collectively their desired level of corporate governance trading off its costs and benefits. Although this may apply to some corporate governance variables (like the choice of the firm's auditing system and the drafting of its charter), in other cases individual shareholders have to take action at their own costs in order to improve the firm's corporate governance (as in the cases of proxy proposals and more generally shareholder

⁷ It is interesting to notice that the uniqueness of the equilibrium disappears if $\mu = 0$. In such special case, the reaction curves would overlap for all $g \in [g^*, g_{FB}]$. Since this is a special case, we will always implicitly assume that $\mu > 0$.

activism). In this second case, the ownership structure of a firm has a crucial impact on the choice of corporate governance. Furthermore, in the spirit of our overall inquiry, the choice of ownership structure also has an externality across firms.

In this section we consider this extended model and show that the choice of ownership structure also has an externality across firms. The basic setting of our model is fairly standard in corporate finance.⁸ The choice of ownership structure is the results of a trade off between the benefits coming from concentrated ownership (in terms of better monitoring) and its costs (in terms of lack of risk diversification or liquidity).

4.1. Sequence of events

The only change from the model presented in section 3 is the addition of a stage $t=0$, when the founder chooses the fraction α to sell to a large outside shareholder who will later engage in corporate governance at a cost $Kg^2/2$. Let's assume that the large shareholder requires a compensation for holding a large stake in the company. For instance, he needs to be compensated for the idiosyncratic risk he bears (or it could alternatively be a compensation for the lack of liquidity), given by $A\alpha^2\sigma^2$, where A is being the coefficient of absolute risk aversion and $\sigma^2 = e(1-e)Y^2$ is the variance of the firm's payoffs. The rest of the game is as in Section 3.

4.2. Choice of governance

The outside shareholder chooses g and w to minimize their costs subject to the incentive compatibility constraint (13) and the participation constraint (14), or:

$$\begin{aligned} \min_{w,g} \quad & \alpha ew + Kg^2/2 \\ \text{subject to} \quad & (1) \text{ and } (2) \end{aligned} \tag{15}$$

Given this setup, we obtain the following result:

Lemma 1: The choice of governance is: When managers have the option to work for competing firms, the choice of governance is:

$$g = \begin{cases} \alpha(1-\pi-\mu)B/K & \text{if } \bar{g} < \alpha(1-\pi-\mu)(\pi+\mu)B/(\pi K) + \mu(eY-B)/(\pi B) \\ \alpha B/K & \text{if } \bar{g} > \alpha(\pi+\mu)B/(\pi K) + \mu(eY-B)/(\pi B) \\ \pi\bar{g}/(\pi+\mu) - (\mu/B)(eY-B)/(\pi+\mu) & \text{otherwise} \end{cases} . \tag{16}$$

⁸ The setting is similar to the one in Leland and Pyle (1977), Admati, Pfleiderer and Zechner (1994), Bolton and Von Thadden (1998), Kahn and Winton (1998), Maug (1998), and many others.

Proof: It follows immediately as an easy extension of Proposition 2. ■

As in Proposition 2, the choice of governance is weakly increasing in the quality of corporate governance in competing firms. Lemma 1 also shows that corporate governance is strictly increasing in the ownership stake owned by the outside shareholder (α).

4.3. Choice of ownership structure

At $t=0$, the founder chooses α to minimize the sum of three costs: the wage bill to be paid by all shareholders, $(1-g)B$, and the costs of the corporate governance, $Kg^2/2$, and the lack of diversification, $A\alpha\sigma^2/2$, borne by the outside shareholder:

$$\min_{\alpha} (1-g)B + Kg^2/2 + A\alpha^2\sigma^2/2, \quad (17)$$

where g is given in equation (16). The tradeoff is between the benefits coming from concentrated ownership (in terms of better corporate governance) and its costs (in terms of lack of risk diversification).

As a benchmark, it is useful to consider first the case without externality. In such case, $g = \alpha B/K$ and thus problem (17) is solved for $\alpha = \frac{(B^2/K)}{(B^2/K) + A\sigma^2} = \alpha_{FB}$. With externality, we can show that the degree of ownership concentration is lower than optimal.

Proposition 3: The choice of ownership structure is:

$$\alpha = \begin{cases} \frac{(B^2/K)}{(B^2/K) + A\sigma^2} \equiv \alpha_{FB} & \text{if } \bar{g} > \frac{(\pi + \mu)(B^3/K^2)}{(B^2/K) + A\sigma^2} / \pi + \mu(eY - B)/(\pi B) \\ \frac{(1 - \pi - \mu)^2(B^2/K)}{(1 - \pi - \mu)^2(B^2/K) + A\sigma^2} \equiv \alpha^* & \text{if } \bar{g} < \frac{(\pi + \mu)(1 - \pi - \mu)^2(B^3/K^2)}{(1 - \pi - \mu)^2(B^2/K) + A\sigma^2} / \pi + \mu(eY - B)/(\pi B) \\ (\pi/B)K[\bar{g} - \mu(eY - b)/(\pi B)]/(\pi + \mu) & \text{otherwise} \end{cases} \quad (20)$$

Proof: If $\bar{g} > \alpha B/K + \mu(eY - B)/(\pi B)$, the participation constraint is not binding. Hence, the founder chooses α to minimize $(1 - \alpha B/K)B + K(\alpha B/K)^2/2 + A\alpha^2\sigma^2/2$. The solution is the same as in the case without externality.

If instead $\bar{g} < \alpha B / K + \mu(eY - B) / (\pi B)$, the participation constraint is binding and the founder chooses α to minimize

$$B - \alpha(1 - \pi - \mu)^2 B^2 / K + \alpha^2(1 - \pi - \mu)^2 (B^2 / K) / 2 + A\alpha^2 \sigma^2 / 2 \quad (21)$$

The solution in this case is $\alpha = \frac{(1 - \pi - \mu)^2 (B^2 / K)}{(1 - \pi - \mu)^2 (B^2 / K) + A\sigma^2}$.

For intermediate values of \bar{g} companies choose to meet the participation constraint with equality: $\alpha = (\pi / \pi + \mu)(K / B)[\bar{g} - \mu(eY - b) / (\pi B)]$. ■

Proposition 3 shows that the competition among firms in the market for managers can lead to suboptimal ownership concentration. In fact, if we restrict our attention to symmetric equilibria, the only solution is $\alpha^* < \alpha_{FB}$. Figure 5 shows the reaction function of the two companies. They intersect only at $\alpha^* < \alpha_{FB}$. The corresponding level of corporate governance

$$\text{is: } g = \frac{(1 - \pi - \mu)^3 (B^3 / K^2)}{(1 - \pi - \mu)^2 (B^2 / K) + A\sigma^2}.$$

Given the monotonic relation between ownership concentration and corporate governance, the model also predicts that shareholders with lower cost of exercising corporate governance (lower K) and with lower absolute risk aversion (lower A) choose higher corporate governance (and greater ownership concentration). Private equity investors may be an example of such type of investors. The model could thus explain why private equity investors may have the incentive to improve corporate governance. We will come back to this issue in the next Section of the paper.

To summarize, we have argued in this section that the underprovision of governance is due to the low ownership concentration of firms, which, in turn, is a manifestation of the externality firms face in incentivizing their managers. The root cause of the inefficiency is again the fact that managerial talent is scarce relative to the number of profitable firms.

5. Market Solutions and Regulation

In this section, we explore if the lack of efficient levels of governance or ownership structures would lead to market responses aimed at capitalizing on gains to be made from improving upon firm-level governance. We consider first the role of the market for corporate control in the form of activists such as private-equity funds and hedge funds who raid firms, take on significant equity stakes, and thereby have incentives to improve governance. Because of the governance externality, all competitors are better off when firms with poor corporate governance are taken over and their governance improved. Under some conditions that we characterize below, it is profitable for raiders

to engage in such activism, and in these cases, the market for corporate control helps to reduce the underinvestment in corporate governance.

A similar effect is generated by firms that need to raise external capital (through a seasoned equity offering) or entry of new firms to capital markets (through an initial public offering). In order to attract capital, they must choose high corporate governance standards. This represents a positive externality for the competitors. However, we show that raising external finance will be costly and entry may even be impossible if incumbent firms have very poor governance due to financial slack and the attendant lack of market discipline on governance.

5.1 Market for corporate control

Can a raider generate better governance and create value simply by concentrating ownership? At a first impression, the answer seems yes. If, starting from the symmetric solution found in Section 4, ownership concentration in firm 1 increases by Δ , governance increases by $\Delta \cdot (1 - \mu - \pi)B / K$. The value created for shareholders of firm 1 equals the wage saving associated with the better governance regime:

$$\Delta V_1 = \Delta(1 - \mu - \pi)^2 B^2 / K > 0 \quad (22)$$

Moreover, the improvement in corporate governance due to the takeover may increase the value of firm 2 as well given that g_2 is increasing in g_1 .

However, the critical issue is whether the raider will profit from it and therefore if he will have the incentives to do so. To study this problem, consider a raider with risk aversion A_R and cost of governance K_R who considers to bid P for a stake α_R in firm 1. Let's assume that firm 1 and firm 2 are in the symmetric equilibrium described at the end of Section 4. The raider faces the following problem:

$$\max_{\alpha_R} \alpha_R [eY - (1 - g_R)B] - P - K_R g_R^2 / 2 - A_R \alpha_R^2 \sigma^2 / 2 \quad (23)$$

where

$$g_R = \begin{cases} \alpha_R(1 - \pi - \mu)B / K_R & \text{if } g_2 < \alpha_R(1 - \pi - \mu)B(\pi + \mu) / (\pi K_R) + \mu(eY - B) / (\pi B) \\ \alpha_R B / K_R & \text{if } g_2 > \alpha_R(\pi + \mu)B / (\pi K_R) + \mu(eY - B) / (\pi B) \\ g_2 / (\pi + \mu) - (\mu / B)(eY - B) / (\pi + \mu) & \text{otherwise} \end{cases} \quad (24)$$

And

$$g_2 = g_1 = \frac{(1 - \pi - \mu)^3 (B^3 / K^2)}{(1 - \pi - \mu)^2 (B^2 / K) + A\sigma^2} \quad (25)$$

To proceed forward we need to make some assumptions on the bidding price P . Intuitively, P should equal the equity value before the takeover plus a takeover premium which reflects part of the gains from the takeover. The value of equity before the takeover is $eY - (1 - g_1)B$. A mathematically convenient expression for the takeover premium is $(1 - \varphi)(g_R - g_1)B$, where the parameter $\varphi \in [0, 1]$ captures the functioning of the market for corporate control. More precisely it measures the extent to which the raider can capture the value created by the takeover and thus the extent of free-riding in the market for corporate control. For $\varphi = 0$, the raider extracts none of the benefits from the takeover (fully competitive market). For $\varphi = 1$, the raider extracts the full value created from the takeover. With these assumptions on the takeover price P problem (23) simplifies to:

$$\max_{\alpha_R} \varphi(g_R - g_1)B - K_R g_R^2 / 2 - A_R \alpha_R^2 \sigma^2 / 2 \quad (26)$$

Subject to (24) and (25).

Proposition 4: A bidder with risk aversion A_R and cost of governance K_R will takeover the firm with weaker corporate governance (firm 1) iff $\varphi \geq (1 - \pi - \mu) \frac{K_R A_R K_R \sigma^2 + (1 - \pi - \mu)^2 B^2}{2K A K \sigma^2 + (1 - \pi - \mu)^2 B^2}$. In such case, he will bid for an equity stake:

$$\alpha_R = \frac{\varphi(1 - \pi - \mu)B^2}{A_R K_R \sigma^2 + (1 - \pi - \mu)^2 B^2}. \quad (27)$$

Proof: Without loss of generality we assume that in equilibrium firm 2 has lower governance than firm 1 (with the raider), that is, $g_2 < \alpha_R(1 - \pi - \mu)B(\pi + \mu)/(\pi K_R) + \mu(eY - B)/(\pi B)$. In this case, $g_R = \alpha_R(1 - \pi - \mu)B / K_R$ and the raider's problem becomes

$\max_{\alpha_R} \varphi[\alpha_R(1 - \pi - \mu)B / K_R - g_1]B - K_R[\alpha_R(1 - \pi - \mu)B / K_R]^2 / 2 - A_R \alpha_R^2 \sigma^2 / 2$. From the first

order conditions, $\alpha_R = \frac{\varphi(1 - \pi - \mu)B^2}{A_R K_R \sigma^2 + (1 - \pi - \mu)^2 B^2}$. The raider will bid only if his participation

constraint is met, that is, $2\varphi(g_R - g_1)B \geq K_R g_R^2 + A_R \alpha_R^2 \sigma^2$. After simplifications, the participation

constraint becomes $\varphi \geq (1 - \pi - \mu) \frac{K_R A_R K_R \sigma^2 + (1 - \pi - \mu)^2 B^2}{2K A K \sigma^2 + (1 - \pi - \mu)^2 B^2}$. ■

By observing the expression for φ , it follows that for takeovers to happen raiders must have an advantage over regular shareholders coming from either their lower monitoring costs ($K_R < K$) and/or their lower cost of holding under-diversified portfolios ($A_R < A$). More specifically, the participation constraint can be rewritten as $A_R \leq [\xi - K_R(1 - \pi - \mu)^2 B^2] / (K_R^2 \sigma^2)$ where $\xi \equiv \varphi K [(1 - \pi - \mu)^2 B^2 + AK\sigma^2] / [2(1 - \pi - \mu)]$. This curve is represented in Figure 6 as A_R as a function of K_R . The stake acquired by the raider is also a function of A_R and K_R . In fact, α_R is strictly decreasing in their product A_R and K_R . Given this one can think of three types of shareholders willing to invest in corporate governance. The first type of raiders are private equity investors who seem to invest significant resources in monitoring (for example, through more intense engagement with firm management) and have high propensity to take on risk. In the picture those are characterized by both low cost of monitoring and low risk aversion. Such investors are willing to buy a large stake in the company.

There are then two classes of shareholders that engage in governance and take lower equity stakes in companies than private equity investors. On the bottom right, there are those with low risk aversion (but lower monitoring skills than private equity). One can think of those as large institutional investors like pension funds which by sheer size can hold concentrated stakes and yet be diversified. On the top left, there are instead those that have very good monitoring skills (but higher risk aversion than private equity). These are active shareholders like hedge fund activists.

Importantly, raiders generate a positive externality for competing firms as well because they reduce the outside option for managers in terms of rents earned. This, in turn, increases the marginal value of corporate governance and leads non-target companies to choose greater corporate governance as well. This governance externality suggests that the desirability of such activists should thus not be assessed simply on the basis of their own performance, but must also take account of the discipline they impose on non-target firms.

Another important implication of Proposition 5 is that the market for control by activists can work well as a mechanism to improve corporate governance only to the extent that raiders can withhold a large fraction of the takeover gains. Paradoxically thus, the market for corporate control is effective only when it is not perfectly competitive.

One empirical prediction from Proposition 4 is that internal corporate governance is better in countries (or sectors) with more market for corporate control. Cremers and Nair (2005) have found evidence that is consistent with this prediction. The established interpretation for this evidence is that managers choose better corporate governance to fend off the threat of a hostile takeover, as suggested by Manne (1968) and Jensen (1993), and many others. Our model offers an alternative

interpretation for this evidence. The market for corporate control alleviates the externality problem faced by shareholders when choosing corporate governance standards. The critical difference between the two explanations is whether shareholders or managers are more active in the choice of corporate governance. Our interpretation is more appropriate in settings where shareholders choose corporate governance, while Manne's and Jensen's interpretation holds when managers make the choice.

5.2 Raising capital

So far, we assumed that companies do not need to raise capital. This is a limiting assumption given that most of the literature on corporate governance emphasizes the impact of corporate governance on the cost of raising capital (Shleifer and Vishny, 1997). In this section we consider the founder's choice of governance standards at the point when the company needs to raise capital in order to be set up.

We assume that the founder is willing to incur the governance costs to setup the firm because he stands to gain a large private benefit by setting up the firm (in other words, the value of the private benefits is large enough to cover the governance costs). In terms of notation, the external capital needed is denoted as I . We assume that $B + I \geq eY$ to ensure an internal solution.

With interest rates equal to zero, investors provide I if and only if the value of the firm is at least as great as I : that is, the investor participation constraint is

$$eY - \pi(1 - \bar{g})B - (1 - \pi)(1 - g)B \geq I \quad (26)$$

The founder's problem is to minimize the cost of incentivizing the managers subject to the participation constraint (26), that is:

$$\min_g \pi(1 - \bar{g})B + (1 - \pi)(1 - g)B + Kg^2 / 2 \quad (27)$$

subject to the inequality (26).

For the participation constraint to be satisfied, governance must be better than a minimum level $g \geq 1 - [eY - I - \pi(1 - \bar{g})B] / [(1 - \pi)B]$. In a symmetric equilibrium, this condition simplifies to $g \geq 1 - (eY - I) / B$.

Hence, the solution to problem (27) is

$$g^* = \min \{ (1 - \pi)B / K, 1 - (eY - I) / B \} \quad (28)$$

This equation shows that the need to raise capital alleviates the externality problem and leads to better corporate governance. This of course applies only to companies that need to raise capital (entrants) and does not apply to established, cash-rich, companies (incumbents). The tension

between entrants and incumbents may thus play a crucial role on the choice of corporate governance.

Consider two companies: an incumbent firm (firm 2) and a potential entrant (firm 1) competing for managers. Each firm can hire one or two managers each with productivity as in the basic case described in Section 3. Assume also that firm 2 chooses \bar{g} before firm 1 chooses g . Firm 1 also needs to raise capital I . We can easily show that in some cases the competition for managers acts as an entry barrier.

From equation (26) we know that firm 1 will be able to enter only if $g \geq 1 - [eY - I - \pi(1 - \bar{g})B][(1 - \pi)B]^{-1}$. If $eY \leq I + \pi B$, the incumbent can prevent the entrant from entering by choosing its level of corporate governance sufficiently low that the entrants cannot raise capital. For a level of corporate governance $\bar{g} < (I + \pi B - eY)/(\pi B)$, the investor participation constraint (26) will always be violated. Notice that the incumbent will always block entry if possible because in such case he will not face competition for managers.

If instead $eY > I + \pi B$, entry cannot be blocked. In such case, the entrant will sent the level of corporate governance so that the participation constraint is met with equality, that is, $g = [(B + I - eY) - \pi \bar{g} B][(1 - \pi)B]^{-1}$. Firm 2 (the incumbent) can act as a Stackelberg leader. It can choose \bar{g} taking into consideration the effect of \bar{g} on g . In this case the incumbent fully internalizes the externality and chooses (in some cases) the optimal level of corporate governance.

Two cases must be examined depending on whether the participation constraint for firm 2 is binding or not.

The participation constraint is not binding if the wage paid by firm 2 is greater than the wage paid by firm 1 or if $1 - \frac{B + I - eY}{(1 - \pi)B} + \frac{\pi}{1 - \pi} \bar{g} > 1 - \bar{g}$. In that case, firm 2 will simply choose the first-best level of corporate governance $\bar{g}^* = B/K$. For this value of \bar{g} , the participation constraint is not binding if $K > B^2/(B + I - eY)$.

If the participation constraint is binding, firm 2 solves the following problem:

$$\begin{aligned} \min_{\bar{g}} \quad & \pi \left[1 - \frac{B + I - eY}{(1 - \pi)B} + \frac{\pi}{1 - \pi} \bar{g} \right] B + (1 - \pi)(1 - \bar{g})B + K(\bar{g})^2 / 2 \\ \text{s.t.} \quad & 1 - \frac{B + I - eY}{(1 - \pi)B} + \frac{\pi}{1 - \pi} \bar{g} \leq 1 - \bar{g} \end{aligned} \quad (29)$$

From the first-order condition, $\bar{g} = \max\{0, (B/K)[(1-\pi) - \pi]/(1-\pi)\}$. However, this solution satisfies the constraint only if $K \leq \frac{B^2}{B+I-eY} \frac{(1-\pi) - \pi}{1-\pi}$. In all other cases, the choice of governance is such as to meet the constraint with equality: $\bar{g}^* = (B+I-eY)/B$.

To summarize, the need to raise external finance is a natural market discipline on the governance choice of firms. However, the limitation of this market discipline is that for it to work, not many firms in the economy should have financial slack, or in other words “permanent capital”: To be more precise, firms raising capital should not be competing in the managerial labor market with firms that have such financial slack. This provides one potential explanation for why targets of leveraged buyouts by private equity funds are generally companies that have stable cash flows, whereby the need to access external capital, and, in turn, governance discipline is lower. Somewhat interestingly, even if outside of the scope of our model, the above argument suggests that one cost of over-valued equity (Jensen, 2005) could be that it allows firms to create excessive financial slack that lowers corporate governance in the future, and also imposes an externality on the overall governance in the economy.

5.3 Regulatory standards

We argued that while market mechanisms like activism and market discipline can ameliorate the governance externality problem, they require specific conditions to be effective at doing so. Another possible solution to the externality problems described in our framework is for a regulator to introduce governance standards that increase the minimum level of corporate governance companies must choose. For instance, in the model presented in Section 3 this corresponds to setting the minimum level of corporate governance \underline{g} equal to B/K .

With sufficient information or knowledge of firm-level parameters and with appropriate objectives, such regulatory standards can indeed work. However, both of these are likely to be requirements that are met only in a utopian setting. Since regulators are likely to be non profit-maximizing (unlike corporate raiders, for example), they may not have incentives or technologies to acquire the information required to set correct standards. Furthermore, the regulatory objective may not be fully aligned with efficiency due to political economy considerations, such as capture by corporate lobbyists or by institutional investors, depending upon the immediate past of governance problems. We are currently investigating these issues in a setting where regulator has incomplete information and is potentially captured.

If companies are perfectly symmetric (i.e. if they face the same costs of corporate governance, the same risk aversion, the same ownership structure, the same idiosyncratic risk), regulation trivially solves the externality problem. In fact, a simple requirement that $g \geq B / K$ would push companies to the first best.

This is not true if the two companies are not identical. Consider for example two companies with different ownership structure. Firm 1 has more concentrated ownership than firm 2. Specifically, $\alpha_1(1 - \pi) > \alpha_2$. In such situation (as shown in Lemma 1), firm 1 has a level of corporate governance that is lower than optimal ($g_1 = \alpha_1(1 - \pi)B / K$) while firm 2 has the optimal level of corporate governance ($g_2 = \alpha_2B / K$).

In such case, regulation to increase corporate governance would make firm 1 better off and firm 2 worse off. In other words, in the presence of heterogeneity among firms regulation is not always Pareto improving because one size does not fit all.

6. Concluding remarks

We have taken the view in this paper that corporate governance is a choice of individual firms but one that affects and is affected by the choice of other competing firms. Our primary channel for this externality was the assumption that giving incentives to management and investing in better governance are substitutes, as proposed by Bebchuk and Fried (2004) and as demonstrated empirically by Fahlenbrach (2006). The result of this externality is an underinvestment in corporate governance in the economy at large. We investigated the implications of the externality for choice of ownership structures and concluded that ownership of firms may end up being inefficiently dispersed.

As in the traditional economics literature (Stigler, 1971 and Peltzman, 1976, for example), this externality in governance could in principle be regulated through standards. Some standards such as quality of disclosure and auditing may be relatively straightforward to enforce and our analysis suggests that their benefits would be amplified for the economy as an improvement in the governance of each firm enables other firms to improve their governance as well. Indeed, such standards can help entry of new firms by enabling them to choose better governance and in turn lowering their cost of capital.

Broader regulatory enforcement of firm-level governance may however necessitate gathering information on precise parameters of firms in the economy. Since this is an onerous requirement (and regulators may not have the best incentives to perform this task), we propose instead two market mechanisms that can help get around the externality. First is to encourage the

market for raiders and shareholder activists such as private equity and hedge funds, but for these to be effective, they must be able to keep a sufficiently large portion of the surplus they unlock. Second is the need for firms to raise external capital, which would be effective provided there are enough firms in the economy without “permanent” capital and the remaining firms are not too poorly governed.

It is important to note that at the heart of our results is the assumption that managerial talent is scarce within industries or in the economy as a whole. Interestingly, the same assumption has been employed in the recent literature (e.g., Gabaix and Landier, 2007) to argue that competition for talent when both firms and managers are heterogenous could explain the significant rise in the pay of CEOs over the last two decades. By introducing governance as a choice of firms and one that has a direct tradeoff with the provision of incentives, our model suggests that competition for talent is not necessarily a guarantee that observed pay or pay-for-performance sensitivity levels are efficient. More theoretical and especially empirical research is needed in order to tease out the two different hypotheses and their applicability to different industries and economies.

References

- Admati, Anat R., Paul Pfleiderer and Josef Zechner, "Large Shareholder Activism, Risk Sharing, and Financial Market Equilibrium", *The Journal of Political Economy*, 102, 1994, 1097-1130.
- Bebchuk, Lucian and Jesse Fried, 2004, *Pay Without Performance, The Unfulfilled Promise of Executive Compensation*, Harvard University Press, Cambridge, MA.
- Bergman, Nittai and Daniel Nicolaievsky, 2007, *Investor Protection and the Coasian View*, *Journal of Financial Economics* 84, 738-771.
- Black, Bernard, 2001, *The Corporate Governance Behavior and Market Value of Russian Firms*, *Emerging Markets Review* 2, 89-108.
- Becht, Marco, Julian Franks, Colin Mayer and Stefano Rossi, 2006, *Return to Shareholder Activism: Evidence from a Clinical Study of the Hermes U.K. Focus Fund*, forthcoming, *Review of Financial Studies*.
- Bolton, Patrick and Ernst-Ludwig von Thadden, 1998. "Blocks, Liquidity, and Corporate Control," *Journal of Finance*, American Finance Association, vol. 53(1), pages 1-25, 02.
- Brav, Alon, Wei Jiang, Frank Partnoy, and Randall Thomas, 2006, *Hedge Fund Activism, Corporate Governance, and Firm Performance*, forthcoming, *Journal of Finance*.
- Bris, Arturo and Christos Cabolis, 2006, *Corporate governance convergence by contract: evidence from cross-border mergers*, unpublished working paper, IMD, Switzerland.
- Chhaochharia, Vidhi and Laeven, Luc, 2007. "The Invisible Hand in Corporate Governance," CEPR Discussion Papers 6256
- Claessens, Stijn and Bruno, Valentina G., 2007. "Corporate governance and regulation: can there be too much of a good thing ?," Policy Research Working Paper Series 4140, The World Bank.

Doidge, Craig, Andrew Karolyi, and Rene Stulz, 2007, Why do countries matter so much for corporate governance? *Journal of Financial Economics* 86, 1-39

Durnev, Art and Han Kim, 2005, To Steal or Not to Steal: Firm Attributes, Legal Environment, and Valuation, *Journal of Finance* 60, 1461–1493.

Falhenbrach, Rudiger, 2006, Shareholder Rights, Boards, and CEO Compensation, Working paper, Ohio State University.

Gabaix, Xavier and Augustine Landier, 2007, Why Has CEO Pay Increased So Much, *Quarterly Journal of Economics*, forthcoming.

Gompers, Paul, Joy Ishii and Andrew Metrick, 2003, Corporate Governance and Stock Prices, *Quarterly Journal of Economics* 118, 107-155.

Hermalin, Benjamin and Michael Weisbach, 2006, A Framework for Assessing Corporate Governance Reform, Working Paper, University of California at Berkeley.

Jensen, Michael C., 1986. Agency costs of free cash flow, corporate finance and takeovers. *American Economic Review* 76, 323-329.

Jensen, Michael, 1989, Eclipse of the public corporation, *Harvard Business Review*, Sept.-Oct., 61-74.

Jensen, Michael, 1993. The modern industrial revolution, exit, and the failure of internal control systems. *Journal of Finance* 48, 831-880.

Jensen, Michael, 2005, Agency costs of overvalued equity, *Financial Management*, Spring 2005.

Kahn, Charles and Andrew Winton, 1998. "Ownership Structure, Speculation, and Shareholder Intervention," *Journal of Finance*, American Finance Association, vol. 53(1), pages 99-129, 02.

Kaplan, Steven, 1989, The effects of management buyouts on operations and value, *Journal of Financial Economics* 24, 217-254.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny, 2000, Investor Protection and Corporate Governance, *Journal of Financial Economics* 58, 3-27.

Leland, Hayne E and Pyle, David H, 1977. "Informational Asymmetries, Financial Structure, and Financial Intermediation," *Journal of Finance*, American Finance Association, vol. 32(2), pages 371-87, May.

Manne, H., 1965. Mergers and the market for corporate control. *Journal of Political Economy* 75, 110-126.

Maug, Ernst "Large Shareholders as Monitors: Is There a Trade-Off Between Liquidity and Control?," *Journal of Finance*, February 1998, 65-98.

Peltzman, Sam, 1976, Toward a More General Theory of Regulation, *Journal of Law and Economics*, 19(2), Conference on the Economics of Politics and Regulation), pp. 211-40.

Shleifer, Andrei and Robert Vishny, 1997, A Survey of Corporate Governance, *Journal of Finance*.

Stigler, George, 1971. The Theory of Economic Regulation, *The Bell Journal of Economics*, Volume 2, No. 1, pp. 3-21.

Tirole, Jean, 2006, *The Theory of Corporate Finance*, Princeton University Press, Princeton, NJ.

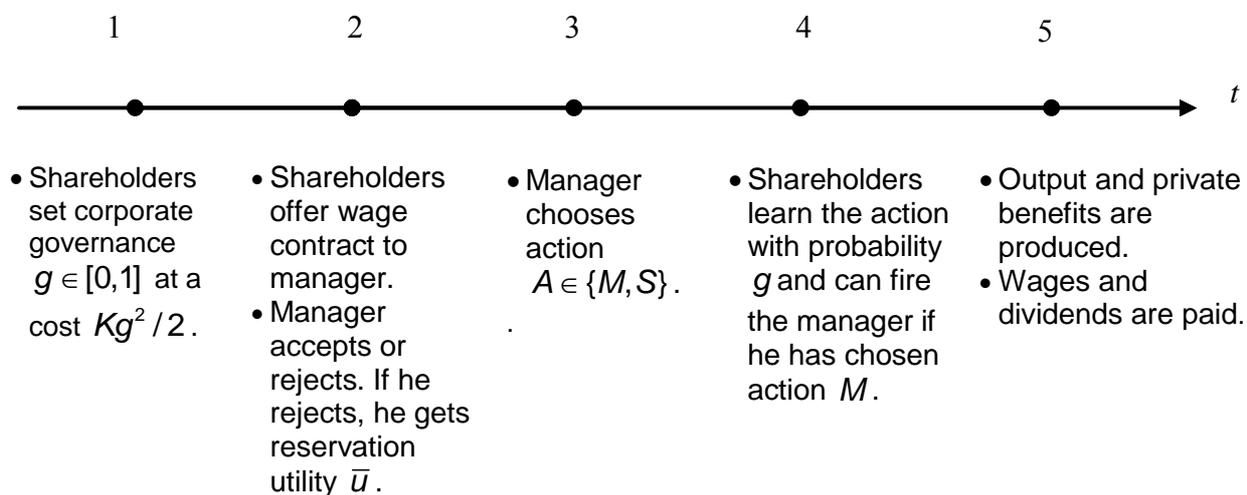


Figure 1. Time line.

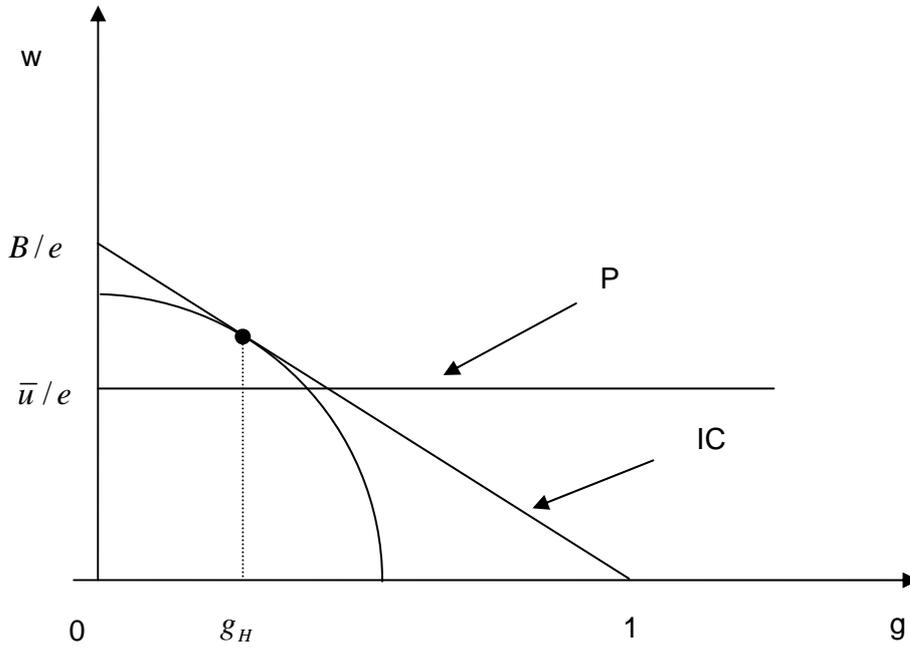


Figure 2, Panel A. Participation constraint is not binding

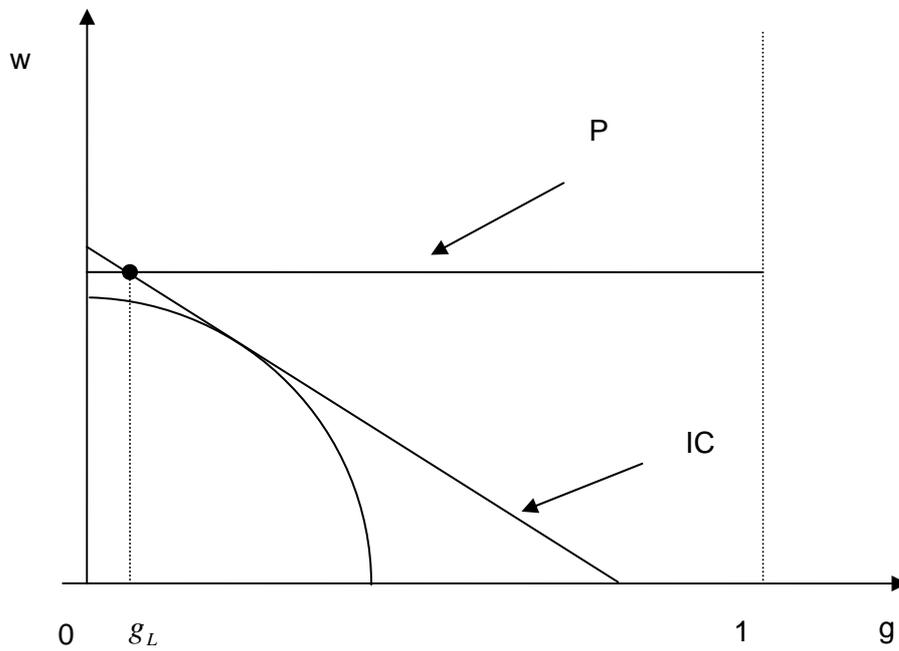


Figure 2, Panel B. Participation constraint is binding

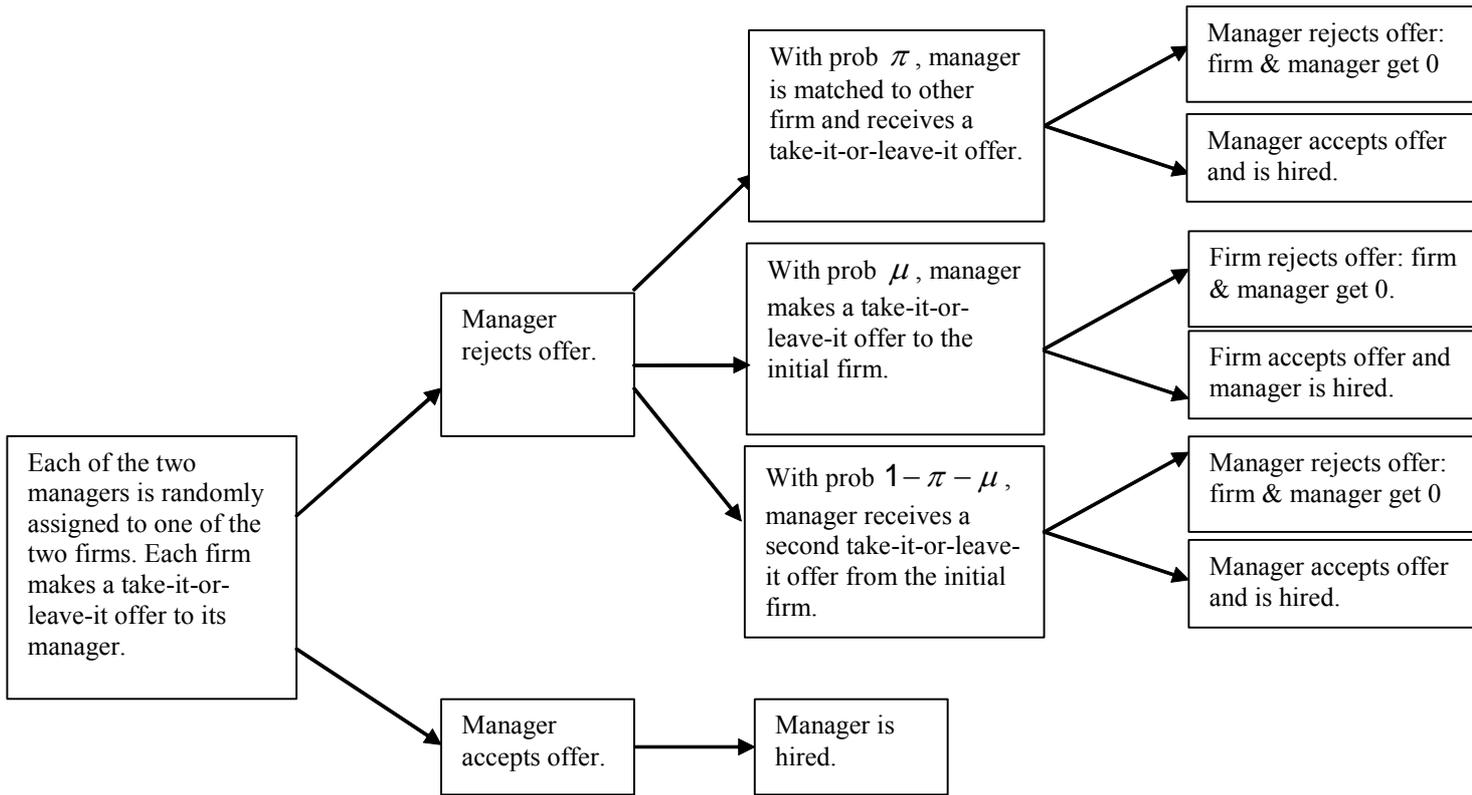


Figure 3. Market for managerial talent (t=2).

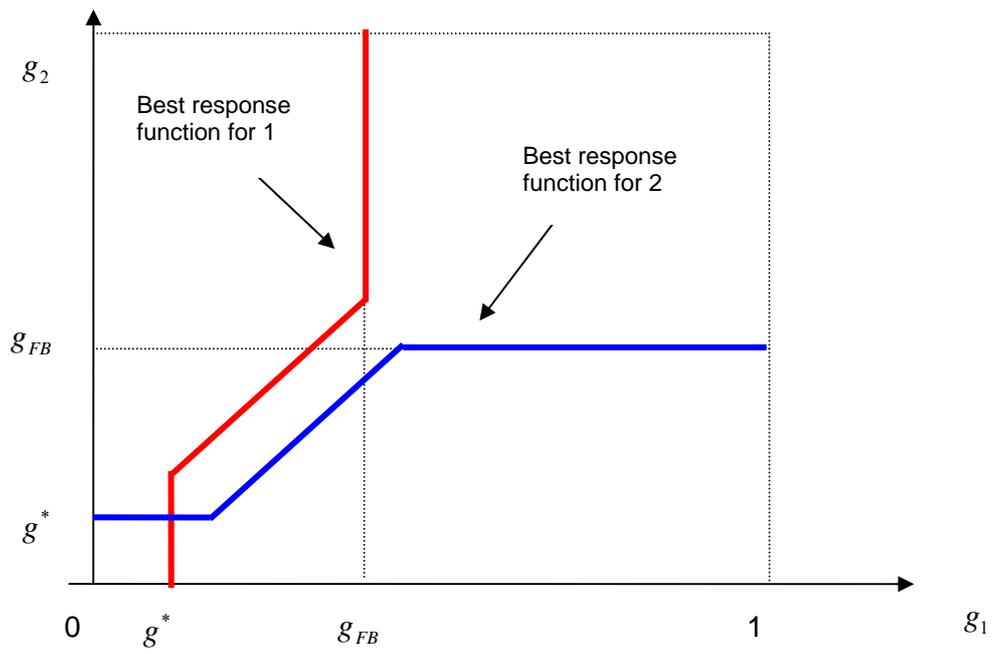


Figure 4. Choice of corporate governance in a symmetric equilibrium with externality

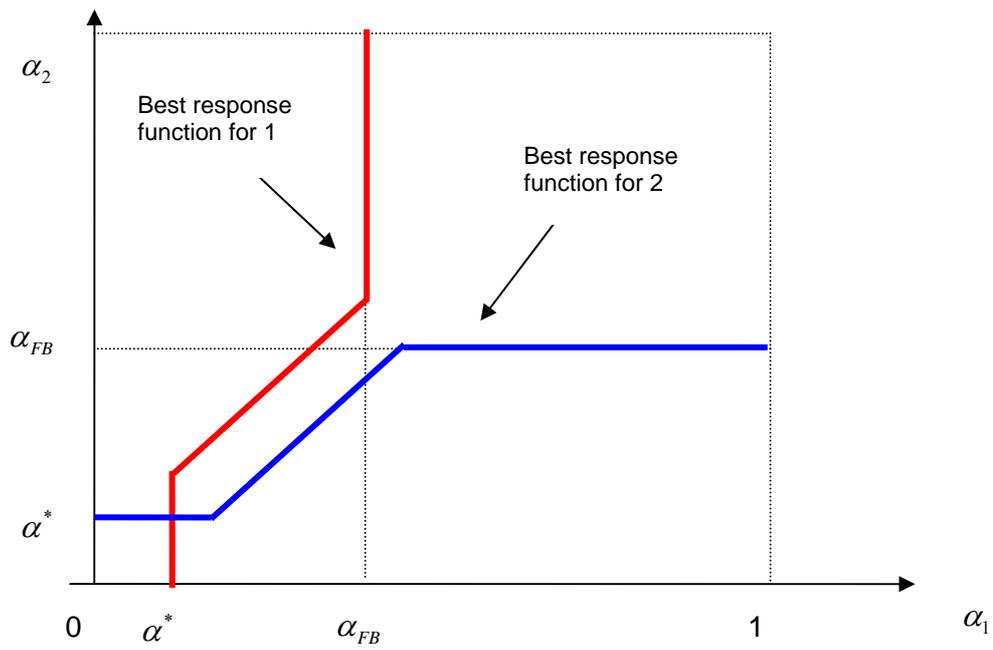


Figure 5. Choice of ownership structure in a symmetric equilibrium with externality

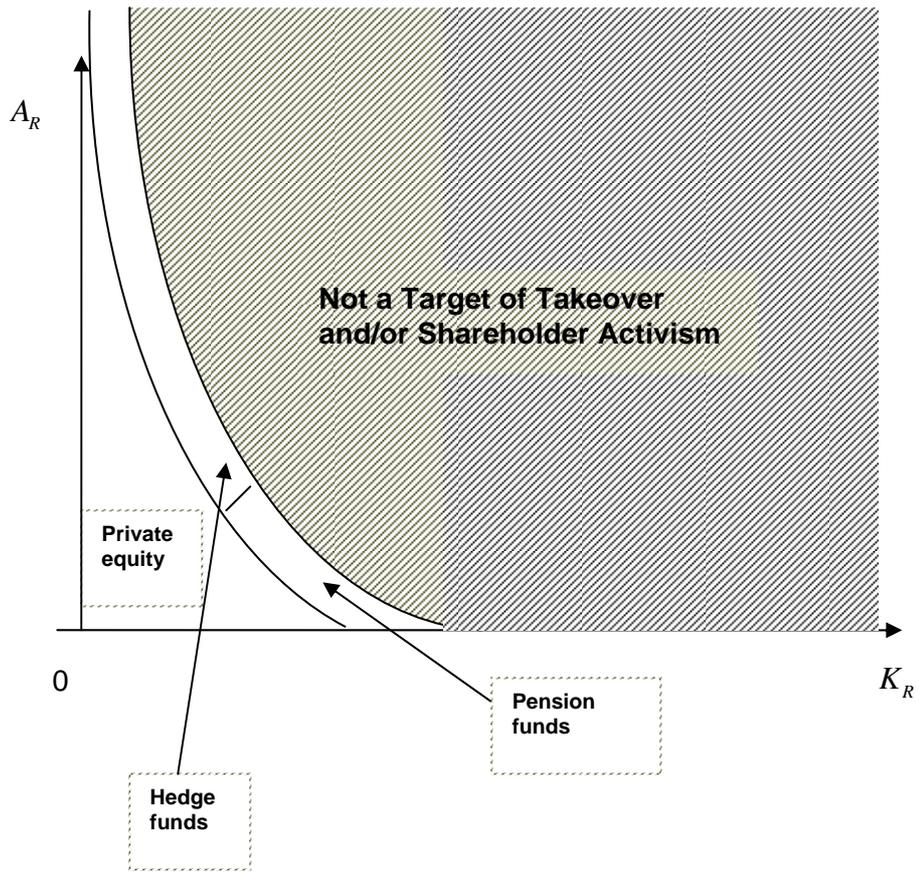


Figure 6. Types of shareholders active in corporate governance.