DESIGN OF CORPORATE GOVERNANCE:
Role of Ownership Structure, Takeovers, and Bank Debt[1]

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ABSTRACT

We examine how different economies would design an optimal corporate governance system structured from three of the main mechanisms of corporate governance (managerial ownership, monitoring by banks, and disciplining by the takeover market). We allow for interactions among the mechanisms. The first set of results characterizes the combination of governance mechanisms that can appear in any optimally designed structure: 1) when monitored debt appears in an optimal system it is accompanied by concentrated ownership, and 2) when takeovers appear in an optimal system they are accompanied by diffuse ownership. We show that out of the numerous governance structures that could arise from combinations of the governance mechanisms, only three are candidates for an optimal system. These three endogenously derived governance structures match the prevalent systems (family based, bank based and market based) in the world. The optimal system for a given economy is characterized as a function of the degrees of development of its financial institutions and markets. Our analysis yields several testable implications.

With new and emerging economies searching for the right corporate governance, the debate on the relative efficiency of the different existing governance systems has attained enormous importance. Much of this attention has focused on the differences among the corporate governance systems of the advanced economies of the world. On the one hand in Japan and Germany, managers are monitored by a combination of banks, and large corporate shareholders with little or no role for the market for corporate control. On the other hand in the U.S and U.K, market for corporate control is an important mechanism for disciplining management with little or no monitoring by banks and large corporate shareholders. In other words, the relative weights given to the different mechanisms of corporate governance are markedly different in these two corporate governance systems.[2]

The differences in the corporate governance systems observed around the world raise many important questions. How are individual governance mechanisms combined to form a governance structure? Are some governance mechanisms more effective when used in conjunction? What blend of different mechanisms of corporate governance constitutes an optimal governance structure? Is the optimality of the governance structure related to the embedding financial and legal system?

A major objective of this paper is to model multiple mechanisms of corporate governance, study the interactions among them, and characterize the optimal combinations. Our analysis shows that there are only three combinations which are possible candidates for an optimal governance structure. Which one of the identified structures is optimal for a given economy depends on the degree of development of financial institutions and markets in that economy. Thus we

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[2] The academic literature in law, economics, finance, strategy, and management on corporate governance has become extensive. For recent surveys, see Shleifer and Vishny (1997), John and Senbet (1998), and Bradley, Shipani, Sundaram and Walsh (1999).

endogenously derive governance structures that are optimal for different economies and find that they mirror the major governance structures observed in the world.

There is increasing empirical evidence on the differences in corporate governance among countries. In a series of influential papers La Porta et al. (1997,1998,1999,2002) have argued that the extent of legal protection of outside investors from expropriation by inside shareholders or managers, is an important determinant of these differences. Recent empirical work shows that better legal protection of outside shareholders is associated with lower concentration of ownership and control, more valuable stock markets, higher number of listed firms and higher valuation of listed firms relative to their assets.[3] Studies have also documented a link between corporate valuation and corporate governance mechanisms other than investor protection. Gorton and Schmid (2000) show that higher ownership by the large shareholders is associated with higher valuation of assets in Germany. Gompers, Ishi and Metrick (2001) document that US firms in the top decile of a "governance index" constructed from provisions related to takeover defenses and shareholder rights earned significantly higher abnormal returns over those in the lowest decile.[4]

While the understanding of the empirical differences in the patterns of corporate governance has advanced in recent years, the theoretical work in this area is nascent. A number of studies attempt to explain theoretically why control is so concentrated with poor shareholder protection in a setting where alignment is the only viable mechanism of corporate governance (Zingales (1995), La Porta et al. (1999), Bebchuk (1999)). La Porta et al. (2002) make the case for higher concentration of cash flow ownership with poor shareholder protection. Shleifer and Wolfenzon (2001) also study ownership concentration as a function of the quality of investor protection. The effectiveness of investor protection is modeled as the likelihood that the entrepreneur is caught and fined for

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[3] See European Corporate Governance Network (1997), La Porta, Lopez- de-Silanes and Shleifer (1999); Claessens et al. (2000,2002), La Porta et al. (1997,1998,1999,2002).
[4] Other interesting evidence that relate differences in international corporate governance to growth, performance and capital allocation has been documented recently. See, e.g., the special issue on International Corporate Governance of the Journal of Financial Economics, Vol. 59, Nos. 1-2, October-November 2000.

expropriating shareholders. In a model, which allows for insider ownership as the only mechanism of corporate governance, they derive implications for the equilibrium ownership concentration and dividend payouts as a function of protection of shareholders available in a given country. We depart from the earlier literature in several ways. First we allow for multiple mechanisms of corporate governance and consider the problem of designing an optimal governance system constituted from multiple available mechanisms. In our model, takeovers and monitored debt are available as component governance mechanisms in addition to managerial alignment. We also allow for interactions among the corporate governance mechanisms.

We start with a simple generic agency problem. When managers act to maximize the value of a firm they will undertake the most profitable projects available. In general, however, managers may have other objectives besides maximizing firm value and may choose projects that give them a larger level of discretion and higher private benefits of control. In our model we start with a set up in which the lower valued project yields to the manager larger private benefits. At this point the entrepreneur looks to the mechanisms of corporate governance available and designs a corporate governance system which minimizes the expected agency costs.

The three mechanisms that we consider are: (1) aligning the manager's incentives with that of shareholders, (2) monitored debt, and (3) takeovers. Although we do not model all of the corporate governance mechanisms possible, we view (2) and (3) as representative of two groups of corporate governance mechanisms available. Monitored debt is a mechanism put in place at the manager's discretion. Other mechanisms that have a self-binding or pre-commitment property like committing to periodic audits, establishing monitoring institutions such as corporate boards and including monitoring rules in the corporate charter or self-imposing debt covenants belong to this group. The second group of mechanisms that act to implement the good project do so without the consent of the manager. These mechanisms can be thought of as interventionist mechanisms.

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These include hostile takeovers, outside large shareholder activism and creditor intervention in bankruptcy.

In modeling the mechanisms of corporate governance we have emphasized two important aspects: (1) these mechanisms interact. For example, an increase in managerial ownership increases managerial alignment with those of shareholders while simultaneously reducing the effectiveness of takeovers in disciplining management, (2) whether or not to employ these mechanisms is decided in a decentralized fashion by different economic agents. For example, the manager decides whether or not to go for bank debt as a function of his ownership, cost of bank monitoring and the relative effectiveness of the takeover environment. The decentralized nature of decisions brings about additional complex interactions among the corporate governance mechanisms. We believe that understanding this complex relationship among these mechanisms is crucial to understanding the optimal design and relative efficiency of the corporate governance systems seen around the world.

From our analysis of combining the various mechanisms into optimal governance mechanisms, we get two classes of results. The first class of results limit the combinations of governance mechanisms which can appear in any optimally designed structure. An important result of the paper is that the pre-commitment and interventionist mechanisms do not appear together in any optimal governance system. We show that whenever bank monitoring is part of an optimal governance structure, it is accompanied by concentrated ownership. Similarly, in any optimal governance system where takeovers play a role, the corresponding ownership is diffuse. Although, combining multiple interacting governance mechanisms can give rise to myriad configurations as possible candidates for governance structures, we are able to show using our results above that only three configurations can arise as optimal governance structures no matter what the characteristics of the embedding economy. These three configurations can be characterized as follows: 1) concentrated ownership by managers or insiders with no role for takeovers or monitored debt (referred to as alignment-based (AB) governance structures), 2) monitored debt accompanied by

concentrated ownership by managers with no role for takeovers (referred to as pre-commitment-based (PB) governance structures), and 3) takeovers accompanied by diffuse ownership with no monitored debt (referred to as intervention-based (IB) governance structures).

We obtain further results that characterize the optimality of the three governance structures for various economies. In the main model, we characterize all possible economies based on two parameters: the degree of development of financial institutions and the degree of development of financial markets. In our model the characteristics of development of financial institutions, which is important is that which facilitate effective bank monitoring. Similarly, the characteristics of development of markets which is important is that which facilitates takeovers. Countries differ dramatically in the regulatory framework, institutional intricacies and cultural attitudes vis a vis takeovers and monitored debt. Our results are as follows: in economies where neither institutions nor markets are well developed the optimal governance structure is alignment-based (AB). In economies where financial institutions are relatively well developed while market are not, the optimal governance system is precommitment-based (PB). In remaining economies with well-developed markets, the optimal governance system is intervention-based (IB). We note that the commonly observed governance systems around the word loosely correspond to the optimal configurations that we identify, i.e., AB has the characteristics of what is commonly referred to as family-based systems, PB shares most characteristics of bank-based systems, and IB corresponds to market-based systems with diffused ownership and a prominent role for takeovers.

Another conventional classification of corporate governance systems has been as "insider systems" involving concentrated ownership by insiders and "outsider systems" involving diffuse ownership. Our characterization of AB and PB map into "insider systems", and IB into "outsider systems". Most discussions of corporate governance take these two classes of systems as given and discuss the properties and relative merits. A contribution of this paper is to endogenously derive their features and characterize the economic settings in which they would be optimal.

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Our results on optimal governance structures have interesting empirical implications for ownership structures around the world. In governance systems in which takeovers play an important role, insider ownership will be diffuse and in family-based and/or bank-centered governance systems, ownership will be concentrated. In addition to cross-country implications, our results also have implications for inter temporal changes in ownership structures for economies that have undergone development in the quality of its market and institutions. In economies that have undergone development in its markets the governance structure would have gone from alignment based (AB) to interventionist based (IB) with ownership changing from concentrated to diffuse. On the other hand, in economies that have undergone large developments in its financial institutions although the governance systems may have become more bank-centered the ownership structures would have remained concentrated.

The rest of the paper is organized as follows. In Section 1 we discuss the structure and implications of the basic model, with managerial ownership and takeovers as the governance mechanisms available. Section 2 extends the model to include monitoring by banks as an additional governance mechanism. Section 3 discusses extension, Section 4 lays out some of the empirical implications and Section 5 concludes.

1. THE MODEL

In this section we introduce the basics of the model. The investment technology of the firm is specified and a simple agency problem is characterized. Our model of the three mechanisms of corporate governance is introduced and the general problem of designing the optimal corporate governance system is laid out.

The entrepreneur has the following technology at date $t = 0$. The technology consists of a project with two possible implementations. Both implementations require an initial investment of $I > 0$ at date $t = 1$ and generate state contingent cash flows at date $t = 2$. Both implementations generate cash flows of $H > I$ when the project is successful (the good state) and zero when it is

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unsuccessful (the bad state). The implementations differ in the probability of obtaining the good

state. The probability of obtaining the good state is α_g for Implementation 1 and α_b for

Implementation 2 with $0 < \alpha_b < \alpha_g \leq 1$. Since $\alpha_b < \alpha_g$, Implementation 1 will be referred to as the

good project while Implementation 2 as the bad project. Further denote $\rho = \alpha_g - \alpha_b$. The

entrepreneur incorporates a firm and hires a manager to implement the technology. The manager

raises the capital needed for the investment of I and chooses between the good and bad project.

1.1 The Agency Problem

By assumption, the manager cannot finance the required investment I from his personal wealth.

He sells claims to outside investors to finance the investment. Now we introduce the managerial

agency problem through the following simple device: The manager derives differential private

benefits of control from the two implementations of the technology. For simplicity, we will

standardize the private benefits from the good project to be zero and that from the bad project to be

$B > 0$. Now the project, which maximizes the managerial objective of the sum of his private

benefits of control and the value of his personal holding in the project cash flows, can be the bad

project. The level of private benefits B parameterizes the severity of the agency problem and the

managerial incentives to implement the bad project.[5] The level of private benefits, B, is not known

to the entrepreneur at date $t = 0$. It is common knowledge that B is uniformly distributed over the

interval $\left[0, H\left(\alpha_g - \alpha_b\right) \right]$.[6] The value-maximizing decision is always to adopt Implementation 1,

i.e. the good project. The thrust of the paper is to design the corporate governance structure, which

will minimize the loss in firm value due to adoption of the bad project by the manager.

1.2 Mechanisms of Corporate Governance

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[5] An alternative interpretation (which produces similar results) is that the manager has to expend incremental effort at private cost B, to implement the good project.

[6] We have chosen $H\left(\alpha_g - \alpha_b\right)$ as the relevant maximum level of private benefits because at that level of private benefits, the bad project becomes the socially optimal choice.

We model explicitly three of the commonly used mechanisms of corporate governance: (1) aligning the manager's incentives with that of shareholders, (2) takeovers, and (3) monitored debt.

The first mechanism serves to align the manager's interests with those of shareholders. We model this class of governance mechanisms based on managerial incentive contracts simply through the device of a managerial compensation structure consisting of a salary S and a fraction 'a' of the equity of the firm. This modeling choice is motivated by empirical and theoretical considerations.[7] The empirical literature emphasizes the role of pay-performance sensitivity of managerial compensation structures, and documents that the bulk of the pay-performance sensitivity in managerial contracts comes from managerial ownership of equity and stock options (see, e.g., Jensen and Murphy (1990) and Murphy (1998)). In our model, the fraction of equity owned by the manager captures the degree of alignment of his interests with that of the shareholders. Although we do not explicitly model bonuses and executive stock options, it can be shown theoretically that in the context of the agency problem of our model, this is without loss of generality.[8] Independent of his ownership in the firm, the manager is in control of the project choice.

Takeovers are the second corporate governance mechanism we consider. A great deal of theory and evidence support the view that takeovers are an important corporate governance mechanism (in the US), without which managerial discretion cannot be controlled effectively.[9] Discipline by takeovers takes the form of a raider emerging with a probability ϕ, accumulating a

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[7] The theoretical and empirical literature on incentive contracts, is vast and too numerous to be cited. See Murphy (1998) for a recent survey on managerial compensation issues.

[8] Given the two-state cash-flow function for the firm, the most general structure of managerial compensation can be represented by a tuplet of wages for the manager, one for the high state and one for the low state. Any such feasible tuplet of payoffs for the manager that can be paid from the firm's cash flows can be replicated through a combination of a salary and an appropriate level of equity ownership. In this sense there is no loss in generality in restricting our managerial compensation to be the sum of a fractional ownership of equity and salary. More generally, in any two-state agency problem, it can be shown that an *affine* compensation structure subsumes the most general compensation structures possible.

[9] See Manne (1965) and Scharfstein (1988)) for the role of takeovers in solving managerial agency problems. There is evidence that takeovers increase the combined value of the target and acquiring firm (Jensen and Ruback (1983)) and that takeover targets are often poorly performing firm (Morck, Shleifer and Vishny (1988a)). Jensen (1986) has argued that takeovers can solve the free cash flow problem, since they often lead to distribution of the firm's profits to investors.

controlling fraction of the votes and implementing the good project. This probability is a function of two important characteristics of the embedding economy (1) the ease of takeovers in that economy, which in turn, is a function of the development of financial markets, (2) the fraction of shares owned by the manager, (3) the degree of entrenchment of the manager. The takeover function is discussed in further detail in the section 1.3.

The third mechanism is monitored debt. The literature on the monitoring role of debt is extensive and has taken several different perspectives. In Jensen (1986), agency costs of free cash flow are studied and debt is argued to mitigate the agency cost by reducing free cash flow and managerial discretion. In a series of influential papers (e.g., Diamond (1991), Rajan (1992), Sharpe (1990)) the focus is on the monitoring role of relationship debt. The bank acquires private information about the borrowing firm that enables the bank to monitor the firm and implement the correct investment choices. Periodic enforcement of debt covenants also performs a monitoring role. However, allowing the bank to develop such an informational monopoly and be in a position to hold up the borrowing firm, is costly.

A dominant theme of the literature on monitored debt is that bank monitoring curtails the private benefits of the manager through a combination of mechanisms such as reducing the free cash flow, relationship banking, or by enforcing debt covenants. Another general feature of bank monitoring is that it entails a cost that is paid by the firm. Both of the above characteristics are featured in our modeling of bank (monitored) debt. We have chosen to keep the cost of monitored debt separate from the yield on the debt, since the cost of monitored debt can take several different forms and arise from several sources.

In our model the manager chooses whether or not to opt for monitored debt. The degree of his alignment and the level of his private benefits determine his choice. But once bank debt is chosen, bank monitoring ensures that the right project is implemented. In this case monitored debt captures the intuition of self-imposed pre-commitment by the manager to forgo his private benefits

and undertake the good project. Viable institutions like banks facilitate credible pre-commitment. The effectiveness of such institutions is parameterized by C_b, the cost of bank monitoring, in our model.[10]

Each one of these mechanisms has been studied in the theoretical and empirical literature often independently of other mechanisms. However, the interaction of these mechanisms and the optimal combination of these mechanisms into an integrated corporate governance system has not been examined.[11] Now we present the problem of designing the optimal corporate governance system constituted from these mechanisms. To study the interplay of the different corporate governance mechanisms in an optimal design, we examine the solution of the following stylized design problem: The entrepreneur designs an ownership structure for the manager to whom the running of the firm is delegated. In designing this ownership optimally the entrepreneur takes into account that the severity of the agency problem (parameterized by B) will have a range of possible realizations. He also rationally anticipates the effect of managerial ownership on: (1) the manager's incentive to choose bank monitoring, and (2) the effectiveness of the takeover market in disciplining the manager. The chosen corporate governance structure will therefore, be represented by an optimally designed managerial ownership structure, existence or not of bank monitoring and resulting effectiveness of the takeover mechanism.

The sequence of events is as follows. At date $t = 0$, the entrepreneur hires a manager and chooses an ownership level a for the manager. At this time, the entrepreneur knows the characteristics of the embedding economy, such as the effectiveness of the legal system L, the takeover environment $\phi(a)$ and the effectiveness of bank monitoring as parameterized by C_b. The

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[10] One of the other mechanisms of pre-commitment to monitoring, is the board of directors. For a survey on the board of directors and its effectiveness, see John and Senbet (1997). Although we do not explicitly model the board, costly monitoring by the board would be similar to our analysis of monitoring by banks.

[11] Although not in the context of an integrated corporate governance system, Hirshleifer and Thakor (1994) and Gorton and Kahl (1999) and Kester and Luehrman (1993) examine issues related to multiple mechanisms. Hirshleifer and Thakor (1994) model corporate boards and takeovers, and Gorton and Kahl (1999) model takeovers and large

project technology and the probability distribution of the private benefits are common knowledge. At date $t = 1$, the private benefits are revealed. The manager chooses between bank debt and public debt. If he chooses bank debt, the bank monitors and implements the good project. The manager chooses the project at $t = 1$. If the manager chooses the bad project, the raider emerges with probability $\phi(a)$ and implements the good project. At period 2, the cash flows are realized and all claims are settled. The sequence of events is:

t = 0
• Entrepreneur chooses managerial ownership a

t = 1
• Private benefits are revealed
• Manager chooses to issue bank debt or not
• Raises required financing
• Manager chooses project
• If he chooses bank debt, the bank monitors
• Raider arrives with probability $\phi(a)$

t = 2
• Cash flows generated and all claims settled
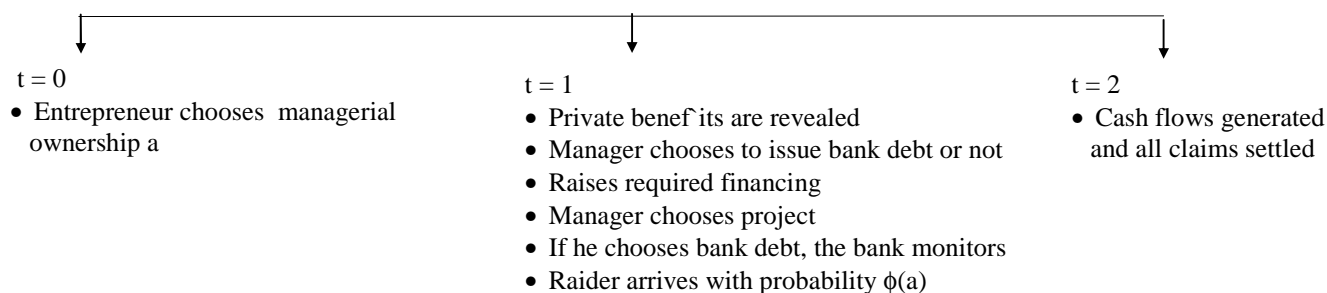
In the remainder of this section, we derive managerial decisions and optimal ownership structures in the presence of only two of the three corporate governance mechanisms. These are managerial ownership and takeovers. Monitoring by banks is introduced in the next section.

1.3 The Takeover Environment

There are several models of takeovers that characterize in greater detail the strategies of the large outside shareholder (the potential raider), the dispersed shareholders and the incumbent management which give rise to a characterization of the probability of takeovers and the premium included in the takeover price. (See surveys by Jensen and Ruback (1983), Spatt (1989), and Hirshleifer (1995)). The reduced form characterization that we have adopted here is closest in spirit to the models in Shleifer and Vishny (1986) and Stulz (1988).

In the simple but realistic setting that we consider the manager has chosen the good project or the bad project to maximize the sum of his cashflow claims and the realized private benefits. The

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potential raider has undertaken research to determine the probability, p, with which the manager has undertaken the bad project (and hence the scope for implementing costly takeover resulting in the replacement of the manager). The incumbents want to keep their jobs and they resist, increasing the costs of takeover to the bidder. The takeover costs $C_T(M,a)$ is assumed to be a declining function of M, the ease of takeovers in the economy, and an increasing function of a, the ownership (and hence voting power) of the incumbent management.[12] We also assume that the raider has a large enough stake α that it pays him to do some monitoring of the management. Given the signal, when the expected profits on his stake justify a takeover, i.e., when $\alpha\, p(H\rho) - C_T \geq 0$, he attempts to implement the takeover. The probability of successful takeovers are increasing in α and p; it is decreasing in $C_T(M,a)$. We capture this dependence in a reduced form manner through the function $\phi(a)$ where ϕ is increasing in the economy wide parameter M, and decreasing in the managerial ownership, a. The effect of insider ownership a on ϕ can also be motivated through a model with dispersed shareholders who have heterogeneous reservation prices for tendering shares (see Stulz (1988)).[13] The raider when successful can implement the good project (with or without managerial replacement).

The takeover probability is specified as $\phi(a) = Max(M - \dfrac{M}{\psi}a, 0)$ where M, $0 < M \leq 1$, is the ease of takeovers in the economy, a is managerial ownership and ψ is the minimum level of managerial ownership at which takeover probability becomes zero. M captures the underlying effectiveness of takeovers in the economy.

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[12] For such a specification where managerial ownership is entrenching ,see, e.g., Stulz (1988), Fluck (1999), Morck, Shleifer and Vishny (1988b), and Song and Walkling (1993).

[13] In their seminal paper, Grossman and Hart analyze exclutionary devices that can be built into the corporate charter to overcome the freerider problem which can thwart takeovers. In their reduced form modeling of takovers, the takeover probability is an increasing function of the dilution factor ϕ which represents the amount by which the shareholders valuation is lower than the raiders valuation of the post raid firm. Grossman and Hart argue that the level of dilution written into a corporate charter is a way of precommitting to a corresponding probability of takeovers.

Countries differ dramatically in the ease and frequency of takeovers. This arises not only from differences in the regulatory framework underlying takeovers but also from cultural and historical attitudes towards takeovers. While the U.S has a very active takeover market, other countries like Germany have virtually no hostile takeovers. Takeover law differs across countries in ownership levels which trigger disclosure requirements by acquirers, timing of the offer, applicability of partial bids, need for pre-approved financing, pricing, structure of bids and defensive tactics which can be employed by the target.[14] Countries also differ in the liquidity of their secondary markets. Liquid secondary markets both facilitate transfer of large blocks of voting shares and make it feasible for bidders to raise large sums of money, influencing the effectiveness of the takeover market. Differences in the effectiveness of takeovers could also arise from differences in legal rules protecting minority shareholders (LLS (1999)).[15] All these factors which bear on the market for corporate control have been modeled in a reduced form way by the parameter M, which captures the effectiveness of the takeover market in the economy. M is also a function of the legal regime λ and their relationship is further explored in Section 2.4.

The value of ψ determines the level of ownership at which the manager gets fully entrenched. For example, $\psi = 0.2$ implies that if the manager owns 20% of the firm he is entrenched and takeovers are ineffective in disciplining him. ψ is a function of firm level characteristics which affect takeover probability. These include among others anti-takeover measures such as poison pills, super majority provisions and dual voting stock which can shield the manager from an otherwise active takeover environment, enabling him to be entrenched at low levels of ownership. By allowing a manager with the same ownership to entrench himself to

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[14] See Berger (1992) for details on comparison of takeover legislation in European community. The U.K has a highly developed takeover market though it is non-statutory. France, which has historically not had much takeover activity enacted new takeover legislation in 1992. New takeover legislation has also been enacted in Spain, Belgium, Italy, Norway and Denmark. Germany and Netherlands seem to have had little legislation and have relied on market and cultural forces to eliminate hostile takeovers.

different degrees in different economic regimes, we want to capture cross-country differences in the prevalence of mechanisms such as pyramids, and shares with differential voting rights. These mechanisms enable insiders to create a wedge between ownership of cash flow claims and voting control. See LLS (1999) for evidence on the use of these mechanisms by insiders around the world.

At zero managerial ownership, also called diffuse ownership, the takeover probability is M which then declines at the rate of M/ψ as managerial ownership increases from $a = 0$ to $a = \psi$. In the region of managerial ownership $\psi \leq a \leq 1$, takeover probability stays constant at zero .

1.4 The Manager's Decision

The manager is assumed to be risk-neutral. We abstract from the "risk-aversion" of the manager, since it does not play any essential role in the agency problem that we model. The manager's objective can be specified as $a \times CF + S +$ private benefits, where a is managerial ownership of the firm, CF denotes the expected cash flows to equity holders and S is his salary.

The manager issues external claims to raise capital for investment. These claims could be debt or equity claims. We focus on the agency costs arising from the incentives of insiders deviating from those of all external investors. We abstract from issues of capital structure, (or more generally security design) and agency problems arising from the conflict between debt holders and equity holders. Here we assume that he issues debt claims of an appropriate face value $F > 0$ (more details on F follow).[16]

If the manager implements the good project, his payoffs are $a[\alpha_g (H - F)] + S$. However if he chooses the bad project, with probability $\phi(a)$ the raider takes control and implements the good project and with probability $(1 - \phi(a))$ the manager implements the bad project. The manager's

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[15] LLS argue that in countries with good legal protection for minority shareholders, the cost of expropriation from losing control of the firm through takeovers is low, i.e., laws protecting minority shareholders facilitate takeovers.
[16] If it was financed by sale of equity, the appropriate fraction given to outsiders is determined by rationally anticipating the project choice to be implemented. This is similar to the determination of F, the face value of debt.

payoffs are $a[\alpha_g(H-F)]+S$ with probability $\phi(a)$ and $a[\alpha_b(H-F)]+S+B$ with probability,

$(1-\phi(a))$ where $a[\alpha_b(H-F)]$ is his expected payoff and B is his private benefits.

The manager chooses the bad project only when the private benefits B are sufficiently large to offset the incremental value of his share of the higher cash flows from the good project. For low realized values of B, the manager will forego the private benefits and choose the good project. Let B_1 be the cutoff such that for all values of $B \le B_1$ the manager chooses the good project, and for all $B > B_1$ he chooses the bad project. For low realizations of private benefits, $B \le B_1$, the manager can raise debt with face value F_g, where $F_g = I/\alpha_g$ as the debtholders correctly anticipate that the manager will implement the good project. For $B > B_1$, the debtholders anticipate that the manager will implement the bad project with probability $(1-\phi(a))$ and the raider will take over with probability $\phi(a)$ and implement the good project. Accordingly they demand a face value of F_ϕ

where $F_\phi = \dfrac{I}{\phi(a)\alpha_g + (1-\phi(a))\alpha_b}$. The manager is therefore able to issue debt with lower face value when private benefits are low, i.e., $F_\phi > F_g$. Incentive compatibility for the manager requires that the manager has no incentive to implement the bad project, subsequent to issuing debt of face value F_g, for values of $B \le B_1$. In the following equation, B_1 is the highest value of private benefits for which he chooses the good project:

$$a[\alpha_g(H-F_g)] = (1-\phi)[a[\alpha_b(H-F_g)]+B_1]+\phi[a[\alpha_g(H-F_g)]]$$

Equivalently, $B_1(a) = a\rho(H-F_g)$. Let $M^* \equiv 1 - F_g/H$ then

$$B_1(a) = a\rho H M^* \tag{1}$$

$(1-M^*)$ can be interpreted as an index of the extent of outside financing required. If the need for external financing is large, M^* is small and $B_1(a)$ is also small. The manager's choice can be represented as follows:

$B = 0$		$B = B_1(a)$		$B = H\rho$
Region I Manager chooses the good project.				**Region II** Manager chooses bad project. The good project gets implemented with probability $\phi(a)$.
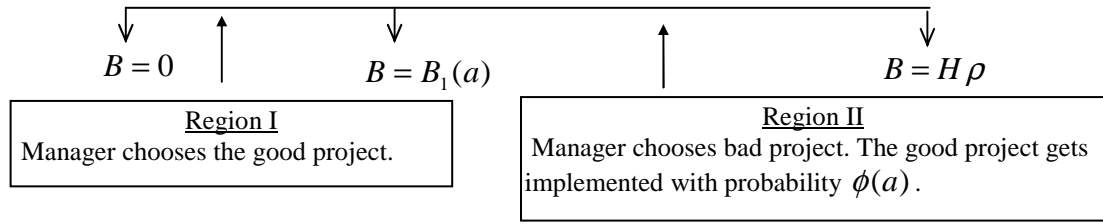
The manager implements the good project with probability $P(B \le B_1(a))$, which is endogenously determined by the level of managerial ownership, 'a' and M^*. The higher the managerial ownership a, the more likely is the manager to implement the good project. As private benefits are uniformly distributed over $[0, \rho H]$ (see Section 1.1),

$$P(B \le B_1(a)) = \frac{a\rho H M^*}{H\rho} = aM^* \tag{2}$$

1.5 The Optimal ownership structure

In this section we consider only two mechanisms of corporate governance (managerial alignment and takeovers), both of which are functions of managerial ownership, a. Increasing managerial ownership, a, increases alignment of the manager with shareholders but decreases the probability of takeovers. This trade-off between the effectiveness of the two interacting mechanisms is at the heart of the design of optimal corporate governance in this simple model.

Given that B is random (i.e., uniformly distributed on $[0, H\rho]$), the design of corporate governance is simply to choose a level of managerial ownership such that over all possible realizations of B, firm value is maximized. For any managerial ownership a, the manager will choose the good project when the realized private benefits are less than the cutoff $B_1(a)$, i.e., when $B \le B_1(a)$. For this range of realizations of private benefits there are no agency costs and firm value equals $H\alpha_g$. However for larger realizations of private benefits, given by $B > B_1(a)$, the good project gets implemented only with probability $\phi(a)$ and firm value equals

$\phi(a)H\alpha_g + (1-\phi(a))H\alpha_b$. At any given ownership 'a', the firm value resulting from the induced project choices is given by $V(a)$, where

$$V(a) = P(B \le B_1(a)) \times H\alpha_g + P(B > B_1(a)) \times [\phi(a)H\alpha_g + (1-\phi(a))H\alpha_b] \qquad (3)$$

Here $V(a)$ is smaller than $H\alpha_g$, the value of the firm that could have been achieved in a world with complete contracting. $H\alpha_g - V(a)$ is the value loss due to agency problems. This will be referred to as agency costs. The entrepreneur picks the ownership structure 'a', $0 \le a \le 1$ to minimize the agency costs, which we will denote as $L(a)$.

$$\underset{a}{Min}\ L(a) = P(B > B_1(a))(1-\phi(a))H\rho \qquad (4)$$

Henceforth, we will think of the entrepreneur's problem as one of minimizing agency costs. In the above characterization of the entrepreneur's problem, we have chosen not to include explicitly the compensation R paid to the manager

$$R = S + a\ V(a)$$

R is the sum of a salary S and fractional ownership a in the firm (valued at a V(a)). The compensation, R is fixed by the labor market for managers, and is independent of the ownership structure `a' chosen by the entrepreneur.[17]

Substituting the value of $P(B > B_1(a))$ from (2), agency costs at managerial ownership 'a' are

$$L(a) = \left(1 - aM^*\right)\left(1 - \phi(a)\right)H\rho \qquad (5)$$

We now characterize the ownership structure, which along with takeovers minimizes agency costs.

Lemma 1: _In any optimal governance system where takeovers play an effective role, i.e., $\phi(a) > 0$, the optimal managerial ownership is zero (diffuse)._

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[17] In the case where a is large and $aV(a) > R$, $S < 0$, i.e., the manager will have to make a payment $(a\ V(a) - R)$ into the firm. If $(a\ V(a) - R)$ is large, the pool of candidates available to be such a manager (or an insider) with a large ownership structure will be limited by the initial wealth required. In such a case a frequent candidate may indeed be the initial owner or the entrepreneur of the firm whose initial wealth includes substantial or full ownership in the firm.

Proof: Agency cost function given in (5) is concave in the region $0 \le a \le \psi$ with

$$\frac{\partial^2 L(a)}{\partial a^2} = \frac{-2H\rho MM^*}{\psi} < 0.$$ Agency costs are therefore minimized at $a = 0$ or $a = \psi$. At $a = \psi$,

$\phi(a)$ drops to zero, and stays at zero for all levels of managerial ownership a, $1 \ge a \ge \psi$, i.e.,

takeovers play no role. In the region where takeovers play a role, (i.e., $0 \le a \le \psi$) agency costs are

minimized at diffuse managerial ownership of $\hat{a} = 0$.   Q.E.D

To understand this further, consider the case of zero managerial ownership. The governance

mechanism here consists of only the takeover mechanism. As managerial alignment is zero, the

manager has no incentive to implement the good project. An increase in managerial ownership

from zero affects agency costs in two ways. An increase in managerial ownership increases his

alignment and the probability of his implementing the good project. This reduces the agency costs

incurred. However, an increase in managerial ownership also entrenches the manager and decreases

the probability with which the takeover mechanism disciplines the manager when he chooses the

bad project. This increases agency costs. The decrease in agency costs due to increased managerial

alignment is captured by an increase in probability with which the manager implements the good

project, i.e., by $P(B \le B_1(a))$ or aM^*. This increases linearly in managerial ownership. The

increase in agency costs due to increased managerial entrenchment is captured by the expected costs

of a reduced takeover probability. Takeover probability declines at a constant rate of M/ψ as

managerial ownership increases. However the expected increase in agency costs, arising from a

declining takeover probability is also a function of managerial alignment. For example, if the

manager is fully aligned, he will implement the good project with a high probability and the cost of

a declining takeover probability would be small. On the other hand, at zero managerial alignment

the impact of the same decline in takeover probability would be highest. The negative impact of

reducing takeover probability on firm value decreases as managerial ownership increases while the

positive impact of increasing alignment on firm values stays constant. Therefore total agency costs are likely to first increase as managerial ownership increases from zero and then decline, giving rise to a concave agency cost function.

We now characterize the optimality of governance structures over a range of takeover environments (M, ψ). In this region, the entrepreneur puts in place governance mechanisms to mitigate agency problems. As seen in Lemma 1, optimal managerial ownership associated with governance structures with takeovers is zero, i.e., $\hat{a} = 0$. At $\hat{a} = 0$, residual agency costs are given by $L(0) = (1 - M)H\rho$. In the region without takeovers $\psi < a \leq 1$, increase in managerial ownership increases alignment. However as the probability of takeovers stays constant at zero, total agency costs decline with increasing ownership, i.e., $L(\psi) > L(1)$. In absence of takeovers, full managerial ownership $\hat{a} = 1$ minimizes agency costs. The residual agency costs with managerial ownership of $\hat{a} = 1$ is given by $L(a) = \left(1 - M^*\right)H\rho$. Optimal governance structure is now easily determined by comparing the residual agency costs associated with the two governance structures. The optimal ownership structure in different takeover environments (M, ψ) is given by the following proposition:

Proposition 1

Recall $M^* = 1 - \dfrac{F_g}{H}$,

(1) *Full ownership governance structure with $\hat{a} = 1$, and no takeovers is optimal when*

$M^* > M$.

(2) *Market-based governance structure with diffuse ownership structure of $\hat{a} = 0$ and effective*

takeovers is optimal when $M > M^*$.

Proof:

The total agency cost associated with full ownership structure is $L(\hat{a}=1)=(1-M^*)H\rho$. As seen in Lemma 1, diffuse ownership of $\hat{a}=0$ is optimal with takeovers with agency costs given by $L(\hat{a}=0)=(1-M)H\rho$. Full ownership is optimal when it has the lower total agency costs, i.e., $L(\hat{a}=1) < L(\hat{a}=0)$ or when $M^* > M$.   Q.E.D

The intuition behind the optimal design of governance systems from the two mechanisms (managerial ownership and takeovers) is as follows: For a required level of external financing (denoted by $(1-M^*)$), full managerial ownership gives rise to some agency costs equal to $(1-M^*)H\rho$. Takeovers are most effective with diffused managerial ownership. At their best, they give rise to agency costs of $(1-M)H\rho$. Comparison of the agency costs implies the optimally designed governance system characterized in Proposition 1.

1.6 Other Specifications

In the framework developed, the takeover function is linearly declining in managerial ownership. Though these are reasonable and general characterizations, it is possible to have other specifications, which are feasible and affect the optimality of the ownership structure.[18] For example, consider the following characterization of the takeover environment. Let the takeover probability $\phi(a)$ decline very slowly over an initial range of managerial ownership $0 \le a \le a^*$ and rapidly thereafter till the manager gets entrenched. Managerial ownership of a^* now allows for increased alignment with little loss in the takeover probability and could be the optimal ownership structure. It is only for ownership levels greater than a^* that there exists the tradeoff between alignment and takeover, similar to that in our model. For sufficiently small a^* this is tantamount to

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[18] Let F be a general distribution of private benefits B with probability density f and let $\phi(a)$ be a general characterization of the takeover function. The agency costs are still given by $L(a) = P(B \ge B_1)(1-\phi(a))H\rho$. For this characterization, $\partial^2 L/\partial a^2 = -H\rho((1-F)\phi'' - 2fB_1'\phi' + (1-\phi)f'B_1')$ where F, f, f' are evaluated at B_1. $\phi'' < 0$

moving the analysis from managerial ownership of zero to that of a^*, without changing the intuition of the model. For small enough perturbations of the functions, the diffuse ownership structure can be broadly interpreted as being low managerial ownership rather than zero managerial ownership.

Other characterizations can also be analyzed in the framework developed here. All these possible specifications, essentially provide combinations of managerial alignment and takeover probability at some interior level of managerial ownership, not available in the simple setup described here. This interior level of ownership might dominate the extreme ownership structures where there is either managerial alignment or takeovers.

2. BANK DEBT

In this section we consider monitoring by bank debt as an additional mechanism of corporate governance. For examining the role of bank debt in corporate governance, we highlight the monitored debt aspect of bank debt in contrast to public debt which is less efficient in its monitoring role. Diamond (1984) shows that intermediation is an efficient mechanism for monitoring. The alternative of direct financing is inefficient because monitoring costs are needlessly duplicated among individual lenders. Moreover, if debt is diffusely held then no individual lender may have sufficient incentive to bear the private costs of monitoring. By pooling the resources of many depositors and lending to many firms, banks can hold a substantial piece of a firm's debt giving banks incentives to monitor. Diamond (1984) further shows that the incentive problems between the bank and depositors can be solved by using debt contracts -- depositors can use debt contracts to induce diversified banks to monitor at low cost, which in turn induces efficient firm behavior.

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or $f' < 0$ is necessary though not sufficient for the agency costs to be minimized at an interior optimum cases ($L'' > 0$).

In studying the role of monitored debt in corporate governance, we focus on the incentives of managers to choose between monitored debt and public debt. We have chosen not to model explicitly the contractual and monitoring relationships between depositors and banks, and take as given that banks have an incentive to monitor, while individual lenders do not. This approach has been taken in several recent papers such as Diamond (1991), Hoshi, Kashyap and Scharfstein (1993), Rajan (1992), and Rajan and Winton (1995). In our model, the decision to obtain monitored debt is made by the manager trading off the costs and benefits of such a pre-commitment. On one hand, given the existence of monitored debt the manager obtains superior terms (the lower face value, F_g) on the external financing, which in turn increases the value of his fractional holding of the residual claims. On the other hand, he has to forego the private benefits, B. The bank monitoring entails a cost, C_b.

In our model, banks monitor the firm's adherence to an elaborate set of debt covenants and ensure the implementation of the good project at cost C_b. At time $t = 1$, the manager observes the realization of his private benefits and chooses between bank and public debt.

The cost of monitoring by banks, C_b, differs across economies. Countries differ widely in regulatory regime applicable to the banking system. For example, there is no separation of commercial banking from securities and investment business in Germany. German banks therefore offer their customers custodial services for shares and vote on behalf of them at shareholder meeting, i.e., differences in banking regulation leads to very different roles played by banks in corporate governance.[19] There is also considerable variation in the legal limit of bank ownership of non-financial firms across different countries. Ability of banks to own equity in firms enhances

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[19] Baums (1992) highlights how the two-tier board system, co-determination and the voting process leads to the dominant role played by banks in corporate governance. He also highlights the incentives of banks to monitor in the German system.

their ability to be effective monitors.[20] Other than regulatory regime, practices like the main-bank system in Japan and the house bank system in Germany further allow banks to be effective monitors. In the U.S. until recently banking regulation such as Glass-Steagall Act severely limited banks ability to hold stocks in manufacturing firms, and in general to combine banking and commerce. [21] Lender liability laws and equitable subordination laws also limited the ability of banks to be effective monitors. Once again the differences in regulatory and cultural environments, which lead to differences in the ability and incentives of banks to monitor are modeled in a simple reduced form way. Economies like Germany where banks are effective monitors are characterized as having a low cost of bank monitoring. On the other hand economies where the environment is not conducive to bank monitoring are regarded as having a high cost of bank monitoring.

2.1 Manager's Decision

When the manager issues bank debt, he knows that he will be monitored by the bank and the good project will be implemented. The manager, therefore, chooses bank debt only when the costs of bank debt (captured by C_b and the foregone private benefits) are less than the benefits of bank debt. The benefits of bank debt are captured in the model by the ability of the manager to issue debt with a reduced face value. By choosing bank debt the manager commits to being monitored and can therefore raise debt with face value of F_g.

The realization of private benefits is publicly known at the time of the debt issue. When $B \leq B_1(a)$, the manager will implement the good project in his own interest. It is only for ($B > B_1(a)$), that the pre-commitment through bank debt is valuable. There exists a range of private benefits $B_1(a) < B \leq B_2(a)$ in which the manager will find it in his interest to issue bank debt. Specifically,

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[20] See Institute of International Bankers (1997) for legal limits to bank ownership. LLS (1999) classify countries where banks can both own majority stakes in and invest more than 60% of their capital portfolio in industrial firms.

Lemma 2: _Given a managerial ownership 'a', the manager will issue bank debt only when the realized private benefits are in the range_ $B_1(a) < B \le B_2(a)$ _where_ $B_1(a) = a\rho H M^*$ _and_

$B_2(a) = a[H\rho - C_b/(1-\phi)]$.

Proof: For $B > B_1(a)$, the manager's payoffs are $a[\alpha_g(H - F_g) - C_b]$ if he issues bank debt and

$(1 - \phi(a))\{a\alpha_b(H - F_\phi) + B\} + \phi(a)\{a\alpha_g(H - F_\phi)\}$ if he issues public debt. The manager therefore

issues bank debt only if realized private benefits are less than $B_2(a) = a[H\rho - C_b/(1-\phi)]$ Q.E.D

His actions are shown below:

| | $B = 0$ | $B = B_1(a)$ | $B = B_2(a)$ | $B = H\rho$ |

Region I	Region II	Region II
Manager chooses the good project.	Manager issues Bank Debt and chooses the good project	Manager chooses bad project with the raider implementing the good project with probability $\phi(a)$.
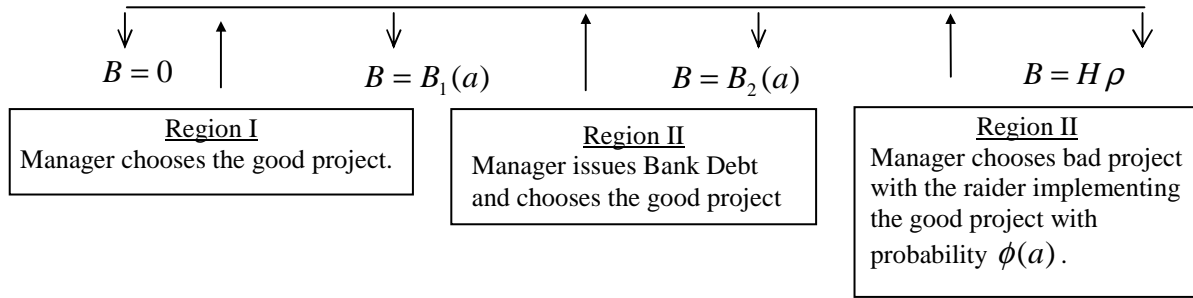
We will refer to the interval of private benefits $[B_1(a), B_2(a)]$ as the "bank debt region".

The length of this interval is $B_2(a) - B_1(a) = a(F_g\rho - C_b/(1-\phi(a)))$. Bank debt is used only when

the costs of bank monitoring are sufficiently low, i.e. $C_b < F_g\rho(1-\phi(a))$. When $C_b > F_g\rho$, the

manager will never choose to issue bank debt. The interaction of bank debt with managerial

alignment can now be characterized.

Lemma 3: _The incidence of bank debt is increasing in managerial ownership_ a.

Proof: The length of the bank debt region $B_2(a) - B_1(a) = a(F_g\rho - C_b/(1-\phi(a)))$. As

$\dfrac{\partial(B_2(a) - B_1(a))}{\partial a} = \dfrac{F_g\rho(1-\phi(a)) - C_b(1 - aM/((1-\phi(a))\psi)}{(1-\phi(a)} > 0$, the bank debt region is increasing

in managerial alignment a.   Q.E.D.

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[21] The recent Gramm-Leach-Bliley Act of November 1999 has overhauled the financial services industry by repealing

A more aligned manager is more likely to issue bank debt to commit to implementing the

good project. The bank debt region is also a decreasing function of the takeover effectiveness as

$\dfrac{\partial(B_2(a)-B_1(a))}{\partial M}=-\dfrac{aC_b(1-a/\psi)}{(1-\phi(a))^2}<0$. When the takeover environment is effective, i.e., M is

large, the bank faces competition from the takeover mechanism for its monitoring services and will

be used only in a smaller range of private benefits. In an ineffective takeover environment, there is a

higher incidence of bank monitoring.

2.2 Optimal Ownership Structure

The determination of the optimal governance system is done in two steps. First we

determine the optimal ownership structure which, along with bank monitoring, minimizes agency

costs. Second, we determine the conditions under which total agency costs associated with bank

monitoring and the optimally determined ownership are less than the total agency costs without

bank monitoring. This determines the conditions under which bank monitoring and an optimally

determined ownership structure will be the optimal governance system.

The entrepreneur takes the manager's incentives (and the optimal decision to be taken

conditional on the B value to be realized at $t=1$) into account when designing the optimal

ownership structure. The benefit of increasing managerial ownership is not just a more aligned

manager who is more likely to choose the good project but also one who is more likely to pre-

commit to be monitored by bank debt. The total agency cost for any ownership structure 'a' is

$$L(a) = \quad P(B_1(a) < B \le B_2(a))C_b + P(B > B_2(a))(1-\phi(a))H\rho . \qquad (6)$$

where $P(B_1(a) < B \le B_2(a)) = \dfrac{a(F_g\rho - C_b/(1-\phi(a)))}{H\rho}$ is the probability with which the manager

issues bank debt and incurs the cost C_b of bank monitoring. $P(B > B_2(a))(1-\phi(a))$ is the

probability with which the manager implements the bad project.

We first characterize the optimal ownership structure with bank debt (without takeovers).

Lemma 4: *Managerial ownership of $\hat{a} = 1$ is optimal with bank monitoring.*

Proof: Total expected agency costs at any managerial ownership 'a' with bank debt and without

takeovers is given by $L(a) = P(B_1(a) < B \leq B_2(a))C_b + P(B > B_2(a))H\rho$ where

$$P(B_1(a) < B \leq B_2(a)) = \frac{a(F_g\rho - C_b)}{H\rho} \text{ and } P(B > B_2(a)) = 1 - \frac{a(H\rho - C_b)}{H\rho}.$$ This can be written as

$$L(a) = H\rho - \frac{a\{(H\rho - C_b)H\rho - (F_g\rho - C_b)C_b}{H\rho} \text{ and is minimized at } \hat{a} = 1.$$ Q.E.D.

Governance structures with bank monitoring require full managerial ownership. The

intuition for this result is simple. Manager's incentive to pre-commit through bank debt is

increasing in managerial alignment. Therefore $a = 1$ maximizes the manager's incentive to choose

the good project as well as to pre-commit through bank debt. Before we discuss the optimal

governance structures, we will characterize the interactions of the different mechanisms in this

simple setup.

Lemma 5: *If $C_b < F_g\rho$, full managerial ownership _with_ bank monitoring dominates full*

managerial ownership _without_ bank monitoring.

Proof: Agency costs are $L(1) = P(B_1(1) < B)H\rho$ with full ownership and without bank monitoring.

Agency costs are $L^B(1) = P(B_1(1) < B \leq B_2(1))C_b + P(B_2(1) < B)H\rho$ with full ownership and bank

monitoring. $L(1) - L^B(1) = P(B_1(1) < B \leq B_2(1))(H\rho - C_b)$ is positive when $C_b < F_g\rho$.   Q.E.D.

When bank debt is feasible, monitoring by banks further mitigates the residual agency costs

associated with full ownership. Governance structures that include monitoring by the bank,

dominate governance structures that rely exclusively on managerial alignment.

Lemma 6: *Monitoring by bank debt will not appear in any optimal corporate governance system in*

which takeovers play a role.

Proof: As takeovers are effective only when managerial ownership $0 \leq a \leq \psi$, it is in this range of ownership structure where both banks and takeovers can play a role. Agency costs in this region are given by (6), and $L(a) = \dfrac{a(F_g \rho - C_b/(1 - \phi(a)))}{H \rho} C_b + \left(1 - \dfrac{a(H\rho - C_b/(1 - \phi(a)))}{H \rho}\right)(1 - \phi(a))H\rho$.

Agency costs are concave in this region with $\partial^2 L(a)/\partial a^2 < 0$. The agency costs are therefore minimized at either $a = 0$ or at $a = \psi$. Agency costs decrease with a in the region $\psi \leq a \leq 1$ with $L(\psi) > L(1)$. Agency costs will therefore be minimized at either managerial ownership of $a = 0$, where takeovers are effective but there is no bank monitoring, or managerial ownership of $a = 1$ with bank monitoring but no takeovers.   Q.E.D.

The intuition of the above result is as follows: Bank monitoring requires managerial alignment. Only a sufficiently aligned manager will choose to pre-commit through bank debt. However, concentrated managerial ownership makes the manager entrenched and rules out discipline through takeovers. Similarly, takeovers are most effective with diffuse ownership. However, poorly aligned managers will have no incentive to pre-commit to being monitored by bank debt.

The optimal governance structure for different takeover environments (M, ψ), different levels of effectiveness of bank monitoring (C_b) and different legal regimes λ are characterized in the following proposition:

Proposition 2

Recall $M^* = 1 - \dfrac{F_g}{H}$, _and_ $M_b^* = 1 - \dfrac{C_b}{H\rho}\left(1 + \dfrac{F_g}{H} - \dfrac{C_b}{H\rho}\right)$

1) _For_ $C_b > F_g \rho$, _the optimal governance structure consists of managerial ownership of_ $\hat{a} = 1$

   without bank monitoring when $M^* > M$. _Otherwise managerial ownership of_ $\hat{a} = 0$ _with_

   takeovers is optimal.

2) *For* $0 < C_b \leq F_g \rho$, *the optimal governance structure consists of managerial ownership* $\hat{a} = 1$

   with bank monitoring when $M_b^* > M$. *Otherwise diffuse managerial ownership of* $\hat{a} = 0$ *with*

   takeovers is optimal.

Proof:

1) For $C_b < F_g \rho$, bank debt is feasible. As shown in Lemma 6, full ownership with

   bank monitoring dominates full ownership without bank monitoring. As seen in Lemma 7,

   agency costs are minimized either at full ownership with bank monitoring or at diffuse

   ownership with takeovers. Comparison of the agency costs associated with these governance

   structures, determine their optimality. Agency costs with full ownership and bank debt are

   given by $L(a) = \dfrac{a(F_g \rho - C_b)C_b}{H\rho\lambda} + \left(1 - \dfrac{a(1 - C_b/H\rho)}{\lambda}\right)H\rho$ which can be expressed as

   $(1 - M_b^*)H\rho$. Agency costs with diffuse ownership and takeovers is given by $(1 - M)H\rho$.

   Full ownership with bank debt will be optimal when $(1 - M_b^*)H\rho < (1 - M)H\rho$ or when

   $M_b^* > M$.   Q.E.D

   The intuition behind the optimal design of governance systems from the three mechanisms

(managerial ownership, takeovers and bank debt) is as follows: For a required level of external

financing (denoted by $(1 - M^*)$), even full managerial ownership gives rise to some agency costs

equal to $(1 - M^*)H\rho$. Monitoring by bank debt when feasible mitigates these residual agency costs

associated with full ownership (but at a cost C_b). Takeovers do not play a role when monitored debt

is used, and are most effective with diffused managerial ownership. At their best, they give rise to

agency costs of $(1 - M)H\rho$. Comparison of the agency costs implies the optimally designed

governance system characterized in Proposition 2.

M_b^* can be regarded as the measure of bank effectiveness for a given project (H, F_g, ρ).

M_b^* is decreasing in the cost of bank monitoring C_b with $\partial M_b^* / \partial C_b < 0$. Whereas, $\partial^2 M_b^* / \partial C_b^2 > 0$.

<div align="center">**INSERT FIGURE 1 HERE**</div>

Proposition 2 characterizes the governance systems optimal for different configurations of the economy parameterized by $(M, C_b) \in (0,1] \times (0, \infty)$. When bank monitoring is prohibitively expensive ($C_b > F_g \rho$) and takeovers are ineffective ($M < M^*$), full ownership is the optimal governance system. Otherwise either bank monitoring with concentrated ownership or takeovers with diffuse ownership become the optimal governance system.

<div align="center">**3. EXTENSIONS**</div>

To keep the basic model simple we had left out several ingredients, which is discussed in related work on corporate governance. In this section we consider straightforward extensions of our basic model to study: 1) the effect of legal regimes on corporate governance, 2) the effect of legal protection and corporate governance on the size of debt and equity markets, and 3) firm specific variation in corporate governance.

3.1 Legal Regimes and Corporate Governance

To this point, in our model of corporate governance, we have considered the degree of development of markets and that of institutions as the defining parameters of the embedding economy. We can extend the basic model to consider the role of the legal system in determining the corporate governance in an economy. The effectiveness of the legal system can be introduced into our framework through its effect on M and C_b, the defining parameters of the embedding economy.[22]

We will use $\lambda \in [0,1]$ as a parameter of the effectiveness of the legal system in an economy. It will be useful to categorize the provisions of the legal system into two groups. The first group of

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[22] Researchers have also used alternate specifications to model the effect of legal system on ownership (See Shleifer and Wolfenzon (2001)) and on corporate governance (See John and Kedia (2002)).

provisions improve the degree of development of equity markets. Examples of such provisions include those which provide better legal protection of outside shareholders and those which facilitate takeovers. We will index the effectiveness of these provisions by λ_M and further assume that M is increasing in λ_M. A second group of legal provisions facilitate the effectiveness of bank monitoring. Better bankruptcy laws, laws which enhance creditor rights and creditor monitoring are examples of this group. We will index the effectiveness of these provisions by λ_B and further assume that C_b is decreasing in λ_B.

Given this dependence of the legal system on M and C_b, the following implications can be derived from Proposition 1 and 2.

Corollary 1: *An increase in λ_M will lead to a lower concentration of ownership.*

Increases in λ_M lead to increases in M. If concentrated ownership without bank monitoring was optimal before the change, with a larger M the governance structure either remains the same or switches into a takeover based governance structure with diffuse ownership (Proposition 1). If bank-centered governance structure was optimal before the change, either the new governance structure is the bank centered one with concentrated ownership or there is a transition to the takeover based governance structure with diffuse ownership (Proposition 2). In either case an increase in λ_M is more likely to lead to a less concentrated ownership structure. In a series of influential papers La Porta et al. (1997, 1998, 1999) have documented that better legal protection of outside shareholders is associated with lower concentration of ownership and control. However, our focus on an optimal governance system constructed from multiple mechanisms of corporate governance raises a potential caveat. If improvements in the legal system can lead to changes in the effectiveness of different governance mechanisms, the combined effect on the optimal governance system can be complex. For example, consider a change in the legal system,

which leads to better protection of creditor rights, i.e., an increase in λ_B. This will lead to a

reduction in C_b which in turn can lead to a transition from a takeover based governance structure

with diffuse ownership to a bank-centered governance structure with concentrated ownership

($M_b^* > M$ in Proposition 2). In this case, the improvement in the legal system would have led to an

increase in ownership concentration.

To summarize, our analysis yields two new perspectives on the current literature relating legal

systems and corporate governance. Firstly, in evaluating changes or differences in legal systems it

is important to examine the specific nature of the legal provision under discussion. Secondly, it is

important to examine changes in the governance system brought about by changes in the legal

system and not just changes in ownership structure, which is only one of the mechanisms of

corporate governance. In our framework, for example, improvements in creditor rights may bring

about a change from a family based governance system to a bank-centered governance system while

the ownership structure may remain concentrated.

3.2 Corporate Governance and the Size of Equity Markets

In our model, each economy solves for the optimal corporate governance system. Since each

system is optimal given the characteristics of the economy, we do not rank the different governance

systems. However, there are important differences among the governance systems with regard to

the size of external financing possible.

In our framework, the family based governance system and the bank centered governance system

require concentrated ownership by insiders while the takeover based governance system requires

only diffuse ownership by insiders. This implies that the size of the external equity possible in a

takeover-based system is larger than the external equity possible in the other two systems. In other

words, the size of the external equity markets in economies with a takeover-based governance

system will be larger. We can also relate the size of the equity market to λ_M. Recall that economies

with larger λ_M have larger values of M which in turn makes it more likely that a takeover based governance system is optimal for that economy. This implies that economies with higher values of λ_M will have larger equity markets. The recent empirical work also shows that better legal protection of outside shareholders is associated with more valuable stock markets (see La Porta et al. (1997, 1998), Claessens et al. (2000), and ECGN (1997)). Shleifer and Wolfenzon (2001) show that ownership is less concentrated and equity markets are larger in countries where shareholders are better protected.

3.3 Firm Specific Governance Structures

In the basic model, we did not consider heterogeneity among firms that will give rise to different optimal governance structures within an economy. There may be several sources of such heterogeneity among firms. In particular, characteristics of the assets of the firm such as its productivity may determine the optimal scale of investment to be undertaken. The nature of the business activity and industry characteristics may determine the severity of agency problems present. Another important characteristic that may be different among firms in the same economy, may be the liquidity needs of the entrepreneur. The liquidity needs of the entrepreneur and the optimal scale of investment required may determine the level of external financing has to be undertaken. These characteristics specific to the firms may give rise to different optimal governance structures within a given economy (M, C_b).

In this following discussion, we will limit our analysis to heterogeneity among firms to be based on external financing required at $t = 0$. Assume that the firm will raise additional liquidity of $L = \delta \alpha_g$ such that the total financing raised is $(I + \delta \alpha_g)$ instead of I in the basic model. This will give rise to firm-specific parameters $M_b^*(\delta) = 1 - \dfrac{C_b}{H\rho}\left(1 + \dfrac{(F_g + \delta)}{H} - \dfrac{C_b}{H\rho}\right)$ and

$$M^*(\delta) = \left(1 - \frac{(F_g + \delta)}{H}\right)$$ taking the place of M_b^* and M^* in Propositions 1 and 2 respectively. The

optimal corporate governance for a firm characterized by liquidity demand δ in an economy

(M, C_b) will be given as before in Proposition 1 and 2.

In economies with large M, i.e, $M \approx M^*$ cross-sectional differences among δ will give rise

to differences in optimal governance structures; inter-temporal changes in δ for a given firm can

also lead to changes in its governance structure. To see this, take the case of two firms with

different δ values, $\delta_2 < \delta_1$, $M^*(\delta_1) < M < M^*(\delta_2)$ then the firm with $\delta = \delta_1$ will have a takeover-

based governance system whereas the firm with $\delta = \delta_2$ will have a family-based governance

structure. Similarly, a firm whose liquidity needs increases from δ_2 to δ_1 will go from a family-

based governance structure into a takeover-based governance structure with diffuse ownership by

going public. A change in the opposite direction where the liquidity needs decrease from δ_1 to δ_2

will make it optimal for the firm to undertake a going-private transaction switching its governance

from a takeover system with diffuse ownership to a family-based system with concentrated

ownership.

In an economy with a small M, such that $M^*(\delta) > M$ for a large range of values of δ,

such differences in governance structures will not obtain. Even though firms have different

liquidity needs their governance structures will continue to be family- based or bank-centered with

concentrated ownership. These arguments lead to the following result.

Corollary 2: *In strong takeovers regimes $M \geq M^*$ cross sectional differences in governance*

structures are characterized by large differences in ownership structures and changes in

governance structures are accompanied by large changes in ownership structures. In weak

takeover environments, $M \quad M^*$ there is little cross sectional or inter temporal variation in

ownership structures.

4. EMPIRICAL IMPLICATIONS

We have derived a number of results on the structure and properties of optimally designed

governance systems as a function of the economy (M , C_b). Several new empirical implications

are suggested by these results. Among these results some help to explain existing empirical

evidence, while others offer opportunities for further empirical work.

Using empirical proxies for λ, M, and C_b as economy-wide parameters we can test the

implications of our results for cross-country differences in the usage of different corporate

governance mechanisms. In addition to these cross-sectional implications, there are also interesting

time-series implications of our results. These pertain to how ownership structure and usage of other

corporate governance mechanisms change with (1) changes in economy-wide parameters relating to

its legal regime and the role of banks and the market for corporate control, or (2) changes in firm-

specific parameters. A few of these testable implications are discussed below:

Implication 1: The concentration of ownership is decreasing in the level of investor protection in

an economy.

Since provisions in the legal system that increase the protection of outside investors from

expropriation by insiders increases λ_M , this implication follows from Corollary 1. LLSV (1997,

1998) examine the laws that affect shareholder rights and construct an Anti-director index, which is

a proxy for λ_M . They document an inverse relationship between λ_M and concentration of

ownership and control.

In addition to the cross-country implications relating corporate governance and the

effectiveness of legal regimes, we can also formulate time-series implications of that relation, i.e.,

changes in the legal system should give rise to changes in corporate governance. These

relationships, however, might be hard to test because of the slow pace of changes in legal regimes. A faster adoption of some key features of a more effective legal system may be achieved when a firm in one country with a weak legal regime cross-lists on an organized stock exchange in another country with a strong legal regime. For example, an Italian firm that cross-lists in the U.S. is subject to U.S. security laws and has to conform to U.S. GAAP, which enables the Italian firm to adopt several aspects of the U.S. legal regime within a short period.[23] In general, firms that cross-list in the U.S. face a different (more effective) legal regime which leads to an increase in λ_m. These firms are more likely to find that a different governance structure is optimal. This argument leads to the following prediction:

Implication 2: In an economy with a weak legal regime, firms that cross-list in the U.S. should experience more rapid changes in corporate governance than firms which do not cross-list.

Further empirical predictions arise from our results on the interaction of the different governance mechanisms. Lemmas 1, 4 and 6 imply that monitored debt should appear together with concentrated ownership while takeovers should appear with diffuse ownership. A straightforward implication is:

Implication 3: Ownership concentration should be higher in bank-centered governance systems compared to that in takeover based governance systems. A related prediction is that when a firm reduces its reliance on monitored debt and switches to issuing public debt the ownership concentration should decline.

Based on our discussions in Section 3.3, our model also yields predictions on cross-sectional and inter temporal variations in governance structures in a given economy. Corollary 2 has the following implication:

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[23] Reese and Weisbach (1999) document that firms from French Civil Law countries, which have relatively weak protections for minority shareholders, are more likely to cross-list on an organized exchange than firms from English Common Law countries. Subsequent to cross-listing in the U.S., equity offerings increase from firms from all countries, and the increase is larger from countries with lower shareholder protections.

Implication 4: The cross-sectional and inter-temporal variation in ownership structures would be higher in an effective takeover environment than a weak takeover environment. Going public and going private transactions should be more frequent in an effective takeover environment than a weak takeover environment.

This prediction can be tested using proxies for takeover effectiveness. For example, Gompers, Ishii and Metric (2001) construct a governance index, which is higher in an effective takeover environment. A dynamic version of this implication can be obtained by introducing into the model some plausible transaction costs of going public which is declining with the age of the firm.

Implication 5: In an economy with an effective takeover environment, the time to going public will be decreasing in liquidity needs (δ).

Empirical tests of the above implication can be done using the usual proxies for firm liquidity and the time to going public (e.g., the duration between the date of incorporation and the date of going public, See Gompers (1995, 1996)). Similar testable implications of other results in the paper can also be developed.

5. CONCLUSION

In this paper we present a theoretical model of comparative corporate governance. The starting point is a simple agency model driven by managerial benefits of control. The economies differ in the degree of development of financial institutions and markets. In this setting, we study the design of optimal governance systems constituted from three of the main corporate governance mechanisms, i.e., managerial ownership, takeovers, and monitoring by banks. To our knowledge, ours is the first model that analyses the design of an optimal governance system constituted from multiple, interacting governance mechanisms.

The optimal configurations of corporate governance that arise display interesting patterns. Some of the mechanisms occur in conjunction with each other, while others are substitutes. Concentrated ownership of shares by the managers or controlling insiders constitutes the optimal

governance system in economies with a weak takeover environment and an inefficient banking sector. Monitoring by banks arise in an optimal system only in conjunction with some degree of concentrated ownership. Moreover, this combination is optimal only for economies in which the capital markets are not well developed but the banking sector is quite efficient. When markets are well developed and the banking sector is relatively not, the optimal governance system involves diffused ownership structures and an active market for corporate control (takeovers). These governance structures that arise as optimal ones correspond closely to three of the most prevalent governance systems observed around the world. Indeed, the first governance structure, often called family-based is by far the most common governance structure in the world (see, LLS (1999), Claessens et al (2000)). The second governance structure above (often referred to as bank-based) is also common and is characterized by concentrated ownership, bank monitoring with little or no role for takeovers. The third governance structure, referred to as takeover based governance is characterized by zero (or small) managerial ownership and an active role for takeovers, with only a small role for monitored debt.

In addition to relating concentration of ownership to the effectiveness of the legal regime (studied by LLS (1999)) our results make several predictions about the characteristics of the corporate governance mechanisms optimally selected to supplement the legal system. The choice of these mechanisms is affected by the relative development of markets and financial institutions. Ease and liquidity of secondary market trading, bankruptcy laws, banking regulation, takeover regulation and cultural and political factors could be determinants of the optimal configuration.

REFERENCES

Allen, F., 2001, "Do Financial Institutions Matter?" *Journal of Finance*, Vol. 56, 1165-1175.

Allen, F., and D. Gale, 2000, "Corporate Governance and Competition," in X. Vives (ed.) *Corporate Governance: Theoretical and Empirical Perspectives*, Cambridge University Press.

Baums, T., 1992, "Corporate Governance in Germany: The Role of the Banks," *The American Journal of Comparitive Law*, Vol. 40, 503-523.

Bebchuk, L., 1998, "A Theory of the Choice Between Concentrated and Dispersed Ownership of Corporate Shares," Working Paper, Harvard University.

Berger, D. J., 1992, "A Comparitive Analysis of Takeover Regulation in the European Community," *Law and Contemporary Problems*, Vol. 55, 53-75.

Berle, A., and G. Means, 1932, "*The Modern Corporation and Private Property*", New York, Macmillan.

Bhide, A., 1993, "The Hidden Costs of Stock Market Liquidity," *Journal of Financial Economics* 34, 31-51.

Boot, A.W.A., and A.V.Thakor, 1997, "Financial System Architecture," *Review of Financial Studies*, 10, 693-733.

Bradley, M., C. A. Schipani, A.K. Sundaram and J.P. Walsh, 1999, "The Purposes and Accountability of the Corporation in Contemporary Society: Corporate Governance at Crossroads," *Law and Contemporary Problems*, Vol 62, No 3, 9-86.

Brickley, J., and C. James, 1987, "The Takeover Market, Corporate Board Composition, and Ownership Structure: The Case of Banking," *The Journal of Law and Economics* (April), 161-181.

Chidambaran, N. K., and K. John, 1997, "Managerial Compensation, Voluntary Disclosure, and Large Shareholder Monitoring," Working Paper, New York University, November.

Claessens, S., S.Djankov and L. Lang., 2000, "The Separation of Ownership and Control in East Asian Corporations," Journal of Financial Economics 58, 81-112.

Demirguc-Kunt, A., and Maksimovic, V., (1998), "Law, Finance, and Firm Growth", *Journal of Finance*, 53, 2107-2137.

Demsetz, H., and K. Lehn, 1985, "The Structure of Corporate Ownership: Causes and Consequences," *Journal of Political Economy*, 93, 1155-77.

Diamond, D., 1984," Financial Intermediation and Delegated Monitoring", *Review of Economic Studies*, LI, 393-414.

European Corporate Governance Network (ECGN), 1997, "The Separation of Ownership and Control: A Survey of 7 Countries Preliminary Report to the European Commission," Vol 1-4, Brussels: European Corporate Governance Network.

Fluck, Z., 1999, "The Dynamics of the Management-Shareholder Conflict," *The Review of Financial Studies*, 12, 379-404.

Franks, J., and C. Mayer, 1994, "The Ownership and Control of German Corporations," Working Paper, London Business School.

Gompers, P. A. 1995, "Optimal Investment, Monitoring, and the Stages of Venture Capital." Journal of Finance 50: 1461-1489.

Gompers, P. A. 1996,"Grandstanding in the Venture Capital Industry." Journal of Financial Economics 42: 133-156.

Gompers, P.A., J.L.Ishii, and A. Metrick, 2001, "Corporate Governance and Equity Prices," Harvard Business School Working Paper.

Gorton, G., and M. Kahl, 1999, "Blockholder Identity, Equity Ownership Structures, and Hostile Takeovers," Working Paper, University of Pennsylvania.

Grossman, S.J., and O.D. Hart, 1988, "One-Share One-Vote and the Market for Corporate Control," *Journal of Financial Economics*, 20, 175-202.

Harris, M., and A. Raviv, 1988, "Corporate Governance: Voting Rights and Majority Rules," *Journal of Financial Economics*, 20, 203-235.

Hirshleifer, D., and A. Thakor, 1994, "Managerial Performance, Boards of Directors and Takeover Bidding," *Journal of Corporate Finance,* 1, 63-90.

Hirshleifer, D., 1995, "Mergers and Acquisitions: Strategic and Informational Issues", in *Finance,* Hand Books in Operations Research and Management Science, Vol. 9, North-Holland.

Hoshi,T., A. Kashyap, and D. Sharfstein, 1993, "The Choice between Public and Private Debt: An Analysis of Post- Regulation Corporate Financing in Japan", MIT Working Paper.

Jensen, M., 1986, "Agency Costs of Free Cash Flow, Corporate Finance and Takeovers," *American Economic Review*, 76, 323-29.

Jensen, M., and W. Meckling, 1976, "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics*, 3, 305-60.

Jensen, M., and K. Murphy, 1990, "Performance Pay and Top Management Incentives," *Journal of Political Economy*, 98, 225-63.

Jensen, M., and R. Ruback, 1983, "The Market for Corporate Control: The Scientific Evidence," *Journal of Financial Economics*, 11, 5-50.

John, K., and A. Kalay (1982), "Costly Contracting and Optimal Payout Constraints," *Journal of Finance,* 457-470.

John, T.A., and K. John (1993), "Top-Management Compensation and Capital Structure," *Journal of Finance*, 48, 949-974.

John, K., and L. Senbet, (1998), "Corporate Governance and Board Effectiveness*," Journal of Banking and Finance*, 22,371- 403.

Kang, J., and A. Shivdasani, 1995, "Firm Performance, Corporate Governance, and Top Executive Turnover in Japan," *Journal of Financial Economics*, 38, 29-58.

Kaplan, S., 1994, "Top Executive Rewards and Firm Performance: A Comparison of Japan and the United States," *Journal of Political Economy*, 102, 510-46.

Kester, C.W., 1991,"*Japanese Takeovers*," Harvard Business School Press, Boston, Massachusetts.

La Porta, R., F. Lopez-De-Silanes, and A. Shleifer, 1999, "Corporate Ownership Around the World," *Journal of Finance*, 54, (April), 471-518.

La Porta, R., F. Lopez-De-Silanes, A. Shleifer, and R.W. Vishny, 1997, "Legal Determinants of External Finance", *Journal of Finance*, 52, (July), 1131-1150.

La Porta, R., F. Lopez-De-Silanes, A. Shleifer, and R.W. Vishny, 1998, "Law and Finance", *Journal of Political Economy*, 106, 1113-1155.

La Porta, R., F. Lopez-De-Silanes, A. Shleifer, and R.W. Vishny, 2002, "Investor Protection and Corporate Valuation", *Journal of Finance*, forthcoming.

Manne, H., 1965, "Mergers and the Market for Corporate Control," *Journal of Political Economy*, 75,110-26.

Morck, R., A. Shleifer, and R. W. Vishny, 1988a, "Characteristics of Targets of Hostile and Friendly Takeovers," in Alan J. Auerbach (ed*). Corporate Takeovers: Causes and Consequences*, Chicago: University of Chicago Press, 1988.

Morck, R., A. Shleifer, and R. W. Vishny, 1988b, "Management Ownership and Market Valuation: An Empirical Analysis," *Journal of Financial Economics*, 20, 293-315.

Murphy, K.J., 1998, "Executive Compensation," in O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics,* Volume 3, North-Holland.

Myers, S.C., 1977, "Determinants of Corporate Borrowing," *Journal of Financial Economics*, 147-175.

Myers, S.C., 1999, "Financial Architecture," *European Financial Management*, 5, 133-141.

Prowse, S., 1990, "Institutional Investment Patterns and Corporate Financial Behavior in the United States and Japan," *Journal of Financial Economics*, 27, 43-66.

Rajan, R., 1992, "Insiders and Outsiders: The Choice Between Relationship and Arms-Length Debt," *Journal of Finance*, 47, 1367-400.

Reese, Jr., W.A, and M. S. Weisbach, 1999, "Protection of Minority Shareholder Interest, Cross-Listings in the United States, and Subsequent Equity Offerings, Working Paper, University of Illinois.

Scharfstein, D., 1988, "The Disciplinary Role of Takeovers," *Review of Economic Studies*, 55, 185-99.

Sharpe, S., 1990, "Asymmetric Information, Bank Lending and Implicit Contracts: A Stylized Model of Customer Relationships," *Journal of Finance*, 45, 1069-1087.

Shivdasani, A., 1993, Board Composition, Ownership Structure, and Hostile Takeovers*," Journal of Accounting and Economics*, 16, 167-98.

Shleifer, A., and R. W. Vishny, 1986, "Large Shareholders and Corporate Control," *Journal of Political Economy*, 94, 461-488.

Shleifer, A. and R. W. Vishny, 1997, "A Survey of Corporate Governance," *Journal of Finance*, 52, 737-775.

Shleifer, A. and D. Wolfenzon, 2001, "Investor Protection and Equity Market," New York University Working Paper.

Smith, C., and J. Warner, 1979, "On Financial Contracting: An Analysis of Bond Covenants*," Journal of Financial Economics*, 117-161.

Song, M. H., and R.A. Walkling, 1993, "The Impact of Managerial Ownership on Acquisition Attempts and Target Shareholder Wealth," *Journal of Financial and Quantitative Analysis*, Vol. 28.

Stulz, R., 1988, "Managerial Control of Voting Rights: Financing Policies and Market for Corporate Control," *Journal of Financial Economics*, 20, 25-54.

Thakor, A.V., 1996, "The Design of Financial Systems: An Overview," *Journal of Banking and Finance*, 20, 917-984.

FIGURE 1

A COMPLETE CHARACTERIZATION OF THE OPTIMAL CORPORATE GOVERNANCE SYSTEM IN TERMS OF THE ECONOMY PARAMETERS (M, C_b)

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