

Institutions, Monitoring Costs
and the
Choice of Corporate Ownership Structure

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Abstract

Recent work finds that countries with poorly developed legal systems are characterized by firms with high concentrations of ownership and narrow capital markets. The causality of this relationship, however, has not been formalized. This paper presents a theoretical model to analyze the influence of institutions on the decision to go public and the choice of ownership structure. The model shows that as the efficiency of legal institutions decreases, shareholder's monitoring costs increase and, in consequence, the market value of publicly traded firms decreases. The low market value of public firms leads firm owners to avoid the capital market. In addition, the model suggests that maintaining high concentrations of ownership is a value maximizing choice of the firm owner when legal institutions are inefficient.

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Introduction

It is evident that ownership structure varies greatly across countries. For instance, whereas most large Latin American firms are owned by a few individuals, the typical U.S. firm is owned by numerous shareholders. This difference in ownership structure has been documented in the literature. La Porta et al. (1997), for example, find that ownership is highly concentrated in countries such as Spain and Italy, but not as much in England and Japan. Two questions immediately arise from identifying these facts: What factors contribute to the choice of ownership structure? Why does this choice vary across countries?

Explaining the choice of ownership structure is a task that has occupied economists for decades. Typically, the choice of ownership structure is described as a strategy to alleviate principal-agent problems associated with the delegation of control. In their classic paper, Jensen and Meckling (1976) suggest that the initial owner of a firm will choose to retain a large share of her assets to prevent managers from engaging in appropriative activities. The role of large shareholders in determining the concentration of ownership is also discussed in Grossman and Hart (1980) and Shleifer and Vishny (1986). Other analyses of the choice of ownership structure include that of Israel (1997), who describes the choice of ownership and capital structure as the result of proxy fights. Explanations for the difference in ownership structure across countries, however, are scarce and found primarily in disciplines other than economics. Only recently have economists turned their attention to this issue. Shleifer and Vishny (1998) for instance, argue that the efficiency of institutions responsible for protecting shareholder's rights is inversely related to concentration of ownership. In particular, they suggest that weak legal systems lead to high

ownership concentrations. Similarly, La Porta et al. (1997) find that, in countries where the Roman law characterizes the legal system, ownership is highly concentrated. Neither of these two papers, however, formalizes the argument. In a recent paper, Pagano and Roel (1998) develop a theoretical paper that links monitoring costs to the choice of ownership structure. Although they suggest that monitoring costs would vary according to the efficiency of institutions at enforcing the law, they do not formally explore the argument.

Following the framework used in Castillo (1999), the models presented in this paper examine one of the primary costs associated with the decision of selling equity, the agency problems resulting from the separation of ownership and control. In particular, consistent with the principal-agent argument, I assume that when selling equity the incumbent owner/manger of the firm will not necessarily undertake the optimal actions from the point of view of shareholders. More explicitly, I consider the case in which the incumbent owner/manager engages in divertive activities that reduce the value of the firm. Examples of divertive activities are abundant and include siphoning funds from the firm to fund pet projects, tampering with accounting records, and the like. Anticipating that incumbent owners/managers will engage in such behavior, potential shareholders discount the price they are willing to pay for shares by the monitoring costs they must incur to protect their investment. The higher the monitoring costs, the lower the price they will pay for shares and thus the lower the value of the publicly traded firm.

The role of institutions is captured by considering the relation between monitoring costs and the efficiency of institutions at protecting property rights. Specifically, consider an agent who chooses the amount of resources devoted to appropriative activities. If she perceives that the probability of being punished is high, then, she will devote fewer resources to illegal activities relative to the case when the probability of being punished is

low. If we then consider the efficiency of legal institutions at implementing the law as a signal to evaluate the probability of being punished when committing a crime, it is clear that the more efficient the institutions the less resources an agent will devote to illegal activities. Thus, when property rights are poorly enforced, we should find that the agent devotes more resources to appropriative activities and so does the principal devote more resources to monitoring. Since the costs of monitoring increase with the amount of monitoring, the less efficient institutions, the higher the monitoring costs and the lower the price shareholders are willing to pay for the shares of the publicly traded firm.

This intuition just described is formalized in models developed under a contest-game theoretic framework in which an incumbent owner/manager and potential shareholders compete for the resources of a publicly traded firm. At the outset of this interaction, the incumbent owner realizes the net value that she would receive from the publicly traded firm. This realization will dictate the choice of ownership structure. In particular, if the net value of the publicly traded firm to the incumbent owner is greater than the value she receives from keeping the firm privately owned, she will go public. The models show that when institutions protect property rights efficiently, the value of the publicly traded firm is greater than the value of a family business, but as the efficiency of institutions at protecting property rights decreases, so does the value of the publicly traded firm. These results are consistent with the empirical evidence that in countries where property rights are poorly enforced ownership concentration is significantly higher relative to countries where the laws are more efficiently enforced.

Notice that there exists the possibility that the causality between the choice of firm structure and the enforceability of property rights is reversed. In particular, it might be the case that in countries where firms are highly concentrated there is no need for a legal

framework. That is, firm owners themselves protect their property by keeping ownership of the firm within a few individuals. Empirical evidence, however, does not seem to support this possibility. In most of Latin American countries, for instance, we find that the participation of firms in the stock market follows improvements in the legal framework. For example, in Mexico firms began to participate in the stock market in significant numbers after the enactment of stock market laws in 1975. Prior to that year, large Mexican firms avoided listing in the stock market. Formal empirical analysis to show causality between property rights enforceability and the choice of ownership structure is an exercise that will be conducted in future research. This work provides an initial analysis of the importance of the protection of property rights in the choice of ownership structure.

The remaining of the paper is organized as follows: Section I describes the assumptions and notation. In addition, I consider a basic model in which the funds raised by a public offering are not reinvested in the firm. In Section II I relax this assumption and develop a more realistic model. Considering the two cases separately has an empirical justification. In the U.S., it is often the case that firm owners retain the funds raised in public offerings. In contrast, the majority of initial public offerings in Mexico are designed to provide investment funds to the firm. The theoretical analysis will conclude that independently of the destination of the funds raised by the public offering, a more efficient protection of property rights increases the willingness of firm owners to go public. Section III presents a discussion of the implications of the models with respect to investment and the choice of capital structure. Section IV concludes.

Section I. The Basic Model

a. Notation and Assumptions

One of the primary assumptions of the analysis is the role of the incumbent firm owner after she decides to go public. There exist two possible scenarios; either she retains management of the firm or she delegates control to managers appointed by outside shareholders. In this model, I assume the first case. The second scenario is rarely found in real life. It is often the case that, even when outside shareholders acquire majority of the firm, the incumbent owner retains some prominent managerial position within the firm.¹ Although this assumption is important for the results derived by the model, I expect similar results to hold if we were to assume that the incumbent owner is relieved from his managerial responsibilities.

We begin the analysis by considering a firm owner who has invested all of her wealth in a family owned business with market value V_f . This is the value that she would obtain in the private market by entirely selling and exiting the firm. She contemplates raising capital via selling equity. In this basic model, I assume that the funds raised by the public offering, S , are simply pocketed by the incumbent owner.² The value of the firm when it becomes public is given exogenously by V_p .³ This value can be greater, equal or smaller than the value of a privately owned firm, V_f , depending on the benefits and costs of both types of ownership. In this basic model, I consider the case when $V_p > V_f$. That is,

¹ Typically, a firm owner will have first hand knowledge of the daily operations of the firm. In that case, keeping her in the firm, even if she holds a non-managerial position, may be in the best interest of the firm.

² This assumption is not far from reality. In fact, many Initial Public Offerings (IPO's) and subsequent public offerings in the U.S. do not specify the destination of the funds raised. In general, the funds are kept by the incumbent firm owners.

I assume that the benefits of going public including increased public recognition and an easier access to capital markets provide the firm owner with a greater net benefit than keeping the firm privately owned.⁴

The fraction of equity retained by the owner is α . Hence, her expected return from selling equity is $\frac{\alpha V_p}{(1-\delta)}$, where δ is the discount rate. Outside shareholders receive $(1-\alpha)$ share of the firm. They provide funds as long as their expected return, $\frac{(1-\alpha)V_p}{(1-\delta)}$, is at least as large as their investment, S .

When going public, a firm incurs tangible and non-tangible costs. Moreover, going public results in the separation of ownership and control between the shareholders and the incumbent owner who retains management of the firm. Following the principal-agent argument, I assume that the owner/manager will exert some effort e_m to appropriate resources from the firm. Similarly, the shareholders will devote a monitoring effort e_s to

³ This assumption is relaxed in the next section.

⁴ In this model the firm owner does not face a binary choice between selling the entire firm or keeping it privately owned. Hence, notice that this assumption entails that the value of a firm may increase by a non-infinitesimal amount for even infinitesimal public ownership. That is, in this model since the value of the public firm is not a function of the funds raised or the share sold by the owner, there exist the theoretical possibility that a firm owner sells a very small portion of the firm and receives V_p . Admittedly, this is a shortcoming of this basic model. Including this assumption, however, simplifies the analysis and permits to highlight the importance of the protection of property rights on the choice of ownership structure in a straightforward manner. In particular, it will become clear that decreasing institutional efficiency at protecting property rights decreases the value of a publicly traded firm to a level that might be below the value of a privately owned firm. Moreover, one can suggest a reasonable scenario in real life under which a firm owner may not be able or want to sell a small portion of the firm and receive V_p . Consider the actual likelihood that an epsilon of the firm is sold. From the point of view of the shareholders it might not be in their best interest to buy a tiny portion of the firm since there are some transaction costs involved in such purchase and these might be greater than the value of the firm they acquire. Similarly, from the point of view of the firm owner selling a tiny portion of the firm may not be in his best interest. Consider that when selling even a very small portion of the firm he must incur the fixed costs of going public and face non-tangible costs including outside monitoring, compliance with regulatory norms, intrusion by shareholders in the daily operations of the firm and the like. It is reasonable to believe that when selling a very small portion of the firm, the costs just mentioned outweigh the benefits of going public and thus, it will not always be the case that the firm goes public. In fact, the model will show that, in equilibrium, the firm owner will not be able to sell an epsilon of the firm when there are significant transaction costs involved in the choice of going public.

protect their investment. The marginal costs of monitoring and appropriative efforts are λ and μ respectively. To capture the efficiency of institutions at implementing the law a parameter θ is introduced. In particular, θ is associated with the appropriative effort of the manager, e_m , as follows: the lower the efficiency of institutions (the higher θ) the more effective the appropriative effort.

The competing interaction of principals (shareholders) and agent (incumbent owner/manager) is captured by the Contest Success Function (CSF) $q(e_s, e_m, \theta)$. CSF's have been extensively used in the modeling of tournaments and contest to represent the winning probabilities of the participants. In this model, the CSF represents the share (value) of the publicly traded firm retained by the shareholders after accounting for their monitoring effort and the appropriative effort of the manager. Moreover, the model assumes that $q'_{e_s}(\cdot) \geq 0$, $q'_{e_m}(\cdot) \leq 0$ and $q'_{\theta}(\cdot) \leq 0$. The notation is presented in Table 1.

It follows that the value of the publicly traded firm to the shareholders, after considering their competitive interaction with the incumbent owner/manager, is given by

$$\frac{(1-\alpha)(q(e_s, e_m, \theta))V_p}{(1-\delta)}.$$

Similarly, the value to the incumbent owner/manager is

$$\frac{\alpha(q(e_s, e_m, \theta))V_p}{(1-\delta)}$$

The model in the next section makes the value of the public firm a function of the funds raised by the public offer and the share retained by the incumbent owner and thus, the discontinuity problem is eliminated.

Since the incumbent owner retains management of the firm after going public, she will obtain some value from appropriative activities.⁵ The value of the publicly traded firm obtained by the incumbent owner while engaging in such activities is

$$\frac{(1 - q(e_s, e_m, \theta))V_p}{(1 - \delta)}$$

Thus, the total expected revenues to the initial owner from selling equity is the sum of three amounts, the value of the share of the firm she retains, the value of the firm she appropriates and the funds she receives from the shareholders. Then, her problem is to find her optimal level of appropriative effort, e_m ,⁶ that maximizes the net value of her expected return, V_m , formulated as follows:

$$MaxV_m = \frac{1}{(1 - \delta)} [(1 - q(e_s, e_m, \theta))V_p + \alpha(q(e_s, e_m, \theta)V_p) - \mu e_m] + S \quad (1)$$

w.r.t. e_m

Similarly, shareholders are faced with the decision to choose their monitoring effort that maximizes their expected return. Formally,

$$MaxV_s = \frac{1}{(1 - \delta)} (1 - \alpha)[q(e_s, e_m, \theta)V_p - \lambda e_s] - S \quad (2)$$

w.r.t. e_s

⁵ We show in Appendix A that the incumbent owner has no incentives to monitor herself. That is, she always invests a positive amount of resources to appropriate value from the firm.

⁶ There exists the possibility that managers or shareholders commit to a determined effort prior to engaging in a contest. This possibility is not examined here. I expect, however, that the qualitative results under such scenario would be equivalent to the results obtained in this model.

Assuming that the CSF takes the following functional form:⁷

$$q(e_s, e_m, \theta) = \frac{e_s}{e_s + \theta e_m}$$

The incumbent manager and shareholders problems become

$$\text{Max} V_m = \frac{1}{(1-\delta)} \left[\frac{\theta e_m}{e_s + \theta e_m} V_p + \alpha \left(\frac{e_s}{e_s + \theta e_m} \right) V_p - \mu e_m \right] + S \quad (3)$$

w.r.t. e_m

and

$$\text{Max} V_s = \frac{1}{(1-\delta)} (1-\alpha) \left[\frac{e_s}{e_s + \theta e_m} V_p - \lambda e_s \right] \quad (4)$$

w.r.t e_s

The solution concept for this model is Nash equilibrium where the incumbent owner and outside shareholders choose their efforts, e_m^* and e_s^* , respectively, that maximize their expected return. In equilibrium, the shareholders anticipate the fraction of the firm's profits that they will receive considering their conflictive interaction with the manager. That fraction is the amount of funds they provide and the share of the firm that is sold. When the value the firm owner receives from selling the equilibrium share of the firm is lower than the value of the firm when kept privately owned, the firm does not go public.

⁷ Skaperdas (1996) shows that this functional form complies with all the conditions for a valid CSF. Specifically, the sum of the winning probabilities of the various participants adds up to one. Moreover,

b. Solving the Model

The First Order Conditions for (3) and (4) are respectively

$$\frac{\partial V_m}{\partial e_m} = \frac{V_p \theta e_s (1 - \alpha)}{(e_s + \theta e_m)^2} - \mu = 0 \quad (5)$$

$$\frac{\partial V_s}{\partial e_s} = \frac{V_p \theta e_m (1 - \alpha)}{(e_s + \theta e_m)^2} - \lambda = 0 \quad (6)$$

Solving the two equations simultaneously gives the optimal efforts for the incumbent owner/manager and the shareholders:

$$e_m^* = \frac{V_p \theta (1 - \alpha) \lambda}{(\mu + \theta \lambda)^2} \quad (7)$$

$$e_s^* = \frac{V_p \theta (1 - \alpha) \mu}{(\mu + \theta \lambda)^2} \quad (8)$$

Substituting (7) and (8) in (3) we obtain the relevant firm value for the incumbent owner/manager, V_m .

$$V_m = \frac{V_p}{(1 - \delta)} \left[\frac{\theta \lambda + \alpha \mu}{(\mu + \theta \lambda)} - \frac{\mu \lambda \theta (1 - \alpha)}{(\mu + \theta \lambda)^2} \right] + S \quad (9)$$

greater participant's efforts result in an increase in their winning probability.

The first term in the brackets represents the gain from going public which is the sum of the resources she can appropriate from the firm and the fraction of the firm's worth she retains. The second term is the cost of engaging in appropriative activities. Since we assume that the incumbent owner/manager pockets the funds raised by the public offering, S enters in V_m as an additive term.

In order to obtain the equilibrium value of the firm to the incumbent owner, V_m^* , we need to find the equilibrium amount of funds, S^* , provided by the shareholders. For the shareholders, their expected return is

$$V_s^* = \frac{V_p}{(1-\delta)} \frac{(1-\alpha)\mu^2}{(\mu + \theta\lambda)^2} - S \quad (10)$$

That is, the value they obtain from the purchasing shares of the firm minus the funds they provide. To simplify the analysis, I assume that shareholders provide funds as long as they break even. Hence, the equilibrium amount of funds provided by shareholders, S^* , is determined by the equality $V_s^* = S$ or

$$S^* = \frac{V_p}{(1-\delta)} \frac{(1-\alpha)\mu^2}{(\mu + \theta\lambda)^2} \quad (11)$$

Notice that S^* decreases with θ : less efficient law enforcement leads to less funds provided by the shareholders. Substituting S^* into V_m^* we get the total revenue for the firm owner, in equilibrium, when going public

$$V_m^* = \frac{V_p}{(1-\delta)} \left[\frac{\theta\lambda + \alpha\mu}{(\mu + \theta\lambda)} - \frac{\mu\lambda\theta(1-\alpha)}{(\mu + \theta\lambda)^2} + \frac{(1-\alpha)\mu^2}{(\mu + \theta\lambda)^2} \right] \quad (12)$$

The first and second terms are the same as in (9), the third term represents the added benefit to the incumbent owner received by the funds raised. Expression (12) can be simplified to

$$V_m^* = \frac{V_p}{(1-\delta)} \left[\frac{\theta\lambda + \alpha\mu}{(\mu + \theta\lambda)} + \frac{(1-\alpha)(\mu - \mu\lambda\theta)}{(\mu + \theta\lambda)^2} \right] \quad (13)$$

This is the value of the publicly traded firm, to the incumbent firm owner, for a given α . We can immediately identify the relationship between V_m^* and degree of property rights enforceability θ . First, notice that when property rights are perfectly enforced, $\theta \approx 0$, then $V_m^* \approx V_p$. Since I argued that $V_p > V_f$, we should expect to find all firms, meeting listing requirements, going public. As the efficiency of legal institutions at protecting property rights decreases (θ increases), however, V_m^* decreases as determined by the second term in the brackets of (13). This result comes from the decrease in the amount paid by the shareholders. In words, the lower the protection of shareholders' rights, the lower the value they obtain from the firm and thus, the lower S^* . When V_m^* becomes smaller than V_f the incumbent owner will simply choose to keep the firm privately owned.

From (13), we can identify another factor that will determine the choice between V_m^* and V_f . When $\theta > 0$, the relative value of V_m^* and V_f is determined by the market valuation of the firm when going public, V_p . Specifically, if V_p is much greater than V_f , it

could be the case that V_m^* is still greater than V_f even when θ is high. That is, even in cases when institutions are highly inefficient, firms will go public as long as their public valuation is high. How is the valuation of a public firm determined? In this simple model, since V_p is given exogenously, variations on V_p can be the result of exogenous factors such as marketing efficiency to promote the firm, bargaining skills of firm officials to obtain favorable financing terms and the like. For illustrative purposes consider another of these exogenous factors, the ability of firms to access privileged information via government ties. In Mexico, for example, for many years a selected group of firms maintained close relations with the government. These firms, without doubt, had first hand knowledge of regulatory changes in their industries, knowledge that provided them with an advantage over the competition. In consequence, everything else equal, these firms had a high V_p relative to firms with no government ties. Thus, it is not surprising to find that, in times where property rights were poorly enforced, the majority of firms entering the Mexican stock exchange were firms with well established relations with government officials. That is, firms with high V_p entered the stock market even when θ was high.

The optimal firm share, α^* , retained by the incumbent owner when going public can be derived from equation (13). Notice that V_m^* increases with α . Thus, if the goal of the firm owner is to maximize V_m^* , she will chose an α close to 1. But when the share that the firm owner would like to sell is extremely small, the value that shareholders obtain might be so insignificant that they do not provide the funds and the firm does not go public. From equation (11) the amount of funds that shareholders provide in equilibrium is

$$S^* = \frac{V_p (1-\alpha)\mu^2}{(1-\delta)(\mu + \theta\lambda)^2}$$

Notice that if the firm owner sells an epsilon of the firm, the share of the firm that the shareholders receive, $(1-\alpha)$, is close to zero. In that case, the amount of funds that the shareholders provide, S^* , and the value they receive from buying shares, V_s^* , is also close to zero. Assume that there is a positive transaction cost of purchasing equity. In that case, it is reasonable to believe that this cost is greater than the value shareholders receive from buying an epsilon of the firm and thus, they chose to purchase zero shares.

This result comes from the fact that, since the firm owner is simply pocketing the funds raised and the shareholders are certain that she will engage in divertive activities, outside shareholders have no incentives to invest. In consequence, although the firm owner would like to go public, and in fact sell a tiny portion of the firm and enjoy all the benefits of public ownership, outside shareholders provide no funds and the firm remains privately owned.

The next section considers the case in which the funds raised by the public offering are reinvested in the firm. We will find that the firm owner will not longer choose to retain a large share of the firm. In fact, the firm owner would like to sell a large stake of the firm and retain management to be able to appropriate resources from the firm. Anticipating this strategy, shareholders will choose to provide a small amount of resources. Hence the firm owner will face a tradeoff between appropriating value from the firm or receiving funds from the shareholders.

Section II. Reinvesting Funds

We now assume that at least some of the funds raised by the public offering are reinvested in the firm. Specifically, V_p becomes a function of S . Now, $V_p(S)$ can serve as a signal for investors to estimate the market value of the publicly traded firm. We follow an argument similar to that developed in the previous section. Consider a firm owner who has invested all of her wealth in a family owned business with market value V_f . She contemplates an investment opportunity for which she requires funds, S , beyond her possibilities. The funds are raised via a public offering. The value of the private firm after the funds are reinvested in the firm is increased by a multiplicative factor $S^\beta K$, where $\beta \in (0,1)$ indicates that the firm faces diminishing marginal productivity with respect to the investment. K is an efficiency parameter. Thus, the value of the publicly traded firm as a function of the funds raised is $V_p(S) = V_f S^\beta K$, with $V_p'(S) > 0$. Since the incumbent owner will no longer pocket S , her problem is given by (3) but without adding the funds raised by the public offering, formally

$$\text{Max} V_m = \frac{1}{(1-\delta)} \left[\frac{\theta e_m}{e_s + \theta e_m} V_p - \mu e_m + \alpha \left(\frac{e_s}{e_s + \theta e_m} \right) V_p \right] \quad (14)$$

w.r.t. e_m

The problem of the shareholders remains the same, find their optimal monitoring effort while choosing the amount of funds they are willing to provide. The problem is identical as in the earlier section

$$\text{Max } V_s = \frac{1}{(1-\delta)}(1-\alpha) \left[\frac{e_s}{e_s + \theta e_m} V_p - \lambda e_s \right] \quad (15)$$

w.r.t e_s

Solving the model, I find that the value of the publicly traded firm to the owner when the funds are reinvested in the firm is

$$V_m = \frac{V_p}{(1-\delta)} \left[\frac{\theta\lambda + \alpha\mu}{(\mu + \theta\lambda)} - \frac{\mu\lambda\theta(1-\alpha)}{(\mu + \theta\lambda)^2} \right]$$

which is identical to (9) but without the addition of S . Since V_p is a function of S , replacing

V_p with $V_p(S)$ in the previous expression we define the value of the publicly traded firm

to the firm owner given by

$$V_m = \frac{V_f S^\beta K}{(1-\delta)} \left[\frac{\theta\lambda + \alpha\mu}{(\mu + \theta\lambda)} - \frac{\mu\lambda\theta(1-\alpha)}{(\mu + \theta\lambda)^2} \right] \quad (16)$$

To close the model we need to find the equilibrium amount of funds provided by the shareholders $S(\alpha)^*$. First, we obtain the equilibrium condition for the shareholders from (10)

$$V_s^* = \frac{V_p}{(1-\delta)} \frac{(1-\alpha)\mu^2}{(\mu + \theta\lambda)^2} \geq S$$

by replacing V_p with $V_p(S)$. I get

$$V_s(\alpha) = \frac{V_f S^\beta K (1-\alpha)\mu^2}{(1-\delta)(\mu+\theta\lambda)^2} - S \geq 0 \quad (17)$$

Solving for $S(\alpha)^*$ assuming an equality I get

$$S(\alpha)^* = \left[\frac{V_f K (1-\alpha)\mu^2}{(1-\delta)(\mu+\theta\lambda)^2} \right]^{\frac{1}{1-\beta}} \quad (18)$$

Similar to the results of the basic model, we have that the funds provided by outside shareholders increase with the share they obtain from the firm $(1-\alpha)$, and decrease with the inefficiency of institutions, θ .

Now that we have the amount of funds provided by the shareholders in equilibrium, we can determine the equilibrium market value of the publicly traded firm, $V_m(\alpha)$, for the incumbent owner. To simplify notation I set the marginal costs of efforts, μ and λ equal to one. Replacing (18) in (16) and simplifying, $V_m(\alpha)$ becomes

$$V_m(\alpha) = \frac{V_f K}{(1-\delta)} \left[\frac{V_f K (1-\alpha)}{(1+\theta)^2} \right]^{\frac{\beta}{1-\beta}} \left[\frac{\alpha + 2\theta\alpha + \theta^2}{(1+\theta)^2} \right] \quad (19)$$

For a given α , this is the value of the publicly traded firm for the incumbent owner. Similar to the analysis in the previous section with respect to the equilibrium market value of $V_m(\alpha)$ we have the following results. The first term in (19) represents the

value to the shareholders of the public firm. An increase in θ will decrease this value and thus, the value of the public firm, since the price that shareholders are willing to pay for shares decreases. The last term in the brackets represents the amount of the firm that the incumbent owner can appropriate. Evidently, the greater the θ , the more resources the incumbent owner appropriates.

From (19) we can determine the optimal firm share, α^* , that maximizes the utility of the incumbent owner. We have that

$$\frac{\partial V_m(\alpha)}{\partial \alpha} = \left[\frac{V_f K(1-\alpha)}{(1+\theta)^2} \right]^{\frac{\beta}{1-\beta}} \frac{1+2\theta}{(1+\theta)^2} + \frac{\alpha+2\alpha\theta+\theta^2}{(1+\theta)^2} \left[\frac{\beta}{1-\beta} \left(\frac{V_f K(1-\alpha)}{(1+\theta)^2} \right)^{\frac{2\beta-1}{1-\beta}} \left(\frac{-V_f K}{(1+\theta)^2} \right) \right] \leq 0$$

After some algebraic manipulation, I get that

$$\alpha^* = 1 - \frac{\beta(1+\theta)^2}{(1+2\theta)} < 1 \quad (20)$$

Thus, the optimal share retained by the firm owner when going public, α^* , is less than 1. That is, the optimal ownership structure entails some level of dispersion. This result is consistent with that of Pagano and Roel (1998). Unlike their model, however, the choice of α^* here is a direct function of the efficiency of property rights enforceability θ . In

particular, from (20) it can be shown that $\frac{\partial \alpha^*}{\partial \theta} < 0$. In words, the less efficient law

enforcement (higher θ), the lower the share retained by the initial owner (lower α). At first, this result may seem counterintuitive. After all, we argued at the beginning of the chapter that we should expect to find a positive correlation between ownership

concentration and the efficiency of law enforcement, the less efficient enforcement of the law (lower θ) the lower the concentration of ownership (lower α). How can we then explain this result? Recall that the model assumes that the incumbent firm owner retains management and that she is the person engaging in appropriative activities. Hence, from the point of view of the incumbent owner, she would like to sell the entire firm, receive the funds from the shareholders and continue stealing from the firm. The shareholders, however, are not willing to provide funds when property rights are poorly enforced. Thus, the firm owner faces a tradeoff between appropriating value from the firm or receiving funds from the shareholders. The firm owner optimal strategy when facing this tradeoff can be obtained by considering the net firm value when going public.

Replacing α^* into $V_m(\alpha)$ and after some algebraic manipulation I get

$$V_m(\alpha^*) = \frac{V_f K(1-\beta)}{(1-\delta)} \left[\frac{V_f K\beta}{(1+2\theta)} \right]^{\frac{\beta}{1-\beta}} \quad (21)$$

Notice that $V_m(\alpha^*)$, the net firm value to the incumbent owner decreases with θ . Specifically, lower law enforcement efficiency results in lower net value of the publicly traded firm. Thus, although the firm owner would like to sell more of the firm as she engages in more appropriative activities, the valuation of the firm and thus her net gain of taking the firm public decreases. So what is the optimal strategy of the firm owner? She must compare $V_m(\alpha)^*$ to the value of her privately owned firm V_f . That is, she will go public if $V_m(\alpha)^* > V_f$. From (21) we have that the size of $V_m(\alpha)^*$ is a function of the parameters β, δ, K , the efficiency of the legal system θ and the value of the privately

owned firm V_f . For illustrative purposes consider the case where $\beta = \delta = 1/2$ and $K = 1$.

With these assumptions, $V_m(\alpha)^*$ becomes

$$V_m(\alpha^*) = \frac{.5V_f^2}{(1 + 2\theta)} \quad (22)$$

$V_m(\alpha^*)$ is greater than V_f for small values of θ or large values of V_f . In words, firms with a low V_f will go public only when property rights are almost perfectly enforced. This result is consistent with empirical evidence from countries where property rights are poorly enforced. Consider the case of Mexico. Prior to the enactment of stock market laws in 1975, only some of the largest firms in the country were listed in the stock market. Even though medium size firms were allowed to list, it was only until 1993, after new laws and regulations were established, that medium size firm entered the market. The majority of the medium size firms that listed after 1993 were firms that met listing requirements many years prior to the improvements of the law.

Notice that the two models examined in this chapter provide similar results. In the case where funds are not reinvested in the firm, shareholders are not willing to provide funds anticipating that the firm owner can potentially appropriate the entire investment. The optimal choice of the firm owner is to maintain a share of the firm close to 1. That is, firm owners are less willing to go public when property rights are poorly enforced. In the second case, when the funds raised by the public offer are reinvested in the firm, the firm owner optimal choice when property rights are poorly enforced, is to keep a small share of the firm. The willingness of shareholders to provide funds, however, decreases as the efficiency of institutions decreases. Hence, the firm owner faces a tradeoff between

appropriating value from the firm or receiving funds from shareholders. The optimal strategy of the firm owner under this scenario will depend on the level of property rights enforceability. In particular, a more efficient enforcement of the law will provide the firm owner with more incentives to go public.

In addition to the results previously derived with respect to the relationship between the choice of ownership structure and the protection of property rights, the models suggest some implications of the level of property rights enforceability for investment and the choice of capital structure. These implications are discussed in the next section.

Section IV. Investment and Capital Structure

The models in the previous section show that inefficient protection of property rights results in the low valuation of publicly traded firms. The implications of this result with respect to capital structure and investment follow immediately; the low valuation of publicly traded firms leads to a low incidence of equity financing and low levels of investment. The latter implication has been discussed in the literature within the context of political instability. Alesina and Perotti (1996),⁸ for example, find that investment decreases with higher levels of political instability. The paper, however, does not explicitly examine the relationship between investment and the protection of property rights. The results from the previous section provide some insights to establish such link.

Recall from the models presented in Section III that the owner wishes to issue a public offering to raise funds for an investment opportunity. The models show that the decision of the firm owner to undertake the public offering, and thus fund the investment,

⁸ Although political instability and the efficiency of institutions at implementing the law are not equivalent concepts, we can consider both to be a measure of property rights enforceability.

depends primarily on the relative sizes of her gain from going public, $V_m(\alpha^*)$ and the value of the firm when retained privately owned. $V_m(\alpha^*)$ in turn, is a function of the level of property rights enforceability, θ . Specifically, the higher the θ the lower $V_m(\alpha^*)$ and the lower the willingness of firm owners to raise funds via a public offering. Thus, in an environment where property rights are poorly enforced, the probability that firm owners will raise funds via equity is small. That is, poor protection of property rights results in a decrease in the availability of sources of capital.

Considering the decrease in funding options available to firms in societies where property rights are poorly enforced, it is reasonable to conclude that overall investment in such economies is low. Initially, this suggestion is consistent with the empirical evidence found by Alesina and Perotti (1996). Empirical test of this argument, however, is yet to be provided.

But investment is not non-existent in countries with poorly enforced laws. How do firms manage to fund their investment projects? Firm owners seek other sources of financing. An obvious alternative is debt financing. Under the framework of the models presented in this chapter, it can be shown that debt financing is a more viable funding alternative than equity financing in countries where the legal system is highly inefficient.

Assume that equity and debt financing are the only two feasible alternatives to raise funds. From the previous section, we have that $V_m(\alpha^*) > V_f$ only for small values of θ , holding V_f constant. Thus, in countries where θ is high, firms that wish to invest in a project with positive Net Present Value (NPV) must seek debt financing. Consider this scenario, a firm owner approaches a bank to request funds for an investment project.

Similar to the case when the firm owner sells equity, we have a principal-agent interaction. How are shareholders different from bank officials as principals? Initially, shareholders are direct residual claimants of the firm. Bank officials, in contrast, merely work for a corporation and do not have a direct stake as residual claimants. Hence, we can argue that shareholders have stronger incentives to monitor the firm owner than bank officials do. It follows that shareholders will invest more monitoring effort relative to bank officials. These higher amounts of monitoring effort decrease the willingness to provide funds, since the expected return from providing funds decreases as described by the theoretical model. Thus, everything else equal, banks are more likely to provide funds than shareholders.⁹

Assume now that bank officials and shareholders have the same incentives to monitor. We can still argue that monitoring costs are higher for shareholders than for bank officials. If bank officials presume that the management of the firm is engaging in illegal activities, they have the right to undertake disciplinary action, such as conducting an audit and prosecuting the managers. In contrast, although shareholders may have equal rights, implementing corrective actions is more difficult for independent individuals than for financial institutions. For instance, capital resources of financial institutions are, in general, greater than most individuals. Thus, embarking in a legal battle to oust the manager is an action that financial institutions are more likely to take. That is, it is more often the case that banks have more efficient mechanisms of monitoring than shareholders do.

Although there is an evident relationship between the level of institutional efficiency and investment and the choice of capital structure, it is clear that more work is necessary to establish, convincingly, the link.

⁹ This argument will hold for the case when there are few shareholders owning a large stake of the firm and the free-riding problem is reduced. This type of ownership is in fact predominant in countries where property

Section V. Conclusion

Only recently have economists begun to analyze the difference in ownership structure across countries. In this paper, I contribute to the literature by formally introducing a theoretical analysis that examines the choice of ownership structure as a function of the efficiency of institutions at implementing the law. The models I present consider a firm owner faced with the decision to raise funds via a public offering. I find that, independently of the destination of the funds raised by a public offer, ownership concentration is negatively related to institutional efficiency. That is, poor protection of property rights leads to higher ownership concentrations. Furthermore, the models suggest that factors such as firm size and the participation of government in the financial sector contribute to the decision to go public. Small firms have fewer incentives than large firms to seek funding in capital markets. In addition, firms with close ties to the government have stronger incentives to go public than firms with no government connections.

The results from the theoretical models suggest clear implications for investment and the choice of capital structure. In particular, we should find that investment decreases as the efficiency of institutions at protecting the law decreases. In addition, when property rights are poorly enforced, we should observe that debt is the primary source of funding. I have, to some extent, tested the implications of the theoretical analysis with respect to ownership structure and property rights enforceability in Castillo (1999). The results from the empirical analysis largely support the predictions of the theoretical models. Formal empirical analysis, however, is necessary for the implications on investment and the choice of capital structure.

rights are poorly enforced. See La Porta et al. 1999.

Table 1

Notation

V_f	Value of a Privately Owned Firm
V_p	Value of a Publicly Owned Firm
α	Share of Firm Retained by Initial Owner When Going Public
δ	Discount Rate
S	Funds Raised by the Public Offer
β	Marginal Productivity of Investment
K	Efficiency Parameter
e_s	Monitoring Effort
e_m	Appropriative Effort
λ	Marginal Cost of Monitoring Effort
μ	Marginal Cost of Appropriative Effort
θ	Measure of Property Rights Enforceability

Appendix A

The problem of the incumbent owner when she considers monitoring herself is

$$\text{Max} V_m = \frac{1}{1-\delta} \left[(1-q)(e_s, e_m, e_{sm}, \theta) V_s + \alpha(q(e_s, e_m, e_{sm}, \theta) V_s) - \mu e_m - c e_{sm} \right]$$

w.r.t. e_m, e_{sm}

where e_m is the appropriative effort and e_{sm} is the monitoring effort on herself.

$$\text{Substituting for the functional form } q(e_s, e_m, e_{sm}, \theta) = \frac{e_s}{e_s + e_{sm} + \theta e_m}$$

The First order conditions are

$$\frac{\partial V_m}{\partial e_m} = \frac{V_p \theta (e_{so} + e_{sm}) (1-\alpha)}{(e_{so} + e_{sm} + \theta e_m)^2} - \mu \leq 0 \quad (1)$$

$$\frac{\partial V_m}{\partial e_{sm}} = \frac{V_p \theta (e_m) (\alpha - 1)}{(e_{so} + e_{sm} + \theta e_m)^2} - c \leq 0 \quad (2)$$

From (1) $e_m > 0$ for $\alpha < 1$ and $e_m = 0$ for $\alpha \geq 1$. That is, appropriative effort is positive when the incumbent owner sells part of the firm and is zero when she retains full ownership. Similarly, from (2) $e_{sm} > 0$ for $\alpha > 1$ and $e_{sm} = 0$ for $\alpha \leq 1$. In words, the only instance in which the incumbent owner monitors herself is in the eventuality that $\alpha > 1$ which is impossible since $\alpha \in [0,1]$.

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