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Ownership Structures and the Decision to Go Public

Private versus Social Optimality

Lucian Arye Bebchuk and Luigi Zingales

It is generally accepted among academic economists and lawyers that the ownership structure chosen at the initial public offering (IPO) stage is efficient. The costs and benefits of the chosen ownership structure—the argument goes—are reflected in the price the owner can fetch for her shares (Jensen and Meckling 1976). Consequently, the owner of a private firm taking it public will fully internalize the costs and benefits of her choice. Ergo, the ownership structure chosen at the IPO stage is socially efficient. This view has served as the foundation for much of the positive and normative work in corporate finance.

This paper shows that the ownership structure chosen by a value-maximizing entrepreneur at the IPO stage might differ from the socially optimal one. Interestingly, we show this while retaining all the standard assumptions: efficient markets populated by rational agents who maximize the total value of their payoffs.

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The reason for the identified inefficiency is an externality that the choice of ownership structure has on potential buyers of control. In fact, the initial choice of ownership structure will have important effects on the welfare of the initial owner, the dispersed shareholders, and the potential buyer. Of course, a rational entrepreneur will fully internalize the effects that the ownership structure will have on her future wealth. Moreover, she will fully internalize the effects that the ownership structure will have on the dispersed shareholders because, in an efficient market, those effects are reflected in the IPO price. But the initial owner will not internalize the effects of the ownership structure on the surplus captured by potential buyers (as long as the potential buyer is still willing to buy). This will create a wedge between the choices that are optimal from the initial owner's point of view and the choices that are socially efficient. As we argue, the magnitude of this wedge is a function of the degree of competition in the market for corporate control. In a perfectly competitive market for corporate control, the wedge will disappear, and the privately optimal choice of ownership structure coincides with the socially efficient one.¹

Specifically, our model includes three ways in which the initial choice of ownership structure affects potential buyers of control. First, this choice will influence whether a transfer of control will take place, affecting both the likelihood of a control transfer and the circumstances under which it will occur. The likelihood and circumstances of control transfer, in turn, affect the expected surplus that potential buyers can be expected to capture.

Second, in those control transfers that will take place, the initial distribution of ownership will influence the division of surplus between the initial shareholders and the control buyer. This, again, will affect the expected surplus of potential future buyers.

Third, should a control transfer take place, the initial distribution of ownership might affect the value of the company under the control buyer. For example, if the initial ownership is dispersed and the control buyer wants to move to a more concentrated ownership (because that would be a more efficient structure), such a change might be difficult to accomplish. This, yet again, might affect the surplus that a potential control buyer can expect to capture.

To demonstrate our thesis, we focus on one important choice that initial

1. The idea that private choices made by those who set up a company might differ from the socially optimal ones was first introduced by Grossman and Hart (1980). Grossman and Hart, however, take as given the choice of ownership structure (dispersed ownership in their case), and they focus on the choice of the dilution factor in takeovers. Subsequent work on the divergence between private and social optimality in the setting up of a company also takes the ownership structure as given and focuses on choices concerning the rules governing control transfers (see, e.g., Bebchuk and Kahan 1990; and Bebchuk 1994). In contrast to the existing work, we endogenize the choice of ownership structure, and we analyze the divergence between private and social optimality in making this basic choice.

owners make. Specifically, we analyze the initial owner's choice between a privately held (PR) company, in which the company remains private and the initial owner retains complete ownership of the firm's cash-flow rights, and a publicly owned (PU) company, in which the initial owner retains control of the firm but sells some of the firm's cash-flow rights to public investors. This is the choice that an owner faces in deciding whether to go public.²

Because of the three general effects noted above, the privately optimal choice between a PR and a PU structure generally differs from the socially optimal one. Not only do we demonstrate the existence of such a distortion, but we also explore its likely direction. Much of our analysis is devoted to identifying the conditions under which this distortion will be in the direction of PR structures and the conditions under which it will be in the direction of PU structures.

Our results indicate which empirical evidence would be needed to determine the direction of the identified distortions. Some such evidence already exists, and combining our results with that evidence suggests that, in the United States, the distortion is likely to be in the direction of an excessive incidence of going public. As is well known, the incidence of IPOs (adjusted for population) is larger in the United States than in other advanced economies (see La Porta et al. 1997). While this large incidence of IPOs is generally taken to be a socially optimal outcome, our results suggest the possibility that this incidence is excessive. We should emphasize, however, that much more empirical work, along the lines suggested by our analytic conditions, would be needed before firm conclusions on the direction of the distortion can be reached.

Our analysis is also shown to have policy implications for the legal rules governing the sale of control blocks. We analyze how the equal opportunity rule, the main contender to the market rule prevailing in the United States, affects the direction of the distortion. More important, we identify a regulatory approach for sales of control blocks that could in principle eliminate the identified distortions. We show that, if legal rules were to ensure that sales of control blocks neither benefit nor harm minority shareholders, then the choice between PR and PU would not be distorted. We examine whether and how rules could be designed to accomplish such a result.

There is a large literature on the costs and benefits of a PU structure as compared with those of a PR structure (see, e.g., Jensen and Meckling 1976; Shleifer and Vishny 1986; Holmström and Tirole 1993; Zingales

2. Bebchuk (1999)—which we discuss briefly in our concluding remarks—analyzes potential distortions in another important choice made by the initial owner. Specifically, that paper studies the choice, in the event that the initial owner chooses to go public, between a structure with a controlling shareholder and a structure without a controlling shareholder.

1995; Burkart, Gromb, and Panunzi 1997; Bolton and von Thadden 1998; and Pagano and Roell 1998). This literature largely assumes that initial owners will choose the most efficient structure and focuses on identifying the factors that influence initial owners' choices.³ In contrast, our model focuses on a consideration that drives a wedge between initial owners' choice and social optimality.

Section 2.1 of the paper describes the framework of analysis. Section 2.2 demonstrates the existence of a distortion. Section 2.3 derives conditions that help us identify the direction of this distortion. Section 2.4 discusses possible extensions of the model. Section 2.5 discusses the model's policy implications for the rules governing control transfers. Section 2.6 concludes.

2.1 The Framework

We consider an initial owner, I , who owns all the shares of a firm and decides whether she should maintain the company as a privately held (PR) concern or take it public (PU) by selling a fraction α of her cash-flow rights. In the latter case, we assume that she always retains a majority of voting rights and, hence, control of the company.⁴ Since, through the use of dual class stocks and stock pyramids, I can retain control while selling an α much greater than 50 percent, we let α vary between zero and one.

The problem is interesting only if there is a difference between the value that an individual investor attributes to a company's shares and the value of a controlling block. Let Y_i be the value of the verifiable cash flow produced by the company, that is, the value that a risk-neutral outside investor will pay for the company's cash flow. Let B_i be the difference between the value of the company for the incumbent (V_i) and the value of the verifiable cash flow (Y_i): $B_i = V_i - Y_i$. For convenience, we refer to B_i as the private benefits of control to I even though B_i also includes the costs of control.⁵

We make the conventional assumption that the values of V_i , Y_i , and B_i are affected by the fraction α of cash-flow rights that the initial owner sells to outside shareholders. The total value of a company (V_i) will be affected by the fraction α for various reasons. On the one hand, going public may reduce value because of the transaction costs involved in the process (Rit-

3. A notable exception is Pagano (1993). Pagano argues that the number of public companies may be excessively low from a social point of view because the initial owner bears all the costs of listing but reaps only part of the gains of increased diversification opportunities that she provides other owners.

4. In future work, we plan to analyze private vs. social optimality in the choice between going public while retaining control (PU) and moving further to dispersed ownership.

5. Note that this definition is more general than the one commonly used in the literature. B_i includes both the private benefits of control and the costs associated with control. For instance, B_i can be negative if the initial owner is very risk averse.

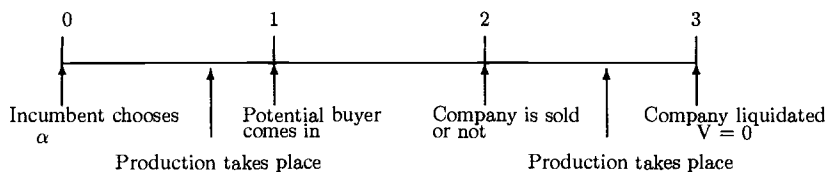


Fig. 2.1 Timing of the events

ter 1987) and, more important, because of the agency costs thereby created (Jensen and Meckling 1976).⁶ On the other hand, going public may increase the value of a company by spreading risk, by increasing the amount of information for compensating employees (Holmström and Tirole 1993), or by preventing a large shareholder from interfering with the company's management (Burkart, Gromb, and Panunzi 1997).

We define $1 - \alpha^*$ as the optimal fraction of cash-flow rights that the incumbent should retain:

$$V_I^* = V_I(\alpha_I^*) = \max_{\alpha_I \in [0,1]} V_I(\alpha_I).$$

We make no assumptions about the value of α_I^* . In other words, consistent with Demsetz (1983), we do not assume that the efficient level of ownership is necessarily 100 percent, and we allow for the optimal α to vary from case to case. We also make no assumptions about the shape of the function $V_I(\alpha)$. We do not even assume that $V_I(\alpha)$ is a continuous function. In particular, we want to allow for the possibility of a discontinuity at $\alpha = 0$. In fact, there are some fixed costs associated with the decision to go public, costs that will be borne independently of the fraction α sold to outside investors, provided that $\alpha > 0$.

The timing of the events is summarized in figure 2.1. At time 0, an initial owner, I , makes a choice between maintaining complete ownership or moving to a controlling-shareholder structure by selling a fraction α of her shares to the public.

Between time 0 and time 1, the company operates and produces value. At time 1, a potential buyer of control, N , emerges and can purchase the company. At time 2, control may be transferred. Between time 2 and time 3, there are again value-producing operations. At time 3, the company is dissolved.

Note that a critical element of our analysis is that, when making the

6. In principle, the initial owner could design incentive contracts that would reproduce the effects of ownership, eliminating the agency costs associated with an increase in α . In practice, however, such a contract would succeed in eliminating the agency costs only by undoing the sale through a contract. Therefore, if the incumbent owner wants to dispose of a fraction of cash-flow rights, she will have to bear the increased agency costs.

time 0 choice between PR and PU, the initial owner will pay attention to the possibility that a potential buyer will emerge at time 1. This seems to us quite plausible in light of the evidence on the substantial frequency of control changes in firms that have gone public.⁷

The potential buyer, who emerges at time 1, has a different valuation of the company, $V_N = B_N + Y_N$.⁸ The buyer's valuation may differ from that of the incumbent for many reasons. Different owners may have different managerial ability and thus produce different levels of cash flow. They might also have different synergies with the company or be more or less risk averse. Therefore, they might differ not only in their total valuation, V_N , but in its components as well. Consistently, we define $1 - \alpha_N^*$ as the optimal fraction of cash-flow rights that the new buyer should retain:

$$V_N^* = V_N(\alpha_N^*) = \max_{\alpha_N \in [0,1]} V_N(\alpha_N).$$

Note that the initial owner is not able to change her ownership level just after the first production period. This assumption is meant to capture the fact that the timing of the arrival of the potential buyer is uncertain and, therefore, that, if the initial owner wants to pre-position the ownership structure, she faces the risk of having a suboptimal ownership structure in at least one production period.

While the market for minority shares is perfectly competitive, the market for controlling blocks is not. Therefore, when the owner sells a fraction α of her shares to dispersed shareholders, she will receive the expected value of those shares. By contrast, when she trades her large block with another party interested in control, she will not be able to appropriate all the surplus from the trade. This assumption of an imperfectly competitive market for corporate control seems to be a realistic one. Suppose, for example, that some private benefits derive from a synergy with another company owned by a potential acquiring party. This is something very specific to the particular buyer, and, in this situation, it seems unlikely that a seller could extract all the surplus.⁹

7. The empirical evidence indicates that controlling blocks in publicly traded companies are transferred rather frequently. For example, Holderness and Sheehan (1988) find that, in a group of 114 New York and American Stock Exchange companies each of which had a shareholder owning a majority interest, there were twenty-one sale-of-control transactions in the four-year period between 1978 and 1982. Similarly, Caprio, Floreani, and Radaelli (1994) look at the frequency of the transfer of control blocks on the Milan Stock Exchange, where most companies have a controlling block (Zingales 1994). They report that, in the 1970s, 35 percent of the companies experienced a control-block transfer; during the 1980s, the same figure was 33 percent. Similarly, Pagano, Panetta, and Zingales (1998) show that firms experience an unusually high level of control sales in the three years following an IPO.

8. For simplicity, we assume that, if I and N are risk averse, this affects only the function B . Otherwise, we treat them as risk neutral.

9. An alternative rationale might be that the acquisition of a company requires large financial resources, which are available generally only to a few wealthy individuals. Therefore, the sale of a company cannot always be conducted as a competitive auction.

We assume that the incumbent will get a fraction $1 - \theta$ of the total surplus captured by the buyer and the incumbent combined. This can be formalized as the outcome of a bargaining game in which, with probability $0 < \theta < 1$, N has the right to make a take-it-or-leave-it offer and, with probability $1 - \theta$, the opportunity belongs to I . The main thrust of the results is not sensitive to the particular bargaining model chosen so long as the incumbent does not capture all the buyer's surplus (i.e., $\theta \neq 0$).

Initially, we assume that whoever is in control of the company in period 2 will move to the optimal α . In particular, if $\alpha = 0$ and $\alpha^* > 0$, then the controller will sell additional shares. If $\alpha > 0$ and $\alpha^* = 0$, we assume that the controller will freeze out minority shareholders at the current value of the shares, that is, paying $\alpha Y(\alpha)$.¹⁰ As we show in section 2.4.2 below, dropping this assumption introduces another source of divergence between private and social optimality.

We also assume that the discount rate is equal to zero and that the buyer is not liquidity constrained.¹¹ Finally, we assume that all the parameters are common knowledge.

2.2 Divergence between Private and Social Optimality

In this section, we show the existence of a divergence between the ownership structure that maximizes the proceeds of the initial owner at the IPO stage and the socially efficient ownership structure (i.e., the ownership structure that a benevolent social planner facing the same problem as the initial entrepreneur will choose). In order to achieve this objective, we first need to illustrate how the choice of ownership structure influences whether a transfer of control will take place and the price at which it will take place.

2.2.1 Conditions for a Transfer

The first step involves identifying when control will be transferred from I to N as a function of the cash-flow rights sold by the incumbent (α). If N gets control, he will capture $V_N^* - \alpha Y_N$. By contrast, if I retains control, she will get $V_I^* - \alpha Y_I$. Thus, a transfer will take place if and only if

$$(1) \quad V_N^* - V_I^* > \alpha[Y_N(\alpha) - Y_I(\alpha)].$$

In what follows, we drop the subscripts I and N unless the context requires otherwise. Let $\Delta V^* = V_N^* - V_I^*$ and $\Delta Y(\alpha) = Y_N - Y_I$. Then the condition for a transfer is

$$(2) \quad \Delta V^* > \alpha \Delta Y(\alpha).$$

10. For an analysis of the optimal freezeout rule, see Burkart, Gromb, and Panunzi (1998).

11. Implicitly, we also assume that the incumbent is not liquidity constrained in the sense that she can finance all positive net present value projects with internal funds or riskless debt. We make the assumption in order to avoid the additional complication associated with the capital structure decision (see Israel 1992).

The left-hand side represents the total value generated by the change in control, while the right-hand side is the effect of the transfer on minority shareholders. Thus, condition (2) simply says that a transfer of control will take place if it generates value in excess of what is captured by minority shareholders.

Note that, when $\alpha = 0$, there will be a transfer of control whenever it is socially efficient (i.e., whenever it generates value $\Delta V^* > 0$). Thus, the value of the company in the second period will always be $\max\{V_N^*, V_I^*\}$.

As shown in Bebchuk (1994), however, when $\alpha > 0$, some efficient transfers will be prevented, and some inefficient transfers will take place. Specifically, an efficient transfer will be blocked when

$$0 < \Delta V^* < \alpha \Delta Y(\alpha),$$

and an inefficient transfer will occur when

$$\alpha \Delta Y(\alpha) < \Delta V^* < 0.$$

As a result, when $\alpha > 0$, the value of the company in the second period will not always be equal to $\max\{V_N^*, V_I^*\}$ but will be a function of α . We refer to this second-period value as $V_2(\alpha)$.

2.2.2 The Socially Optimal Incidence of PU

Since we assumed a discount rate of zero, the social planner maximizes the sum of the value of the company in the two periods. This is given by

$$(3) \quad \max_{\alpha \in [0,1]} W(\alpha) = V_I(\alpha) + E\{V_2(\alpha)\}.$$

Let α^{FB} be the solution to program (3). Then, for a given distribution of potential buyers, we can define

$$(4) \quad PU^{FB} = \{I : \alpha^{FB} > 0\}$$

as the set of incumbents for whom it is socially optimal to have a PU structure rather than a PR one. Note that α^{FB} can well be different from α^* because of the effect of α on V_2 .

2.2.3 The Initial Owner's Choice

The initial owner chooses α to maximize her profits (Π), not the social welfare (W). The difference between the two is represented by the expected gain captured by the buyer, which enters the social planner's objective function but not that of the initial owner. Thus,

$$(5) \quad \Pi = W - G_N,$$

where G_N is N 's expected gain from the transfer. G_N is the source of the potential divergence between the social and the private optimization. N 's expected gain can be written as

$$(6) \quad G_N = \text{prob}[\text{transfer}] E[\text{expected gains to } N | \text{transfer}].$$

Thus, the initial owner cares not only about the effect of α on W but also about its effect on G_N .

2.2.4 The Effect of α on the Surplus Captured by the Buyer

Under PR, the surplus captured by the buyer is simply

$$G_N^{PR} = \theta E[\Delta V^* | \Delta V^* > 0] \text{prob}\{\Delta V^* > 0\}.$$

Under PU, the surplus captured by the buyer is

$$G_N^{PU} = \text{prob}\{\Delta V^* - \alpha \Delta Y(\alpha) > 0\} \\ \cdot \theta E[\Delta V^* - \alpha \Delta Y(\alpha) | \Delta V^* - \alpha \Delta Y(\alpha) > 0].$$

We are interested in studying how the choice of ownership structure affects the surplus captured by the buyer. Thus, we want to study the difference between G_N^{PU} and G_N^{PR} . This difference can be written (assuming $\text{prob}\{\Delta V^* - \alpha \Delta Y(\alpha) = 0\} = 0$) as

$$(7) \quad \Delta G_N(\alpha) = -\theta \alpha E[\Delta Y(\alpha) | \Delta V^* > 0 \cap \Delta V^* - \alpha \Delta Y(\alpha) > 0] \\ \times \text{prob}\{\Delta V^* > 0 \cap \Delta V^* - \alpha \Delta Y(\alpha) > 0\} \\ - \theta E[\Delta V^* | \Delta V^* > 0 \cap \Delta V^* - \alpha \Delta Y(\alpha) < 0] \\ \times \text{prob}\{\Delta V^* > 0 \cap \Delta V^* - \alpha \Delta Y(\alpha) < 0\} \\ + \theta E\{[\Delta V^* - \alpha \Delta Y(\alpha)] | \Delta V^* \leq 0 \cap \Delta V^* - \alpha \Delta Y(\alpha) > 0\} \\ \times \text{prob}\{\Delta V^* \leq 0 \cap \Delta V^* - \alpha \Delta Y(\alpha) > 0\}.$$

The first term represents the expected effect that a move to PU would have on N 's surplus in all those circumstances in which a control transfer would take place under both PU and PR. This effect can be either positive or negative, depending on whether the expected effect of a control transfer in those circumstances on minority shares is negative or positive. When a control transfer raises the value of minority shares, the presence of minority shares leaves N with less surplus under PU than under PR. In contrast, when a control transfer reduces the value of minority shares, the presence of minority shares would enable N to extract more surplus under PU than under PR.¹²

The second term represents the expected surplus that N would lose from a move from PR to PU owing to the fact that the move would block some (efficient) transfers that would take place under PR. The third term repre-

12. In Zingales (1995), the effect of a move to PU on N 's surplus is always negative because of his assumption that a control transfer always benefits the minority shareholders. We study a more general setting, one in which minority shareholders can either benefit or lose from a control transfer, and, in this setting, the considered effect is ambiguous.

sents the expected surplus that N would gain from the move from PR to PU owing to the fact that the move would lead to some (inefficient) control transfers that would not take place under PR.

2.2.5 Private versus Social Optimality

From equation (5), it is easy to see why the socially efficient level of α may diverge from the privately optimal one. In particular, given I and N , we have the following proposition:

PROPOSITION 1. *I will choose PU even though PR is socially optimal if and only if $\Delta G_N < W(\alpha) - W(0)$ for some α . Vice versa, I will choose PR even though PU is socially optimal if and only if $\Delta G_N > W(\alpha) - W(0)$ for all α .*

PROOF. See the appendix.

Note that a necessary condition for $\Delta G_N < W(\alpha) - W(0)$ for some α , given that $W(\alpha) < W(0)$ for all α (i.e., PR is socially optimal), is $\Delta G_N < 0$ for some α . Similarly, a necessary condition for $\Delta G_N > W(\alpha) - W(0)$ for all α , given that $W(\alpha) > W(0)$ for some α (i.e., PU is socially optimal), is $\Delta G_N > 0$ for some α .

The intuition is as follows. If the choice between PR and PU affects the expected surplus captured by the potential buyer, it drives a wedge between the social and the private optimum. In particular, if a positive α decreases the expected surplus extracted by the buyer to a sufficient extent, it will distort the initial owner's choice in favor of going public (excessive PU). On the other hand, if a positive α increases the expected surplus captured by the rival to a sufficient extent, it will distort the decision of the initial owner against going public (excessive PR).

Having established the possibility of a divergence, we can now explore the direction and the magnitude of this divergence. This is the subject of the next section.

2.3 The Direction of the Distortion

2.3.1 The Importance of ΔY

The source of the externality that generates the divergence between private and social incentives is the effect that a control transfer has on minority shareholders. When $\Delta Y(\alpha) = 0$, there is no externality, and thus there is no divergence. This idea is formalized in the following proposition:

PROPOSITION 2. *If $\Delta Y(\alpha) \equiv 0$ (i.e., if $Y[\alpha]$ is the same for any possible controlling shareholder), then $\Delta G_N \equiv 0$, and the privately optimal choice between PU and PR is socially optimal.*

PROOF. If $\Delta Y(\alpha) = 0$, then $G_N^{PR} = G_N^{PU}$, so $\Delta G_N(\alpha) = 0$. Then the conclusion follows directly from proposition 1.

$\Delta Y(\alpha)$ is the effect of a sale of control on minority shareholders. Thus, it will be zero only if minority shareholders are completely unaffected by the transaction. There are both theoretical and empirical reasons to doubt that this is the case. Theoretically, minority shareholders' value might well be affected by a control transfer owing to a change in either V or B (or both) because, under the existing corporate law rules, there is no mechanism that shields minority shareholders from the economic effects of a control transfer on their shares.

Empirically, $\Delta Y(\alpha)$ can be estimated. Barclay and Holderness (1991), for instance, find that block trades that lead to a change in control generate an abnormal return of 18 percent for minority shareholders.¹³ This figure represents only the unanticipated component of the externality. Nevertheless, it suggests that, on average, the externality is positive in the United States. It also suggests that the size of the externality imposed on minority shareholders by control transfers is far from trivial. The blocks analyzed by Barclay and Holderness (1991) represent about 30 percent of the companies' stock. Therefore, just the unanticipated component of the externality represents about 13 percent of the value of a firm.¹⁴

In sum, under current corporate law rules, $\Delta Y(\alpha)$ should not be expected to be generally equal to zero and thereby eliminate all distortions. Nevertheless, proposition 2 is useful in attempting to determine what rules can eliminate the externalities of control transfers. We return to this issue in section 2.5 below. For now, we assume that $\Delta Y(\alpha) \neq 0$ and explore its consequences.

2.3.2 The Relation between ΔY and ΔV

An important role in determining the direction of the distortion is played by the correlation between the effect that a change of control has on total value and its effect on the value of minority shareholders:

PROPOSITION 3. *If $\Delta Y(\alpha)$ and ΔV^* have opposite signs for all α , I , and N , then $\Delta G_N(\alpha) > 0$ for all α , I , and N , and the potential distortion is in the direction of an excessive incidence of PR.*

PROOF. The only interesting case is that in which $\Delta V^* > 0$ and $\Delta Y(\alpha) < 0$. When $\Delta V^* > 0$ and $\Delta Y(\alpha) < 0$, the first term in (7) is nonnegative (positive when the probability term is positive and zero when the probability term is zero). $\Delta V^* > 0$ and $\Delta Y(\alpha) < 0$ also imply that $\Delta V^* - \alpha \Delta Y > 0$. Thus, all transactions that will take place under PR will also take place under PU. This implies that the second term in (7) is zero. Finally, given $\Delta V^* - \alpha \Delta Y(\alpha) > 0$, the last term in (7) is positive when the probability is

13. This figure is obtained by averaging the 19 percent return obtained by the forty-one firms that were subsequently taken private and the 8.1 percent return obtained by the forty-five firms that experienced changes in control while remaining publicly traded.

14. A similar study conducted by Caprio, Floreani, and Radaelli (1994) for the Italian market comes to similar conclusions.

positive and zero when the probability is zero. Thus, if there is any chance of a transaction under PU, it must mean that the sum of the probability terms in the first term and in the third term is positive and, thus, that either the first term or the third term is positive.

$\Delta Y(\alpha)$ and ΔV^* are likely to have opposite signs when legal constraints on self-dealing transactions are weak and different controlling shareholders can generate different synergies. In this case, a controlling shareholder with more synergy (higher V) will also be the one with a greater business relationship with the acquired company and, thus, the one who is able to extract more value from the company (lower Y) through self-dealing transactions.

A different scenario, and perhaps the one that is more likely to occur in the United States, is that in which $\Delta Y(\alpha)$ and ΔV^* have the same sign. In this case, we have the following proposition:

PROPOSITION 4. *If $\Delta Y(\alpha)$ and ΔV^* have the same sign for all α , I , and N , and if $\text{prob}\{\Delta V^* \leq 0 \cap \Delta V^* - \alpha \Delta Y(\alpha) > 0\} \equiv 0$, then $\Delta G_N(\alpha) < 0$ for all α , I , and N , and the potential distortion is in the direction of an excessive incidence of PU.*

PROOF. The third term in (7) is positive if the probability is positive and zero if the probability is zero. In addition, given that $\Delta Y(\alpha)$ has the same sign as ΔV^* , which is positive in the first term in (7), the first term in (7) is negative. Finally, the second term is nonpositive by definition.

One scenario in which the conditions of this proposition are satisfied is that in which the private benefits of control are a given fraction of the firm's total value. Another scenario in which the conditions of this proposition are likely to hold is that in which the differences among the private benefits of different controlling shareholders are small. In this latter case, an acquirer with a higher V will also have a higher Y . Thus, in countries where the private benefits of control tend to be small (as they are in the United States), the distortion is likely to be in the direction of excessive PU.

Since V cannot be directly observed, any statement trying to identify the condition that is more likely to hold in a particular country is inevitably speculative. The value of cash flow to security holders (Y), however, can be observed. We can draw certain inferences from ΔY regarding the relation between the signs of ΔY and ΔV :

PROPOSITION 5. *If in a control transfer $\Delta Y(\alpha) > 0$, then $\Delta Y(\alpha)$ and ΔV^* must have the same sign in that transfer.*

PROOF. Assume not. Then it should be possible that a transfer occurs where $\Delta Y(\alpha)$ is positive and ΔV^* is negative. But this implies that $\Delta V^* - \alpha \Delta Y < 0$, which makes a transfer impossible, contradicting the hypothesis.

When I and N agree to a transfer, it must be the case that either the transfer generates value $\Delta V^* > 0$ or it generates a negative externality on minority shareholders $\Delta Y(\alpha) < 0$; otherwise, there is no room for

agreement. So, when we observe a transfer of control with $\Delta Y(\alpha) > 0$, we are guaranteed that $\Delta V^* > 0$ also.

Among other things, $\Delta Y(\alpha)$ is a function of the legal regime governing sale-of-control transactions. In particular, the following corollary of proposition 5 can be stated:

COROLLARY 1. *If corporate law rules ensure that minority shareholders never lose from control transfers, then $\Delta Y(\alpha)$ and ΔV^* will always have the same sign, and the distortion is in the direction of an excessive incidence of PU.*

One example of a rule that ensures that minority shareholders never lose from a control transfer is the equal opportunity rule, which gives minority shareholders the option to be bought out at the same price paid by the acquirer. We discuss this rule more extensively in section 2.4.1 below. Another rule that can achieve the same result is the right to sue majority shareholders in the case of a predatory acquisition (i.e., an acquisition that reduces Y).

This corollary is important in assessing the likely direction of the distortion in practice. For example, in countries where minority shareholder rights are well protected (as they are in the United States), the changes in total value and in minority shareholders' value are always in the same direction, and, as a result, the distortion is clearly in favor of PU. This conclusion highlights an interesting externality of any legislation aimed at improving the protection of minority shareholders. It is consistent with Roe's (1994) claim that populist legislation in favor of minority shareholders has forced the American system toward an excessive separation of ownership from control. Interestingly, however, the mechanism by which that excess takes place is different. In Roe (1994), the law directly forbids some players (specifically, financial institutions) from assuming the role of large shareholders. In our case, it is the protection of minority shareholders that makes it very convenient for the incumbent to disperse ownership.

While the discussion presented above suggests that $\Delta Y(\alpha)$ and ΔV^* are likely to have the same sign in the United States, it does not guarantee that their signs are always the same (as the conditions of proposition 4 would require). On the other hand, the existing empirical evidence indicates that, in the majority (but not necessarily in all) of the cases, $\Delta Y(\alpha)$ and ΔV^* do have the same sign in the United States.

2.3.3 The Expected Value of ΔY

Let us assume that both cases, that of proposition 3 and that of proposition 4, are possible and analyze what we can learn from the fact that, on average, $\Delta Y(\alpha)$ is positive:

PROPOSITION 6. *A necessary condition for ΔG_N to be negative, and thus for the distortion to be in favor of PU, is that the expected effect on minority shareholders of a value-enhancing transfer of control is positive ($E[\Delta Y(\alpha) \mid \Delta V^* > 0] > 0$).*

$> 0] > 0$). A sufficient condition for ΔG_N to be negative, and thus for the distortion to be in favor of PU, is that the expected effect of a transfer of control on minority shareholders is positive ($E[\Delta Y(\alpha) | \Delta V^* - \alpha \Delta Y(\alpha) > 0] > 0$).

PROOF. See the appendix.

The source of the distortion is that the surplus captured by the incumbent is modified by her choice of ownership structure. A necessary condition for her to benefit from going public is that, by going public, she succeeds in extracting a larger share of the rents. This occurs only if a transfer of control generates a positive externality on minority shareholders, which the incumbent can capture up front, in the price fetched at the IPO stage. This condition is exactly $E\{\Delta Y(\alpha) | \Delta V^* > 0\} > 0$.

The condition outlined above, however, is not sufficient because a change in the ownership structure also affects which transfer of control will take place. In particular, the fact that in a PU structure the incumbent does not own 100 percent of the cash-flow rights allows for the possibility that some transfer will take place even when $\Delta V^* < 0$ and $\Delta Y(\alpha) < 0$. Thus, the sufficient condition of proposition 6 requires that the positive externality exists even after we account for the changes in the set of control transfers that will take place.

Correspondingly, we have the following proposition:

PROPOSITION 7. *A necessary condition for ΔG_N to be positive, and thus for the distortion to be in favor of PR, is that the expected effect of a transfer of control on minority shareholders is negative ($E[\Delta Y(\alpha) | \Delta V^* - \alpha \Delta Y(\alpha) > 0] < 0$). A sufficient condition for ΔG_N to be positive, and thus for the distortion to be in favor of PR, is that the expected effect on minority shareholders of a value-enhancing transfer of control is negative ($E[\Delta Y(\alpha) | \Delta V^* > 0] < 0$).*

PROOF. See the appendix.

When a transfer of control generates a negative externality on minority shareholders, the amount of surplus that the incumbent can capture is reduced by going public. As a result, a necessary condition for the distortion to be in favor of PR is that the externality is on average negative. Again, this condition does not ensure the existence of a distortion because a PU structure changes the set of control transfers that will take place. The sufficient condition of proposition 7 requires that the negative externality exists even within the modified set of control transfers.

Barclay and Holderness (1991) show that, on average, the effect of a control transfer on the share price is positive. It is, then, legitimate to conclude that, on average, the expected value of a transfer of control on minority shareholders in the United States is positive. This suggests that the distortion in the United States is likely to be in the direction of excessive PU.

Two qualifications are warranted here. First, all firms in the sample used by Barclay and Holderness (1991) are firms that choose the PU structure. Thus, it might well be possible that, across the entire population of firms,

$E[\Delta Y(\alpha) \mid \text{transfer occurring}]$ is negative, but we observe only the ones for which $\Delta Y > 0$ because these firms are the most likely to go public. While possible, this hypothesis is rather unlikely for the United States given the great propensity of companies to go public there. The problem may be more relevant for other countries, where only a small fraction of companies choose to go public.

Second, the evidence discussed here comes only from the United States. We are aware of another paper that finds similar results in Italy (see Caprio, Floreani, and Radaelli 1994). It would be interesting, however, to investigate the effect of control transfers in different institutional environments, environments in which different rules for the protection of minority shareholders hold.

2.4 Extensions

2.4.1 The Equal Opportunity Rule

In many countries other than the United States, there exists a law requiring that the acquirer of a control block extend an offer at the same price to all shareholders—the equal opportunity rule (EOR). Even in the United States, where such a law does not exist, many companies insert a similar requirement in their corporate charter. Therefore, it is of practical relevance to understand the effects of an EOR on the direction of the distortion.

Corollary 1 has established that, if corporate law eliminates the possibility that $\Delta Y < 0$ in an acquisition, then the distortion is always in the direction of excessive PU. It is easy to see that this is exactly the effect produced by the EOR, provided that the incumbent's private benefits of control are nonnegative. In fact, under the EOR, minority shareholders get at least as much as I (per share). Since I will agree to a transfer only if she is better off, the minority shareholders (who, given that $B \geq 0$, will start from a lower price per share) will be made better off as well.¹⁵ Thus, all transfers of control generate a positive externality. It follows that the EOR ensures that the divergence between private and social optimality is in the direction of an excessive use of PU. Thus, other things being equal, countries that have the EOR should have proportionally more companies going public.

2.4.2 Difficulties in Implementing a Freezeout in the Last Period

Thus far, we have assumed that whoever ends up in control at time 2 will be able to move to the optimal ownership level at no additional cost. In particular, we assumed that, if $\alpha > 0$, the period 2 controller would be able to buy out all minority shares at $\alpha Y(\alpha)$. However, as Burkart, Gromb,

15. Since we defined B as the private benefits of control net of the risk-bearing costs, it is possible that B is negative. In such a case, however, the incumbent will have an interest in selling shares at least to the point at which $B \geq 0$. Thus, for all practical purposes, we can assume that $B \geq 0$.

and Panunzi (1998) point out, when a move to complete ownership produces some efficiency gains, dispersed shareholders will not tender at $\alpha Y(\alpha)$. Even if we introduce the possibility of a freezeout, it is likely that a premium above $\alpha Y(\alpha)$ might be needed. It is, thus, important to consider what happens when a controlling shareholder faces a cost in moving toward the optimal ownership level.

To examine the implications of such difficulties, consider the extreme case in which a freezeout at time 2 is impossible. In this case, any $\alpha > 0$ chosen at time 1 becomes irreversible, whereas a choice of $\alpha = 0$ at time 1 can be modified at time 2. Under this assumption, an initial PU structure may impose a cost on whoever is in control at $t = 2$ by impeding a move to the optimal α . This cost is going to be borne at least partially by N , and, therefore, it will not be fully internalized by I in her initial decision.

If the distortion is in favor of PU to begin with (as we found to be somewhat more likely for the United States), this new factor will exacerbate that situation. However, if the initial distortion is against PU, this new factor will mitigate that situation. This is not at all surprising: in a world of second best, some distortion can actually improve welfare.

2.5 Policy Implications for the Rules Governing Sale-of-Control Transactions

The source of the divergence, we have seen, is that the choice of an initial ownership structure is influenced by the prospect of a future sale-of-control transaction. As we have seen before, both the market rule prevailing in the United States and the EOR prevailing in other countries generate some distortions in the choice of ownership. It is natural to wonder, then, whether it is possible to regulate sale-of-control transactions in a way that would eliminate the distortion in the choice of the initial ownership structure.

Such a regulatory approach can be identified but might be hard to implement. As we saw, the divergence between private and social optimality results from the fact that, under the existing rules for sale-of-control transactions, a transfer of control from I to N may impose a positive or negative externality on minority shareholders. This problem will disappear if we have an arrangement that ensures, in the event of a control transfer, that minority shareholders will end up with exactly Y_j . Bebchuk (1994) demonstrates that such an arrangement will ensure *ex post* efficiency—that is, control blocks will be transferred if and only if the transfer is efficient. Our analysis points out that such an arrangement will also lead to an *ex ante* efficient choice of ownership structure and, in particular, to an efficient incidence of control blocks.

As Bebchuk (1994) shows, there are two arrangements that ensure that minority shareholders always end up with a value of Y_j . Unfortunately, they

both require that courts and minority shareholders have sufficient information. First, if courts have the same information concerning Y_I as I and N are assumed to have, then a combination of appraisal rights and freezeout rights would produce the desired result. Under this arrangement, minority shareholders will have an appraisal right to redeem their shares for a value of Y_I as estimated by the court, and I will also have a freezeout right to buy out the minority shareholders prior to the transaction for a value of Y_I as estimated by the court. If courts can observe Y_I accurately, this arrangement would ensure that minority shareholders always get Y_I . But, if courts might err in estimating Y_I (and in a direction that can be anticipated by I and N), then this arrangement will not ensure that minority shareholders get an expected value of Y_I in sale-of-control transactions.

Second, if minority shareholders have the same information concerning Y_I and Y_N as I and N are assumed to have, then a specialized voting arrangement can be used. Under this arrangement, a control transfer will require a vote of approval by a majority of the minority shareholders; furthermore, a majority of the minority shareholders will be able to approve a transaction in which they end up with less than Y_N by, say, approving a payment from the company to I or N . Under this arrangement, if minority shareholders know Y_I and Y_N as I and N are assumed to know, then all the transactions that are brought to shareholders for approval and that obtain such approval will be ones that provide the minority shareholders with a value equal to Y_I . Once again, it can be shown that, if minority shareholders might err in estimating either Y_I or Y_N (and in a direction that can be anticipated by I and N), the sale-of-control transactions will still involve an expected externality with respect to minority shareholders.

2.6 Conclusions

This paper shows that the ownership structure chosen by a value-maximizing entrepreneur might differ from the one that is socially optimal. Focusing on the choice between PR and PU structures, we show how this choice might be distorted, and we identify conditions under which the distortion will be in the direction of an excessive and suboptimal incidence of going public.

The results of the model indicate which empirical evidence would be useful for determining the direction of the identified distortion. Some of the evidence already exists, and combining it with our results suggests that, in the United States, the distortion tends to be in the direction of an excessive incidence of going public. But more empirical work, along the lines suggested by our results, would be needed to reach firm conclusions about the direction of the distortions.

While our analysis has focused on the choice between PR and PU structures, our point about the divergence between private and social optimality

also applies to the choice between a PU structure and a structure of dispersed ownership (DI). The choice between PU and DI might also have an external effect on potential buyers of control by influencing the conditions for a transfer and the buyer's surplus in a transfer. This external effect is analyzed in Bebchuk (1999), which shows that, when the corporate law system is lax and the private benefits of control are consequently large, a PU structure will enable the initial shareholders to extract more surplus from control transfers than will a DI structure. Therefore, when private benefits of control are large, publicly traded companies tend to have a PU structure (as is indeed the case), and they might choose a PU structure even if a DI structure is superior from a social point of view. Thus, the divergence between the private and the social optimality in the choice of ownership structure, which this paper has identified, is a general problem, one that should be recognized by students of corporate ownership structure.

Appendix

Proof of Proposition 1

For PU to be chosen even if PR is optimal, we must have that, while $W(0) > W(\alpha)$ for all $\alpha > 0$, there is an α such that $\Pi(0) < \Pi(\alpha)$. Substituting (5), this is equivalent to saying that there is an α such that $0 < W(0) - W(\alpha) < -\Delta G_N$.

For PR to be chosen even if PU is optimal, we must have that, while there is an $\alpha > 0$ such that $W(0) < W(\alpha)$, $\Pi(0) > \Pi(\alpha)$ for all $\alpha > 0$. Substituting (5), this is equivalent to saying that, for all $\alpha > 0$, $W(0) - W(\alpha) > -\Delta G_N$.

Proof of Proposition 6

Necessary Condition. We can rewrite (7) as

$$\begin{aligned}
 \Delta G_N(\alpha) = & -\theta\alpha E[\Delta Y(\alpha) | \Delta V^* > 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) > 0] \\
 & \times \text{prob}\{\Delta V^* > 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) > 0\} \\
 & - \theta\alpha E[\Delta Y(\alpha) | \Delta V^* > 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) < 0] \\
 & \times \text{prob}\{\Delta V^* > 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) < 0\} \\
 & - \theta E[\Delta V^* - \alpha\Delta Y(\alpha) | \Delta V^* > 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) < 0] \\
 & \times \text{prob}\{\Delta V^* > 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) < 0\} \\
 & + \theta E[\Delta V^* - \alpha\Delta Y(\alpha) | \Delta V^* \leq 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) > 0] \\
 & \times \text{prob}\{\Delta V^* \leq 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) > 0\}.
 \end{aligned}$$

Collecting terms, we obtain (assuming $\text{prob}\{\Delta V^* - \alpha\Delta Y(\alpha) = 0\} = 0$)

$$(A1) \quad \Delta G_N(\alpha) = -\theta\alpha E[\Delta Y(\alpha) | \Delta V^* > 0] \text{prob}\{\Delta V^* > 0\} \\ + \theta E[|\Delta V^* - \alpha\Delta Y(\alpha)| | \Delta V^* \text{ and } \Delta V^* - \alpha\Delta Y(\alpha) \text{ have opposite signs}] \\ \times \text{prob}\{\Delta V^* \text{ and } \Delta V^* - \alpha\Delta Y(\alpha) \text{ have opposite signs}\}.$$

Since the second term in (A1) is always nonnegative, a necessary condition for $\Delta G_N(\alpha)$ to be negative is that the first term is negative, that is, $E[\Delta Y(\alpha) | \Delta V^* > 0] \text{prob}\{\Delta V^* > 0\} > 0$.

Sufficient Condition. Rewrite the last term in (7) as

$$\theta E[\Delta V^* | \Delta V^* \leq 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) > 0] \\ \times \text{prob}\{\Delta V^* \leq 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) > 0\} \\ - \theta\alpha E[\Delta Y(\alpha) | \Delta V^* \leq 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) > 0] \\ \times \text{prob}\{\Delta V^* \leq 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) > 0\}.$$

Collecting terms, we can rewrite ΔG_N as follows:

$$(A2) \quad \Delta G_N(\alpha) = -\theta\alpha E[\Delta Y(\alpha) | \Delta V^* - \alpha\Delta Y(\alpha) > 0] \\ \times \text{prob}\{\Delta V^* - \alpha\Delta Y(\alpha) > 0\} \\ - \theta E[\Delta V^* | \Delta V^* > 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) < 0] \\ \times \text{prob}\{\Delta V^* > 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) < 0\} \\ + \theta E[\Delta V^* | \Delta V^* \leq 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) > 0] \\ \times \text{prob}\{\Delta V^* \leq 0 \cap \Delta V^* - \alpha\Delta Y(\alpha) > 0\},$$

or

$$(A3) \quad \Delta G_N(\alpha) = -\theta\alpha E[\Delta Y(\alpha) | \text{transfer under PU}] \\ \times \text{prob}\{\text{transfer under PU}\} \\ - \theta E[|\Delta V^*| | \Delta V^* \text{ and } \Delta V^* - \alpha\Delta Y(\alpha) \text{ have opposite signs}] \\ \times \text{prob}\{\Delta V^* \text{ and } \Delta V^* - \alpha\Delta Y(\alpha) \text{ have opposite signs}\}.$$

The second term of (A3) is always nonpositive. Thus, $E[\Delta Y(\alpha) | \text{transfer under PU}] \text{prob}\{\text{transfer under PU}\} > 0$ is sufficient to ensure that $\Delta G_N(\alpha) < 0$.

Proof of Proposition 7

Necessary Condition. Since the second term in (A3) is always nonpositive, a necessary condition for $\Delta G_N(\alpha)$ to be positive is that the first term is positive, that is, $E[\Delta Y(\alpha) | \text{transfer under PU}] \text{prob}\{\text{transfer under PU}\} < 0$.

Sufficient Condition. Since the second term in (A1) is always nonnegative, $E[\Delta Y(\alpha) \mid \Delta V^* > 0]$ is sufficient to ensure that ΔG_N be positive.

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Comment Merritt B. Fox

The ideal level of public ownership is determined by achieving the proper trade-off between private ownership's illiquidity and public ownership's agency costs of management. According to the traditional view, in a country with a highly developed capital market, such as the United States, each firm makes the socially optimal choice concerning its ownership structure. This is because its founding entrepreneur feels the full social effects of her choice when she decides what portion, if any, of her firm's shares should be sold to the public. In many other countries, however, institutional factors, such as weak legal protections for outside shareholders, limit the development of capital markets, and this in turn restricts entrepreneurial choice and results in too little public ownership.

In their paper, Lucian Bebchuk and Luigi Zingales enlarge our understanding of public versus private ownership by questioning this traditional view. They do so in the context of an entrepreneur's choice of ownership structure in a situation where, regardless of any public sale, she retains voting control of the firm during the current period but may sell this control at some point in the future. The paper makes three points of real importance to the study of both comparative corporate governance and transition economics. First, it shows that, under certain circumstances, a country with a highly developed capital market can have too much public ownership. This is because the entrepreneur's decision is distorted from a social point of view by the fact that, when a subsequent transfer of control increases the verifiable cash flow available to minority shareholders, these shareholders are the beneficiaries of a positive externality flowing from the transferee's improved management. Since the prospect of this externality increases share price at the time of the entrepreneur's initial public offering (IPO), the entrepreneur can capture a larger piece of the surplus generated by such a transfer by selling a larger portion of the firm at the time of the IPO.

Second, the paper shows how legal rules can affect this bias toward too

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much public ownership. Specifically, an “equal opportunity” rule, whereby the acquirer of a control block must extend an offer at the same price to all shareholders, exacerbates the problem. The problem is also exacerbated by a legal structure that results in minority shareholders receiving, at the time of a freezeout by a new controlling shareholder, a premium for their shares above the value of these shares as pro rata claims on the firm’s verifiable cash flows under the original entrepreneur’s management.

Third, the paper enriches our understanding of the institutional factors that can lead to too little public ownership in countries with less well-developed capital markets. It is already well understood that weak protections for minority shareholders will have a negative effect on public ownership because fear that the entrepreneur will engage in such overreaching reduces the price at which shares can be sold. Bebchuk and Zingales, however, go beyond this usual analysis by considering the role of expectations concerning future control changes. Specifically, they show that, where the expected impact of a value-enhancing transfer of control on minority shareholders is negative (which is more likely to be the case in a country with weak minority shareholder protections), public ownership will occur even less often than has been previously understood. This is because, in such a situation, the transfer of control would on average create a negative externality on the minority shareholders. As a result, a lower level of public ownership will allow the entrepreneur to capture a larger share of the surplus created by the transfer and thus affect the division of rents between her and the transferee.

Bebchuk and Zingales’s paper stimulates several observations, which are set out below. I parallel their notation throughout.

The Welfare Effects of the Distortion

A closer examination of the social welfare effects of the distortion identified by Bebchuk and Zingales helps sharpen the policy implications of their analysis.

A Simple One-Period Model with No Possibility of a Control Transfer

I start this examination by looking at a simple one-period model with no potential transfer of control. Thus, no potential for distortion exists. As in Bebchuk and Zingales’s paper, the entrepreneur intends to keep voting control regardless of what ownership structure she chooses.

If the entrepreneur decides to keep the firm privately held (PR), that is, if $\alpha = 0$,

$$(C1) \quad CE(0) = S + Y(0) - D(0),$$

where $CE(\alpha)$ is the certainty equivalent value to the entrepreneur of the ownership structure she has chosen, S is synergies and is not a function of α since the entrepreneur is assumed to retain voting control whatever α she chooses, $Y(\alpha)$ is identifiable cash flow available for pro rata distribution and is a negative function of α , and $D(\alpha)$ is dollar measure of disutility from lack of diversification, which is also a negative function of α .

If the entrepreneur decides to sell some of the firm's shares to the public, that is, if $\alpha > 0$,

$$(C2) \quad CE(\alpha) = S + R(\alpha) + (1 - \alpha)Y(\alpha) + \alpha Y(\alpha) - D(\alpha),$$

where $R(\alpha)$ is the "rip-off" factor (due to managerial shirking, direct diversions of cash flow and assets, and transactions in which management is interested), $R(\alpha)$ is a positive function of α (because the greater the public's share of identifiable cash flow, the less "rip-offs" involve just moving money from one of the entrepreneur's pockets to the other), and $\alpha Y(\alpha)$ is cash received from selling shares to the public. Equation (3) follows directly from equation (2):

$$(C3) \quad CE(\alpha) = S + \underbrace{R(\alpha)}_{+} + \underbrace{Y(\alpha)}_{-} - \underbrace{D(\alpha)}_{+}.$$

As demonstrated by Jensen and Meckling (1976), the sum of $R(\alpha) + Y(\alpha)$ is a negative function of α , reflecting the fact that reduction in verifiable income resulting from managerial rip-offs is greater than the utility that managers gain from these rip-offs. $D(\alpha)$, managerial disutility from lack of diversification, is also a negative function of α because the entrepreneur's sale of a larger portion of the firm's shares permits her to diversify a larger portion of her wealth. Thus, there is a trade-off between $R(\alpha) + Y(\alpha)$ and $D(\alpha)$. The entrepreneur maximizes her utility, represented by $CE(\alpha)$, by choosing α^* , which optimizes this trade-off. The entrepreneur's choice is socially optimal because the investing public pays only for what it gets.

The Consequences of Adding the Possibility of a Transfer of Control

Now introduce a second period and the possibility of a second owner. As Bebchuk and Zingales have shown, the initial entrepreneur will choose an α_1 different from α^* , and, because of this deviation, social welfare will not be maximized.

What are the consequences of this deviation? First, consider the first period. The effects of the deviation can be divided into its effect on the return on capital and its effect on the return on entrepreneurship. As for its effect on the return on capital, if $\alpha_1 > \alpha^*$, there is a bad trade-off between agency costs and diversification in the first period, resulting in Y

being below the optimal level. This lowers the return on capital and, hence, its supply. On the other hand, if $\alpha_1 < \alpha^*$, it raises Y and actually increases return on capital. As for the effect of the deviation, first-period returns on entrepreneurship are diminished by a deviation in either direction since any deviation from α^* leads to an inefficient trade-off between diversification and agency costs. This, however, will be more than compensated for by the entrepreneur's gain in the second period because of the increased portion of second owners' rents that entrepreneurs capture.

Next consider the consequences of the deviation in the second period. Returns on capital are hurt by a deviation either way from α^* . Some transfers that would decrease Y will go through. Some transfers that would increase Y will be blocked. The deviation increases the returns to entrepreneurship since it permits entrepreneurs to capture more of the potential control purchaser's rents. For the same reason, returns to being a potential control purchaser are hurt by the deviation.

Policy Implications

This analysis has several policy implications. We may believe, for example, that entrepreneurship and second ownership are relatively inelastically supplied, that capital is relatively more elastically supplied, but that the amount of capital supplied in the economy is, for other reasons, sub-optimal (i.e., that capital formation needs to be encouraged). In that case, we should be particularly concerned with a deviation if we think that $\alpha_1 > \alpha^*$ (i.e., that ΔG is negative) since that would lower the supply of capital. We should not be as concerned if $\alpha_1 < \alpha^*$ since that would increase the supply of capital without promoting significant other distortions in the economy. Thus, if we are somewhat uncertain as to whether α_1 is greater than or less than α^* , we should err on the side of a policy that discourages PU; that is, we should favor a policy that tends to reduce α_1 . On the other hand, we may believe that capital and second ownership are relatively inelastically supplied and that it is entrepreneurship that is both relatively more elastically supplied and, for other reasons, undersupplied. In that event, a deviation in either direction should not bother us since allowing the deviation increases the rents available to entrepreneurs, thus prompting an increase in the amount of entrepreneurship supplied, without promoting serious other distortions in the economy.

Do ΔY and ΔV Have the Same Sign?!

Bebchuk and Zingales state: "Another scenario in which the conditions of this proposition are likely to hold is that in which the differences among

1. ΔY is the change in Y from a sale of control, and ΔV is the difference between the value of controlling the firm to the control purchaser and that value to the entrepreneur.

the private benefits of different controlling shareholders are small. In this . . . case, an acquirer with a higher V will also have a higher Y . Thus, in countries where the private benefits of control tend to be small (as they are in the United States), the distortion is likely to be in the direction of excessive PU" (section 2.3.2). The first two sentences are clearly true. As for the third sentence, however, all we really know is the status of the United States *relative to other countries*—that the private benefits from control are smaller in the United States than they are in other countries. We do not know that in the United States they are small *relative to V* . Yet it is the smallness of private benefits relative to V that is necessary for the conclusion in the third sentence to follow. This observation is important because Bebchuk and Zingales's suggestion that the United States has too much public ownership rests on the assumption that ΔY and ΔV have the same sign (see their proposition 4).

Is ΔY Positive?

Bebchuk and Zingales's proposition 6 shows that a sufficient condition for ΔG_N to be negative and hence for there to be a distortion in favor of PU is that the expected effect of a transfer of control on minority shareholders be positive. They conclude that this is the case in the United States. They base this conclusion on Barclay and Holderness (1991), which shows abnormal positive returns to changes in ownership blocks. Barclay and Holderness's study forms an uncertain foundation for such a conclusion. After all, their findings could well be the result of signaling. Outsiders might conclude from a control buyer's interest in the stock that they had previously underestimated Y , whoever might be in control. This seems quite possible given that much of the actual effect of changes in ownership on Y would be anticipated in price well prior to the actual announcement of a control-transfer transaction.

The Desirability of an Equal Opportunity Rule

In the extensions to their analysis, the authors consider the desirability of an equal opportunity rule whereby the acquirer of a control block is required to extend an offer at the same price to all shareholders. They conclude that such a rule would be bad policy in the United States, where they assume that $\Delta G < 0$. They show that an equal opportunity rule would increase α and thus, when $\Delta G < 0$, increase the deviation from social optimality.

It is worth noting, however, that, whatever the situation in the United States, an equal opportunity rule might be good for another country. This is because, in other countries, ΔG may be greater than zero since ΔY and ΔV may have opposite signs. This is likely to happen where private benefits

for control are large and thus, relative to V , vary more from one owner to another.

Multiple-Period, Multiple-Owner Extension

Suppose that liquidation is many years off, that there will be several controlling owners, and that the discount rate is positive. Working back, starting with the penultimate owner, each owner would want to have $\alpha > \alpha^*$ in order to try to capture the rents of the owner after him. The deviations each period may be quite small, however, given that current-period efficiency must be traded off against gains that, at least in part, are far in the future. This raises the possibility that the problem of too much public ownership may not be of large magnitude.

Extension: Freezeout by First Owner and Appraisal

Bebchuk and Zingales suggest that the tendency toward too much public ownership would be solved by a combination of giving the entrepreneur, prior to a control sale, a right to freeze out minority shareholders at a price equaling Y_t (the verifiable cash flow available for pro rata distribution with the firm under the incumbent entrepreneur's management) and giving the shareholders appraisal rights at the same price. Their concern is that there might be a predictable bias by the courts in estimating Y_t . Such a bias, however, could be corrected by a change in the legal standard. The more interesting issue is the effect of uncertainty concerning this estimate even if the estimate is expected to be unbiased since courts will inevitably be uncertain in their estimates.

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