Legal Investor Protection and Takeovers*

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July 2011

Abstract

We study the role of legal investor protection for the efficiency of the market for corporate control. Stronger legal investor protection limits the ease with which an acquirer, once in control, can extract private benefits at the expense of non-controlling investors. This, in turn, increases the acquirer's capacity to raise outside funds to finance the takeover. Absent effective competition for the target, the increased outside funding capacity does not make efficient takeovers more likely, however, because the bid price, and thus the acquirer's need for funds, increase in lockstep with his pledgeable income. In contrast, under effective competition, the increased outside funding capacity makes it less likely that the takeover outcome is determined by the bidders' financing constraints—and thus by their internal funds—and more likely that it is determined by their ability to create value. Accordingly, stronger legal investor protection can improve the efficiency of the takeover outcome. Taking into account the interaction between legal investor protection and financing constraints also provides new insights into the optimal allocation of voting rights, sales of controlling blocks, and the role of legal investor protection in cross-border mergers and acquisitions.

*We thank Augustin Landier (NBER discussant), Franco Ferrari, Igor Letina, and seminar participants at the NBER Corporate Finance Summer Institute 2011, Stockholm School of Economics, Duisenberg School of Finance (Amsterdam), and Luiss Guido Carli University for helpful comments. Financial support from the ESRC is gratefully acknowledged. All remaining errors are our own.

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1 Introduction

Building on the seminal works of La Porta et al. (1997, 1998), empirical studies have shown that countries with stronger legal investor protection allocate resources more efficiently. Wurgler (2000) shows that countries with stronger legal investor protection increase investment more in growing industries, and decrease investment more in declining industries, relative to countries with weaker legal investor protection. Likewise, McLean, Zhang, and Zhao (2010) show that firms in countries with stronger legal investor protection exhibit a higher sensitivity of investment to growth opportunities (q) and, as a result, enjoy higher total factor productivity growth, higher revenue growth, and higher profitability.

One important resource allocation mechanism is the takeover market. In that market, both assets and managerial talent are (re-)allocated across firms. Indeed, consistent with the studies cited above showing that countries with stronger legal investor protection allocate resources more efficiently, Rossi and Volpin (2004) find that these countries also have more active takeover markets.

Existing theory offers little guidance as to *why* the takeover outcome might be more efficient in countries with stronger legal investor protection. This is for two reasons. First, existing takeover models do not explicitly consider legal investor protection. Second, empirical research suggests that legal investor protection matters primarily because it relaxes financing constraints (e.g., La Porta et al., 1997; McLean, Zhang, and Zhao, 2010).[1] However—and in stark contrast to the standard corporate finance model of investment (e.g., Tirole, 2006, Chapters 3 and 4)—existing takeover models typically assume that bidders are financially unconstrained (e.g., Grossman and Hart, 1980, 1988; Shleifer and Vishny, 1986; Hirshleifer and Titman, 1990; Burkart, Gromb, and Panunzi, 1998, 2000; Mueller and Panunzi, 2004).[2]

[1] La Porta et al. (1997) show that countries with stronger legal investor protection have larger external capital markets and more IPOs. McLean, Zhang, and Zhao (2010) show that firms in these countries exhibit both a lower sensitivity of investment to cash flow—meaning they are less financially constrained—and a higher sensitivity of either equity or debt issuance to q—meaning firms with better investment opportunities are better able to raise outside funds: "These findings suggest that investment-sensitivity to q is stronger in countries with greater investor protection in part because in these countries high q firms can more easily obtain external finance to fund their investments" (p. 2).

[2] All these models build on Grossman and Hart's (1980) seminal analysis of the free-rider problem in takeovers. While Chowdhry and Nanda (1993)—in a model that assumes no free-rider problem—and Mueller and Panunzi (2004) examine the strategic role of debt financing in takeovers, neither of these two models con-

To address this issue, we incorporate both legal investor protection and financing constraints into a standard takeover model. In that model, no individual target shareholder perceives himself as pivotal for the outcome of the tender offer, leading to free-riding behavior. Consequently, target shareholders tender only if the bid price reflects the full post-takeover share value (Bradley, 1980; Grossman and Hart, 1980).[3] However, if the bidder cannot make a profit on tendered shares, this implies that value-increasing takeovers may not take place. As Grossman and Hart argue, one way for the bidder to make a profit is by diverting corporate resources as private benefits after gaining control of the target. Private benefit extraction lowers the post-takeover share value and thus the price which the bidder must offer target shareholders to induce them to tender their shares.

In our model, legal investor protection limits the ease with which the bidder can divert corporate resources as private benefits. This has two main implications. First, it reduces the bidder's profit from the takeover, making efficient—i.e., value-increasing—takeovers less likely. Second, it increases pledgeable income by increasing the post-takeover share value, thereby increasing the bidder's outside funding capacity. However, absent effective competition for the target, the increased outside funding capacity does not relax the bidder's budget constraint. As the bid price increases in lockstep with the post-takeover share value—to induce target shareholders to tender their shares—the bidder's *need for funds* increases one-for-one with his pledgeable income, thereby offsetting any positive effect of legal investor protection on his outside funding capacity.

The conclusion that legal investor protection does not relax the bidder's budget constraint is disconcerting. After all, empirical research suggests that one of the main implications of legal investor protection is that it eases financing constraints. However, the conclusion follows

siders bidders' financing constraints. In particular, this implies that—in contrast to the standard corporate finance model of investment—bidders' own wealth is immaterial for efficiency.

[3]Rossi and Volpin (2004) provide empirical support for the free-rider hypothesis by showing that bid premia in tender offers are higher than in other takeover modes. The authors conclude (p. 293): "We interpret the finding on tender offers as evidence of the free-rider hypothesis: that is, the bidder in a tender offer needs to pay a higher premium to induce shareholders to tender their shares." In a recent empirical study, Bodnaruk et al. (2011) provide more direct evidence of the free-rider hypothesis. The authors show that: (i) takeover premia are higher when the target's share ownership is more widely dispersed, and (ii) firms with more widely dispersed share ownership are less likely to become takeover targets. Both findings are consistent with finite-shareholder versions of the free-rider model (e.g., Bagnoli and Lipman, 1988; Holmström and Nalebuff, 1992).

naturally in any setting in which the bid price increases in lockstep with the post-takeover share value and thereby with the bidder's pledgeable income. Turning this result on its head, if the bid price did *not* increase in lockstep with the bidder's pledgeable income, then the positive effect of legal investor protection on the bidder's outside funding capacity might have implications for efficiency. There are different reasons for why the bid price may not increase in lockstep with the bidder's pledgeable income. For instance, financing frictions may prevent bidders from raising outside funds against the full post-takeover share value. Another reason—that we explore in this paper—is bidding competition, where the bidders are forced to make offers exceeding the post-takeover share value.

As private benefits are not pledgeable, offers exceeding the post-takeover share value must be (partly) funded out of the bidders' internal funds. Consequently, the takeover outcome not only depends on the bidders' *willingness* to pay—i.e., their valuations for the target—but it may also depend on their *ability* to pay.

If bidders are arbitrarily wealthy, the takeover outcome depends exclusively on the bidders' willingness to pay. This is the situation analyzed in much of the theory of takeovers. As the most efficient bidder—i.e., the one who can create the most value—has the highest valuation for the target, he can always outbid less efficient rivals. Thus, absent financial constraints, the outcome of the takeover contest is always efficient.

By contrast, if bidders are financially constrained, the takeover outcome may be inefficient. As an illustration, suppose there are two bidders, bidder 1 and bidder 2. The target value is normalized to zero. If bidder 1 gains control, the target value increases to 100, while if bidder 2 gains control, it increases only to 90. Thus, bidder 1 is more efficient. Suppose next that both bidders can, once in control, divert the same fraction of firm value, say, 30 percent, as private benefits. Hence, if bidder 1 gains control, the post-takeover share value is 70, and his private benefits are 30. Likewise, if bidder 2 gains control, the post-takeover share value is 63, and his private benefits are 27. Thus, bidder 1 is not only more efficient, but he can also raise more outside funds: bidder 1's outside funding capacity is 70, while bidder 2's outside funding capacity is only 63. (Recall that private benefits are not pledgeable.) And yet, bidder 2 may win the takeover contest. Specifically, assume bidder 1 has no wealth, while bidder 2 has own wealth of 8. In this case, bidder 1 is able to pay 70 for the target, but bidder 2 is able to pay 71: he can raise 63 from outside investors and use 8 of his own wealth. Consequently, bidder 2 can outbid bidder 1 and win the takeover contest.[4]

In sum, if bidders are financially constrained, the takeover outcome not only depends on the bidders' ability to create value, but it may also depend on their wealth. In particular, if the less efficient bidder—i.e., the one who can create less value—is wealthier, the takeover outcome may be inefficient. In this case, stronger legal investor protection can improve efficiency. To continue with the example, suppose that legal investor protection is now stronger, allowing bidders to divert only 10 percent of firm value as private benefits. As a result, bidder 1's outside funding capacity is now 90, while bidder 2's outside funding capacity is now 81. If the bidders' wealth is the same as before, this implies that bidder 1 can now pay 90 for the target, while bidder 2 can only pay $81 + 8 = 89$. Thus, bidder 1 can outbid his less efficient rival, bidder 2.

As the example shows, stronger legal investor protection can promote efficient takeover outcomes. By boosting bidders' ability to raise outside funds against the value they can create, it makes it more likely that the most efficient bidder wins the takeover contest.

We explore a number of implications of our analysis, both normative and positive. Under a "one share–one vote" rule, all shares have equal voting rights. The leading argument in favor of this rule is that it minimizes the likelihood that less efficient bidders with higher private benefits can outbid more efficient bidders with lower private benefits (Grossman and Hart, 1988; Harris and Raviv, 1988). In our model, this argument does not apply, as the most efficient bidder has also the highest private benefits. Nonetheless, a "one share–one vote" structure is socially optimal in our model as it minimizes the likelihood that less efficient but wealthier bidders can outbid more efficient but less wealthy bidders. Naturally, this argument is absent from the models of Grossman and Hart (1988) and Harris and Raviv (1988), as both models assume that bidders are arbitrarily wealthy. Moreover, we show that departures from "one share–one vote" are more likely to lead to an inefficient takeover outcome when legal investor protection is weak.

We next examine sale-of-control transactions in which a bidder seeks to acquire a ma-

[4]Bidder 1 is *willing* to pay up to 100 for the target, while bidder 2 is *willing* to pay up to 90. Hence, if the bidders were financially unconstrained, bidder 1 would always win the takeover contest.

jority of the target's shares from a controlling shareholder ("incumbent"). Effectively, the incumbent is like a rival bidder who is arbitrarily wealthy: he can always "afford" the controlling block by simply refusing to sell it. As we show, efficient sales of control are more likely to succeed when the controlling block is large. In a second step, we endogenize the size of the controlling block and show that it is larger when legal investor protection is weak. This is consistent with empirical evidence by La Porta et. al (1998, 1999) showing that ownership is more concentrated in countries with weaker legal investor protection.

We finally examine issues related to cross-border M&A. In a typical cross-border M&A transaction, the target adopts the corporate governance structures, accounting standards, and disclosure practices of the country of the acquirer. As we show, if bidders from different countries compete for a target, those from countries with stronger legal investor protection have a strategic advantage in the takeover contest. Holding the bidders' wealth and their ability to create value fixed, bidders from countries with stronger legal investor protection can extract fewer private benefits, implying a higher post-takeover share value. This boosts their outside funding capacity, allowing them to outbid rivals from countries with weaker legal investor protection. Our model predicts that takeover premia in cross-border M&A deals are increasing in the quality of legal investor protection in the country of the acquirer, which is consistent with empirical evidence by Bris and Cabolis (2008).

The paper proceeds as follows. Section 2 presents the model. Section 3 considers the case of a single bidder. Section 4 analyzes bidding competition. Section 5 considers implications of our analysis for the optimal allocation of voting rights, sales of controlling blocks, and cross-border M&A transactions. Section 6 offers concluding remarks. All proofs are in the Appendix.

2 The Model

We consider a model of takeovers in which potential acquirers are financially constrained. Suppose a firm ("target") faces a potential acquirer ("bidder"). The target has a measure one continuum of shares, which are dispersed among many small shareholders. (Section 5.2 considers the case in which the target has a controlling shareholder.) All shares have equal voting rights. (Section 5.1 considers departures from "one share–one vote.") Shareholders are homogeneous, everybody is risk neutral, and there is no discounting.

The target value is normalized to zero. If the bidder gains control of the target, its value increases to $v > 0$. To gain control, the bidder must make a tender offer to the target shareholders that attracts at least a majority of the target shares. (The bidder has no initial stake in the target.) Target shareholders are atomistic in the sense that no individual shareholder perceives himself as pivotal for the outcome of the tender offer. Tender offers are conditional on acquiring at least a majority of the target shares and unrestricted in the sense that the bidder is willing to acquire any and all shares beyond this threshold. If the tender offer is successful, the bidder incurs an execution cost, c, that cannot be imposed on the target or its shareholders (unless the target is fully owned by the bidder, in which case the assumption becomes irrelevant).[5]

Even if a control transfer is efficient ($v > c$), it may not take place. As Bradley (1980) and Grossman and Hart (1980) point out, if no individual target shareholder perceives himself as pivotal for the outcome of the tender offer, efficient takeovers will not materialize unless the bidder can extract private benefits once in control. Accordingly, we assume that, after gaining control, the bidder can divert a fraction $(1 - \phi)$ of the target value as private benefits, where $\phi \in [\bar{\phi}, 1]$ is a choice variable. For simplicity, we assume that private benefits cause no deadweight loss. Thus, the bidder's private benefits are $(1 - \phi)v$, while the security benefits accruing to all shareholders, including the bidder himself, are ϕv. Importantly, private benefits cannot be contracted upon. This implies the bidder cannot commit to a given level of private benefits, nor can he transfer or pledge these benefits to third parties (e.g., investors).[6] Instead, the legal environment—captured by the parameter $\bar{\phi}$—effectively limits diversion, with larger values of $\bar{\phi}$ corresponding to stronger legal investor protection.

In practice, there are different ways how a controlling shareholder can extract private

[5] If there are multiple bidders, it is important that the execution cost is only incurred by the winning bidder. Otherwise—at least when the bidding outcome is deterministic—there would never be any bidding competition as the losing bidder would not be able to break even.

[6] Our assumption that private benefits are not pledgeable rules out the possibility that the bidder can directly pledge target assets as collateral even if he does not fully own the target, as discussed in Mueller and Panunzi (2004). Such arrangements, which rely on second-step mergers between the target and a shell company owned by the bidder, are not available in all countries. Even in the United States, their role has become limited due to the widespread adoption of (anti-)business combination laws.

benefits at the expense of other investors. For instance, he can sell target assets or output below their market value to another company he owns. Alternatively, he can pay himself an artificially high salary or consume perks while declaring them as necessary business expenses. Johnson et al. (2000) describe how—even in countries like France, Belgium, and Italy—controlling shareholders can extract private benefits by transferring company resources to themselves ("tunneling"). Bertrand, Mehta, and Mullainathan (2002), Bae, Kang, and Kim (2002), Atanasov (2005), and Mironov (2008) provide further examples of tunneling from India, Korea, Bulgaria, and Russia, respectively.[7]

To study the financing of takeovers, we assume the bidder has internal funds, A. In addition, the bidder can raise outside funds, F, from competitive investors. Since private benefits are not pledgeable, the amount of outside funds which the bidder can raise is limited by the value of his security benefits. We impose no restriction on the type of financial claims which the bidder can issue against these security benefits, except that their value must be non-decreasing in the underlying security benefits.

The sequence of events is as follows.

In stage 1, the bidder decides whether to bid for the target. If he decides to bid, he can raise outside funds, F, in addition to his internal funds, A, and make a take-it-or-leave-it, conditional, unrestricted cash tender offer with bid price b.

In stage 2, the target shareholders simultaneously and non-cooperatively decide whether to tender their shares. The fraction of tendered shares is denoted by β. If $\beta < 0.5$, the takeover fails. Conversely, if $\beta \geq 0.5$, the takeover succeeds, tendering shareholders receive a cash payment equal to the bid price, and the bidder incurs the execution cost, c.

In stage 3, if the bidder gains control of the target, he diverts a fraction $(1 - \phi)$ of its value as private benefits, subject to the constraint $\phi \geq \bar{\phi}$ imposed by the law.

To select among multiple equilibria, we apply the Pareto-dominance criterion, which selects the equilibrium outcome with the highest payoff for the target shareholders (e.g., Grossman and Hart, 1980; Burkart, Gromb, and Panunzi, 1998; Mueller and Panunzi, 2004). Among other things, this implies our focus on value-increasing takeovers is without any loss

[7] Barclay and Holderness (1989), Nenova (2003), and Dyck and Zingales (2004) are empirical studies documenting the value of private benefits of control.

of generality.[8] Indeed, any equilibrium of the tendering subgame in which a value-decreasing takeover succeeds is dominated by an equilibrium in which the takeover fails, where the latter equilibrium always exists.[9] Thus, Pareto dominance rules out what is, by all means, an implausible scenario, namely, that target shareholders would tender to a bidder for a price below the status quo value.[10]

The model is solved by backward induction. We first consider the bidder's diversion decision, followed by the target shareholders' tendering decision and the bidder's offer and financing decisions. Generally, a successful bid must win the target shareholders' approval and match any competing offer. We examine both the case in which shareholder approval is the binding constraint ("single-bidder case") and the case in which outbidding of rivals is the binding constraint ("bidding competition").

3 Single-Bidder Case

The single-bidder assumption does not literally rule out that there are other bidders interested in controlling the target. It merely presumes that none is able to create nearly as much value as the bidder under consideration. By implication, shareholder approval is the binding constraint for a successful takeover.

Consider first stage 3, where the bidder must decide how much value to divert as private benefits. If the bidder gains control, he chooses ϕ to maximize

$$\beta\phi v - F(\beta\phi v) + (1-\phi)v, \tag{1}$$

[8] Also, introducing restricted bids into our framework does neither affect the takeover outcome nor the payoffs to the (winning) bidder and the target shareholders.

[9] There always exists a Nash equilibrium—in fact, a continuum of Nash equilibria—in which the takeover fails. If it is anticipated that a majority of the target shareholders does not tender, any individual shareholder is indifferent between tendering and not tendering, implying that failure can always be supported as an equilibrium outcome. Note that while unconditional offers may avoid problems of multiple equilibria, they suffer from problems of nonexistence of equilibrium (e.g., Bagnoli and Lipman, 1988).

[10] Grossman and Hart (1980, p. 47) also argue that bids below the status quo value are implausible, for the same reason, namely, because they fail whenever they are expected to fail. Naturally, a value-decreasing takeover ($v < 0$) might succeed if the bidder makes an offer above the status quo value, $b \geq 0$. However, making such an offer would violate the bidder's participation constraint.

where $\beta\phi v$ is the value of the security benefits associated with the bidder's equity stake, $F(\beta\phi v)$ is the value of the claims issued against these security benefits as part of the takeover financing, and $(1-\phi)v$ are the bidder's private benefits. Since, by assumption, F is non-decreasing in the underlying security benefits, the bidder's objective function is decreasing in ϕ, implying that maximum diversion is optimal: $\phi = \bar{\phi}$.[11] Thus, legal investor protection imposes a binding constraint on diversion, and the value of the security benefits increases with the quality of legal investor protection.[12]

Consider next stage 2, where the target shareholders must decide whether to tender their shares. Being atomistic, target shareholders tender only if the bid price equals or exceeds the post-takeover value of the security benefits (Bradley, 1980; Grossman and Hart, 1980). Consequently, a successful tender offer must satisfy the "free-rider condition,"

$$b \geq \bar{\phi} v. \tag{2}$$

If this condition holds with equality, target shareholders are indifferent between tendering and not tendering. Without loss of generality, we break the indifference in favor of tendering.[13,14] Thus, if the takeover succeeds, it succeeds with $\beta = 1$.

Consider finally stage 1, where the bidder must choose the offer price b and secure financing for the takeover. A successful offer must satisfy the free-rider condition (2) as well as two further conditions. First, the offer must satisfy the bidder's participation constraint. For $\beta = 1$, this constraint can be written as

$$v - b - c \geq 0. \tag{3}$$

Note that the claims issued to outside investors and the funds provided by them do not

[11] Taking the derivative of (1) with respect to ϕ yields $\beta v - F'(\beta\phi v)\beta v - v$. Given that F' is non-negative, $\phi = \bar{\phi}$ is a global maximum. This maximum is unique if $\beta < 1$ or if $F'(\bar{\phi}) > 0$.

[12] Empirical evidence by Nenova (2003) and Dyck and Zingales (2004) shows that private benefits of control are decreasing in the quality of legal investor protection.

[13] See Grossman and Hart (1980, pp. 45-47). A common motivation for this assumption is that the bidder could always break the indifference by raising the bid price infinitesimally.

[14] A small (technical) caveat: we break the indifference in favor of tendering only if the outcome is such that the takeover succeeds. This means that failure can still be supported as an equilibrium outcome.

appear in the participation constraint. They cancel out as investors are competitive.

Second, the offer must satisfy the bidder's budget constraint. For $\beta = 1$, this constraint can be written as

$$A + \bar{\phi}v \geq b + c. \tag{4}$$

The LHS is the bidder's total budget. Indeed, the bidder can pledge to outside investors no more than the value of the security benefits associated with his (future) stake, $\beta = 1$, implying his outside funding capacity is limited to $\bar{\phi}v$.[15] The RHS represents the bidder's need for funds, which includes the bid price, b, as well as the execution cost, c.

Lowering the bid price increases the bidder's objective function—i.e., the LHS of (3)—while relaxing both his budget constraint and his participation constraint. Therefore, the optimal bid is such that the free-rider condition holds with equality:

$$b = \bar{\phi}v. \tag{5}$$

Given (5), the bidder's budget constraint becomes

$$A \geq c, \tag{6}$$

and his participation constraint becomes

$$(1 - \overline{\phi})v \geq c. \tag{7}$$

Importantly, the bidder's budget constraint (6) does not depend on the quality of legal investor protection, $\bar{\phi}$. In the original budget constraint (4)—i.e., before inserting the free-rider condition (5)—the bidder's outside funding capacity increases with $\overline{\phi}$. Indeed, stronger legal investor protection limits the ease with which the bidder can extract private benefits

[15] Our assumption that private benefits are not pledgeable—while security benefits are fully pledgeable—simplifies the exposition but is stronger than what is needed. It suffices to assume that security benefits are more pledegable than private benefits. This is plausible, especially if private benefits come (partly) in the form of consumption (e.g., perks) or are obtained in "semi-legal" ways (e.g., tunneling). Also, if security benefits were not fully pledgeable, this would create a wedge between the bid price and the bidder's pledgeable income. We explore the implications of such a wedge in the next section, where competition forces bidders to pay more than the post-takeover value of the security benefits.

at the expense of other investors. This increases his pledgeable income, thereby increasing his outside funding capacity. However, once the free-rider condition is accounted for, the increased outside funding capacity does not relax the bidder's budget constraint as the bid price—and thus the bidder's need for funds—must increase in lockstep: $b = \bar{\phi}v$. Ultimately, the budget constraint is thus independent of $\bar{\phi}$.[16] Furthermore, with all pledgeable value being captured by the target shareholders, none of this value can be used to raise funds to cover the execution cost, c. Accordingly, the execution cost must be funded entirely out of the bidder's internal funds, A.

The more familiar participation constraint (7) reflects the fact that free-riding by target shareholders limits the bidder's profits from the takeover to his private benefits net of the execution cost, c. Stronger legal investor protection reduces the bidder's private benefits, thereby tightening his participation constraint.

Combining (6) and (7), we have the following result.

Lemma 1. *The bidder takes over the target if and only if*

$$\min\{(1-\overline{\phi})v, A\} \geq c. \tag{8}$$

In sum, legal investor protection affects the takeover outcome in two ways. On the one hand, stronger legal investor protection reduces the bidder's profits, making efficient takeovers less likely. On the other hand, stronger legal investor protection increases the bidder's pledgeable income, thereby increasing his outside funding capacity. This latter effect is immaterial, however, as the bid price—and thus the bidder's need for funds—must increase in lockstep with his pledgeable income.[17]

We conclude this section by examining the effect of legal investor protection on the likelihood that efficient takeovers succeed. In condition (8), the LHS decreases (weakly)

[16] If the budget constraint (6) is slack, the amount of external funds raised by the bidder is indeterminate. This is because the bidder is indifferent between financing the bid partly with his remaining internal funds, $A - c$, and financing it with external funds.

[17] Notice the difference to the standard corporate finance model of investment (e.g., Tirole, 2006, Chapters 3 and 4). In the standard corporate finance model, increasing pledgeable income relaxes the entrepreneur's financing constraint and improves efficiency. In contrast, here, increasing pledgeable income does not relax the bidder's financing constraint, because the "investment cost" increases one-for-one with the pledgeable income. On the contrary, increasing pledgeable income *worsens* efficiency by reducing the bidder's profits.

with $\overline{\phi}$. Therefore, as legal investor protection becomes stronger, it becomes less likely that the bidder takes over the target.[18]

Proposition 1. *Absent effective competition for the target, stronger legal investor protection makes it less likely that efficient takeovers succeed: it does not relax the bidder's financing constraint but reduces his profits from the takeover.*

Conditional on the takeover succeeding, target shareholders benefit from stronger legal investor protection, because it raises the bid price. However, this has no implications for efficiency: it merely constitutes a wealth transfer from the bidder to the target shareholders. In contrast, the adverse effect of legal investor protection on the bidder's participation constraint has implications for efficiency, as it makes it more likely that efficient takeovers do not succeed in the first place.

4 Bidding Competition

As we have remarked earlier, the single-bidder case does not literally rule out that there are multiple bidders competing for the target. It merely implies that such competition is ineffective, in the sense that the binding constraint is shareholder approval—given by the free-rider condition (5)—and not outbidding of rivals. Effective bidding competition, by definition, implies that the requirement to outbid rivals, rather than winning shareholder approval, determines the winning bid price.

We consider two potential bidders, bidder 1 and bidder 2, competing to gain control of the target. Bidder $i = 1, 2$ has internal funds A_i. If bidder i gains control, the target value increases to $v_i > 0$, where $v_1 > v_2$ without loss of generality. Regardless of which bidder gains control, his ability to divert firm value as private benefits is limited by the same legal environment, $\overline{\phi}$. (Section 5.3 considers the case in which bidders come from different legal environments.) The takeover process is the same as in the single-bidder case, except that both bidders make their offers, b_1 and b_2, simultaneously.

[18] Here, and elsewhere, we say that an event is more likely if it occurs for a larger set of parameter values.

In stage 3, as before, the controlling bidder finds it optimal to divert a fraction $(1-\bar{\phi})$ of the target value as private benefits. In stage 2, target shareholders can be faced with up to two offers. The case of a single offer is as before. The case of two offers is as follows.

Lemma 2. *In a Pareto-dominant equilibrium, the winning bid is the highest bid among those satisfying $b_i \geq \overline{\phi} v_i$, if any.*

In stage 1, the bidders must decide whether to bid for the target. If so, they make their offers simultaneously. Denote by $\widehat{b}_i$ the highest offer which bidder i is willing and able to make. That is, $\widehat{b}_i$ is the highest value of b_i satisfying the bidder's participation constraint,

$$v_i \geq b_i + c, \tag{9}$$

and his budget constraint,

$$A_i + \bar{\phi} v_i \geq b_i + c. \tag{10}$$

Given (9) and (10), the highest offer which bidder i is willing and able to make is

$$\widehat{b}_i = \bar{\phi} v_i + \min\left\{(1-\overline{\phi})v_i, A_i\right\} - c. \tag{11}$$

The first term on the RHS represents the security benefits if bidder i gains control. The bidder is both willing and able to pay for these benefits as he can pledge their value to outside investors. The third term is the execution cost, c. All else equal, it reduces the bidder's willingness to pay for the target. The second term is the minimum of the bidder's private benefits and his internal funds, which increase his willingness and ability, respectively, to pay for the target.

Lemma 3. *Bidder 1 wins the takeover contest if and only if*

$$\min\left\{(1-\overline{\phi})v_1, A_1\right\} \geq c \tag{12}$$

and

$$A_1 \geq \min\left\{(1-\overline{\phi})v_2, A_2\right\} - \overline{\phi}(v_1 - v_2). \tag{13}$$

The result lays out two conditions for bidder 1 to win the takeover contest. The first condition, (12), states that bidder 1 must be willing to incur and able to fund the execution cost, c. This condition is the same as in the single-bidder case. It is independent of bidder 2's presence or his characteristics. If the condition does not hold, there is either no bidding competition or no bidding at all.[19] To allow for bidding competition, we henceforth assume that c is small enough so that condition (12) holds.

Assumption 1. $\min\left\{(1-\overline{\phi})v_1, A_1\right\} \geq c$.

The second condition, (13), arises solely due to bidding competition. It determines under what conditions bidder 1's maximum offer, $\widehat{b}_1$, exceeds bidder 2's maximum offer, $\widehat{b}_2$. As is shown, bidder 1's internal funds, A_1, must exceed some minimum threshold. Accordingly, the RHS of (13) captures the extent to which bidding competition tightens bidder 1's budget constraint. Importantly, the RHS decreases with $\overline{\phi}$. Hence, as legal investor protection improves, competition has less of a tightening effect on bidder 1's budget, making it more likely that he can outbid his less efficient rival, bidder 2.

Proposition 2. *Under effective competition for the target, stronger legal investor protection promotes efficient takeover outcomes.*

When the more efficient bidder is wealthier ($A_1 \geq A_2$), condition (13) always holds, irrespective of the quality of legal investor protection. Indeed, bidder 1 not only has a higher valuation for the target, but he also has a larger budget: he has both more internal funds ($A_1 \geq A_2$) and a higher outside funding capacity ($\overline{\phi}v_1 > \overline{\phi}v_2$). Thus, while bidder 2's presence may very well force bidder 1 to raise his bid, it will never exhaust his budget constraint. By implication, bidder 1 always wins the takeover contest, and the quality of legal investor protection is irrelevant for the takeover outcome.

Suppose now that the less efficient bidder is wealthier ($A_1 < A_2$). When legal investor protection is weak, the outcome is now more likely to be inefficient. As an illustration, consider the admittedly extreme case in which investors enjoy no legal protection at all

[19] If $\min\left\{(1-\overline{\phi})v_1, A_1\right\} = (1-\overline{\phi})v_1 < c$, then both bidders' participation constraints are violated as $\min\left\{(1-\overline{\phi})v_2, A_2\right\} \leq (1-\overline{\phi})v_2 < (1-\overline{\phi})v_1$. In that case, there is no bidding at all.

($\overline{\phi} = 0$). In that case, the two bidders have no outside funding capacity and must rely entirely on their own funds to finance their bids. While bidder 1 has a higher valuation for the target, his budget is tighter than bidder 2's budget, possibly so tight as to prevent him from making an offer exceeding bidder 2's offer. In that case, bidder 2 wins the takeover contest, implying that the outcome is inefficient. As legal investor protection becomes stronger, both bidders can pledge a larger fraction of firm value to outside investors, which relaxes both their budget constraints. However, because bidder 1 can create more value, his budget increases more than bidder 2's budget, making it more likely that he can outbid his less efficient rival, bidder 2.[20]

Formally, it follows from condition (13) that if $A_1 \geq \min\{v_2, A_2\}$, the takeover outcome is efficient for any value of $\overline{\phi}$, i.e., irrespective of the legal environment. Conversely, if $A_1 < \min\{v_2, A_2\}$, there exists a critical value, $\overline{\phi}'$, such that the takeover outcome is efficient if and only if $\overline{\phi} \geq \overline{\phi}'$.

We conclude this section by examining whether—conditional on the takeover succeeding—target shareholders benefit from stronger legal investor protection. To win the takeover contest, a bidder must not only outbid his rival, but his offer must also satisfy the free-rider condition. Accordingly, the winning bid is $b_i^* = \max\left\{\widehat{b}_j, \overline{\phi} v_i\right\}$ for $j \neq i$. As the losing bidder's maximum bid, $\widehat{b}_j$, is (weakly) increasing in $\overline{\phi}$, the winning bid, b_i^*, is also (weakly) increasing in $\overline{\phi}$. Hence, conditional on the takeover succeeding, target shareholders benefit from stronger legal investor protection as it raises the winning bid price.

Intuitively, stronger legal investor protection affects the bid price through two channels. First, it increases the value of the security benefits regardless of the winning bidder's identity ($\overline{\phi} v_i$ increases with $\overline{\phi}$), thus forcing each bidder to raise his bid. Second, stronger legal investor protection increases both bidders' outside funding capacity, allowing them to compete more fiercly for the target's shares ($\widehat{b}_i$ increases weakly with $\overline{\phi}$). For both reasons, stronger legal investor protection raises the winning bid price. Consistent with this result, Rossi and Volpin (2004) find that takeover premia are higher in countries with stronger legal investor protection.

[20] In the budget constraint (10), the LHS increases with $\overline{\phi}$ at a rate of v_i. Since $v_1 > v_2$, a given increase in $\overline{\phi}$ increases bidder 1's budget more than it increases bidder 2's budget.

5 Implications

Taking into account the interaction between legal investor protection and financing constraints also provides new insights into the optimal allocation of voting rights, sales of controlling blocks, and the role of legal investor protection in cross-border mergers and acquisitions. In what follows, we set the execution cost, c, equal to zero for simplicity. Incorporating $c > 0$ into the analysis is straightforward but does not yield any new insights given that Assumption 1 holds.

5.1 "One Share–One Vote"

This section studies the implications of departures from "one share–one vote" for the efficiency of the takeover outcome. Suppose the target has a dual-class share system: a fraction $\alpha \in (0, 1]$ of the target's shares have (equal) voting rights, while the remaining shares are non-voting. A "one share–one vote" structure corresponds to $\alpha = 1$.

In stage 3, as before, the controlling bidder finds it optimal to divert a fraction $(1 - \bar{\phi})$ of the target value as private benefits. In stage 2, target shareholders of different voting classes may face different bids, which they each must accept or reject. That is, we explicitly allow bidders to make different bids for voting and non-voting shares. As it turns out, this problem can be simplified.

Lemma 4. *Without any loss of generality, we can assume that bidders make a bid only for voting shares.*

From the bidder's perspective, it is immaterial whether or not he acquires non-voting shares: they do not help him gain control. Thus, the maximum he is willing to pay for non-voting shares is their "fundamental" value, $\overline{\phi} v_i$.[21] (In contrast, as shown in the previous section, bidders may offer a higher price for voting shares to gain control of the target.) Also, due to free-riding, non-voting shareholders will tender only if the bid price is at least

[21] As is customary in the literature, we always express bids in terms of a measure one of shares. Given that a fraction $(1 - \alpha)$ of the target's shares are non-voting, this means the bidder is willing to pay up to $(1 - \alpha)\overline{\phi} v_i$ for all of the non-voting shares.

$\overline{\phi}v_i$. Accordingly, the only price at which a transaction may occur is $\overline{\phi}v_i$.[22] At this price, however, both parties (bidder and non-voting shareholders) are indifferent between trading and not trading. Thus, without any loss of generality, we can assume that bidders do not make a bid for non-voting shares.

The target shareholders' tendering decision is as in Section 4. Hence, Lemma 2 applies, and the voting shareholders tender to the highest bidder offering $b_i \geq \overline{\phi}v_i$, if any. In stage 1, the bidders must decide whether to bid for the target. Thus, we must again characterize the highest offer which bidder i is willing and able to make, $\widehat{b}_i(\alpha)$, i.e., the highest value of b_i satisfying the bidder's participation constraint,

$$\alpha\bar{\phi}v_i + (1 - \overline{\phi})v_i \geq \alpha b_i, \tag{14}$$

and his budget constraint,

$$A_i + \alpha\bar{\phi}v_i \geq \alpha b_i. \tag{15}$$

In the participation constraint (14), $\alpha\bar{\phi}v_i$ is the value of the security benefits associated with voting shares, $(1 - \overline{\phi})v_i$ are the bidder's private benefits, and αb_i is the total payout to voting shareholders. In the budget constraint (15), the LHS is the bidder's total budget, consisting of his internal funds, A_i, and his outside funding capacity, $\alpha\bar{\phi}v_i$, while the RHS captures the bidder's need for funds.

Given (14) and (15), the highest offer which bidder i is willing and able to make is

$$\widehat{b}_i = \bar{\phi}v_i + \frac{1}{\alpha} \cdot \min\left\{(1 - \overline{\phi})v_i, A_i\right\}. \tag{16}$$

This expression resembles (11), except that $c = 0$, and except that the second term is normalized by the fraction of voting shares, α. Indeed, when not all shares carry a vote, the bidder's willingness and ability to pay, respectively, is spread across fewer shares. This increases the maximum offer he is willing and able to make (for voting shares). In particular, the bidder's willingness to pay is higher, because he can now obtain the same private benefits,

[22] Similarly, the security-voting structure (i.e., the choice of α) is irrelevant in the single-bidder case, because the bid price must equal the post-takeover value of the security benefits.

$(1-\overline{\phi})v_i$, by acquiring fewer shares. Likewise, his ability to pay is higher, because he can now use his given wealth, A_i, for the acquisition of fewer shares.

Lemma 5. *Bidder 1 wins the takeover contest if and only if*

$$A_1 \geq \min\left\{(1-\overline{\phi})v_2, A_2\right\} - \alpha\overline{\phi}(v_1 - v_2). \tag{17}$$

By inspection, the RHS of (17) decreases with α. Thus, the likelihood that bidder 1 wins the takeover contest is highest under a "one share–one vote" structure.

Proposition 3. *"One share–one vote" is socially optimal.*

When the more efficient bidder is wealthier ($A_1 \geq A_2$), condition (17) holds for any value of α. That is, the takeover outcome is always efficient, irrespective of the fraction of voting shares. The intuition is the same as before: not only does bidder 1 have a higher valuation for the target, but he also has a larger budget. Hence, bidder 1 can always outbid his less efficient rival, bidder 2.

Suppose now that the less efficient bidder is wealthier ($A_1 < A_2$). If A_1 is sufficiently large, the takeover outcome is again efficient, irrespective of the fraction of voting shares. This situation—i.e., when both bidders are financially unconstrained—is the situation analyzed in much of the theory of takeovers.

By contrast, if A_1 is sufficiently small, the takeover outcome may be inefficient. Indeed, while bidder 1 has a higher *willingness* to pay for the target, bidder 2's *ability* to pay may be higher due to his larger wealth. As an illustration, consider expression (16), which characterizes the highest offer which bidder i is willing and able to make. If $A_i \leq (1-\overline{\phi})v_i$, this expression becomes

$$\widehat{b}_i = \bar{\phi}v_i + \frac{A_i}{\alpha}. \tag{18}$$

Even though bidder 2 generates lower security benefits ($\bar{\phi}v_2 < \bar{\phi}v_1$), his maximum offer may be higher than bidder 1's if A_2 is sufficiently larger than A_1. Moreover, when α is smaller, a smaller wealth difference $A_2 - A_1$ is needed for bidder 2 to be able to outbid bidder 1. Intuitively, the effect of bidder wealth on the takeover outcome is larger when α is smaller, because a given wealth can then be spread across fewer voting shares.

Formally, it follows from condition (17) that if $A_1 \geq \min\left\{(1-\overline{\phi})v_2, A_2\right\}$, the takeover outcome is efficient for any value of α, i.e., irrespective of the fraction of voting shares. By contrast, if $A_1 < \min\left\{(1-\overline{\phi})v_2, A_2\right\} - \overline{\phi}(v_1 - v_2)$, the takeover outcome is inefficient irrespective of α. In all intermediate cases, there exists a critical value

$$\widehat{\alpha} = \frac{\min\left\{(1-\overline{\phi})v_2, A_2\right\} - A_1}{\overline{\phi}(v_1 - v_2)}, \tag{19}$$

such that the takeover outcome is efficient if and only if $\alpha \geq \widehat{\alpha}$. By inspection, $\widehat{\alpha}$ decreases with $\bar{\phi}$. Hence, departures from "one share–one vote" are more likely to lead to an inefficient takeover outcome when legal investor protection is weak. (Conversely, weak legal investor protection is more likely to lead to an inefficient takeover outcome when the fraction of voting shares, α, is small.)

Corollary 1. *Deviations from "one share–one vote" are more likely to lead to inefficient takeover outcomes when legal investor protection is weak.*

Our results must be contrasted with those of Grossman and Hart (1988, GH) and Harris and Raviv (1988, HR), who also find that "one share–one vote" is socially optimal. The economics of the results, however, are fundamentally different. In their models, departures from "one share–one vote" may allow bidders with low security benefits but high private benefits to win against bidders with high security benefits but low private benefits, even if the former are less efficient—i.e., even if they generate lower *total* (security + private) benefits. In our model, this is not possible, as security and private benefits are positively related. That is, our model assumes that bidders can divert more value in absolute (i.e., dollar) terms from more valuable firms. In contrast, in both GH and HR, bidders may divert more value in absolute terms from less valuable firms.

The converse is also true: the main inefficiency in our model—which is minimized under a "one share–one vote" structure—does not arise in GH and HR. The main inefficiency in our model is not that less efficient bidders may have a higher *willingness* to pay, as in GH and HR, but rather that they may have a higher *ability* to pay. Hence, the sole reason why efficient takeovers may not take place in our model is because bidders are financially constrained. In contrast, in both GH and HR, bidders are arbitrarily wealthy, so financing constraints play no role.

5.2 Sales of Controlling Blocks

This section extends our analysis to the case of a target with a controlling shareholder ("incumbent"). The incumbent owns a fraction $\beta \geq 0.5$ of the target shares and generates firm value $v_0 \geq 0$, which is divided into security benefits $\overline{\phi}v_0$ and private benefits $(1 - \overline{\phi})v_0$. The target faces a (single) potential acquirer ("bidder"). If the bidder gains control of the target, its value increases to $v_1 > v_0$.

A transfer of control must be mutually beneficial, since the incumbent can block the transfer at will. Accordingly, a control transfer may occur only if the bidder is willing and able to compensate the incumbent for his controlling block. Consistent with the law and legal practice in the United States, we assume that minority shareholders enjoy no rights in this sale-of-control transaction. In particular, the bidder is under no obligation to extend his offer to minority shareholders. In fact, he is under no obligation to make them any offer at all.[23]

In stage 3, as before, the bidder diverts a fraction $(1 - \bar{\phi})$ of the target value as private benefits. In stage 2, the incumbent and the minority shareholders may face different bids, which they each must accept or reject. Notice the analogy to our previous analysis in Section 5.1. There, we assumed, without loss of generality, that bidders do not make a bid for non-voting shares. Similarly, here, the bidder has nothing to gain from acquiring minority shares: they do not help him gain control, and the only price at which a transaction may occur is at their "fundamental" value, $\overline{\phi}v_1$, making everybody indifferent between trading and not trading. As in Lemma 4, we can thus assume, without loss of generality, that the bidder does not make a bid for minority shares.

We must again characterize the highest offer which the bidder is willing and able to make,

[23] This rule is known as "market rule" (MR, see Bebchuk, 1994). It is the prevailing rule in the United States. Given that the MR imposes no obligation on the acquirer whatsoever, "the MR is probably best described as the absence of a rule, rather than a rule" (Schuster, 2010, p. 8). Many other countries, including most European countries, use a different rule—the "equal opportunity rule" or "mandatory bid rule"—which requires that the bidder makes an offer to the minority shareholders on the same terms as his offer to the controlling blockholder.

$\widehat{b}_1(\beta)$, i.e., the highest value of b_1 satisfying his participation constraint,

$$\beta\bar{\phi}v_1 + (1-\overline{\phi})v_1 \geq \beta b_1, \tag{20}$$

and his budget constraint,

$$A_1 + \beta\bar{\phi}v_1 \geq \beta b_1. \tag{21}$$

Conditions (20) and (21) are similar to (14) and (15), except that α is replaced with β. Accordingly, the highest offer which the bidder is willing and able to make is

$$\widehat{b}_1 = \bar{\phi}v_1 + \frac{1}{\beta} \cdot \min\left\{(1-\overline{\phi})v_1, A_1\right\}, \tag{22}$$

whereas the incumbent's valuation for the controlling block is

$$\beta b_0 = \beta\overline{\phi}v_0 + (1-\overline{\phi})v_0. \tag{23}$$

For a sale-of-control transaction to occur, the bidder's maximum offer for the controlling block, $\beta\widehat{b}_1$, must equal or exceed the incumbent's valuation for the controlling block, βb_0.[24] Otherwise, there are no gains from trade.[25]

Lemma 6. *The bidder acquires the controlling block if and only if*

$$A_1 \geq (1-\overline{\phi})v_0 - \beta\overline{\phi}(v_1 - v_0). \tag{24}$$

Condition (24) is similar to condition (17). The latter condition reflects the requirement that bidder 1's maximum offer for all of the voting shares, $\alpha\widehat{b}_1$, must exceed bidder 2's maximum offer, $\alpha\widehat{b}_2$. Likewise, condition (24) states that the bidder's maximum offer for the controlling block, $\beta\widehat{b}_1$, must exceed the incumbent's valuation, βb_0. The main difference is that the incumbent's wealth does not enter in condition (24). As the incumbent already

[24] Recall that we always express bids in terms of a measure one of shares. Thus, if the highest offer which the bidder is willing and able to make is $\widehat{b}_1$, this implies his maximum offer for the controlling block is $\beta\widehat{b}_1$.

[25] The sale will occur at a price $p \in [\beta b_0, \beta\widehat{b}_1]$ depending on the incumbent's and bidder's relative bargaining powers. For our purposes, the value of p is not important, as it does not affect efficiency.

owns the controlling block, his ability to pay is irrelevant. In a sense, the incumbent is like a rival bidder who is arbitrarily wealthy.

By inspection, the RHS of (24) decreases with β. Thus, the likelihood that the sale of control takes place increases with the size of the controlling block.

Proposition 4. *Efficient sales of control are more likely to occur when the controlling block is large (as a fraction of total shares).*

Recall that the incumbent's wealth plays no role: he can always "afford" the controlling block by simply refusing to sell it. Accordingly, whether or not the sale of control takes place depends solely on the bidder's wealth, A_1. If A_1 is sufficiently large, the sale of control always takes place, irrespective of the size of the controlling block. Thus, once again, absent financial constraints, the takeover outcome is always efficient.

In contrast, if the bidder is financially constrained, the sale of control may not take place. The intuition is analogous to our previous analysis. In Section 5.1, a smaller voting block, α, amplified the advantage of the wealthier (but less efficient) bidder. Here, a smaller controlling block, β, amplifies the advantage of the wealthier (but less efficient) incumbent.

Formally, it follows from condition (24) that if $A_1 \geq (1-\overline{\phi})v_0 - \frac{\overline{\phi}}{2}(v_1 - v_0)$, the sale of control always takes place, irrespective of the size of the controlling block. By contrast, if $A_1 < (1-\overline{\phi})v_0 - \overline{\phi}(v_1 - v_0)$, the sale of control never takes place. In all intermediate cases, there exists a critical value, $\widehat{\beta} \geq 0.5$, given by

$$\widehat{\beta} = \frac{(1-\overline{\phi})v_0 - A_1}{\overline{\phi}(v_1 - v_0)}, \tag{25}$$

such that the sale of control takes place if and only if $\beta \geq \widehat{\beta}$. By inspection, $\widehat{\beta}$ decreases with $\bar{\phi}$. Thus, efficient sales of control are more likely to occur when legal investor protection is strong.

Corollary 2. *Stronger legal investor protection promotes efficient sales of control.*

Bebchuk (1994) also finds that efficient sales of control may not take place, albeit for a different reason. In his model, an incumbent with low security benefits but high private benefits may not sell his controlling stake to a potential acquirer with high security benefits but low private benefits, even if the sale of control is efficient. In our model, this is not possible, as security and private benefits are positively related. Instead, efficient sales of control may not take place in our model because bidders are financially constrained. In contrast, in Bebchuk's model, bidders are arbitrarily wealthy, so financing constraints play no role.[26]

So far, we have taken the size of the controlling block, β, as given. We now discuss how it can be endogenized. Suppose the incumbent is initially the firm's sole owner. In the spirit of Zingales (1995), he can retain a controlling block, $\beta \geq 0.5$, and sell the remaining shares, $1 - \beta$, to dispersed investors. As in Zingales' analysis, everybody has rational expectations about the (future) control transfer. For simplicity, we assume the bidder has full bargaining power when negotiating the sale of control with the incumbent.

From our previous analysis, we know that the sale of control succeeds if and only if condition (24) holds. In that case, the bidder acquires the controlling block at a price equal to the incumbent's valuation,

$$\beta \overline{\phi} v_0 + (1 - \overline{\phi}) v_0. \tag{26}$$

(If the bidder did not have full bargaining power, expression (26) would have to be modified accordingly.)

When the incumbent sells shares to dispersed investors, they rationally anticipate the control transfer and are thus willing to pay up to $(1 - \beta)\, \overline{\phi} v_1$ for the minority shares. Overall, and as long as condition (24) holds, the incumbent's total payoff is therefore

$$\beta \overline{\phi} v_0 + (1 - \overline{\phi}) v_0 + (1 - \beta)\, \overline{\phi} v_1. \tag{27}$$

Given that $v_1 > v_0$, the incumbent's total payoff decreases with β. On the other hand, condition (24) becomes tighter as β decreases. Consequently, the incumbent chooses the smallest value of $\beta \geq 0.5$ that is compatible with condition (24).

[26] Imposing a "mandatory bid rule" has the same qualitative effect in our model as in Bebchuk's model, where bidders are financially unconstrained: efficient sales of control become less likely, because the bidder must offer a control premium to all shareholders, including minority shareholders.

Proposition 5. *The incumbent's optimal controlling stake is*

$$\beta^* = \max\left\{\frac{(1-\overline{\phi})v_0 - A_1}{\overline{\phi}(v_1 - v_0)}, 0.5\right\}. \tag{28}$$

Zingales (1995) also models the incumbent's choice of a controlling stake in anticipation of a future control transfer. Moreover, he also assumes that the bidder is more efficient than the incumbent. However, Zingales assumes that the bidder is arbitrarily wealthy. In our model, if the bidder is sufficiently wealthy, the optimal controlling stake is always $\beta^* = 0.5$. In contrast, if the bidder is financially constrained—precisely, if $A_1 < (1-\overline{\phi})v_0 - \frac{\overline{\phi}}{2}(v_1 - v_0)$—the incumbent's problem has a non-trivial solution $\beta^* = [(1-\overline{\phi})v_0 - A_1]/\overline{\phi}(v_1 - v_0) > 0.5$. By inspection, β^* decreases with the quality of legal investor protection, $\overline{\phi}$.

Corollary 3. *The optimal controlling stake is larger when legal investor protection is weak.*

This result is consistent with evidence by La Porta et al. (1998, 1999), who find that ownership is more concentrated in countries with weaker legal investor protection.

5.3 Cross-Border M&A

This section extends our analysis to the case in which bidders come from different legal environments. Without loss of generality, we assume that $\overline{\phi}_1 > \overline{\phi}_2$. That is, bidder 1 comes from an environment with stronger legal investor protection than bidder 2. To isolate the effect of differences in legal investor protection on the takeover outcome, we assume that both bidders have the same internal funds, A, and can create the same value, v.

In a typical cross-border M&A transaction, the target adopts the corporate governance structures, accounting standards, and disclosure practices of the country of the acquirer (Rossi and Volpin, 2004; Bris and Cabolis, 2008; Chari, Ouimet, and Tesar, 2009).[27] Hence, if bidder i wins the takeover contest, his private benefits are $(1-\overline{\phi}_i)v$, while the security benefits accruing to all shareholders, including the bidder himself, are $\overline{\phi}_i v$. Note that—in contrast to our previous analysis—private and security benefits are now inversely related:

[27] As Rossi and Volpin (2004) point out, cross-border M&A is an important channel for the worldwide *functional* convergence of corporate governance standards in the sense of Coffee (1999), i.e., "effective" convergence without any formal changes in the law.

while bidder 1 generates higher security benefits, his private benefits are lower than bidder 2's. Also note that—again in contrast to our previous analysis—both bidders now generate the same *total* (security + private) benefits. From an efficiency standpoint, it is therefore immaterial who wins the takeover contest. Accordingly, the question is not whether efficient takeovers take place, but rather if, and under what conditions, bidders from environments with stronger legal investor protection can outbid rivals from environments with weaker legal investor protection.

In principle, the minority shareholder protection of the target could become *worse* if the acquirer comes from an environment with weaker legal investor protection.[28] Empirically, this case seems less relevant, however. In the vast majority of cross-border M&A deals, the acquirer comes from a country with *stronger*, not weaker, legal investor protection (Rossi and Volpin, 2004; Bris and Cabolis, 2008; Chari, Ouimet, and Tesar, 2009; Isil, Liao, and Weisbach, 2011), implying that "[o]n average, shareholder protection increases in the target company via the cross-border deal" (Rossi and Volpin, 2004, p. 291). To avoid this issue altogether, we assume that legal investor protection in the home country of the target, $\overline{\phi}_0$, is less than or equal to $\overline{\phi}_2$. In the special case where $\overline{\phi}_0 = \overline{\phi}_2$, our model thus analyzes competition between a domestic bidder (bidder 2) and a foreign bidder (bidder 1) coming from a country with stronger legal investor protection.

The analysis is analogous to Section 4, except that $\overline{\phi}_i$ is bidder-specific, while both A and v are identical across bidders. Accordingly, bidder i's maximum offer is

$$\widehat{b}_i = \bar{\phi}_i v + \min\left\{(1-\overline{\phi}_i)v, A\right\}. \tag{29}$$

Proposition 6. *If $A < (1-\overline{\phi}_2)v$, the bidder from the country with stronger legal investor protection wins the takeover contest. Otherwise, either of the two bidders may win the takeover contest.*

As both bidders can create the same value, v, they have the same *willingness* to pay. Hence, the takeover outcome depends solely on the bidders' *ability* to pay. There are three

[28] "The target almost always adopts the governance standards of the acquirers, *whether good or bad*" (Rossi and Volpin, 2004, p. 300, italics added). Likewise, "the new law can be less protective than before, a type of legal reform that is unheard of in the literature" (Bris and Cabolis, 2008, p. 606).

cases.

If $A \geq (1-\overline{\phi}_2)v$, neither bidder is financially constrained. As a result, both bidders can make a bid up to their full valuation of the target, v, which implies either of the two bidders may win the takeover contest.

The second case, $(1-\overline{\phi}_2)v > A \geq (1-\overline{\phi}_1)v$, illustrates perhaps best the strategic advantage of strong legal investor protection in takeover contests. While both bidders can create the same value, v, bidder 1 generates more security benefits. Bidder 1 has therefore a higher outside funding capacity, allowing him to make a bid up to his full valuation, $\widehat{b}_1 = v$. In contrast, bidder 2 can only make a bid up to $\widehat{b}_2 = \overline{\phi}_2 v + A < v$. As a result, bidder 1 wins the takeover contest.

The third case, $A < (1-\overline{\phi}_1)v$, is similar to the second case, except that bidder 1 can no longer make a bid up to his full valuation. Consequently, both bidders can now only bid up to $\widehat{b}_i = \overline{\phi}_i v + A$. However, as bidder 1 generates more security benefits, he can still outbid his rival, bidder 2.

In sum, when bidders are financially constrained, what matters is not only the total value they can create, but also how this value is divided between security benefits and private benefits. As private benefits are not pledgeable, bidders with higher private benefits but lower security benefits may face tighter budget constraints and, therefore, lose out to bidders with lower private benefits but higher security benefits.

We may again ask if—conditional on the takeover succeeding—target shareholders benefit from stronger legal investor protection. In the first case above, the winning bid is $b_i^* = v$, which is independent of $\overline{\phi}_i$. In contrast, in the second and third case, the winning bid is $b_1^* = \max\{\widehat{b}_2, \overline{\phi}_1 v\}$, which is (weakly) increasing in the quality of legal investor protection in the acquirer's country, $\overline{\phi}_1$. Consistent with this result, Bris and Cabolis (2008) find that takeover premia in cross-border M&A deals are higher when the quality of legal investor protection in the acquirer's country is stronger than in the target's country. Likewise, Rossi and Volpin (2004) find that takeover premia are higher in cross-border M&A deals relative to domestic M&A deals, while the acquirer in a cross-border M&A deal is typically from a country with stronger legal investor protection.

6 Conclusion

This paper studies the effects of legal investor protection on the efficiency of the market for corporate control. Stronger legal investor protection limits the ease with which a bidder, once in control, can divert corporate resources as private benefits. This has two main implications. First, it reduces the bidder's profits from the takeover, making efficient takeovers less likely. Second, it increases pledgeable income by increasing the post-takeover share value, thereby increasing the bidder's outside funding capacity. However, absent effective competition for the target, the increased outside funding capacity does not relax the bidder's budget constraint as the bid price increases in lockstep.

In contrast, under effective competition, stronger legal investor protection—and the resulting increase in the bidders' outside funding capacity—may improve the efficiency of the takeover outcome. In particular, if bidders are financially constrained, less efficient but wealthier bidders may be able to outbid more efficient but less wealthy bidders. By boosting bidders' ability to raise funds against the value they can create, stronger legal investor protection makes it more likely that the takeover outcome is determined by their ability to create value rather than by their financing constraints.

The presence of bidders' financing constraints also provides a new rationale for "one share–one vote." As we show, this rule is socially optimal as it maximizes the likelihood that the takeover outcome is determined by bidders' ability to create value rather than by their budget constraints. Another implication of bidders' financing constraints is that efficient sales of controlling blocks are more likely to succeed when the controlling block is large and when legal investor protection is strong. Finally, our analysis implies that when bidders from different countries compete over a target, those from countries with stronger legal investor protection have a strategic advantage in the takeover contest.

7 Appendix

Proof of Lemma 2. For a bid to succeed in equilibrium, it must satisfy the free-rider condition, $b_i \geq \overline{\phi} v_i$. If no bid satisfies this condition, the only equilibrium outcome is that the takeover does not place. Suppose instead that a bid satisfies $b_i \geq \overline{\phi} v_i$. If a target shareholder anticipates the bid to succeed, tendering his shares is (at least) a weakly dominant strategy. Hence, an equilibrium exists in which a bid b_i succeeds if and only if $b_i \geq \overline{\phi} v_i$. Among all equilibria, the target shareholders' payoff is highest in those in which the highest bid succeeds. Q.E.D.

Proof of Lemma 3. For a bid to succeed under competition, it would a fortiori also have to succeed absent competition. By Lemma 1, this is true if and only if condition (12) holds. Moreover, in a Pareto-dominant equilibrium, bidder 1 wins the takeover contest only if $\widehat{b}_1 \geq \widehat{b}_2$. Using expression (11), this can be written as

$$\bar{\phi} v_1 + \min\left\{(1-\overline{\phi})v_1, A_1\right\} - c \geq \bar{\phi} v_2 + \min\left\{(1-\overline{\phi})v_2, A_2\right\} - c \tag{30}$$

or

$$\min\left\{(1-\overline{\phi})v_1, A_1\right\} \geq \min\left\{(1-\overline{\phi})v_2, A_2\right\} - \overline{\phi}(v_1 - v_2). \tag{31}$$

If $(1-\overline{\phi})v_1 \leq A_1$, this condition always holds because

$$(1-\overline{\phi})v_1 = (1-\overline{\phi})v_2 - \overline{\phi}(v_1 - v_2) \geq \min\left\{(1-\overline{\phi})v_2, A_2\right\} - \overline{\phi}(v_1 - v_2).$$

Hence, condition (31) can be written as condition (13). Q.E.D.

Proof of Lemma 4. Suppose bidder i bids b_i for voting shares and b_i^0 for non-voting shares. Who wins the takeover contest is determined solely by the bids for voting shares. Hence, in a Pareto-dominant equilibrium (for the voting shareholders), the winning bid is the highest among those satisfying $b_i \geq \overline{\phi} v_i$, if any. If bidder i fails to gain control, his bid for non-voting shares is irrelevant. (Bids for non-voting shares are conditional upon gaining control.) Conversely, if bidder i gains control, non-voting shareholders tender only if $b_i^0 \geq \overline{\phi} v_i$. In this case, the winning bidder's payoff is

$$\alpha\left(\overline{\phi} v_i - b_i\right) + (1-\alpha)\left(\overline{\phi} v_i - b_i^0\right) + \left(1 - \overline{\phi}\right) v_i. \tag{32}$$

Given the requirement that $b_i^0 \geq \overline{\phi} v_i$, expression (32) is maximized for $b_i^0 = \overline{\phi} v_i$, in which case it becomes

$$\alpha\left(\overline{\phi}v_i - b_i\right) + \left(1-\overline{\phi}\right)v_i, \tag{33}$$

which is the same as if bidder i did not bid for non-voting shares. Consequently, bidder i is indifferent between bidding and not bidding for non-voting shares: he makes zero profit on these shares, and they do not help him gain control. Q.E.D.

Proof of Lemma 5. The proof is analogous to that of Lemma 3 with $c = 0$ and expression (11) replaced by (16). Q.E.D.

Proof of Lemma 6. The proof is analogous to that of Lemma 3 with $c = 0$ and expression (11) replaced by (22) (for the bidder) and

$$\widehat{b}_0 = \overline{\phi}v_0 + \frac{1}{\beta}\cdot(1-\overline{\phi})v_0 \tag{34}$$

(for the incumbent), respectively. Q.E.D.

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