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Agency Conflicts in Public and Negotiated Transfers of Corporate Control

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ABSTRACT

We analyze control transfers in firms with a dominant minority blockholder and otherwise dispersed owners, and show that the transaction mode is important. Negotiated block trades preserve a low level of ownership concentration, inducing more inefficient extraction of private benefits. In contrast, public acquisitions increase ownership concentration, resulting in fewer private benefits and higher firm value. Within our model, the incumbent and new controlling party prefer to trade the block because of the dispersed shareholders' free-riding behavior. We also explore the regulatory implications of this agency problem and its impact on the terms of block trades.

THE ROLE OF CONCENTRATED OWNERSHIP for firm value is a central theme in corporate finance. Unlike small shareholders, large blockholders have an incentive to incur costs to improve management and thus increase the value of their shares. Moreover, substantial influence accrues to the owner of a large block, albeit a leading minority block, especially in firms with an otherwise dispersed ownership.[1] Hence, blockholders are both willing and able to increase firm value. They do so by monitoring and replacing top managers, or even by directly taking part in the firm's operating decisions. The capacity to influence corporate decisions has its drawbacks, however. It enables large blockholders to pursue their own goals and extract private benefits

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[1] For instance, Zwiebel (1995) and La Porta, Lopez-de-Silanes, and Shleifer (1999) report that firms with multiple minority blockholders are rare. Section I.B presents evidence supporting the view that large minority shareholders do indeed exert a controlling influence.

that are produced, at least partly, at the small shareholders' expense. In many cases, the conflict between large and small shareholders is likely to be at least as pertinent as the frequently studied conflict between managers and shareholders (see La Porta et al. (1999)). Hence, blockholders can be either antagonistic or beneficial to small shareholders. In fact, they may be both, and this is the perspective taken in this paper.[2]

The importance of blockholder control is widely recognized. However, a central issue pertains to the dynamics of control allocation. Indeed, circumstances may require that control change hands, and the question arises of whether such transfers are efficient. Much attention has been given to control transactions in firms with dispersed ownership, particularly to the inefficiencies in tender offers (e.g., Grossman and Hart (1980)). In contrast, the economics of control transfers involving firms with an existing controlling shareholder are less well understood. Yet, worldwide, such firms are the rule rather than the exception (La Porta et al. (1999)). Focusing on the case of firms with an existing controlling shareholder, this paper analyzes control transfers and the choice of transfer mode, thereby contributing to the research on the efficiency of corporate control allocation.

The current theoretical view of control transfers in such firms is largely shaped by the two conflicting effects of blockholder control (Bebchuk (1994) and Kahan (1993)). On the one hand, such transactions could transfer control to a more effective management team. On the other hand, the acquirer's primary motive may be to loot the firm to the detriment of small shareholders. Such inefficient transfers can occur because the trading parties fail to internalize negative externalities for small shareholders. This line of reasoning underlies the interpretation of the empirical evidence on the efficiency of block trades. As it turns out, small shareholders actually benefit on average in block trades. It is thus tempting to conclude that the private benefit motive is second order and that, by and large, block trades are efficient (Barclay and Holderness (1991)).

We propose that the theory may be incomplete and, consequently, that the interpretation of the empirical evidence needs to be reconsidered. The focus to date has been on whether control accrues to the party that can use corporate resources most efficiently. This, however, ignores the fact that firm value also depends on the controlling party's incentives to increase firm value rather than extract private benefits. We show that different transfer modes result in different final ownership concentrations, which themselves affect the new controlling party's incentives. Moreover, we point out that private

[2] The sources of blockholder control are twofold. First, blockholders command concentrated votes. Second, their large cash flow claims provide them with incentives to make more informed decisions. This expertise itself translates into greater discretion because other investors are more willing to delegate decisions to the blockholder (see Burkart, Gromb, and Panunzi (1997)). The blockholder can abuse this discretion to extract private benefits. In fact, the abilities to create and to destroy value are closely related. Both sides of blockholder control are well documented in the empirical literature. See, for example, Shleifer and Vishny (1997) and the discussion in Section I.B.

parties may choose a means for transferring corporate control which does not maximize firm value. That is, the very choice of transfer mode can be subject to agency problems. It is noteworthy that this holds true even if the control transfer results in an increase in firm value; the new controlling party could do even better were he given proper incentives. Thus the empirical evidence that, on average, block transfers increase value proves neither that firm value is maximized nor that this is the best feasible outcome.

More specifically, we model a firm with a leading minority shareholder and an otherwise dispersed ownership. The blockholder enjoys private benefits of control, which are extracted at a deadweight loss. A potential buyer appears who, by taking control, would increase the block's total value—that is, the sum of private benefits and the block's fraction of security benefits. Within this setting, we analyze whether and how control changes hands, allowing two alternative methods of transfer: a private sale of the controlling block or a public acquisition.

Compared to a block trade, a public acquisition leads to a more concentrated ownership structure. A controlling party with a larger stake internalizes more of the inefficiency of extracting private benefits, and thus extracts fewer of these gains. Hence, the means of transferring control is important: Firm value is higher following a tender offer than after a negotiated block trade. The incumbent and the buyer tend, however, to disregard this effect when choosing the transfer mode. Indeed, the incumbent-buyer coalition has to acquire shares at the post-tender offer value, since dispersed shareholders free ride in tender offers. Thus, the latter appropriate the bulk of the value improvement brought about by an increase in ownership concentration. Hence, the coalition is not compensated ex ante, through the bid price, for the reduction in private gains that its ex post enlarged stake will induce. From the coalition's point of view, acquiring dispersed shares is detrimental. Since bargaining yields a coalition-efficient outcome, only the block is traded.

The agency problem in the choice of transfer mode has implications for the regulatory debate over the controversial Equal Opportunity Rule (EOR), which grants all shareholders the right to participate in the transaction on the same terms. Based on the current theory, proponents of the EOR argue that imposing a larger fraction of the value loss on the acquirer would deter value-decreasing transfers of control, or at least limit their occurrence. Opponents of the EOR maintain that it would make all transfers, both efficient and inefficient ones, more costly. The evidence that minority shareholders gain in block trades has been interpreted as suggesting that the costs of the EOR outweigh its benefits (Barclay and Holderness (1991)). In our framework, another rationale for the EOR emerges, one that has heretofore been overlooked. By forcing a public tender offer, the EOR can mitigate the underconcentration of return claims, and the consequent inefficient extraction of private benefits. Of course, this does not imply that the EOR's benefits now outweigh its costs (as we did not model these costs for the sake of clarity).

Consistent with the evidence, our model also predicts that the block will be traded at a premium with respect to its post-trade market value. The incumbent-buyer coalition avoids a public tender offer in order to maximize joint surplus. The block premium reflects in part the incumbent's share of this surplus. Generally, factors affecting the small shareholders' payoff in tender offers also change the coalition's surplus from block trading, and hence the block premium. For instance, factors that increase the bid price in tender offers should have a positive impact on block premia. We illustrate this point by introducing financial constraints, takeover resistance, and nonvoting shares. This suggests that empirical research on block trades and premia should include, as explanatory variables, those institutional and regulatory factors that govern alternative modes of transferring control. Additionally, the size of the block is itself an important determinant of private benefits and should thus be included in estimates of block premia.

Few of the many papers on ownership and control address the issue of control by a leading minority blockholder. In Zwiebel (1995), ownership structures arise from the investors' attempt to grab part of the control benefits. Because the presence of a large minority blockholder deters other large investors, in equilibrium, firms with a large minority blockholder have an otherwise dispersed ownership. In Dewatripont (1993), a party owning a leading minority block is committed to compete fiercely in a takeover contest, and thus may deter potential rivals. If the deterrence strategy fails, the incumbent and rival are assumed to compete in a takeover contest. In contrast, we show that, given the choice, parties would trade the block. Most studies of alternative means of gaining control concentrate on the structure of takeover bids, such as their mode of payment and financing (see Hirshleifer's (1995) review). Control transfers in block trades have received comparatively little attention in the theoretical literature. Exceptions discussed above are the studies by Bebchuk (1994) and Kahan (1993), which focus on majority blocks. Building on these and on Zingales (1995), Bebchuk and Zingales (1996) show that the firm's founder may choose an inefficient ownership structure in order to extract more surplus in future control transfers. In contrast, we focus on the choice between alternative modes of transferring control in firms with a minority block. Moreover, the incentive effect of ownership concentration is central to our results. Finally, in Sercu and Van Hulle (1995), the acquirer can start a bidding contest and withdraw, leaving the incumbent with full ownership, only to return and negotiate better terms in the subsequent private control transaction. As in most other related papers, private benefits and security benefits are assumed to be unrelated. Hence, neither the post-transfer resource use nor the choice of transfer mode is subject to an agency problem.

The paper is organized as follows. Section I presents the model. Section II shows that private parties prefer block trading to a tender offer. Section III derives implications for block premia. Section IV addresses some robustness issues. Section V concludes. Mathematical proofs are supplied in the Appendixes.

I. Modeling Block Trading

A. The Model

Consider a firm in which a fraction $(1 - \alpha) > 50$ percent of shares is dispersed among small shareholders, and the remaining minority stake α is held by a leading shareholder (henceforth called the incumbent, I). The incumbent faces a potential acquirer (henceforth called the rival, R) who owns no shares.[3] The firm's stylized governance rules are such that R can gain control by becoming the firm's largest shareholder. He can achieve this either by acquiring shares from I, or by making a public tender offer, or both. Neither private trades between I and R nor tender offers involve any transaction costs. For the time being, trading on the open market by either I or R is ruled out.

The model assumes complete information. There is no discounting, and all agents are risk-neutral. The sequence of events unfolds in the four stages described in the following paragraphs.

Stage 1: I and R can trade privately. This is modeled as Nash bargaining with respective bargaining powers ψ and $1 - \psi$, where $\psi \in [0,1]$. I and R bargain over a fraction $\eta \leq \alpha$ of all shares that R acquires and the transfer price P. They can negotiate a standstill agreement, where I pledges not to acquire further shares in the future. If bargaining breaks down or does not result in a standstill agreement, the game continues with stage 2. Otherwise, it moves directly to stage 4.

Stage 2: A takeover contest takes place. First, R makes an offer, then I may counterbid. Offers are unrestricted. Moreover, we assume that offers to the dispersed shareholders are conditional on at least a fixed (but arbitrarily small) fraction $\varepsilon > 0$ of their shares being tendered. For instance, R's offer can be viewed as an unconditional offer to I, followed by an offer conditional on ε to the dispersed shareholders at the same price. This purely technical assumption ensures the existence of an equilibrium.[4]

Stage 3: The shareholders face the tendering decision. We assume that tendering is sequential. First, I and R decide how many shares (if any) to tender. Having observed these choices, the other shareholders noncoopera-

[3] We assume α to be exogenous and discuss endogeneity and initial share ownership by R in Section IV.

[4] The problem of nonexistence of equilibrium is typical of takeover games with atomistic shareholders. Indeed, even in the original framework of Grossman and Hart (1980), an equilibrium may fail to exist for unconditional offers. Conditional offers ensure the existence of the equilibrium in which the bid fails because less than the required fraction of shares is tendered. In our framework, the question of existence is complicated by the presence of the large shareholder I who can be pivotal, hence the more complex assumed bid form. Note, however, that conditionality does not play any role other than ensuring the existence of an equilibrium. Indeed, the fraction ε on which the offer is conditioned is arbitrarily small, so that the offer is in effect arbitrarily close to being unconditional. Finally, possible alternatives to the assumed bid form would be to follow Grossman and Hart (1980) in considering only offers that result in an equilibrium, or to assume that the bid fails in the absence of an equilibrium. None of our results would be affected by these equally arbitrary and less rigorous approaches.

tively decide whether to tender, and to which party. They are atomistic in that each of them perceives himself as not affecting the outcome of the tender offer. The Pareto dominance criterion is used to select among multiple equilibrium outcomes. Assuming sequential rather than simultaneous tendering keeps the analysis synoptical, without affecting the qualitative outcome of the tender offer.

Stage 4: The firm's largest shareholder, $X \in \{I,R\}$, allocates the firm's resources to generate security benefits, which accrue to all shareholders, or private benefits for himself only. The degree of control by X, and thus his ability to extract private benefits, is assumed to be independent of the block size. This point is discussed in Section IV.E.

Following Burkart, Gromb, and Panunzi (1998), the resource allocation decision is modeled as the choice of $\phi \in [0,1]$ by X such that security benefits are $(1-\phi)v_X$ and private benefits are $d_X(\phi)v_X$. Note that in our model blockholders can both create and destroy security benefits. If v_0 denotes the security benefits under fully dispersed ownership (i.e., in the absence of I and R), then the controlling blockholder adds $(v_X - v_0)$ while diverting ϕv_X. For instance, if v_0 is normalized to zero, blockholders add value overall.

The resource allocation has two crucial features. First, the extraction of private benefits affects the value of all shares equally. That is, the controlling party cannot discriminate among shares when choosing ϕ. Second, the extraction of private benefits is inefficient. On the margin the controlling party's private benefits, measured in monetary terms, are less than the aggregated loss in security benefits.

Assumption 1: *For $X = I,R$, the function d_X is strictly increasing and strictly concave on* $[0,1]$, *with* $d_X(0) = 0$, $d'_X(0) = 1$, *and* $d'_X(1) = 0$.

Denote by ϕ_X^β the level of extraction chosen by the controlling party X, holding a fraction β of shares.[5] The next two assumptions capture the difference in I and R's ability to extract private gains and generate security benefits.

Assumption 2: *R can generate higher security benefits than I; that is,* $v_R > v_I$.

Assumption 3: *R values the block more than I; that is,* $[\alpha(1-\phi_R^\alpha) + d_R(\phi_R^\alpha)] \times v_R > [\alpha(1-\phi_I^\alpha) + d_I(\phi_I^\alpha)]v_I$.

[5] Our results carry over to the standard moral hazard framework with costly effort. Suppose for example that the controlling party chooses effort e at a cost $c(e)$ which increases security benefits by ev, where $c(e)$ is increasing and convex. Then, inefficient misallocation translates into inefficient shirking ($e = 1 - \phi$). The difference between the two formulations is that within the extraction framework private benefits are derived at a public cost, while within the effort framework public gains are generated at a private cost. Using the former permits avoidance of the assumption of exogenous private benefits. Moreover, the two frameworks can be combined to model blockholders' dual role of improving firm management and extracting private benefits (see Section IV.E).

Assumptions 2 and 3 imply that there are gains from transferring control to R, irrespective of the transfer mode. This allows us to focus on the incentive effect of the controlling party's equity stake and the choice of means for transferring control. Finally, we restrict our attention in the main section to the case where the parties are subject to competitive pressure in the tender offer stages.

ASSUMPTION 4 (EFFECTIVE COMPETITION): $v_I > (1 - \phi_R^\alpha)v_R$.

For R to gain control, he must at the same time attract enough shares to become the largest shareholder, and prevent I from successfully countering. Assumption 4 ensures that I's willingness—to pay is the binding constraint. The case of ineffective competition ($v_I \leq (1 - \phi_R^\alpha)v_R$) is analyzed in Section IV.A.

B. Empirical Evidence Related to the Model

The model is based on the notions that large minority shareholders exist and exert corporate control, and that block trades constitute control events. Moreover, it assumes that private benefits reduce security benefits and are inversely related to the controlling party's ownership stake. We briefly present some supportive evidence.

Although ownership of public corporations is generally dispersed in the United States and the United Kingdom, large share stakes and dominant shareholders abound.[6] For instance, Zwiebel (1995) reports that for the 456 firms included in the *1981 CDE Stock Ownership Directory: Fortune 500*, there are 123 shareholders holding blocks in excess of 20 percent of a firm's equity. Moreover, such leading shareholders are usually the firm's single large equityholder. In their study of 106 negotiated block trades in the United States, Barclay and Holderness (1991) document that minority shareholders do indeed have substantial control, and that block sales are control events. The average block size is 27 percent of the firm's equity, and most trades (90 percent) represent a change in the firm's largest blockholder, rather than an increase in ownership concentration. In about half of the cases the block trade is not followed by a full acquisition (at least within the first year), but is itself the final outcome, with control passing from the seller to the purchaser. Moreover, negotiated block trades are a relatively common method for transferring control. For instance, during the period from 1978 to 1982, there were 10 hostile tender offers per year in the United States; during the same period there were approximately 20 registered block trades per year. The hypothesis that block trades result in control transfers is supported by the observed aftermath; typically, acquirers or their representatives become directors or officers and sellers resign from their corporate positions. The CEO turnover following block trades is similar to that following other control transactions, and these changes are typically initiated by block purchas-

[6] Large blockholdings are more pervasive in other countries. The limited takeover markets, however, imply that evidence from these economies can offer only limited support for our theory.

ers. In their study of 244 block purchases in the United States during the 1980s, Bethel, Liebeskind, and Opler (1998) also conclude that block acquisitions constitute significant control events. They document that block share purchases by activist minority investors are followed by extensive operational changes, increased CEO turnover, and improvements in profitability and share value. Moreover, firms on the *Fortune* 500 list are three times as likely to experience a block acquisition by an activist investor than a hostile takeover or a leveraged buyout (LBO), and takeovers typically do not take place within two years of a block purchase. We are not aware of corresponding studies for the United Kingdom. Nevertheless, Franks, Mayer, and Renneboog (1995) document that active new shareholders acquire blocks from incumbent corporate investors and directors in poorly performing companies, and that such trades are associated with significant board turnovers.

The view that minority blockholders enjoy substantial control and can use their influence for self-serving purposes is also reflected in some legislations. For example, the U.K. City Code on takeovers requires a party owning more than 30 percent of the votes to bid for the remaining shares. There are various ways in which a controlling party can employ corporate resources in a self-serving manner (Shleifer and Vishny (1997)). Prominent examples are the excessive retention of free cash flow and acquisitions motivated by empire-building ambitions. More extreme is the straight expropriation of minority shareholders by the controlling party, such as through transactions at preferential terms. Direct evidence on private benefits is, however, hard to find. As Zingales (1994) notes, "In fact, some corporate benefits are enjoyed exclusively by the management precisely because they cannot be easily measured (and thus claimed) by minority shareholders." Nevertheless, Barclay and Holderness (1989) find that in the United States blocks trade at an average premium of 20 percent relative to the post-trade share value—which, they conclude, reflects private benefits to the blockholder. Evidence with the same interpretation is the observed premium that voting shares command relative to nonvoting shares.[7] Furthermore, Barclay, Holderness, and Pontiff (1993) report that despite the considerable discounts on closed-end funds, their large shareholders veto open-ending proposals in order to preserve their private benefits, such as management fees and employment of relatives.

Evidence of self-serving behavior and its mitigation through equity ownership comes from the LBO literature. Jensen (1989) argues that increased managerial ownership in LBOs provides strong incentives for managers to abstain from wasteful investments and self-serving actions. Empirical studies (e.g., Kaplan (1989)) document post-buyout operating improvement and value increases and attribute them to improved incentives rather than wealth transfers.

[7] The average voting premium is 10 percent in the United States and 13 percent in the United Kingdom. Both are well below the values found for Canada (23 percent), Switzerland (27 percent), Israel (45 percent), and Italy (81 percent) (Zingales (1994)).

Finally, the heterogeneity of blockholders' incentives and expertise has been documented in several studies. Morck, Shleifer, and Vishny (1988) find that firm value tends to be lower when the firm is run by a member of the founder's family. The view is perhaps best supported by the fact that stock prices react (positively) to a change in the identity of the blockholder that leaves the ownership structure unaffected (Barclay and Holderness (1991)).

II. Block Trades versus Public Offers

This section presents the paper's two main insights. First, compared to negotiated block trades, tender offers result in more concentrated ownership and therefore in lower post-transfer agency costs. Second, rather than internalizing this effect, I and R choose to transfer control through a negotiated block trade. The game is solved by backward induction.

In stage 4, the party in control, $X \in \{I,R\}$, chooses ϕ_X^β to maximize

$$\beta(1-\phi)v_X + d_X(\phi)v_X. \tag{1}$$

LEMMA 1: *The level of private benefit extraction chosen by the party in control decreases strictly with his shareholding; that is,* $\partial\phi_X^\beta/\partial\beta < 0$.

Proof: The first and second derivatives of X's profit with respect to ϕ are $-\beta v_X + d_X'(\phi)v_X$ and $d_X''(\phi)$. The problem is concave, as $d_X''(\phi) < 0$. That an interior solution is obtained is ensured because $d_X'(0) = 1$ and $d_X'(1) = 0$. Q.E.D.

On the margin, diverting corporate resources is inefficient. As the extent of the controlling party's shareholding increases, he internalizes more of this deadweight loss. Consequently, the extent of private benefit extraction decreases with the size of his stake. This implies a positive relationship between share value $(1-\phi_X^\beta)v_X$ and β.

In stages 2 and 3, R makes a bid, I has the option to counter, and all shareholders (first I and R) then make their tendering decisions. Recall that R may have acquired a fraction η of shares from I in stage 1, even if a standstill agreement has not been reached.

LEMMA 2: *Assume that I does not counter. By bidding* $b \geq v_I$, *R wins control. Moreover, as b increases, his final holding* β *increases while his net payoff decreases strictly. More precisely,*

- *for* $b \leq v_R$, β *satisfies* $b = (1-\phi_R^\beta)v_R$ *and* R's net payoff is $\eta b + d_R(1-(b/v_R))v_R$;
- *for* $b \geq v_R$, $\beta = 1$ *and R's net payoff is* $v_R - (1-\eta)b$.

Suppose that I tenders all his remaining shares $\alpha - \eta$, and that the small shareholders anticipate R's final stake to be $\hat{\beta}$. Then, they expect the post-takeover share value to be $(1-\phi_R^{\hat{\beta}})v_R$, which is weakly less than v_R. Thus, if $b \geq v_R$, tendering is a dominant strategy and R's final holding is 100 percent. If $b < v_R$, it cannot be that $\hat{\beta} = 1$. Otherwise, each atomistic shareholder would anticipate the post-takeover share value to be v_R (Lemma 1), irrespective of his own decision. He would thus retain his shares to realize v_R. This is incompatible with expectations of $\hat{\beta} = 1$ and hence $\hat{\beta} < 1$ must hold. For the shareholders to anticipate that $\hat{\beta} < 1$, they have to be indifferent between tendering for b and retaining their shares to realize $(1 - \phi_R^{\hat{\beta}})v_R$. In equilibrium, shareholders anticipate β correctly, and so $(1 - \phi_R^{\beta})v_R = b$. That is, the equilibrium supply of shares must be such that the post-takeover security benefits equal the bid price. We refer to this relationship as the free-rider condition.[8]

Note that R takes control irrespective of I's tendering decision. Given Assumption 4, the small shareholders' free-rider behavior ensures that for any bid $b \geq v_I$, R's final holding is at least α, making him the largest shareholder. Turning to I's tendering decision, consider a situation where the free-rider condition holds and I retains some shares. If I tenders more shares, the small shareholders simply reduce the amount that they tender, and $(1 - \phi_R^{\beta})v_R = b$ continues to hold. If I tenders fewer shares, the small shareholders want to tender more shares to keep total supply unchanged. However, once they have tendered all their $(1 - \alpha)$ shares, they can no longer compensate for any further reduction in I's supply. Hence, the free-rider condition holds for high values of b only if I tenders a sufficient amount. Doing so is in I's interest, because otherwise the bid price would remain above the value of the shares that he retains. Hence, tendering all shares is weakly dominant for I.[9]

The shareholders' tendering behavior has two further implications. First, the supply of shares, and thus R's final stake, increases with the bid price. An increase in b must be matched by an increase in the post-takeover share value, which, in turn, necessitates a larger final stake (as in Burkart et al. (1998)). Second, R does not make any profit on the tendered shares. He gains only from the value increase of his pre-offer stake, $\eta(1 - \phi_R^{\beta})v_R$ (as in Shleifer and Vishny (1986)) and from his private benefits, $d_R(\phi_R^{\beta})v_R$ (as in Grossman and Hart (1980)).

R's net payoff, $\eta(1 - \phi_R^{\beta})v_R + d_R(\phi_R^{\beta})v_R$, would be maximized for $\phi = \phi_R^{\eta}$. However, the level of private benefit that R chooses ex post is determined by the size of his final holding, $\beta > \eta$. The larger final stake induces R to choose a ϕ below the level that is optimal for a stake η (Lemma 1). He

[8] Other equilibria exist but are Pareto-dominated (Appendix A). For instance, if the small shareholders tender too few shares, R's offer becomes void. Anticipating this, shareholders are indifferent between tendering or not and can indeed tender too few shares. For the same reason, failure also is always an equilibrium in the canonical takeover model (Grossman and Hart (1980)) when bids are conditional on receiving 50 percent of the shares.

[9] With simultaneous tendering, intricacies arise that are tangential to the paper's focus. In particular, if $v_I < (1 - \phi_R^{2(\alpha-\eta)})v_R$, R's bid may fail for $b \in (v_I, (1 - \phi_R^{2(\alpha-\eta)})v_R]$. Given that R's bid succeeds, I has an incentive to tender some additional shares when $b = (1 - \phi_R^{\beta})v_R$ and $\beta \geq \alpha - \eta$. By increasing R's final holding β, he raises the value of the shares that he retains. Because this incentive to "overtender" persists for any b, an equilibrium requires that I tender all his shares. However, I may then be pivotal for the outcome of the tender offer and prefer R's bid to fail.

forgoes more private benefits without making any profit on the tendered shares. In other words, R's net payoff decreases with his bid price and final stake.

LEMMA 3: *If R bids $b < v_I$, he fails to win control.*

It suffices to show that I counters any bid $b < v_I$ by R that would succeed otherwise. First, note that bidding v_I is sufficient for I to win the contest. Following a reasoning similar to Lemma 2, bidding v_I would result in I holding 100 percent of the shares and realizing a net payoff $(\alpha - \eta)v_I$. Hence, I counters unless his payoff exceeds $(\alpha - \eta)v_I$ if R's offer succeeds. Second, suppose that I does not counter and that R bids b and gains control with a final holding β. From Lemma 2 it follows that the post-takeover share value must (at least) match the bid price, $(1 - \phi_R^\beta)v_R \geq b$. Otherwise, some small shareholders (or I) would want to tender additional shares. Consequently, the payoff to I would at most be $(\alpha - \eta)(1 - \phi_R^\beta)v_R$. Given that $b < v_I$, it is not possible that $(1 - \phi_R^\beta)v_R > v_I$, because the small shareholders would then retain their shares to realize the higher post-takeover share value. This in turn would result in R holding a final stake $\beta \leq \alpha$. Thus, $(1 - \phi_R^\beta)v_R < v_I$ must hold, and I's payoff when losing control is always less than $(\alpha - \eta)v_I$. Accordingly, the best response for I is to counter all bids $b < v_I$ and to win control.

The bidding contest's outcome is as follows.

LEMMA 4: *In the bidding contest, R wins control by bidding $b^* = v_I$, and his final holding is β^* such that $(1 - \phi_R^{\beta^*})v_R = v_I$.*

To counter successfully, I would have to bid $b_I > v_I$. Since the share value under I's control cannot exceed v_I, such a bid would attract all shares. Accordingly, I would realize a return less than $(\alpha - \eta)v_I$, an amount he can secure by simply selling all his remaining shares to R. Hence, I prefers to concede control to R. The choice for R is to bid either $b \geq v_I$ and gain control, or $b < v_I$ and leave control with I. Among the winning bids, R prefers the lowest bid $b = v_I$ (Lemma 2) with a net payoff $\eta v_I + d_R(1 - (v_I/v_R))v_R$. In contrast, a failed bid $b < v_I$ would at most yield a return ηv_I. This payoff is realized if I counters with v_I, because both bid price and post-takeover share value would then be v_I. Consequently, R chooses to win control and bids $b = v_I$.[10]

In stage 1, R and I negotiate a private control sale.

LEMMA 5. *Assume that I and R enter a standstill agreement. In the negotiated transfer of control, I and R trade the entire block; that is, $\eta = \alpha$.*

[10] Because of the simple formalization of the bidding contest, I and R's optimal bids are independent of their toeholds. With several or simultaneous bids, parties owning toeholds would overbid (Burkart (1995)). This would not alter our qualitative results.

The gains from a private control sale are maximized when R internalizes the full deadweight loss that the extraction of private benefits imposes on the value of the block. This is achieved only if R acquires the entire block, because the level of private benefits that he chooses is determined by his final holding (Lemma 1). Since bargaining between I and R yields a coalition-efficient outcome, it must result in R acquiring all α shares from I. Later, we demonstrate that I and R want to enter a standstill agreement.

Comparing Lemmas 4 and 5 shows that the mode of transferring corporate control matters.

PROPOSITION 1: *Under effective competition, tender offers result in greater ownership concentration than privately negotiated block trades* ($\beta^* > \alpha$) *and, therefore, in lower post-transaction agency costs* ($\phi_R^{\beta^*} < \phi_R^{\alpha}$).

Transferring control through a block trade preserves the low concentration of ownership and the corresponding high level of inefficient extraction of private benefits. In contrast, the competitive pressure in the tender offer forces R to make a bid that leads to more shares being tendered. As a result, R acquires a larger fraction of the shares and diverts corporate resources to a lesser extent. This translates into a higher firm value.

Of course, Proposition 1 would not necessarily hold in a less parsimonious modeling of the costs and benefits associated with these two means of transferring control. For instance, takeover costs might make tender offers less desirable than block trades. Yet, even though the incentive effect of the controlling party's final holding is but one aspect of control transactions, it is one that has largely been overlooked in the control transfer literature (e.g., Grossman and Hart (1988), Bebchuk (1994), Zingales (1995)). In these models, security benefits and private benefits are independent. As a result, the only relevant issue is whether control is allocated to the most efficient user of corporate resources. Provided that a block trade or tender offer results in the same party having control, the two transfer modes are equivalent. In contrast, Proposition 1 argues that not only the identity of the controlling party but also his incentives matter. Even though Assumptions 2 and 3 imply that R gains control irrespective of the means of transferring control, these modes are not equivalent.

We have shown that different means of transferring corporate control result in different firm values. Our model has the additional implication that private parties may well choose a means of transfer that does not maximize firm value.

PROPOSITION 2: *When choosing the control transfer mode, I and R fail to internalize the positive incentive effect associated with tender offers. Hence, I and R prefer to trade privately (and enter a standstill agreement), even though the tender offer would lead to a higher firm value.*

This result is best understood by considering I and R as a coalition. If their joint ownership increases, their incentive to extract private benefits is reduced. However, in the tender offer, shares have to be acquired at their post-acquisition value because of the dispersed shareholders' free-rider behavior. Thus, the bid price does not compensate the coalition ex ante for the reduction in private benefits that its ex post enlarged stake induces. Therefore, from the coalition's viewpoint, acquiring dispersed shares in a tender offer is detrimental. Instead, I and R agree to trade the entire block privately (Lemma 5) and to enter a standstill agreement. Without a standstill agreement, R would continue to be subject to the threat that I may start a bidding contest to extract a further payment. Anticipating such ex post opportunistic behavior, which would erode their surplus ex ante, I and R find it in their common interest to enter a standstill agreement.[11] Hence, the disparity between private interests and social efficiency generates a discrepancy in the choice of control transfer mode.

This discrepancy is caused by three factors: free-riding by dispersed shareholders, effective competition in tender offers, and inefficient extraction of private benefits. First, without the free-rider behavior, the increase in share value following a tender offer would compensate the coalition of I and R for the reduction in private benefits. It is because dispersed shareholders as a group bargain too hard—even for their own good—that I and R do not trade with them. Second, if I's willingness-to-bid were not a binding constraint on R's bid, R would need to attract at most α shares in the tender offer to gain control. Hence, the tender offer would not increase either ownership concentration or firm value, relative to a block trade.[12] Third, the two transfer modes differ because of the positive relationship between firm value and the controlling party's stake, which itself stems from the inefficiency of private benefits.

Proposition 2 is not meant to suggest that firms with a dominant minority shareholder are never subject to tender offers. For clarity, our model does not account for considerations that may lead an acquirer to prefer a tender offer. Nevertheless, the discrepancy between private objective and firm value maximization in our model is robust. When choosing the transfer mode, pri-

[11] With this analysis in mind, one can see that our assumption that parties can enter a standstill agreement is only a shortcut. For instance, in the presence of takeover costs, selling the block would be a commitment for I not to enter the bidding contest. Suppose that I has to incur some cost prior to R's offer, in order to have the option to counterbid subsequently. This additional cost c is a random variable $c \in (0, \bar{c})$ at the time of the bargaining (stage 1). Having sold η shares to R directly, I's payoff from the bidding contest is $(\alpha - \eta)v_I - c$. By trading the entire block, I has no incentives to trigger a subsequent bidding contest, which is equivalent to signing a standstill agreement. We adhere to our assumption for the sake of conciseness.

[12] In Section IV.A we show that in the absence of effective competition both transfer modes are equivalent with respect to ownership concentration, or the ranking may even be reversed. However, the latter outcome emerges in a setting where tender offers seem an unlikely transfer mode.

vate parties ignore the added benefits of tender offers which accrue to the dispersed shareholders. Ceteris paribus, private interests are thus biased against control transfers through public transactions. This result ties in with the literature on the agency costs of blockholder control. Previous research has focused on how controlling parties divert corporate resources for their own purposes or hinder value-increasing control transfers to retain private benefits. Extending this line of research, our paper shows that the very choice of the means of transferring corporate control can be subject to agency problems.

Our analysis supports a reconsideration of the empirical evidence on the efficiency of block trades. Barclay and Holderness (1991, 1992) find that announcements of block trades are associated with average abnormal share price increases of 16.5 percent, which suggests that improved firm management and more effective monitoring are the main sources of gains.[13] It is tempting to conclude that block trades are not a vehicle for looting firms, and that there is thus little reason to object to them. This interpretation of the evidence is warranted if private benefits and security benefits are held to be unrelated. Our model, however, indicates that gains to small shareholders are insufficient to conclude that block trades are desirable. Certainly, the small shareholders can gain from a block trade if R values the block more than I (assuming his reason for so doing is his ability to generate greater security benefits rather than greater private benefits). However, Proposition 1 or 2 holds irrespective of the sign of the share price reaction to a block trade, as measured by $[(1 - \phi_R^\alpha)v_R - (1 - \phi_I^\alpha)v_I]$. Consequently, our model predicts forgone benefits in negotiated control transfers whether this reaction is positive or negative. That is, using the pretransaction share value to assess block trades implicitly relies on a framework where share value and private benefits are independent, and ignores the incentive effects stemming from the controlling party's shareholding.

Our criticism also bears on the regulatory debate on large block trades, in particular the controversial Equal Opportunity Rule (EOR).[14] The EOR requires the acquirer of a controlling block, say 30 percent, to offer the same terms to all remaining shareholders. Bebchuk (1994) and Kahan (1993) show that the EOR can succeed in preventing all value-decreasing control transfers at the cost of frustrating some value-increasing transfers. Whether or not the beneficial effect of the EOR predominates seems to be an empirical

[13] These gains are similar in magnitude to those observed by Bethel et al. (1998) after activist block share purchases. To be precise, Barclay and Holderness (1992) emphasize that improvements in share value do not exclude substantial private benefits. Quite to the contrary, they write that "block purchasers can . . . simultaneously improve share value and consume private benefits" (p. 269), and "Indeed, our evidence shows that block purchasers typically improve firm management and enjoy private benefits" (p. 292).

[14] The EOR is part of the U.K. City Code but not part of the Williams Act, the federal takeover legislation in the United States. For an account of the debate see Barclay and Holderness (1992), and Bergström, Högfeldt, and Molin (1997).

matter. The documented share-price increases seem to refute the claim that the EOR is necessary to deter value-decreasing control transfers and to protect minority shareholders. Instead, our earlier reservation about the positive assessment of block trades is in fact a new argument in favor of the EOR, one that holds even if shareholders gain in a block trade.

COROLLARY 1: *Provided that control would be transferred through either a tender offer or a block trade, firm value is increased under the Equal Opportunity Rule.*

By banning preferential block trades, the EOR forces I and R to go directly to the tender offer stage. As a result, R gains control by acquiring more shares ($\beta^* > \alpha$), which reduces the inefficient extraction of private benefits and increases firm value. Thus, the EOR is beneficial because it effectively removes the agency problem in the choice of transfer mode.

This rationale for the EOR can only emerge in our framework where total firm value depends on ownership concentration. In Bebchuk's (1994) and Kahan's (1993) framework, where (by assumption) firm value does not depend on the controlling party's holding, the EOR merely redistributes takeover gains from the bidder to small shareholders. This redistribution may prevent a value-increasing control transfer (and always does in the case of a value-decreasing bidder). However, if a bidder acquires control despite this tax, the EOR does not affect total firm value. In contrast, Corollary 1 shows that the EOR has an impact on total firm value, even if it does not change the identity of the controlling party.

Although we focus on the novel incentive effect stemming from the controlling party's ownership stake, our model encompasses the possibility of value-decreasing control transfers (for a given block size α). Indeed, Assumptions 2 and 3 do not exclude the possibility that $[(1 - \phi_I^\alpha) + d_I(\phi_I^\alpha)]v_I \geq [(1 - \phi_R^\alpha) + d_R(\phi_R^\alpha)]v_R$. As in both Bebchuk and Kahan, such transactions are prevented by the EOR. Interestingly, banning block trades may not result in I retaining control in such parameter constellations. Instead, the EOR may transform the control transfer into a value-increasing transaction because of R's larger ownership stake.

Our argument in favor of the EOR needs to be qualified. In the presence of takeover costs, banning block trades may prevent valuable control transfers altogether. In such a setting, the EOR trades off the frequency of control transfers against their inefficiencies. Even if the stringent EOR is rejected, our analysis remains relevant for weaker versions. For example, the block acquirer could be obliged to bid for all remaining shares at a price that cannot be lower than the per-share price paid for the block less a given discount. Alternatively, the acquirer could be required to extend an offer on the same terms but restricted to a certain fraction of the remaining shares (see Gomes (1996)). Both proposals aim at mitigating the agency problem without frustrating value-increasing control transfers. Finally, we have not considered the possible endogeneity of ownership concentration. The existence and size of controlling blocks are likely to be influenced by the regulation of control transfers.

III. Determinants of Block Premia

We now examine the transfer price of control and its determinants in more detail. Within our theory, blocks trade at a premium and part of this premium reflects I and R's surplus from avoiding the tender offer. More importantly, the environment in which tender offers take place affects the terms of block trades.

Two introductory remarks are in order. First, most of the subsequent results require that the bargaining outcome depend to some extent on the parties' outside options.[15] Second, our model predicts block trading irrespective of whether Assumption 2 holds. Because R values the block more highly than I (Assumption 3), and because the small shareholders free-ride, the coalition of I and R still prefers to trade the block when $v_I > v_R$. The difference is that for $v_I > v_R$, R can threaten to increase I's stake through a bidding contest, in order to induce him to trade the block.[16] We restrict the analysis to the case $v_R > v_I$, since the qualitative results do not differ.

A. Block Premium

In stage 1, R acquires the entire block from I at a price P determined by the parties' relative bargaining powers and threat points:

$$P = \alpha b^* + \psi\big[\big(\alpha(1 - \phi_R^{\alpha}) + d_R(\phi_R^{\alpha})\big)v_R - \big(\alpha b^* + d_R(\phi_R^{\beta^*})v_R\big)\big]. \tag{2}$$

The threat point of I is the tender offer contest in which he receives αb^*, the first term of P. This is a purely redistributive transfer from R to I. Second, I also receives a share ψ of the surplus that I and R derive from avoiding a takeover contest. By transferring control through a block trade, they prevent the value of the block from falling by $[\alpha(1 - \phi_R^{\alpha}) + d_R(\phi_R^{\alpha})v_R]$ to $[\alpha b^* + d_R(\phi_R^{\beta^*})v_R]$, the second term of P. This second component is specific to our theory, as it relies on the post-takeover moral hazard on the part of R.

[15] These results would not obtain in Rubinstein's (1982) alternating offers bargaining model. There is, however, an alternative version of this model where players are indifferent about the timing of an agreement and there is a given probability of a breakdown after each bargaining round. In this latter framework, all our results hold because the parties' bargaining payoffs depend on their outside options (see, e.g., Osborne and Rubinstein (1990)).

[16] This result relies again on the assumption that R is an effective competitor. Without this restriction, I can refuse to sell the block and maintain the status quo. Moreover, the threat may lack some credibility because without a toehold R would not benefit from a takeover contest. As will be shown in Section IV.C, R actually has an incentive to acquire an initial stake to strengthen his bargaining position.

Let Π denote the difference between the transfer price and the post-transfer value of α shares. That is, $\Pi = P - \alpha(1 - \phi_R^{\alpha})v_R$.

COROLLARY 2: *The block trades at a premium with respect to the post-trade share value; that is,* $\Pi > 0$. *The premium per share,* Π/α, *decreases with the block size.*

The block premium is

$$\Pi = \alpha[b^* - (1 - \phi_R^{\alpha})v_R] + \psi\big[\big(\alpha(1 - \phi_R^{\alpha}) + d_R(\phi_R^{\alpha})\big)v_R - \big(\alpha b^* + d_R(\phi_R^{\beta^*})v_R\big)\big].$$

The premium must be positive since I receives the equivalent of the higher post-takeover value of α shares ($b^* = (1 - \phi_R^{\beta^*})v_R$) and part of the coalition's surplus from avoiding a takeover contest. The premium per share can similarly be decomposed into two terms:

$$\frac{\Pi}{\alpha} = [b^* - (1 - \phi_R^{\alpha})v_R] + \psi\left[\left((1 - \phi_R^{\alpha}) + \frac{d_R(\phi_R^{\alpha})}{\alpha}\right)v_R - \left(b^* + \frac{d_R(\phi_R^{\beta^*})}{\alpha}v_R\right)\right].$$

As α increases, I's threat point, b^*, remains unchanged, while the post-transfer value of each share increases. Hence, the first term decreases. The coalition's per-share surplus from a block trade, the second term, decreases too. The direct effect of an increase in α is a reduction in the surplus per share—that is, $-\{[d_R(\phi_R^{\alpha}) - d_R(\phi_R^{\beta})]/\alpha^2\}v_R$. A change in α also affects the surplus through the level of dilution ϕ_R^{α}, but this effect is second order. Indeed, with ϕ_R^{α} being chosen optimally, the envelope theorem applies. Moreover, the second term in the surplus remains unchanged because the controlling stake emerging from a tender offer is unaffected by a change in α.

Now consider the rival's profit, which is equal to

$$d_R(\phi_R^{\beta^*})v_R + (1 - \psi)\big[\big(\alpha(1 - \phi_R^{\alpha}) + d_R(\phi_R^{\alpha})\big)v_R - \big(\alpha b^* + d_R(\phi_R^{\beta^*})v_R\big)\big].$$

COROLLARY 3: *The rival's profit decreases with the block size.*

The rival's outside option, $d_R(\phi_R^{\beta^*})v_R$, is independent of α, while an increase in α puts more weight on the security benefits. This reduces the surplus that I and R derive from avoiding a tender offer. An increase in α also affects the extraction of private benefits, but this is again a second-order effect. As a result, the surplus to be shared is reduced and the rival's payoff decreases. This result is in line with the findings of Barclay and Holderness (1992), who observe a lower frequency of large block trades than of smaller block trades.

Although Corollaries 2 and 3 are consistent with empirical findings (Barclay and Holderness (1989, 1991, 1992)), they are not unique to our theory. These results could be generated in a framework with independent private benefits and security benefits. Relative to such models (e.g., Zingales (1995)), the distinguishing feature of our model is the surplus that the coalition of I and R obtains from avoiding the tender offer. It accounts for our unique prediction that factors which increase the dispersed shareholders' payoff in a tender offer lead to a higher block premium. We develop this implication in the next subsection.

B. Tender Offer Prices and Block Premia

Our theory considers block trading as an alternative to a tender offer. This implies that factors which affect the outcome of tender offers also impact on the terms of block trades.

PROPOSITION 3: *For a given block size α, factors that increase the bid price in tender offers and the resulting ownership concentration lead to a higher block premium.*

As the bid price increases, so does the ownership concentration emerging from a takeover contest. This benefits the shareholders and simultaneously reduces R's private benefits. Consequently, both I's outside option and the coalition's surplus from avoiding the tender offer increase with the bid price, which in turn results in a higher block premium. Thus, to understand block trades and premia requires us to include factors that influence the outcome of tender offers (or of other alternative means of transferring control). Examples of such factors are financial constraints, takeover resistance, and a dual class share system.

B.1. Financial Constraints

The contestants' financial strength is tested in takeover contests and may prove decisive. A deep pocket can be key to winning the contest, and a bidder's aggressiveness may be constrained by limited funds. In Section II, the outcome of the tender offer contest (Lemma 4) relies on I being ready to post a bid $b = v_I$ which would attract $(1 - \alpha)$ shares and thus require financial resources of $(1 - \alpha)v_I$. This sum may, however, exceed the funds that I would be able to raise. We now explore the implications of such financial constraints within the context of our main case, where R gains control irrespective of the transfer mode (Assumptions 2 and 3), and where I is an effective competitor (Assumption 4). Hence, we consider the case where I has limited funds F, which are nonetheless sufficient to make his counterbid the binding constraint in the tender offer.[17] For simplicity, we also assume that $\eta = 0$.

COROLLARY 4: *As I becomes more financially constrained (i.e., F decreases), the premium for a given block α decreases.*

[17] For simplicity, we impose an exogenous constraint. Note, however, that the post-takeover moral hazard—that is, the potential for diverting corporate resources—itself limits the parties' ability to raise external finance.

For $F < (1 - \alpha)v_I$, I's financial constraints force him to reduce his counterbid from its optimal level v_I to a price that does not exceed his financial resources. More precisely, I can bid at most b_I such that $F = (\beta_I - \alpha)b_I$, where $(1 - \phi_I^{\beta_I})v_I = b_I$. Clearly, I's counterbid decreases with the funds available to him, which in turn enables R to gain control with a lower bid, and Proposition 3 applies.

B.2. Takeover Resistance

Takeover resistance by I is the counterpart to his financial constraint. By adopting antitakeover measures (e.g., poison pills), I raises the cost of replacing him against his will. In order to overcome the takeover defense, R needs to offer a higher price or acquire more shares, or both. Thus, by Proposition 3 the block premium increases.

B.3. Dual Class Share System

Consider the firm's security-voting structure. Together with the majority rule, the security-voting structure determines the amount of return rights that the bidder has to acquire in a takeover contest. Without loss of generality, the analysis is restricted to two classes of shares: voting shares and nonvoting shares.

COROLLARY 5: *Compared to a one share–one vote system, the premium for a given block α of voting shares is larger when dispersed shareholders also hold a limited number of nonvoting shares.*

Consider a dual class share system where I holds only voting shares while some of the dispersed shareholders hold nonvoting shares. Compared to a one share–one vote system, the competition is fiercer. In a contest, both bidders bid for voting shares only, since acquiring nonvoting shares is of no use in gaining control, and it reduces the winning bidder's private benefits. A reduction in the fraction of voting shares increases the winner's private benefits because he has to hold fewer shares. Furthermore, he spreads these benefits across fewer shares. Hence, the losing bidder's highest bid (i.e., the winning bid price) increases as the fraction of nonvoting shares increases. Starting from a one share–one vote system, introducing more nonvoting shares leads to a larger total number of voting shares being tendered. As a result, both I's outside option and the coalition's surplus from avoiding the tender offer increase, which implies a larger block premium. This effect, however, prevails only if there are some voting shares left that are not tendered. Once it is the case that the winning bidder attracts all voting shares, introducing further nonvoting shares actually reduces the winning bidder's final stake. The resulting effect on the winner's payoff in the bidding contest and on the block premium is indeterminate.

IV. Robustness and Extensions

This section discusses variations of the basic model. First, we analyze the case of noneffective competition in the tender offer. Second, we examine the model's implications for the transfer of majority blocks. Third, we allow R to trade shares on the open market before or after taking control. Fourth, we briefly explore how controlling minority blocks may arise. Finally, we discuss the assumption that the blockholder's control is independent of the block size.[18]

A. Ineffective Competition

When I is not an effective competitor (i.e., $v_I < (1 - \phi_R^\alpha)v_R$), the binding constraint on R's bid is to become the largest shareholder. For simplicity, we assume $\eta = 0$. In this case R never bids more than $b = (1 - \phi_R^\alpha)v_R$ because this price always attracts α shares from the dispersed shareholders, if not from I, and thus ensures that he is the largest shareholder. In fact, this is R's optimal bid if it is below the per-share value of the block under I's control—that is, if $(1 - \phi_R^\alpha)v_R < [(d(\phi_I^\alpha)/\alpha)v_I + (1 - \phi_I^\alpha)v_I]$. Since I would prefer to retain control, R cannot rely on I to tender any shares. Any bid below $b = (1 - \phi_R^\alpha)v_R$ would attract less than α shares from the dispersed shareholders. This would make I pivotal and allow him to block the transfer of control. Given that $b^* = (1 - \phi_R^\alpha)v_R$, the coalition of I and R does not gain by avoiding a tender offer. Like a block trade, it preserves the initial level of ownership concentration. Hence, the block does not trade at a premium. Notice that this relies on our assumption that the largest shareholder has full and unimpaired control.

In the reverse case where $(1 - \phi_R^\alpha)v_R \geq [(d(\phi_I^\alpha)/\alpha)v_I + (1 - \phi_I^\alpha)v_I]$, R can gain control by offering less than $(1 - \phi_R^\alpha)v_R$. Because of the block's low value under I's control, R does not need to induce the dispersed shareholders to sell. Instead, he makes an offer such that I sells a fraction $\gamma \leq \alpha$ of shares. When choosing γ, I compares the post-takeover security benefits $(1 - \phi_R^\gamma)v_R$ with the sum of offered price b and the marginal value increase of the $(\alpha - \gamma)$ retained shares. Because of this second indirect benefit, I always tenders a fraction of shares such that the post-takeover share value exceeds the bid, unless he tenders the entire block.[19] Thus, R can gain control in a tender offer by acquiring fewer than α shares at a price below the post-takeover share value. Consequently, the block trades at a discount.

[18] Formal proofs of all results of this section are omitted. They are available from the authors upon request.

[19] In Holmström and Nalebuff (1992), shareholders are also willing to tender some of their shares at bid prices that are below the post-takeover share value. This result is due to the fact that there are a finite number of shareholders who take into account the impact of their tendering decision on the outcome. In our case, I tenders at a low bid price because it mitigates the post-takeover moral hazard—that is, it reduces the extent of inefficient extraction of private benefits.

To be sure, we include the analysis of this case for the sake of completeness. Given that I is pivotal, a tender offer seems an unlikely means of transferring control. For instance, I would benefit from selling some shares on the open market at their final value because the resulting smaller ownership stake would reduce I's marginal benefit from tendering, and hence would reduce the discount that R can offer while still gaining control.

B. Majority Blocks

If I owns a majority block $\alpha > \frac{1}{2}$, a tender offer is no longer an option. Control can only be transferred through a block trade. Under Assumptions 1, 2, and 3, it still holds that block trades leave the ownership structure unchanged. Moreover, firm value would be enhanced if R were forced to acquire further shares. Since I cannot use the threat of a takeover contest, the outside option in the bargaining is the status quo. Hence, whether splitting the gains from transferring the majority block results in a premium or a discount depends on the bargaining powers and the source of gains. If R values the block more than I because of higher security benefits rather than larger private benefits, dispersed shareholders free ride on the value improvement, and I has to accept a discount. If these gains stem mainly from R's increased ability to extract private benefits, the majority block trades at a premium. Thus, our model is consistent with majority blocks trading at a premium or a discount. This illustrates further how the premium of minority blocks depends on an outside option, where there is effective competition for control.

C. Retrading and Toehold Acquisition

This section relaxes the assumption that I and R can trade shares only in the negotiated transfer and the tender offer. Under fully transparent markets, our model predicts that block trading leaves the ownership structure unchanged. First, R does not reduce his stake after the block trade, because forward-looking buyers anticipate that a smaller block induces R to extract more private benefits, thus lowering share value. As a result, R would bear the deadweight loss on the entire original block α that a reduction of his stake generates. Second, R has no incentive to acquire additional shares. Indeed, dispersed shareholders free ride, and their supply of shares is such that the bid price equals the post-trade share value. Hence, R would only capture a fraction α of the value improvement, which would not compensate him for the reduction in private benefits.

Strictly speaking, the above result does not require fully transparent markets. It suffices to assume that R's trading is perfectly observable, but trading is otherwise anonymous. However, even if R could trade anonymously, insider trading regulation limits his (legal) trading profit opportunities and hence his incentives to alter his ownership stake after the block trade.[20]

[20] For instance, Section 16(b) of the Securities Act of 1934 makes any profits gained by matching purchase and sale within a six-month period (short-swing transaction) recoverable.

The result that R does not alter the size of his stake after the block trade is in accordance with the findings of Barclay and Holderness (1991). They report that ownership concentration often does not change following a block trade. The underlying reasons are the very same as those that induce the coalition of I and R to avoid the tender offer (Proposition 2) and to trade the entire block, rather than breaking it up (Lemma 5). The key factor is the ex post moral hazard problem created by the inefficient extraction of private benefits. In contrast, if private benefits are independent of security benefits, trading only part of the block or retrading after the block trade are both a matter of indifference (unless the controlling position is lost).

Consider now R's decision about whether to acquire shares on the open market prior to the negotiated control transfer. On the one hand, additional shares improve R's bargaining position in stage 1, because his payoff in the takeover contest is larger. On the other hand, they increase the coalition's ownership stake and thereby reduce the amount of private benefits. Moreover, the attractiveness of a toehold acquisition depends on the market environment. For simplicity, assume fully transparent markets. Hence, R has to buy $\triangle$ shares at a price equal to their final value $(1 - \phi_R^{\alpha+\triangle})v_R$. It can be shown that even in this least favorable case R has an incentive to acquire some shares. More precisely, given a price equal to $(1 - \phi_R^{\alpha+\triangle})v_R$, the gain from an improved bargaining position dominates the loss in private benefits for a small number of shares. As the number of shares increases, the relative magnitude of the two effects might be reversed, and acquiring a larger initial stake might be detrimental for R. Hence, given the option to buy shares at their final value, R chooses to do so to a certain extent.

Finally, we have excluded the possibility that R can gain control other than through block trading or a tender offer. An alternative would be to acquire sufficient shares on the open market. Our results do not, however, depend on whether open market purchases are feasible, as long as either party can launch a tender offer. Moreover, open market acquisitions are equivalent to tender offers when markets are fully transparent. Dispersed shareholders anticipate the control transfer and set an ask price equal to the final share value. Therefore, R does not gain by acquiring shares on the market rather than through a tender offer. In practice, neither the identity of the traders nor the traded quantities are always publicly observed. Nevertheless, if the market fails to infer from R's purchases the pending control transfer, the disclosure threshold ensures that his intentions become public information.

D. Endogenous Minority Blocks

Because total firm value is maximized under full ownership (due to the assumed inefficiency of private benefits), one may question whether the model is compatible with the existence of minority blocks. Nonetheless, minority blocks may emerge as privately optimal choices. Zingales (1995) shows how the initial owner's choice of the ownership structure solves a trade-off with respect to a future control transfer. On the one hand, a dispersed structure allows the initial owner to extract all the improvement in security benefits brought about by the future controlling party. In contrast, by bargaining he has to share these improvements with the new controlling party. On the other hand, dispersed shareholders cannot extract any private benefits from the future controlling party, whereas, by having control, the initial owner can extract some of it in a direct negotiation. The optimal fraction retained by the initial owner may well be a minority block.[21]

E. Minority Block and Control

One may argue that the extent of control which a leading minority blockholder enjoys increases with the block size. In that case, a larger stake enables the blockholder to extract more private benefits (control effect), while providing him with greater incentives to improve firm value (alignment effect). Our model implicitly assumes that the latter effect dominates the former. Obviously, this may not hold in general. Our analysis would thus apply only over some range of block sizes where this is the case. Although we do not want to insist that the alignment effect always dominates, several arguments favor this case.

As pointed out in footnote 5, our analysis is not restricted to the diversion of corporate resources, but extends to any activity involving a moral hazard problem. Apart from abstaining from misallocating corporate resources, the blockholder could also add value by monitoring management, making more informed operating decisions, etc. These activities should also be taken into account when evaluating the relative importance of the two conflicting effects. Following an increase in the block size, the blockholder's increased involvement in value-increasing activities may thus outweigh the possible increase in diversion.

Moreover, for these activities the alignment effect is likely to operate alone. For instance, a larger stake hardly restricts the blockholder's ability to monitor management. Indeed, monitoring is not one of his duties, but a voluntary activity. This strengthens the case for a dominant alignment effect.

Finally, footnote 2 already contains an argument in support of this case. Increasing value and diverting resources both require some discretionary powers. Yet this discretion is derived at least in part from the blockholder's ability to increase value. Thus, more value destruction depends upon more discretion, which may itself require more value creation.

[21] The inefficient extraction of private benefits gives rise to a third effect, which is not present in Zingales' (1995) model: A larger block implies a higher share value but fewer private benefits. Therefore, a more dispersed ownership structure proves useful in extracting a larger fraction of security benefits, but lowers the level of security benefits. Conversely, a larger block allows capturing a higher fraction of the private benefits, but reduces the size of private benefits. Due to this additional effect, highly dispersed or very concentrated ownership structures are less likely to emerge in our framework than in Zingales' model.

V. Conclusion

The paper develops a framework for analyzing transfers of corporate control in firms, with a leading shareholder owning a minority block and otherwise dispersed ownership. The starting point is that the incumbent and the new controlling party choose the block trade, not only over no control transfers, but also over alternative means of transferring corporate control, such as a tender offer. Analyzing this choice, we show that the mode of transaction matters. A public tender offer results in a larger stake being held by the new controlling party, which implies less extraction of private benefits and higher firm value. In contrast, a negotiated block trade maintains a low ownership concentration, which leads to large private benefits of control but relatively low firm value. Despite the forgone efficiency gains, the incumbent and the new controlling party prefer to trade the block. Thus, this paper illustrates how the transfer of control itself may be subject to agency problems.

The paper contributes to the regulatory debate on large block trades by pointing out that the allocation of control to the most efficient party should not be the only concern. The incentive effect stemming from the controlling party's shareholding is another important aspect. More specifically, we argue that the EOR not only prevents value decreasing control transfers, but also removes the agency problem in the choice of the transfer mode.

Consistent with the empirical findings, our model also predicts that the block is traded at a premium with respect to its post-trade market value. The premium reflects in part the gain that the incumbent and the acquirer realize in avoiding a tender offer and the consequent transfer to the small shareholders. As a result, factors that alter the payoff of small shareholders in a tender offer (e.g., wealth constraints, takeover resistance, and dual class shares) also alter the block premium. This suggests that empirical research on block trades and premia should include the institutional and regulatory factors that govern alternative modes of transferring control as explanatory variables.

Appendix A

We first analyze the outcome of the small shareholders' tendering game, taking as given R's bid b as well as I's decisions to trade η shares, not to counter, and to tender an additional fraction γ. We refer to this analysis in the subsequent proofs.

Notation: Following R's bid b, I tenders γ. Let $\hat{\beta}$ denote R's final holding as anticipated by the small shareholders. Being atomistic, each of them holds this expectation irrespective of his own tendering decision. In equilibrium, $\hat{\beta} = \beta$ must hold. $\beta(b)$ is defined by $(1 - \phi_R^{\beta(b)})v_R = b$ for $b \in [0, v_R]$ and $\beta(b) = 1$ for $b > v_R$. Notice that $\beta(b)$ is continuous and strictly increasing on $[0, v_R]$.

The null equilibrium. There always exists an equilibrium in which R acquires no shares from the small shareholders and $\beta = \eta + \gamma$. Indeed, if each atomistic shareholder anticipates that fewer than ε shares are tendered by all other small shareholders, he anticipates that R's offer will be withdrawn and is indifferent between tendering or not. It is thus possible that fewer than ε shares are tendered. In this equilibrium outcome, R takes control if $\alpha/2 < \eta + \gamma$, while I retains it otherwise. We distinguish between these two cases in the following analysis of other potential equilibrium outcomes. Recall that we aim to characterize those equilibrium outcomes that are Pareto-dominant for the dispersed shareholders. As will become clear, in each equilibrium outcome, atomistic shareholders all receive the same payoff. By convention, if two Pareto-dominant outcomes exist (i.e., if the small shareholders receive the same payoff in both equilibrium outcomes) we arbitrarily select the one in which R gains control.

Case 1: $\alpha/2 \leq \eta + \gamma$. In the null equilibrium outcome, R wins control with $\beta = \eta + \gamma$, the small shareholders' payoff is $(1 - \alpha)(1 - \phi_R^{\eta+\gamma})v_R$, and I realizes $\gamma b + (\alpha - (\eta + \gamma))(1 - \phi_R^{\eta+\gamma})v_R$.

LEMMA 6: *If $b < (1 - \phi_R^{\eta+\gamma})v_R$, only the null equilibrium outcome prevails.*

Proof: Since R already holds $\eta + \gamma$, $\hat{\beta} \geq \eta + \gamma$ must hold, which implies $b < (1 - \phi_R^{\hat{\beta}})v_R$. Consequently, all dispersed shareholders retain their shares. Q.E.D.

LEMMA 7: *If $(1 - \phi_R^{1-\alpha+\eta+\gamma})v_R > b \geq (1 - \phi_R^{\eta+\gamma})v_R$, $\beta = \beta(b)$ is the only Pareto-dominant equilibrium outcome, then R wins and I realizes $(\alpha - \eta)b$.*

Proof: First, $\hat{\beta} > \beta(b)$ cannot hold in equilibrium because each atomistic shareholder would retain his shares, which implies that $\beta = \eta + \gamma < \beta(b)$, thus violating the expectation. Second, $\beta(b) > \hat{\beta} > \eta + \gamma$ cannot hold either because each atomistic shareholder would tender his shares, which implies $\beta = (\eta + \gamma + 1 - \alpha)$ and so $\beta > \beta(b) > \hat{\beta}$. Instead, there exists an equilibrium outcome in which $\hat{\beta} = \beta(b)$, which is unique. Indeed, under $\hat{\beta} = \beta(b)$, each atomistic shareholder is indifferent between tendering or not. It is thus possible that exactly a fraction $\beta(b) - (\eta + \gamma)$ of shares is tendered (because $\beta(b) - (\eta + \gamma) < (1 - \alpha)$). This outcome Pareto-dominates the null equilibrium[22] since the small shareholders' payoff is $(1 - \alpha)b$, which exceeds $(1 - \alpha)(1 - \phi_R^{\eta+\gamma})v_R$. I realizes $\gamma b + (\alpha - \eta - \gamma)(1 - \phi_R^{\beta})v_R = (\alpha - \eta)b$. Q.E.D.

LEMMA 8: *If $b > (1 - \phi_R^{1-\alpha+\eta+\gamma})v_R$, $\beta = 1 - \alpha + \eta + \gamma$ is the only Pareto-dominant equilibrium outcome, then R wins and I realizes $\pi_C(\gamma) = \gamma b + (\alpha - \eta - \gamma)(1 - \phi_R^{1-\alpha+\eta+\gamma})v_R$.*

Proof: If all atomistic shareholders tender their shares, $\beta = (1 - \alpha + \eta + \gamma)$. Hence, it must be that $\hat{\beta} < \beta(b)$. Under this condition, each atomistic shareholder tenders his shares, so $\beta = (1 - \alpha + \eta + \gamma)$, which satisfies

[22] This equilibrium outcome coincides with the null equilibrium for $b = (1 - \phi_R^{\eta+\gamma})v_R$.

$\beta < \beta(b)$. Clearly, this Pareto-dominates the null equilibrium. The small shareholders' payoff is b per share, which exceeds $(1 - \phi_R^{\eta+\gamma})v_R$. I realizes $\pi_C(\gamma) = \gamma b + (\alpha - \eta - \gamma)(1 - \phi_R^{1-\alpha+\eta+\gamma})v_R$. Q.E.D.

Case 2: $\alpha/2 > \eta + \gamma$. In the null equilibrium outcome, I retains control with a final holding $\alpha - (\eta + \gamma)$. The small shareholders' payoff is $(1 - \alpha)(1 - \phi_I^{\alpha-(\eta+\gamma)})v_I$, and I realizes $\gamma b + (\alpha - (\eta + \gamma))(1 - \phi_I^{\alpha-(\eta+\gamma)})v_I + d_I(\phi_I^{\alpha-(\eta+\gamma)})v_I$.

LEMMA 9: *If $b < (1 - \phi_R^{\alpha-(\eta+\gamma)})v_R$, only the null equilibrium outcome prevails.*

Proof: Same as Lemma 6. Q.E.D.

LEMMA 10: *If $(1 - \phi_R^{1-\alpha+\eta+\gamma})v_R > b \geq (1 - \phi_R^{\alpha-(\eta+\gamma)})v_R$, there exists a single other equilibrium outcome, in which R wins control with $\beta = \beta(b)$ and I's payoff is $(\alpha - \eta)b$.*

(i) *If $b \geq (1 - \phi_I^{\alpha-(\eta+\gamma)})v_I$, this equilibrium is selected.*
(ii) *If $b < (1 - \phi_I^{\alpha-(\eta+\gamma)})v_I$, the null equilibrium is selected.*

Proof: Existence and uniqueness of the alternative equilibrium outcome are established as in Lemma 7. In this equilibrium, tendering and retaining yield the same return to small shareholders; that is, $b = (1 - \phi_R^{\beta})v_R$. Hence, Pareto-dominance is decided by comparing $(1 - \phi_I^{\alpha-(\eta+\gamma)})v_I$ to b. For $b = (1 - \phi_I^{\alpha-(\eta+\gamma)})v_I$, the small shareholders' payoff is the same in both equilibrium outcomes, and we arbitrarily select the outcome in which R gains control. Q.E.D.

LEMMA 11: *If $b > (1 - \phi_R^{1-\alpha+\eta+\gamma})v_R$, there exists a single other equilibrium outcome, in which R wins control with $\beta = 1 - \alpha + \eta + \gamma$ and I realizes $\pi_C(\gamma) = \gamma b + (\alpha - \eta - \gamma)(1 - \phi_R^{1-\alpha+\eta+\gamma})v_R$.*

(i) *If $b \geq (1 - \phi_I^{\alpha-(\eta+\gamma)})v_I$, this equilibrium is selected.*
(ii) *If $b < (1 - \phi_I^{\alpha-(\eta+\gamma)})v_I$, the null equilibrium is selected.*

Proof: Existence and uniqueness of the alternative equilibrium outcome are established as in Lemma 8. Pareto-dominance is decided by comparing $(1 - \phi_I^{\alpha-(\eta+\gamma)})v_I$ to b, with the usual rule if $b = (1 - \phi_I^{\alpha-(\eta+\gamma)})v_I$. Q.E.D.

Appendix B

Having fully characterized the small shareholders' tendering decision (Appendix A), we can now proceed to prove the lemmas and propositions from the text.

Proof of Lemma 2: We prove a more general result than Lemma 2 (and one that is also useful to analyze the case of ineffective competition, i.e., in the absence of Assumption 4).

LEMMA 12: *Assume that I does not counterbid. For all $b \geq \max\{v_I; (1 - \phi_R^{\alpha})v_R\}$, R wins control. Moreover, as b increases, his final holding β increases while his net payoff decreases strictly. More precisely,*

- *for* $b \le v_R$*,* β *satisfies* $b = (1 - \phi_R^{\beta})v_R$ *and R's net payoff is* $\eta b + d_R(1 - (b/v_R))v_R$*;*
- *for* $b \ge v_R$*,* $\beta = 1$ *and R's net payoff is* $v_R - (1 - \eta)b$*.*

Proof: Since $b \ge (1 - \phi_R^{\alpha})v_R$ implies $b \ge (1 - \phi_R^{\eta+\gamma})v_R$, an alternative equilibrium outcome exists, which Pareto-dominates the null equilibrium outcome as $b \ge v_I > (1 - \phi_I^{\alpha-(\eta+\gamma)})v_I$ (see Appendix A). Hence, R wins control.

We now analyze I's choice of γ. His payoff is increasing for $\beta(b) > 1 - \alpha + \eta + \gamma$ $(\partial\pi_C(\gamma)/\partial\gamma > 0)$ and otherwise constant at $(\alpha - \eta)b$. (Continuity at $\gamma = \alpha - \eta$ holds because $\pi_C(\alpha - \eta) = (\alpha - \eta)b$.) Consequently, I chooses γ such that $\beta(b) \le 1 - \alpha + \eta + \gamma$, or, equivalently, $b \le (1 - \phi_R^{1-\alpha+\eta+\gamma})v_R$, provided that this is possible, which it is for $b \le (1 - \phi_R^{1-\alpha+\eta+(\alpha-\eta)})v_R = v_R$.

Finally, R's payoff is $\pi = (\beta(b) - \eta)b + \beta(b)(1 - \phi_R^{\beta(b)})v_R + d_R(\phi_R^{\beta(b)})v_R$. For $b \le v_R$, $b = (1 - \phi_R^{\beta(b)})v_R$, and so $\pi = \eta b + d_R(1 - (b/v_R))v_R$, which decreases strictly with b $(\partial\pi/\partial b = \eta - d_R'(1 - (b/v_R)) = \eta - \beta < 0)$. For $b \ge v_R$, $\beta(b) = 1$, and so $\pi = v_R - (1 - \eta)b$. Moreover, π is continuous because $\eta b + d_R(1 - (b/v_R))v_R = v_R - (1 - \eta)b$ for $b = v_R$. Q.E.D.

Proof of Lemma 3: First, if I does not counter following a bid $b < v_I$, R either fails to gain control or gains control with $\beta \le \max\{\eta + \gamma, \beta(b)\}$ (see Appendix A). In the latter case, I realizes $\pi = \gamma b + (\alpha - \eta - \gamma)(1 - \phi_R^{\beta})v_R$. Since $(1 - \phi_R^{\eta+\gamma})v_R \le (1 - \phi_R^{\alpha})v_R < v_I$ (Assumption 4) and $(1 - \phi_R^{\beta(b)})v_R = b < v_I$, then $\pi \le \gamma b + (\alpha - \eta - \gamma)v_I < (\alpha - \eta)v_I$. Moreover, the small shareholders' payoff is $(1 - \phi_R^{\beta})v_R = \max\{(1 - \phi_R^{\eta+\gamma})v_R; (1 - \phi_R^{\beta(b)})v_R\} \le \max\{(1 - \phi_R^{\alpha})v_R; b\} < v_I$.

Second, I would win the contest by bidding v_I and choosing $\gamma = 0$. Similarly to Lemma 12, if I bids v_I, a Pareto-dominant equilibrium outcome exists in which I holds all shares. In this equilibrium, I realizes $(\alpha - \eta)v_I$, so he will indeed counter and retain control. Q.E.D.

Proof of Lemma 4: For $b \ge v_I$, I's return from tendering would be $(\alpha - \eta)b$. A winning counterbid b_I would have to exceed b and would attract all shares (Lemma 12). I would thus realize $v_I - (1 - (\alpha - \eta))b_I = (\alpha - \eta)v_I - (1 - (\alpha - \eta))(b_I - v_I) < (\alpha - \eta)b$. Hence, for $b \ge v_I$, I does not counter and the bid succeeds (Lemma 2). Consequently, R wins control if and only if $b \ge v_I$ (Lemmas 2 and 3). Moreover, conditional on winning, R strictly prefers $b = v_I$ (Lemma 2).

We now show that for all η, R is strictly better off winning control with $b = v_I$ rather than bidding $b < v_I$ and letting I retain control. From Appendix A and the proof of Lemma 3, we note that if R fails to gain control, he acquires no shares from small shareholders (irrespective of the cause of his failure, such as low bid price or counterbid by I). Hence, R's payoff consists of the part of η retained, the part of η tendered to I, and the fraction γ of shares tendered by I to R for b. The first two components are worth at most ηv_I. Hence, the proof is concluded by showing that R makes a loss on those shares tendered by I.

Step 1: If R's bid would succeed without a counteroffer by I, then $\gamma = 0$. If I counters with $b_I > b$, his final holding β_I is such that $(1 - \phi_I^{\beta_I})v_I \geq b_I > b$. Hence, I is better off retaining his shares rather than selling them below their post-takeover price.

Step 2: If R's bid fails without a counteroffer by I, then it would also fail with $\gamma = 0$. R fails to gain control if $\eta + \gamma < \alpha/2$ and either $b < (1 - \phi_R^{\alpha-(\eta+\gamma)})v_R$ or $b < (1 - \phi_I^{\alpha-(\eta+\gamma)})v_I$ (see Appendix A). These conditions also hold for $\gamma = 0$. Consequently, a choice by I of $\gamma > 0$ must be motivated by a trading gain (as opposed to the necessity of making R lose), which implies a loss for R. Q.E.D.

Proof of Lemma 5: The coalition's joint payoff is $\alpha(1 - \phi_R^{\eta})v_R + d_R(\phi_R^{\eta})v_R$, which by definition is maximized for $\phi = \phi_R^{\alpha}$ (i.e., for $\eta = \alpha$). Q.E.D.

Proof of Proposition 1: The equilibrium condition, $(1 - \phi_R^{\beta^*})v_R = v_I$, and Assumption 4, $v_I > (1 - \phi_R^{\alpha})v_R$, imply $\beta^* > \alpha$. Q.E.D.

Proof of Proposition 2: Suppose that there is no standstill agreement. The tender offer game (stages 2 and 3) results in R gaining control by bidding $b^* = v_I$ and with $\beta^* > \alpha$. In such a tender offer, R's payoff is $\eta b^* + d_R(\phi_R^{\beta^*})v_R$, and I's payoff is $(\alpha - \eta)b^*$. Hence, the coalition's joint payoff is $\alpha b^* + d_R(\phi_R^{\beta^*})v_R$, which can be rewritten as $\alpha(1 - \phi_R^{\beta^*})v_R + d_R(\phi_R^{\beta^*})v_R$. This is less than the payoff under a simple block trade (i.e., with a standstill agreement) because, by definition, $\phi_R^{\alpha} = \arg\max \alpha(1 - \phi_R^{\alpha})v_R + d_R(\phi_R^{\alpha})v_R$, which implies $\alpha(1 - \phi_R^{\alpha})v_R + d_R(\phi_R^{\alpha})v_R > \alpha(1 - \phi_R^{\beta^*})v_R + d_R(\phi_R^{\beta^*})v_R$. Q.E.D.

Proof of Corollary 2:

$$\Pi = \alpha[b^* - (1 - \phi_R^{\alpha})v_R] + \psi\big[[\alpha(1 - \phi_R^{\alpha}) + d_R(\phi_R^{\alpha})]v_R - \big(\alpha b^* + d_R(\phi_R^{\beta^*})v_R\big)\big]. \tag{B1}$$

The first term is positive because $b^* = (1 - \phi_R^{\beta^*})v_R > (1 - \phi_R^{\alpha})v_R$. A revealed preference argument implies that the second term is positive. Hence, $\Pi > 0$. The premium per share is

$$\frac{\Pi}{\alpha} = [b^* - (1 - \phi_R^{\alpha})v_R] + \psi\left[\left((1 - \phi_R^{\alpha}) + \frac{d_R(\phi_R^{\alpha})}{\alpha}\right)v_R - \left(b^* + \frac{d_R(\phi_R^{\beta^*})v_R}{\alpha}\right)\right]. \tag{B2}$$

Computing the derivative with respect to α yields

$$\frac{\partial(\Pi/\alpha)}{\partial\alpha} = \frac{\partial\phi_R^{\alpha}}{\partial\alpha}v_R + \psi\left[0 - \frac{d_R(\phi_R^{\alpha}) - d_R(\phi_R^{\beta^*})}{\alpha^2}\right]v_R. \tag{B3}$$

Because both terms are negative, we have proved $[\partial(\Pi/\alpha)]/\partial\alpha < 0$. Q.E.D.

Proof of Corollary 3: The rival's profit is

$$d_R\left(1-\frac{b^*}{v_R}\right)v_R+(1-\psi)\left[\left(\alpha(1-\phi_R^\alpha)+d_R(\phi_R^\alpha)\right)v_R-\left(\alpha b^*+d_R\left(1-\frac{b^*}{v_R}\right)v_R\right)\right]. \tag{B4}$$

Its derivative with respect to α yields (using the envelope theorem)

$$0+(1-\psi)[(1-\phi_R^\alpha)v_R-b^*]<0. \tag{B5}$$

Q.E.D.

Proof of Proposition 3: Once $\phi_R^{\beta^*}$ is substituted for $(1-(b^*/v_R))$ in the expression for Π, it is immediately seen that

$$\frac{\partial\Pi}{\partial b^*}=\alpha-\psi\left(\alpha-d_R'\left(1-\frac{b^*}{v_R}\right)\right)=\alpha+\psi(\beta-\alpha)>0. \tag{B6}$$

Q.E.D.

Proof of Corollary 4: Define F_0 as $F_0/(\beta_I-\alpha)=(1-\phi_R^\alpha)v_R$, where $(1-\phi_I^{\beta_I})v_I=(1-\phi_R^\alpha)v_R$. For $F_0<F<(1-\alpha)v_I$, I can bid at most $b_I(F)$, which is the solution to $(\beta_I-\alpha)b=F$. $b_I(F)$ increases with F, and Proposition 3 applies. Q.E.D.

Proof of Corollary 5: Given a fraction s of voting shares, the lowest price that I does not counter (i.e., R's winning bid price) is

$$b^*(s)=b_I(s)=\left[(1-\phi_I^s)+\frac{d_I(\phi_I^s)}{s}\right]v_I.$$

Since ϕ_I^s decreases strictly with s, $\partial b_I/\partial s$ has the opposite sign from $\partial b_I^s/\partial\phi_I^s$. Substituting $d_I'(\phi_I^s)$ for s in b_I^s and differentiating yields $(\partial b_I^s/\partial\phi_I^s)=-d_I(\phi_I)d_I''(\phi_I)/[d_I'(\phi_I)]^2>0$. Hence, $b_I(s)$ decreases with s.

Because $(1-\phi_R^s)v_R$ increases with s, and $b_I(s)$ decreases with s, there exists a unique s^* such that $b^*(s^*)=(1-\phi_R^{s^*})v_R$. Moreover, Assumptions 2 and 4 imply that $1>s^*>\alpha$. For $s>s^*$, R's winning bid $b^*(s)$ determines his final holding. That is, the equality $b^*=(1-\phi_R^{\beta^*})v_R$ holds. Hence, $\beta^*<s^*$, $\phi_R^{\beta^*}=(1-(b^*/v_R))$, and the block premium is given by

$$\Pi=\alpha[b^*-(1-\phi_R^\alpha)v_R]+\psi\left[[\alpha(1-\phi_R^\alpha)+d_R(\phi_R^\alpha)]v_R-\left(\alpha b^*+d_R\left(1-\frac{b^*}{v_R}\right)v_R\right)\right], \tag{B7}$$

which increases with b^* and hence decreases with s.

For $s < s^*$, the winning bidder's final holding is $\beta^* = s$ and $\phi_R^{\beta^*} = \phi_R^s$. In this case, either I or R may win the bidding contest (Assumptions 2 and 3 do not exclude the possibility that $b_I(s) > b_R(s) = [(1 - \phi_R^s) + [(d_R(\phi_R^s))/s]]v_R)$, and the sign of $\partial\Pi/\partial s$ is indeterminate. Q.E.D.

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