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TRANSFERS OF CORPORATE CONTROL IN FIRMS WITH NON-CONTROLLING BLOCKHOLDERS

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I model the choice between a negotiated block trade and a public tender offer as means of acquiring control in a firm with a dominant minority blockholder. Potential acquirers differ in their (privately known) ability to create value in the target .rm. In equilibrium, high types go for a tender offer, intermediate types purchase just the blockholder's stake, and low types abstain. The model yields a number of implications. Compared to tender offers, block trades are associated with lower efficiency in equilibrium, which explains lower target announcement returns following block trades. Some equilibrium block trades are value-reducing. The equal opportunity rule (EOR) helps eliminating them, but it needs to go together with a rule allowing to "freeze out" non-tendering shareholders in order to ensure that no value-increasing takeover fails. The two rules are complements: introducing one without the other may hurt efficiency. Better investor protection raises the incidence of full-scale acquisitions relative to block trades. Yet, when the EOR is present, an increase in investor protection may be detrimental for efficiency as it may prevent some value-increasing takeovers.

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1 Introduction

While the literature on takeovers is huge, insufficient attention has been devoted to the *choice* of the control transfer mode in firms with blockholders.[1] This paper considers a firm with a dominant *minority* blockholder. According to empirical observations, such firms are widespread: most public companies in the world have blockholders, and in most of them the largest owner has less than 50% of votes.[2] The choice between a negotiated block trade and a full-scale takeover is natural in relation to such firms. Whereas acquiring a large block does not probably bring as much control as a full takeover, it still provides the acquirer with substantial control, which is supported by evidence.[3] Empirical observations suggest that *both* types of control transfer occur in companies with blockholders (Barclay and Holderness, 1991; Holmén and Nivorozhkin, 2012).[4]

My main contributions are as follows:

1. I provide a simple theoretical framework that allows to study the choice between a block trade and a full-scale acquisition via a public tender offer and derive empirical implications of this choice. Most papers have not considered such a choice at all, and those that did – Burkart, Gromb, and Panunzi (2000) and Zingales (1995) – predicted only block trades in equilibrium. I show that the type of the control transfer depends on: (a) the acquirer's value-generation ability and (b) the quality of the legal protection of investors. Both parameters positively affect the likelihood of a tender offer as opposed to a block trade, which is consistent with the empirical evidence on announcement returns and the frequency of full-scale acquisitions compared to block trades across various legal regimes.

2. I analyze the effects of takeover regulations on the efficiency of a takeover market. I consider the so called equal opportunity rule (or mandatory bid rule), forcing a block

[1]There exist models considering the choice between a friendly merger and a hostile tender offer, where "a friendly merger" means that the deal is privately negotiated with the target's management (e.g., Berkovitch and Khanna, 1991; Schnitzer, 1996; Betton, Eckbo, and Thorburn, 2009; Calcagno and Falconiery, 2013). However, this literature does not consider block trades as a means of acquiring control.

[2]In the sample of 5,232 European companies in Faccio and Lang (2002), about 92% of firms had a shareholder with at least 5% of the voting rights, and the median largest block was 30% in terms of votes. In Claessens, Djankov, and Lang (2000)'s sample of 2,980 East Asian companies, about 88% of firms had a shareholder with greater than 5% voting rights, and the median largest block among such companies was about 20%. In Holderness (2009), among 375 listed U.S. firms, 96% of the companies had a shareholder holding more than 5% of the votes, and the median size of the largest shareholder among such companies was 17%.

[3]Block purchasers pay substantial "control premiums" (Dyck and Zingales, 2004) and frequently initiate changes in the management and board of directors compositions (Barclay and Holderness, 1991).

[4]In Barclay and Holderness (1991) sample of 106 negotiated block trades in the U.S., in 65 cases firms were not acquired for at least a year after the block trade, while in 41 cases a block trade was followed by an acquisition of the remaining shares. In this latter subsample, tender offers to other shareholders were made simultaneously with block trades in 14 cases. Holmén and Nivorozhkin (2012), studying a sample of 195 Swedish non-financial companies find that both block trades (62 deals) and non-partial tender-offers (28 deals) occur in companies with large shareholders.

purchaser to extend his offer to other shareholders, and the freezeout (squeeze-out) rule, allowing a bidder, upon the acquisition of a majority of the shares in a tender offer, to buy out the remaining shares at the tender offer price. The previous literature has analyzed these regulations separately from each other. I show that these rules are *complements*: only together they result in the efficient takeover market; introducing one without the other may be detrimental to efficiency.

3. Finally, I obtain that stronger legal investor protection does not necessarily lead to higher efficiency of the takeover market. When there is the equal opportunity rule (EOR) *and* no possibility to freeze out non-tendering shareholders, tightening constraints on private benefit extraction by a controlling party may hurt efficiency by hampering value-increasing tender offers.

I consider a firm with a dominant, yet minority, blockholder ("incumbent"). Other shareholders are atomistic so that the incumbent effectively controls the company. A potential acquirer (raider) can first try purchasing the incumbent's share. If the negotiations fail, the acquirer can make a public tender offer. The incumbent can launch a counter offer. The dispersed shareholders decide non-cooperatively whether to tender their shares and to whom. If the incumbent does not counter, he also makes his tendering decision.

The incumbent and the raider are characterized by the total value each party generates being in control. A party in control also divert a fixed proportion of the total value for his/her own private benefits at no cost. For simplicity, I assume that this proportion is the same for both the raider and the incumbent and is determined by the quality of legal protection of investors (unrelated to takeover regulation). The rest of the value is security benefits accruing to all shareholders. Potential acquirers differ in their value-generation ability. Since private benefit extraction involves no cost, the first-best solution is characterized by control transfers occurring if and only if the acquirer generates higher total value than the incumbent.

In my baseline model, the regulatory environment is acquirer-friendly. First, I assume that there is no EOR: that is, there is no obligation for a block purchaser to make an offer to the remaining shareholders. Second, I assume that upon the acquisition of at least 50% of the shares in a tender offer, the controlling party can "freeze out" those shareholders who refused to tender by forcing them to sell their shares at his/her tender offer price. This eliminates the well known free-rider problem (Grossman and Hart, 1980) effectively improving the raider's bargaining position vis-a-vis dispersed shareholders. Namely, the raider does not need to match her bid to the expected security benefits she will generate, she only needs to overbid the incumbent.

I first consider the case when the raider's ability is common knowledge. The first-best solution is achieved in such a case. In a tender offer contest, each party is prepared to bid up to the total value it generates. Thus, given that a bid contest occurs, the company is taken over if and only if the raider generates a greater value. In a block trade, since the proportion of the private benefits in the total value is the same for both the raider and the incumbent, there are positive gains from trade if and only if the acquirer generates greater value.[5]

The symmetric information benchmark already delivers the relationship between the raider's ability and the transaction type, which is going to carry over to the model with asymmetric information. For a given ability of the raider, both types of transactions lead to the same aggregate value. However, a block trade creates an externality on dispersed shareholders – they receive the post-transaction security benefits generated by the acquirer without paying anything. In contrast, in a bid competition they receive the aggregate value generated by the incumbent. Hence, whenever the former is lower than the latter, the joint payoff of the acquirer and the incumbent is greater under a block trade and, due to perfect bargaining under symmetric information, a block trade occurs. Otherwise the whole company is acquired through a tender offer.

Thus, the choice of the transaction type is determined by the raider's value-creation ability: the higher types make a full acquisitions whereas the lower types go for a block trade. Hence, *block trades are associated with lower efficiency compared to tender offers.* The structure of the equilibrium straightforwardly *explains why the targets' stock price reaction to tender offers is higher compared to that to block trade announcements*[6], as suggested by the empirical evidence.[7]

Next I introduce the assumption that the raider's value creation ability is her private information. The equilibrium structure remains the same, but now some value-reducing block trades occur. For such a trade to happen, the incumbent must be willing to accept a price below his valuation of the block from a less efficient acquirer.[8] Under symmetric information, any such offer would be safely rebuffed: the incumbent would observe that he is facing a value-reducing raider who would not go for a tender offer. At the same time, the incumbent is ready to accept offers below his valuation of the block (provided that they are not too low, of course) when the acquirer is value-increasing. This is because

[5]Of course, if I allowed the proportion of private benefits to differ between the acquirer and the incumbent, inefficient block trades could arise. This is, however, not crucial for my analysis.

[6]To be rigorous, in order to obtain this result, I need first to modify the basic setup so as to have some information revelation in the model. The way I do this is by introducing information asymmetry about the value the acquirer can generate. The choice of the transaction type then partially reveals the acquirer's type thereby moving the target's stock price.

[7]See Barclay and Holderness (1991) and Holmén and Nivorozhkin (2012), as well as references in subsection 6.1 of this paper.

[8]While in the model I assume that the acquirer makes a take-it-or-leave it offer in block trade negotiations, the emergence of value-reducing block trades is robust to bargaining protocol assumptions.

value-increasing raiders are ready to go for a tender offer and would win with the bid equal to the total value generated by the incumbent (this is true under both symmetric and asymmetric information). This value is smaller than the incumbent's block valuation (per share), because the block, while giving the right to a share of security benefits, allows to extract *all* private benefits. When the incumbent does not know the acquirer's type, some value-decreasing acquirers pool with a set of value-increasing block purchasers. Such pooling increases the minimum price at which the incumbent is ready to sell the block, but this price is still *below* his valuation of the block because there is a positive probability that he is facing a value-increasing raider. Hence, block trades become profitable for some value-reducing acquirers in equilibrium.

Thus, under asymmetric information, there is a scope for regulation. The EOR kills block trades. However, whether the effect of the EOR is beneficial crucially depends on the whether the tender offer market is efficient absent the possibility for block trades. It turns out that the freezeout rule, by solving the free-rider problem, ensures efficiency of tender offers: since the minimum bid needed to acquire the company under this rule is only determined by the competition with the incumbent, all value-increasing takeovers succeed, and all value-reducing ones fail. However, if there is no freezeout rule or it is insufficiently effective (e.g., due to a too high ownership threshold required for effecting a freezeout), the equilibrium tender offer bid is higher and the EOR may result in killing some efficient takeovers.

A similar conclusion arises if we consider the introduction of the freezeout rule with and without the EOR. The freezeout rule reduces the equilibrium tender offer price. With the EOR, it ensures efficiency, as we already know. Without the EOR, there are value-reducing block trades, and the freezeout rule lowers the block trade price *indirectly* through decreasing the tender offer bid in equilibrium (since the tender offer bid affects the outside option of the incumbent in bargaining over the block). Consequently, more value-reducing block trades result.

Thus, an important conclusion emerges: *the EOR and the freezeout rule are complements*: one should not kill block trades without ensuring an efficient tender offer market; and one should not facilitate takeovers without introducing an obstacle to value-reducing control transfers.

Next, I consider the effects of legal protection of investors. To clarify, by investor protection in this paper I mean constraints on the private benefit extraction by a controlling party, rather than rules regulating takeovers. First, I show that, in accordance with the empirical evidence (Kim, 2012; Rossi and Volpin, 2004), *better investor protection results in a higher frequency of tender offers relative to block trades.* Block trades are driven partly by private benefits, whereas full acquisitions are driven by efficiency improvements. Thus, when constraints on private benefit extraction tighten, block trades become less attractive, and some of the former block trade purchasers switch to either full acquisitions or no transacting at all. I should note that this result holds provided that the free-rider problem among dispersed shareholders is absent or sufficiently mitigated through the freezeout rule. Otherwise investor protection raises the tender-offer bid and reduces the attractiveness of tender offers as well, which is related to my next result.

Namely, I show that *stronger investor protection may result in less efficient takeover market if takeover regulation is too hostile to acquirers.* Investor protection helps eliminating inefficient block trades. However, it also increases post-takeover security benefits, which makes tender offers more expensive *unless* there is a freezeout rule (due to the free-rider problem). Hence, if block trades are already killed by the EOR *and* the freezeout possibility is absent, strong investor protection may "overkill" takeovers by preventing some value-increasing tender offers.

Overall, my analysis suggests that the effects of the freezeout rule, the EOR and investor protection cannot be analyzed in isolation from each other; their interdependence should be taken into account when considering legal reforms.

The paper proceeds as follows. Section 2 reviews the related literature. Section 3 presents the model. In section 4, I solve the model under the assumption of symmetric information and provide implications for the efficiency of tender offers relative to block trades and the effect of investor protection on the incidence of each type of transactions. Section 5 solves the model under asymmetric information. In section 6, I consider implications of the model for announcement stock price reactions, efficiency of takeovers, and the effects of regulation and investor protection. Section 7 discusses two extensions: what happens if the incumbent cannot launch a counter-bid, and what changes if private benefit extraction is costly. Section 8 concludes.

2 Related literature

Studies Burkart, Gromb, and Panunzi (2000) and Zingales (1995) also model the choice between a block trade and a tender offer. However, in contrast to my work, tender offers never happen in equilibrium in either paper. The crucial reason for the difference is that these papers do not allow for the freezeout of non-tendering shareholders. The resulting free-rider problem leads to a large transfer of value to dispersed shareholders in tender offers, thus making block trades a preferred control transfer mode.[9] Thus, although the threat of a tender offer affects equilibrium in these papers, they cannot provide

[9] Another important feature of these papers is symmetric information. As I show in Appendix B, if the acquirer's ability is her private information, tender offers may occur even in the presence of the free-rider problem, because the information asymmetry introduces imperfections in the block trade negotiations.

equilibrium implications for differences between block trades and public tender offers. Burkart, Gromb, and Panunzi (2000) argue that the choice of the control transfer mode is subject to agency problems: block trades result in more inefficient post-transaction private benefit extraction compared to (out-of-equilibrium) public acquisitions. In my work, *equilibrium* block trades are less efficient than *equilibrium* public acquisitions, and this difference is unrelated to agency problems.

Starting from La Porta et al. (1997, 1998), a huge literature examining relationships between legal protection of investors and various financial market outcomes has emerged.[10] However, the effects of investor protection on the market for corporate control have received relatively little attention. Kim (2012) finds that full-scale mergers as opposed to control stake acquisitions are more common in countries with stronger investor protection. Rossi and Volpin (2004) document that stronger investor protection is associated with greater frequency of hostile takeovers. Consistently with these findings, investor protection raises the frequency of tender offers relative to block trades in my model.

Burkart et al. (2014), in a theoretical model, argue that better investor protection leads to a more efficient takeover market. In their paper, stronger investor protection increases the pledgeable income of the bidder, thereby reducing the role of internal funds in financing a takeover. Consequently, as investor protection improves, bidder's efficiency as opposed to availability of internal funds becomes more important in determining the winner in a takeover contest. In contrast, in my model, investor protection acts through affecting the rent that the acquirer can obtain from a takeover and may "overkill" takeovers.

A number of papers consider the effects of takeover regulations, such as the EOR and the freezeout rule. However, these rules have been studied in isolation from each other and from investor protection. In contrast, my work emphasizes the importance of interdependence between these elements of the legal system. The possibility to transfer control via a block trade as an alternative to a tender offer is crucial here: the effects of investor protection and the freezeout rule depend qualitatively on whether block trades are feasible or eliminated through the EOR.

Bebchuk (1994) and Kahan (1993) consider transfers of control in companies with a *controlling* shareholder, assuming that no control transfer is possible without the incumbent's participation. Similarly to my model, the EOR eliminates value-reducing block trades, but may also kill some efficient control transfers.

Bergström, Högfeldt, and Molin (1997) look at the effect of the EOR on the wealth

[10] E.g., Wurgler (2000), La Porta et al. (2002), Brockman and Chung (2003), Chen, Chen, and Wei (2009), McLean, Zhang, and Zhao (2012) to mention a few.

of target shareholders rather than social welfare. They study firms with fully dispersed ownership but allow for partial bids. The EOR forces a bidder to make a non-partial offer (i.e., for 100% of the shares). The paper finds that the target shareholders gain from the EOR only when difference in the private benefits of the rival and the incumbent is large enough.

In Burkart, Gromb, and Panunzi (1998, 2000) the benefits of the EOR arise from a lower post-takeover moral hazard: the EOR makes the winning party to end up with a higher share of the target, thereby reducing his incentives to extract inefficient private benefits ex-post. However, if a tender offer involves a cost, then the EOR may block some efficiency-increasing control transfers that would go through without the EOR. This is because, the EOR reduces the rent the acquirer obtains from a takeover.

As it was shown in Yarrow (1985) and Amihud, Kahan, and Sundaram (2004), the possibility to freeze out non-tendering shareholders at the tender offer price[11] solves the free-rider problem of Grossman and Hart. These two papers focused on the free-rider problem as an obstacle to value-increasing takeovers. The proposed freezeout rules eliminated the necessity to share the takeover gains with the target's shareholders and, thus, led to efficiency. In Burkart, Gromb, and Panunzi (1998) freezeouts increase efficiency not only because they facilitate value-increasing takeovers, but also because they increase the share of the controlling shareholder, which reduces the post-takeover moral hazard.

In my model, the freeze-out rule acts similarly to Yarrow (1985) and Amihud, Kahan, and Sundaram (2004), but the possibility of transferring control through a block trade introduces a crucial difference. Namely, when there is no EOR, making tender offers cheaper via the freezeout rule is *harmful*, because it *indirectly* lowers the negotiated block price and, hence, facilitates inefficient block transfers.

Maug (2006) considers various freezeout rules and argues that all of them, including the rule suggested by Amihud, Kahan, and Sundaram (2004), result in overbidding in a takeover contest (with an arbitrageur): the bidder bids above the expected value she is going to generate. As a result, some value-decreasing takeovers occur. The key rationale for overbidding is the possibility to make restricted bids together with some learning about the value of the target's assets *after* the acquisition of the controlling stake in a tender offer, but *before* the freezeout decision. Then the freezeout possibility provides the bidder with a valuable option[12]: the freezeout is implemented if and only if it generates

[11] See also Gomes (2012). To be precise, Amihud, Kahan, and Sundaram (2004) propose that the freezeout price should be set at the maximum of the tender offer bid *and* the pre-offer share price in order to avoid inefficient equilibria in which target shareholders tender at a too low price just because a non-tendering shareholder will be frozen out at this same price.

[12] For this statement to hold, it must be that the freezeout price is not too sensitive to the new information. This is trivially the case, when the freezeout rule prescribes that the freezeout price cannot be below the tender offer bid.

a positive ex-post gain to the acquirer. Hence, overbidding (when it is necessary to win the contest) becomes rational. Thus, differently from my analysis, in Maug (2006) inefficient transactions have nothing to do with block trades. Maug (2006) finds that EOR restores efficiency through eliminating the freezeout option (Proposition 10 in his paper). However, in contrast to my work, Maug (2006) does not perform full analysis of regulation, he takes the freezeout possibility as given. In contrast, I argue that the freezeout rule is a *necessary* ingredient of the optimal regulation – the effect of the EOR is either less beneficial or harmful without the freezeout rule. More generally, there is complementarity between the freezeout rule and the EOR: introducing one without the other hinders efficient takeover market.

Finally, there are a few models that also study takeovers of firms with a large minority shareholder without considering negotiated block trades. Instead, these works focus on the role the blockholder plays in affecting the tender offer outcome. Stulz (1988) assumes that the target's manager never tenders. He argues then that higher managerial control rights may either benefit or harm shareholders: on the one hand, it makes the acquirer offer a higher price in order to attract enough shares, but on the one hand it reduces the likelihood of a takeover. In Burkart, Gromb, and Panunzi (2006), the presence of a blockholder makes the raider acquire a greater amount of shares, which results in a higher ultimate ownership of the raider. This, in turn, leads to lower private benefit extraction and, hence, higher post-takeover security benefits, which implies a higher tender offer price. Ekmekci and Kos (2015), in a setup where target shareholders have dispersed private information about the post-takeover value of the firm, obtain that the presence of a large shareholder helps the raider to cope with the free-rider problem and make a profit from the takeover.

3 The model

3.1 Players and information

There is a firm run by a manager (incumbent), who is also the largest shareholder of the firm. His share is α, while the rest of equity is dispersed among atomistic shareholders. The firm has a one-share-one-vote structure. The incumbent is currently in control over the firm and generates value X_I. Out of this value, he can divert any fraction $\psi \leq \varphi$ to derive private benefits at no cost. So, his private benefits are ψX_I, while the rest is security benefits available to all shareholders, $(1-\psi)X_I$.

Parameter $\varphi \in (0,\ 1]$ reflects the strength of legal investor protection in the country. Thus, I am following Burkart, Panunzi, and Shleifer (2003) and At, Burkart, and Lee

(2011) in modeling investor protection.

Crucially, I assume that $\alpha < 1/2$, which implies that a potential acquirer (raider) could try to gather a controlling stake bypassing the incumbent. I assume that this potential acquirer can generate value X if in control. Similarly to the incumbent, once in control, she can divert any fraction $\psi \leq \varphi$ of X.[13] While X is known to the raider, both the incumbent and the dispersed shareholders only know that X is distributed uniformly on $[0,\ \overline{X}]$, with $\overline{X} > X_I$. The crucial assumption is that X is "soft" information. The distribution of X is common knowledge.

There is no discounting in the model; all participants are risk-neutral.

3.2 Timing and payoffs

The sequence of the events is as follows.

$t = 1$. **Negotiation stage.** The raider makes a take-it-or-leave it offer to the incumbent for the entire incumbent's share,[14] suggesting price p per unit share. The price offered is known only to the acquirer and the incumbent. If the offer is accepted, the block trade occurs, the acquirer becomes the new controlling party, and the game proceeds to $t = 4$.[15] If the offer is rejected, the game proceeds to $t = 2$.[16] For concreteness, I assume that if the incumbent is indifferent between accepting the offer and rejecting it, he accepts it.

$t = 2$. **Tender offer stage.** Following a rejection of the block trade offer, the raider can make a public tender offer to all shareholders at price b (bid). I assume that the bid is unrestricted and unconditional[17]. Having observed the raider's bid, the incumbent can launch a counter bid.

If the incumbent does not counter, each dispersed shareholder decides non-cooperatively whether to tender his share or not, and the incumbent decides what fraction of his shares to tender. If the incumbent counters, each dispersed shareholder decides non-cooperatively whether to tender to the raider, tender to the incumbent or retain his share.[18] I assume that a shareholder prefers to tender to the raider rather than to the

[13] I could allow the maximum fraction of value available for diversion to be different for the raider. That would lead to unnecessary complications without changing the substance of the paper.

[14] For simplicity, I do not allow partial sales of the block.

[15] Formally, I could allow the acquirer to buy even more shares after a block trade. However, as I show below for both symmetric and asymmetric information cases, she cannot gain from doing so. So, it is innocuous to assume that no further trading occurs after a block trade.

[16] I could provide the acquirer with the option to make a tender offer straight away, without prior negotiations. Such a setup would lead to observationally equivalent equilibria. In my setup, if the acquirer is determined to launch a tender offer, she can simply propose a zero price to the incumbent, get rejected and make a tender offer then.

[17] Allowing for conditional bids does not change the results.

[18] I assume that the incumbent will not tender if he has launched a counter offer. Allowing him to tender to the raider following his own counter offer would not alter the results in any way.

incumbent, when the bids of the two parties coincide.

The raider obtains control whenever more than 50% of the shares are tendered to her. Otherwise the incumbent keeps control. If the acquirer decides not to make a tender offer, the incumbent keeps control.

$t = 3$. **Freezeout stage.** If the controlling party (be it the raider or the incumbent) has acquired at least 50% in the tender offer stage, it can (but is not obliged to) force other shareholders to sell the remaining shares at the price at which she/he acquired shares in the tender offer stage.

$t = 4$. **Value allocation stage.** The party in control generates value Y and splits it into security benefits $(1 - \psi)Y$ and private benefits ψY, where Y is either X_I or X depending on who is in control.

For concreteness, let us assume the following tie-breaking rule for the acquirer:

Assumption 1: For any two options in which acquirer receives the same payoff, she prefers the one in which she acquires less shares.

I also make the following assumption:

Assumption 2: Given that the acquirer behaves rationally at $t = 3$ and $t = 4$, dispersed shareholders do not play weakly dominated strategies at $t = 2$; once weakly dominated strategies of dispersed shareholders are eliminated, the incumbent does not play his weakly dominated strategies at $t = 2$.

This assumption does not change the results of the model, but it greatly simplifies the exposition and the proofs.

3.3 Discussion of the model

3.3.1 Regulatory environment

The regulatory environment assumed by the model is acquirer-friendly. First, there is no obligation for a block purchaser to extend her offer to other shareholders, i.e., there is no EOR. This will facilitate block trades. Second, there is a freezeout rule, which effectively improves the raider's bargaining position vis-a-vis target shareholders in a tender-offer by solving the well known free-rider problem.

Such an environment is not unrealistic, although countries differ in their takeover regulation. For example, in the U.S., the EOR is absent, and, at the same time, acquirers of controlling stakes typically have a possibility to freeze out minority shareholders.[19].

[19] See Amihud, Kahan, and Sundaram (2004), section V, and Gomes (2012), Introduction.

In contrast to the U.S., most European countries have adopted the EOR, according to which a purchaser of typically either 30% or 2/3 of the votes[20] is obliged to extend her offer to other shareholders (launch a "mandatory bid") at a price that cannot be below the one at which the already acquired shares were bought. To the extent that a block trade can transfer control without exceeding the threshold, the EOR has no bite. Otherwise the EOR is relevant. As well as the freezeout rule is concerned, in most European jurisdictions, contrary to the U.S., one must acquire 90 or 95% in order to effect a freezeout. A high threshold on ownership required to implement a freezeout (freezeout threshold) may give substantial bargaining power to large shareholders of the target firm or arbitrageurs, who can effectively hold out the freezeout (see Gomes, 2012).

In subsection 6.2 I analyze what happens if we introduce the EOR, assuming that the block trade triggers a mandatory bid, and examine the consequences of abolishing the freezeout rule.

3.3.2 Private benefit extraction technology

Extraction of private benefits is assumed to involve no cost in the model. In subsection 7.2 I discuss what would happen if I introduced a cost of private benefit extraction like in Burkart, Gromb, and Panunzi (2000). Qualitatively, my results would remain the same but the model would become more complicated.

3.3.3 Counter-bidding

If the incumbent is resource-constrained, he may by unable to make a counter offer in the tender offer stage. In subsection 7.1 I show that the equilibrium structure will remain the same in this case, although the regulatory implications somewhat change compared to the competition case.

3.3.4 The control transfer rule following a tender offer

One could argue that, if a block trade is enough to acquire control, a tender offer outcome, in which the incumbent gets rid of his stake and the raider acquires less than a half of the firm's shares but more than the incumbent's initial share, should also be considered as acquisition of control. Whereas this is probably a feasible outcome in theory, in practice successful tender offers always result in an acquisition of more (in most cases, substantially more) than a half of the target's shares.

Thus, the 50% requirement for a control transfer in a tender offer looks realistic. It is also convenient because 50% is the freezeout threshold as well, so the acquisition of control

[20] The exact threshold depends on the country; in some countries it is even 25%.

in a tender offer automatically activates the freezeout option. An alternative rule could be that the raider's ultimate share needs to be either 50% or substantially greater than both the incumbent's ultimate share and zero. Such a rule would obviously complicate the solution but, intuitively, would not alter the qualitative results, especially if we allow conditioning tender offers on reaching the freezeout threshold. In fact, if the alternative control transfer rule is introduced, and conditional offers are allowed, the solution will be identical to the one of the current model.

I will search for Perfect Bayesian Equilibria of the game. For given values of the parameters, there will generally be a continuum of equilibria. This poses a problem for comparative statics predictions, so I apply an equilibrium refinement. Common refinements, such as the Cho-Kreps, D1 or D2 criteria do not help to reduce the set of equilibria. For this reason, I apply the concept of "credible beliefs" due to Grossman and Perry (1986). In the context of takeovers, this concept was used in Shleifer and Vishny (1986) and At, Burkart, and Lee (2011). According to the concept, if in an equilibrium there exists a set of types who prefer to deviate, provided that the "seller" believes that the acquirer deviates if and only if she belongs to this set, and no type outside of the set wants to deviate (given such beliefs of the "seller"), then this equilibrium does not satisfy the credible beliefs criterion.

4 Symmetric information benchmark

As a benchmark, let us first solve the model in which X is common knowledge.

4.1 Value allocation stage

For a given ultimate share γ of the controlling party, at $t = 4$ she/he chooses ψ so as to maximize $\gamma(1-\psi)Y + \psi Y$ where Y is the total value. Thus, since there is no cost of private benefit extraction the party in control always steals as much value as possible, i.e., sets $\psi = \varphi$, for any $\gamma < 1$. If $\gamma = 1$, she/he is indifferent among all feasible values of ψ. As it will be clear below, a particular value of ψ chosen in the case of a full acquisition does not matter for the solution.

4.2 Freezeout stage

Suppose a party (which can be either the raider or the incumbent) has acquired more than 50% but below 100% at price z. Then, she/he already has got the possibility to derive private benefits. Therefore, she/he will benefit from buying more shares at price z

if and only if this price is below the security benefits she/he will generate: $z < (1-\varphi)Y$. Thus, taking into account Assumption 1, we obtain a simple optimal decision rule:

$$\begin{cases} \text{If } z \geq (1-\varphi)X, & \text{no freezeout} \\ \text{If } z < (1-\varphi)X, & \text{freezeout} \end{cases} \tag{1}$$

4.3 Tender offer stage

The solution of the freezeout stage implies that shareholders cannot free-ride on value improvements by the raider: if the bid is below the raider-generated security benefits and attracts more than a half of the shares, a non-tendering shareholder will be frozen out rather than receive $(1-\varphi)X$. Thus, the classical free-rider problem disappears, and the equilibrium bid is going to be determined by the competition with the incumbent. In particular, the following result is true:

Lemma 1 *In the tender offer stage, all raiders with $X > X_I$ bid $b = X_I$, and all raiders with $X \leq X_I$ abstain from bidding. All raiders with $X > X_I$ acquire 100% of the shares, except when $(1-\varphi)X = X_I$. In the latter case, the raider acquires all dispersed equity and some fraction of the incumbent's share. However, her payoff is identical to that from acquiring 100% of the shares at $b = X_I$.*

Proof. *See Appendix A.* ■

The intuition is rather simple. Suppose the incumbent is faced with bid b which will succeed (i.e., will be accepted by holders of more than 1/2 of equity) if he does not counter. If the incumbent overbids by arbitrarily small ε, he obtains $X_I - (1-\alpha)(b+\varepsilon)$. If he does not, the maximum he can get is αb: he guarantees himself this payoff by tendering his share, and if he does not tender he either gets αb in a freezeout (when $(1-\varphi)X > b$) or $\alpha(1-\varphi)X < \alpha b$. Thus, the incumbent abstains from countering if and only if

$$\alpha b \geq X_I - (1-\alpha)b \Rightarrow b \geq X_I \tag{2}$$

Thus, the minimum bid necessary to win the bid contest is X_I. It is also straightforward that such an offer will attract more than a half of the shares: if not, a non-tendering atomistic shareholder would gain from deviating and tendering, because $X_I > (1-\varphi)X_I$. Furthermore, following a successful tender offer, the raider always eventually acquires 100% of the company at price X_I per share, except when $X_I = (1-\varphi)X$. All dispersed shareholders tender because non-tendering is weakly dominated (and, thus, is eliminated by Assumption 2). If $X_I > (1-\varphi)X$, the incumbent also prefers to tender. Thus, the raider's payoff is $X - X_I$. If $X_I < (1-\varphi)X$, the incumbent is indifferent between tendering and not, because in the latter case he still receives X_I in a freezeout; the raider eventually acquires 100% either immediately or following the freezeout, meaning that her payoff is again $X - X_I$.

If $X_I = (1-\varphi)X$, the incumbent is indifferent between tendering and not, and there is no freezeout of non-tendered shares due to Assumption 1. However, because the raider is actually indifferent between implementing the freezeout and not when the bid is $(1-\varphi)X$, her payoff will be as if she froze out non-tendered shares, i.e., $X - X_I$.

Thus, the raider's payoff from a successful tender offer is always $X - X_I$. Therefore, all raiders with $X > X_I$ will bid $b = X_I$, and all raiders with $X \leq X_I$ will abstain.

4.4 Negotiation stage

Let us introduce the notions of the incumbent's and the raider's valuations of the block α – how much each party values holding the block, provided that it gives control. For each party, this value is $\alpha(1-\varphi)Y + \varphi Y$, where Y is either X_I or X, depending on who holds the block. The corresponding per share valuations are:

$$v_I \equiv (1-\varphi)X_I + \frac{\varphi}{\alpha}X_I; \; v \equiv (1-\varphi)X + \frac{\varphi}{\alpha}X \tag{3}$$

When $X \leq X_I$, there is no danger of a tender offer if the incumbent rejects the block trade. Moreover, since $v \leq v_I$ in this case, a block trade does not occur either, for there are no gains from trade.

Consider now the case when $X > X_I$. If the incumbent rejects the block trade, the raider will win the tender offer contest with bid $b = X_I$, in which case the incumbent will receive X_I per share. Hence, the minimum price at which the incumbent will accept the block trade is $p = X_I$. Then the raider has the choice between buying just the incumbent's share at $p = X_I$ and acquiring the whole company at $b = X_I$. In the latter case, at $t = 1$, the raider formally offers a block trade price low enough for the incumbent to reject. The corresponding raider's payoffs are:

$$\begin{cases} \alpha(1-\varphi)X + \varphi X - \alpha X_I \equiv \alpha\left[(1-\varphi)X - X_I\right] + \varphi X \text{ from the block trade} \\ X - X_I \equiv (1-\varphi)X - X_I + \varphi X \text{ from the full acquisition} \end{cases} \tag{4}$$

The latter expression is greater than the former whenever

$$X > \frac{X_I}{1-\varphi} \tag{5}$$

Hence, we can state the following proposition.

Proposition 1 *When the raider's ability is common knowledge, the equilibrium in the full game is as follows:*

- *When $X \leq X_I$, there is no transfer of control.*
- *When $X \in \left(X_I,\ \min\left\{\frac{X_I}{1-\varphi},\ \overline{X}\right\}\right]$, there is a negotiated block trade at price $p = X_I$.*
- *Provided that $\frac{X_I}{1-\varphi} < \overline{X}$, when $X > \frac{X_I}{1-\varphi}$, there is a full acquisition by means of a tender offer at price $b = X_I$.*

Note that, although I assumed the raider's full bargaining power at the negotiation stage, neither the equilibrium structure nor the exact thresholds X_I and $X_I/(1-\varphi)$ depend on the raider's bargaining power; in fact, they are just determined by the maximization of the joint payoffs of the two parties. For a given ability of the raider, both types of transactions lead to the same aggregate value. However, a block trade creates an externality on dispersed shareholders – they receive the post-transaction security benefits generated by the acquirer, $(1-\varphi)X$, without paying anything. In contrast, in a bid competition they receive the aggregate value generated by the incumbent, X_I. Hence, whenever the former is lower (higher) than the latter, the acquirer and the incumbent receive a greater (lower) joint payoff from the block trade compared to the tender offer contest.[21]

Remark: no profit from buying extra shares after a block trade. If the acquirer purchases the incumbent's stake, she would benefit from acquiring even more shares provided that she could buy them at a price below $(1-\varphi)X$. However, nobody would want to sell at such a price given that the raider is already in control and, hence, generates value $(1-\varphi)X$ for dispersed shareholders. Theoretically, there exists an equilibrium in which shareholders sell at price $q < (1-\varphi)X$ just because they expect a freezeout at q. However, it is based on weakly dominated strategies (a shareholder cannot gain from selling, and he loses if the freezeout does not materialize). A much more plausible (and pareto-dominant from the dispersed shareholders' standpoint) equilibrium is the one in which no shareholder sells at $q < (1-\varphi)X$.

[21] Formally, for given price p, a block trade yields $\alpha(1-\varphi)X + \varphi X - \alpha p$ to the raider and αp to the incumbent, whereas a tender offer yields $X - X_I$ and αX_I correspondingly. Compared to the tender offer outcome, a mutually beneficial block trade price exists if and only if the joint payoff from a block trade exceeds the one resulting from the tender offer: $\alpha(1-\varphi)X + \varphi X \geq X - X_I + \alpha X_I$, which yields $X \leq X_I/(1-\varphi)$.

4.5 Implications of the symmetric information model

Proposition 1 has several important implications. First, it *explains the choice between a block trade and a full acquisition.* Conditional on the raider obtaining control (meaning access to the private benefits), the raider makes a profit from buying shares whenever the security benefits she generates exceed the price she has to pay: $X(1-\varphi) > X_I$. Thus, raiders who are able to bring a sufficiently high value improvement prefer a full acquisition. Types with moderate value improvements ($X \in (X_I,\ X_I/(1-\varphi)]$) incur a loss per any additional share they purchase, so they prefer to buy the minimum amount of shares necessary to obtain control, i.e., the incumbent's block. Finally, value-decreasing types fail to acquire control: a tender offer is unaffordable to them, and there are no gains from trade with the incumbent.

Thus, we can formulate the following corollary:

Corollary 1 *In equilibrium, block trades are associated with less efficient transfers of control compared to tender offers.*

In Burkart, Gromb, and Panunzi (2000) block trades are also associated with lower efficiency and lower value for dispersed shareholders compared to tender offers. However, the results of Burkart, Gromb, and Panunzi (2000) are driven by higher private benefit extraction after a block trade. In their model, private benefit extraction is costly, and block trades result in lower ownership concentration, causing the acquirer to extract more private benefits, which also leads to a greater deadweight loss. In my model, block trades do not lead to more private benefit extraction, but this mode of control transfer is simply chosen by lower quality acquirers. Thus, my model suggests that lower efficiency of block trades may be unrelated to the degree of post-transaction agency costs.

Note also that in Burkart et a. (2000) (as well as in Zingales, 1995), despite the fact that tender offers are allowed, a block trade is actually the only *equilibrium* mode of control transfers. In contrast, my model allows to compare block trades and tender offers *in equilibrium*, which allows relating my results to empirical comparisons of the two types of control transfers.

In particular, one empirical implication of Proposition 1 is that stronger legal protection of investors (lower φ) results in more full scale acquisitions and fewer block trades, as the threshold $X_I/(1-\varphi)$ is increasing in φ:

Corollary 2 *Under stronger legal protection of investors, tender offers are more frequent and block trades are less frequent.*

The raider's total net gain from the tender offer is determined by her overall value-generation ability, whereas her net payoff from the block trade depends on her private benefits. Investor protection reduces private benefits, thereby making block trades relatively less attractive compared to tender offers. This result is consistent with the empirical evidence in Kim (2012) and Rossi and Volpin (2004). Kim (2012) finds that full-scale mergers as opposed to control stake acquisitions are more common in countries with stronger investor protection. Rossi and Volpin (2004) document that stronger investor protection is associated with greater frequency of hostile takeovers.

Both corollaries carry over to the model when X is the raider's private knowledge. At the same time, the asymmetric information model will yield several important results that the benchmark model does not deliver. In the symmetric information model, the takeover market if fully efficient: all control transfers are value increasing, and no value increasing control transfer fails. In contrast, in the model with X being the raider's private information, some value reducing control transfers will succeed. Thus, there will be a scope for efficiency improvement through regulation. Moreover, I will show that the magnitude of the inefficiency will depend on the quality of investor protection. In addition, the model with asymmetric information will allow me to compare stock price reactions to tender offers and block trades.

5 Asymmetric information case

I now assume that X is the raider's private information. The solution in last two stages of the game is clearly unaffected by the information asymmetry.

The tender offer stage is essentially unaffected either. In fact, Lemma 1 continues to hold with a small change: under asymmetric information types with $X > X_I$ *always* acquire 100% of the shares:

Lemma 2 *Under asymmetric information, in the tender offer stage, all raiders with $X > X_I$ bid $b = X_I$ and acquire 100% of the shares, and all raiders with $X \leq X_I$ abstain from bidding.*

Proof. *See Appendix A.* ■

Just as in the symmetric information case, in a successful takeover, a shareholder (including the incumbent) cannot free-ride: if $b < (1 - \varphi)X$, he will be frozen out at b. So, given that the dispersed shareholders tender, the incumbent applies the same reasoning as in the symmetric information model in deciding whether to overbid or not. Hence, his decision is still determined by (2). Thus, only bids weakly exceeding X_I are not overbid, and dispersed shareholders are happy to sell at such prices because they cannot free-ride. Thus, the optimal winning bid is X_I. The "strange" equilibrium that we had in the symmetric information case, in which the incumbent was indifferent between tendering and not, and the raider did not freeze out, disappears now. Since the incumbent does not observe the raider's type, there is always a hypothetical possibility that among the types who bid b there is a positive measure of types who satisfy $(1-\varphi)X < b$. Thus, given that the dispersed shareholders tender, non-tendering becomes weakly dominated for the incumbent, and, thus, it is eliminated by Assumption 2.

However, the information asymmetry affects the outcome of the negotiations. The reason is that the incumbent is uncertain about the raider's intentions once the block trade offer is rejected, because he does not know the type of the raider he is facing. Consequently, the incumbent is uncertain about his disagreement payoff. Intuitively, this gives "bad" raiders (i.e., those with $X < X_I$) an opportunity to lower the block trade price acceptable to the incumbent by threatening to launch a tender offer upon rejection. Under symmetric information, the incumbent faced with a bad raider would safely reject any price below v_I (per share), because he would know that such a raider would abstain from a tender offer. Now, a bad raider can "pretend" to be "good" (i.e., having $X > X_I$) and offer a price between v_I and the tender offer price $X_I < v_I$. The incumbent would agree to such a price if he thinks that the probability of a tender offer following a rejection is high enough. For this to hold, it is needed that, in equilibrium, among the types offering this price there are some good raiders, who would indeed go for a tender offer if the block trade fails.

Let us define $\overline{\varphi}$ as the positive root of

$$\frac{1-\varphi(1-\varphi)(1-\alpha)}{1-\varphi}X_I = \overline{X}. \tag{6}$$

Then, the equilibrium is formally described by the following proposition:

Proposition 2 *The unique equilibrium satisfying the credible beliefs criterion of Grossman and Perry (1986) is as follows:*

i. When $\varphi < \overline{\varphi}$, all types with $X \in [0,\ X']$ abstain from any transaction, all types with $X \in (X',\ X'']$ do a block trade at p^*, and all types with $X \in \left(X'',\ \overline{X}\right]$ acquire the whole firm in a tender offer at b^*, with

$$X' \equiv (1-\varphi+\alpha\varphi)X_I < X_I,\ X_I < X'' \equiv \frac{1-\varphi(1-\varphi)(1-\alpha)}{1-\varphi}X_I < \overline{X}, \tag{7}$$

$$p^* = \left[1+(1-\varphi)\varphi\frac{(1-\alpha)^2}{\alpha}\right]X_I < v_I,\ b^* = X_I < p^* \tag{8}$$

ii. When $\varphi \geq \overline{\varphi}$, all types with $X \in [0,\ X_{BT}]$ abstain from any transaction, and all types with $X \in \left(X_{BT},\ \overline{X}\right]$ do a block trade; X_{BT} is decreasing in φ, and $X_{BT} = X'$ at $\varphi = \overline{\varphi}$.

Proof. *See Appendix A.* ■

Again, when I say that the raider chooses a tender offer in equilibrium, this formally means that she first offers a very low price to the incumbent and, after being rejected, launches a tender offer.

Figure 1 depicts the equilibrium for $\varphi < \overline{\varphi}$. Type X' is indifferent between abstention and the block trade; type X'' is indifferent between the block trade and the tender offer. If the equilibrium block trade offer is rejected (an out-of-equilibrium move), types from $(X',\ X_I]$ abstain, while types from $(X_I,\ X'']$ launch a bid at price $b^* = X_I$. Price p^* is such that the incumbent is indifferent between accepting the block trade and rejecting it:

$$p^* = \frac{X_I - X'}{X'' - X'} v_I + \frac{X'' - X_I}{X'' - X'} X_I \tag{9}$$

Here the right hand side is the expected payoff of the incumbent if he refuses the raider's offer: he obtains then either his valuation of the block (when the raider abstains) or the bid price (when the raider launches the tender offer) with the corresponding probabilities.

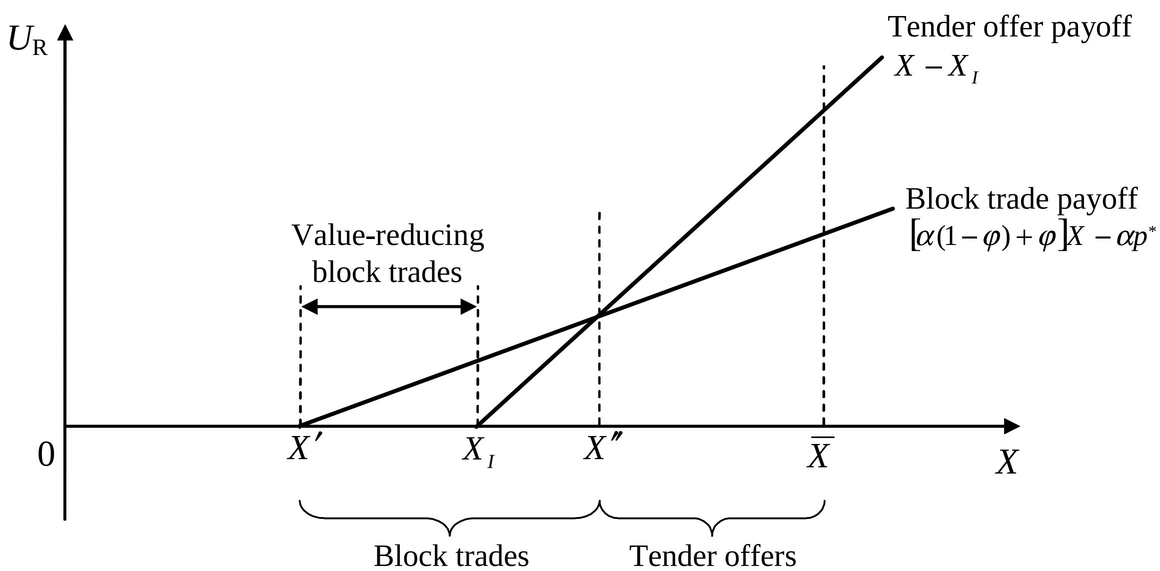

Figure 1. Equilibrium under asymmetric information.

There are also equilibria with a higher block trade price so that the incumbent strictly prefers accepting the offer. They are based on beliefs such that any price below this price is made by weak enough raiders on average, so that with a high probability such a raider will abstain upon rejection. In the proof I show that such beliefs are not credible in the sense of Grossman and Perry (1986), and there is only one equilibrium with credible beliefs – the one described by Proposition 2. Other equilibria have the same structure, thus, the conclusion about the relative efficiency of tender offers and block trades does not actually depend on a particular equilibrium. However, multiplicity of equilibria poses a problem for comparative statics; therefore, I stick to the refined equilibrium in the subsequent analysis.[22]

Note that the information asymmetry does not change the results of Corollaries 1 and 2. Corollary 1 is trivially satisfied as the equilibrium structure remains the same. Furthermore, X' is decreasing in φ, while X'' is increasing in φ (as can be easily shown). When φ reaches $\overline{\varphi}$, X'' hits $\overline{X}$, and tender offers disappear. As I show in the proof of Proposition 2, increasing φ further continues to lower the block trade threshold (for $\varphi \geq \overline{\varphi}$ I call it X_{BT} rather than X'). Thus, Corollary 2 holds as well.

The first thing to notice from Figure 1 is that compared to the symmetric information case, we have more transfers of corporate control due to the new range of acquirers: from X' to X_I. Also, whereas all full acquisitions remain efficient, there appear inefficient block trades – exactly those made by the types belonging to $(X',\ X_I)$. Thus, in the presence of asymmetric information, *competition for control between the raider and the incumbent does not ensure efficiency.*

Remark: no profit from buying extra shares after a block trade. In the case of asymmetric information this statement holds as well. Assume some types decide to acquire more shares after a block trade. Denote the set of such types by Ω. Given that the acquirer is already in control, the minimum price at which any shareholder would agree to sell to her is $E((1-\varphi)X \mid X \in \Omega)$. As in the case of symmetric information, I am ruling out out equilibria in which shareholders sell at price $q < E((1-\varphi)X \mid X \in \Omega)$ just because they expect a freezeout at q. Then, unless Ω consists of a single element, among the types from Ω there must be acquirers for whom $(1-\varphi)X < E((1-\varphi)X \mid X \in \Omega)$. But then these types would actually prefer not to acquire more shares. This means that Ω may consist of maximum one element, and this type makes zero profit from buying extra shares.

[22] Notice that the equilibrium structure would not change if I assumed that at $t = 1$ the incumbent, rather than an acquirer, makes a take-it-or-leave-it offer. For given p^*, the indifference conditions for determining X', X'' would remain exactly the same (that is, for given p^*, Figure 1 would not change at all). The only thing that would change is the condition for determining p^*, because the incumbent would bargain a price, exceeding his disagreement payoff. As a result, p^* would most likely be higher, meaning a downward shift of the block trade payoff. Consequently, there would be more tender offers (as X'' would move to the left) and fewer block trades (both because X'' would move to the left and X' would move to the right). However, the picture would remain qualitatively the same.

6 Implications of the model with asymmetric information

The asymmetric information model yields implications for:

- the target's stock price reactions to announcements of block trades and tender offers,
- the effects of investor protection and regulation (the EOR and the freezeout rule) on the efficiency of the market for corporate control

6.1 Announcement stock price reaction: block trades versus tender offers

The relevant case to consider is $\varphi < \overline{\varphi}$, because we need an environment in which block trades and tender offers coexist. Following a tender offer announcement, the stock price jumps to X_I, while after a block trade announcement it becomes

$$E\left((1-\varphi)X \mid X \in (X',\ X'']\right) = (1-\varphi)\left(X' + X''\right)/2$$

Since type X'' is indifferent between the block trade and the tender offer, it must be that $(1-\varphi)X'' < X_I$, for otherwise type X'' would strictly prefer the tender offer. Indeed, $(1-\varphi)X'' - X_I + \varphi X'' = \alpha\left[(1-\varphi)X'' - p^*\right] + \varphi X''$ implies $(1-\varphi)X'' < X_I$, given that $X_I < p^*$.

Consequently, $(1-\varphi)\left(X' + X''\right)/2 < X_I$, and we have the following proposition:

Proposition 3 *For a given incumbent blockholder's share, the target's stock price reaction to a tender offer is higher than to an announcement of a block trade.*

The intuition behind this result is that block trades are made by mediocre raiders, not too different from the incumbent on average, so that the small shareholders' wealth does not change much as a result of the transaction. At the same time, the tender offer competition makes the raider pay the whole value generated by the incumbent, not just the value of the security benefits.

This result explains the empirical evidence that targets' stock prices react to tender offers more positively than to block trade announcements. For example, Barclay and Holderness (1991) report a substantial difference in cumulative abnormal returns around the announcement date between those deals that resulted in full acquisitions and those in which a block trade was the ultimate control transaction. Similarly, Holmén and Nivorozhkin (2012) report a large difference between announcement returns in non-partial tender offers and block trades. In both papers, acquisition of 100% of shares is associated with higher abnormal returns. Although other empirical studies do not directly compare block trades and tender offers, a rough indirect comparison can be made by looking at these papers separately. Martynova and Renneboog (2008) provide a convenient summary on the targets' stock returns around tender offer announcements found in numerous empirical studies. At the same time, Barclay and Holderness (1991), Kang and Kim (2008), Allen and Phillips (2000), Albuquerque and Schroth (2008) provide evidence on the targets' stock price reaction to block trades. The numbers, provided by Martynova and Renneboog are almost always higher than those found in the block trades studies.

6.2 Efficiency of takeovers and implications for regulation

6.2.1 Optimal regulation

The presence of inefficient block trades suggests that there is a scope for efficiency-improving regulation. Optimal regulation should prevent value-reducing block trades without hurting value-increasing control transfers. It turns out that the introduction of the so called equal opportunity rule (mandatory bid rule) forcing a block purchaser to extend his offer to the remaining shareholders *in addition to* the freezeout rule (which is already present in the model) does the job.

In practice, the EOR obliges an acquirer of a stake above a certain threshold to publicly offer an 'equitable price' for all remaining shares (mandatory bid). In my model, an effective EOR means that the threshold that triggers a mandatory bid is below α, so that a purchaser of the incumbent's stake would have to offer the price (per share) at which she has acquired this stake to other shareholders.[23]

The first thing to notice is that the EOR kills block trades. Indeed, imagine an equilibrium in which a raider of some type purchases the incumbent's share, makes a mandatory offer, but other shareholders decide not to sell their shares. The block trade price cannot be below X_I, because the incumbent can guarantee himself at least X_I upon refusal (he gets X_I if the raider launches a tender offer and $v_I > X_I$ if the raider abstains). It must also be the case that the security benefits generated by such a raider, $(1-\varphi)X$, are below X_I, because otherwise she would go for a tender offer (with bid X_I) instead of the block trade. But then dispersed shareholders would definitely want to sell at the block trade price, for it is higher than the expected security benefits generated by the raider (given that the raider has already got control, a non-selling atomistic shareholder

[23] Since I did not allow for partial block sales, this is a proper definition of an effective EOR in my framework. In practice, when partial block sales are possible, in order for an EOR to prevent transfers of control through block trades, the threshold must be low enough so that any block trade leading to an effective transfer of control would trigger a mandatory bid.

obtains the raider-generated security benefits). Hence, no block trades occur under the EOR.

At the same time, just like in the basic model, the freezeout rule together with the competition between the raider and the incumbent result in the equilibrium tender offer equal to X_I. Therefore, transfers of control will happen if and only if $X > X_I$. Hence, we can state the following proposition

Proposition 4 *In the presence of the freezeout rule, the equal opportunity rule fully restores efficiency*

The intuition is very simple: the EOR kills block trades, the freezeout rule makes sure that all value-increasing tender offers are profitable for the raider, and the competition between the raider and the incumbent guarantees that no value-decreasing tender offer ever occurs.

The result of Proposition 4 is similar to Proposition 10 in Maug (2006), which I discussed in Section 2. In Maug's paper, however, the freezeout option is always a source inefficiency, and the EOR's role is to eliminate this inefficiency. I am going to show now that the freezeout rule is a *necessary* ingredient of the optimal regulation. More generally, there is complementarity between the freezeout rule and the EOR: introducing one without the other hinders efficient takeover market.

6.2.2 Suboptimal regulation

Although Proposition 4 already tells us how the optimal regulation looks like, it is still useful to understand what happens if for some reason the optimal regulation cannot be attained. Specifically, will the efficiency improve if we introduce one rule in the absence of the other one? To answer this question, we need to drop the freezeout rule from the assumptions of the model and check what happens both in the absence of the EOR and under the EOR.

Intuitively, the elimination of the freezeout rule should raise the equilibrium tender offer price, because the raider no longer has an instrument to deal with the free-riding behavior of dispersed shareholders. This should have a positive effect in the absence of the EOR: a higher tender offer price should result in a higher minimum block trade price that the incumbent would be willing to accept, which would eliminate most inefficient block trades. In contrast, under the EOR, the removal of the freezeout rule should have a negative effect due to killing some value-increasing takeovers.

A full treatment of the model without the freezeout rule is presented in Appendix B. Here I will just present a semi-formal explanation of what happens in this case. In addition to the competition with the incumbent, the raider faces the free-rider problem among the target's shareholders: if the takeover is expected to succeed, an atomistic shareholder will not agree to tender his share at a price below the expected security benefits generated by the bidder, $E((1-\varphi)X \mid X \in \Theta)$, where Θ is the set of types who launch a tender offer (as one can easily show, the bid must be the same for all types who implement a successful tender offer). To be precise, when the raider's ultimate share γ equals 1, she does not necessarily divert φ, because she is indifferent among all feasible levels of diversion. However, a shareholder compares the offered price with to he would get if he decided not to tender; and if he does not tender, γ becomes strictly below 1 for any arbitrary small size of the shareholder.[24]

Thus, in any equilibrium in which the raider acquires the company in a tender offer, it must be that her bid is at least $E((1-\varphi)X \mid X \in \Theta)$. This weakly raises the equilibrium tender offer price, which is now going to be equal to $\max\{X_I,\ E((1-\varphi)X \mid X \in \Theta)\}$.

Let us first consider the case when there is no EOR. The structure of the equilibrium in such a case remains the same: the best types go for a tender offer, intermediate types make a block trade, and the lowest types abstain (see Appendix B). Thus Θ is the set $\left(X'',\ \overline{X}\right]$, where X'' is the type indifferent between the block trade and the tender offer, and the equilibrium bid then can be rewritten as

$$b^* = \max\{X_I,\ E((1-\varphi)X \mid X > X'')\} \tag{10}$$

It can be shown (and is rather intuitive) that if X_I or/and φ is/are large enough, then $E\left((1-\varphi)X \mid X > X''\right) \leq X_I$, and the bid is X_I in equilibrium. Hence, in this case, nothing changes with respect to the baseline model. However, if X_I or/and φ is/are sufficiently small, $E\left((1-\varphi)X \mid X > X''\right) > X_I$ in equilibrium, and, hence, the equilibrium bid will exceed X_I. The crucial change here is that, compared to the freezeout case, a higher equilibrium tender offer bid leads to a higher block trade price, which, in turn, raises X'. The block trade price is still determined by formula (9) but with a slight modification: the equilibrium bid is $b^* \geq X_I$ rather than X_I.

$$p^* = \frac{b^* - X'}{X'' - X'} v_I + \frac{X'' - b^*}{X'' - X'} b^* \tag{11}$$

Look at Figure 2. A rise in the tender offer bid shifts the tender offer payoff downwards. Suppose for a moment that the block trade price remains as before. Since the

[24] It would also be realistic to assume that, in the absence of a freezeout rule, a small fraction of shareholders of a positive measure do not tender for exogenous reasons. In this case, the raider always acquires $\gamma < 1$.

One may still wonder whether it is realistic that the acquisition of essentially the whole company and the acquisition of the incumbent's share result in the same level of private benefit extraction. In subsection 7.2, I consider an extension in which private benefit extraction is costly and is endogenously lower after a full takeover. I argue that the results remain qualitatively the same.

slope of the tender offer payoff has not changed, the proportion of those who go for the tender offer after a block trade refusal, $(X'' - b^*)/(X'' - X')$, remains the same. That is, the weights in the above formula do not change. However, now b^* is actually higher. Consequently, the incumbent will refuse to sell at p^* from the basic model. Thus, inevitably, p^* must rise. The new block trade payoff function, thus, will lie lower, and X' will be higher. Note that X' will never be above X_I. If this were the case, this would mean that some raiders with $X > X_I$ do not acquire control. However, the raider can always buy the block at v_I (the incumbent would of course agree), and such a trade is profitable for all raiders with $X > X_I$. Thus, *in the absence* of the EOR, *removing* the freezeout rule has an unambiguously positive effect, as it reduces the zone of inefficient block trades.

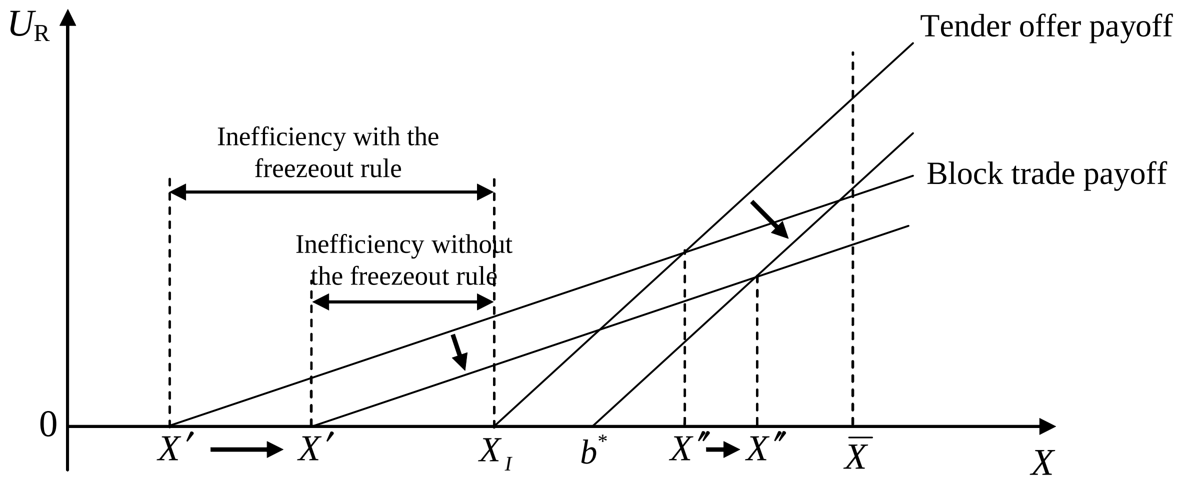

Figure 2. Effects of removing the freezeout rule. Arrows indicate changes.

What happens under the EOR? The EOR kills block trades regardless of the freezeout rule.[25] However, without the freezeout rule, efficiency of tender offers is not guaranteed! The tender offer price b_{EOR} is $\max\{X_I,\ E((1-\varphi)X \mid X > X_{EOR})\}$, where $X > X_{EOR}$ is the set of types who go for a tender offer under the EOR. Since the tender offer payoff is $X - b$, it must be that $X_{EOR} = b_{EOR}$. If X_I or/and φ is/are large enough, $X_{EOR} = b_{EOR} = X_I$, and the takeover market is fully efficient. But when X_I or/and φ is/are sufficiently small, $X_{EOR} = b_{EOR} = E\left((1-\varphi)X \mid X > X_{EOR}\right) > X_I$. Thus, in the absence of a freezeout rule, the EOR may result in killing some value-increasing takeovers. This effect is illustrated in Figure 3.

[25] To be precise, when φ or/and X_I is/are very small, the EOR does not prevent block trades in the absence of the freezeout rule (formal derivations can be found in Appendix B, Proposition 9). This seemingly strange result is due to the fact that v_I and, hence, the block trade price are very low then, so that the dispersed shareholders do not tender their shares in response to the mandatory offer. In such a case, in the absence of the freezeout rule, the EOR is irrelevant for efficiency, and, moreover, the market is fully efficient.

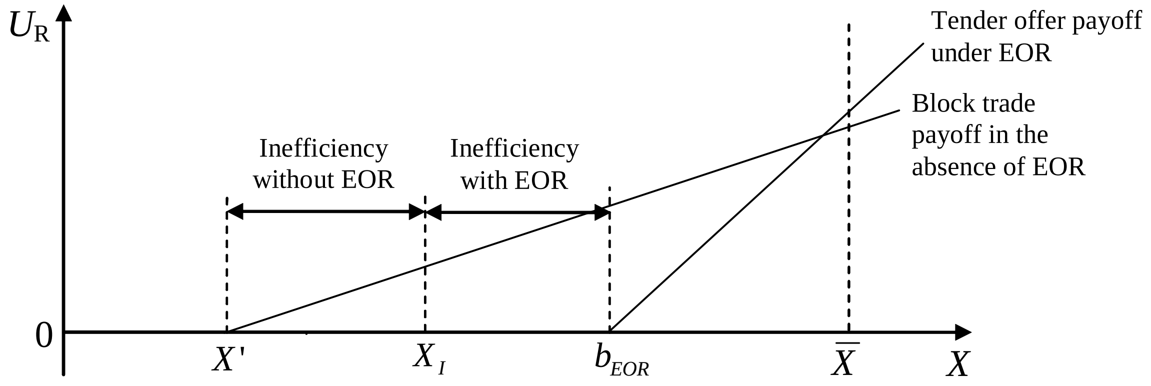

Figure 3. Effect of the EOR in the absence of the freezeout rule.

The above analysis can be summarized by the following proposition.

Proposition 5 *The EOR and the freezeout rule are complements: only together they ensure the efficient takeover market. In the absence of the freezeout rule, the EOR, while eliminating value-reducing block trades, may hamper some value-increasing takeovers. In the absence of the EOR, the freezeout rule reduces efficiency by promoting value-reducing block trades.*

A formal derivation of this result is presented in Appendix B, subsections B.2 and B.3.

Proposition 5 suggests that if for some reason one of the rules is either absent or insufficiently effective, legislators should not introduce the other one without introducing of fixing the first one. Although I do not claim that my analysis is all-encompassing, I think that this result has relevance for a wide set of countries. As I mentioned in subsection 3.3.1, in the U.S., there is no EOR but there is typically a possibility for a freezeout after the acquisition of a majority stake. On the contrary, most European countries have both the EOR and the freezeout rule, but the freezeout threshold (the minimum ownership required to launch a freezeout) is normally set at 90-95%. Such a high threshold reduces the effectiveness of the freezeout rule: the greater the threshold is the higher is the chance that there will appear a shareholder or a group of shareholders who could collectively block the freezeout unless the acquirer offers a high enough price.[26]

As far as emerging markets are concerned, anecdotal evidence[27] suggests that in countries with weak legal institutions acquirers of large stakes often circumvent the EOR using loopholes in the law and weakness of law enforcement. In such an environment, the freezeout rule should not be introduced, according to my model.

[26]See Gomes (2012) who formalizes the hold-out of freezeouts by arbitrageurs. Although my model does not analyze this formally, it is easy to predict that if the freezeout threshold were set above $1-\alpha$ the incumbent would use his ability to block the freezeout to bargain a higher tender offer price.

[27]See, e.g., Shvyrkov and Marushkevich (2011) on evidence from Russia.

6.3 Investor protection and efficiency

In this subsection, I examine the effects of investor protection on the efficiency of the takeover market. To clarify the terminology, by investor protection I mean constraints on private benefit extraction by a controlling party, i.e., φ. That is, I deliberately separate takeover regulation from other country-level institutions of corporate governance.

As we know from subsection 6.2, if the EOR goes together with the freezeout rule we achieve the first best regardless of the degree of investor protection. Thus, considering the effects of investor protection makes sense only when regulation is suboptimal. As we will see, stronger investor protection makes takeovers less profitable. Thus, better investor protection reduces the likelihood of value-destroying control transfers, but may also kill some efficient takeovers.

Whether strengthening investor protection is good or not depends critically on the presence of the EOR. Suppose first that the EOR is absent, meaning that there is a risk of value reducing block trades.

Proposition 6 *When there is no EOR, stronger investor protection raises the overall efficiency of control transfers by reducing the range of raider's types who make value-reducing block trades.*

Proof. *The value of X' from Proposition 2 clearly increases as φ falls; the proof of Proposition 2 (in Appendix A) shows that X_{BT} is inversely related to φ as well. For formal derivations in the absence of the freezeout rule, see Appendix B (subsection B.4 and the whole analysis in Appendix B preceding it).* ■

Intuitively, for a given tender offer price, the attractiveness of a block trade falls with a decrease in private benefits. Hence, under the freezeout rule (i.e., when the tender offer price is fixed at X_I), as φ falls, less efficient types drop out from the corporate control market.[28] When there is no freezeout rule, there is an additional factor reducing the block purchaser's gain: lowering φ raises the equilibrium bid price due to higher expected post-takeover security benefits[29]. This, in turn, exerts an upward pressure on the block trade price, because it raises the incumbent's outside option in bargaining. Importantly, since X' is never above X_I, takeovers cannot be "overkilled" in the absence of the EOR.

A drastically different picture emerges when the EOR is in place, because, with the EOR, the potential problem is not the success of value-reducing control transfers but the failure of value-increasing ones. When the freezeout rule complements the EOR, investor

[28] To be precise, when φ falls, both the private benefits from a block acquisition and the block price go down (due to a decrease in v_I). However, the decrease in the latter is smaller, because the block price reflects not only the private benefits, but also the tender offer price, which is independent of the investor protection in the presence of the freezeout rule.

[29] They rise directly due to lower φ and indirectly – due to higher X''.

protection has no effect, as the first-best is always achieved. When there is no freezeout rule, some efficient takeovers may fail, as we know from subsection 6.2.2. Recall that $X_{EOR} = \max\{X_I,\ E((1-\varphi)X \mid X > X_{EOR})\}$. For high φ, such that $X_{EOR} = X_I$, full efficiency is achieved. But when φ becomes low enough so that X_{EOR} starts exceeding X_I, some value-increasing takeovers fail. Moreover, it is easy to show that in such a case X_{EOR} grows with a decrease in φ, meaning that the inefficiency grows. Thus, in the absence of the freezeout rule, stronger investor protection may impede value-increasing takeovers by making them too expensive for acquirers: a bidder needs to match her bid to the expected post-takeover security benefits, which grow as investor protection improves.[30]

The above analysis can be summarized in the following proposition.

Proposition 7 *When the EOR is present, and there is no possibility for a freezeout, stronger investor protection may decrease efficiency by hampering value-increasing tender offers.*

A formal derivation of this result is presented in Appendix B (subsection B.4 and the whole analysis in Appendix B preceding it).

Thus, as Propositions 6 and 7 imply, investor protection raises efficiency of the corporate control market only when the takeover regulation is not too hostile to acquirers. When the raider is obliged to extend his offer to all shareholders and, in addition, cannot freeze out those who refuse to tender, takeovers are already so costly that any extra protection of investors risks to "overkill" takeovers.

Burkart et al. (2014) provide a model that explains why the market for corporate control may be more efficient in countries with better legal protection of investors. In their paper, stronger investor protection increases the pledgeable income of the bidder, thereby reducing the role of internal funds in financing a takeover. As a result, as investor protection improves, bidder's efficiency as opposed to availability of internal funds becomes more important in determining the winner in a takeover contest.

In my model, investor protection acts through a totally different channel: it affects the rent that the acquirer can obtain from a takeover. I certainly do not claim that my framework is more relevant than the one of Burkart et al. (2014). The value of my analysis of investor protection, however, is that: (1) it offers an additional perspective of how can one think about the impact of investor protection on the takeover market, and (2) it provides an argument why investor protection may actually decrease efficiency under certain circumstances.

[30] A qualification is in place here. As footnote 25 mentioned, when φ is *very* small, block trades are not killed by the EOR in the absence of the freezeout rule, and the market is fully efficient. In this zone, investor protection has actually no effect under the EOR, regardless of the freezeout rule.

7 Extensions

In this section, I consider two modifications of the model. In the first one, I assume that the incumbent does not have resources to launch a counter-offer. In the second one, I introduce a cost of private benefit extraction.

7.1 No bid competition

Assume that the incumbent cannot make a counter offer at the tender offer stage due to wealth constraints and a high cost of raising outside funds. This situation may be more relevant for environments with weak investor protection and underdeveloped capital markets, where raising outside funds is more costly (Burkart et al., 2014)). In this case, the bid sufficient to take over the company is $(1-\varphi)X_I$ when the freezeout rule is in place and $\max\{(1-\varphi)X_I,\ E((1-\varphi)X \mid X \in \Theta)\}$ under no freezeout rule, where $X \in \Theta$ is the set of types who launch a tender offer under no freezeout rule.[31] Thus, the absence of competition strictly decreases the tender offer price under the freezeout rule and weakly decreases it in the absence of a freezeout rule. As it should be clear, the equilibrium block trade price falls too, because the incumbent is threatened to receive a lower price (compared to the competition case) should he reject the block trade. Thus, the absence of competition shifts X' and X_{BT} to the left (weakly in the absence of a freezeout rule), naturally resulting in more value-reducing transfers of control.

Importantly, the combination of the EOR and the freezeout rule does not ensure the first-best anymore. The point is that under no competition, the freezeout rule allows the raider to acquire the company at $(1-\varphi)X_I$ – a price below the aggregate value generated by the incumbent. This inevitably results in some value-reducing transfers even in the presence of the EOR. This observation suggests that, in addition to the EOR, either the absence or some "moderate" version of the freezeout rule would be optimal.

By a "moderate" version I mean a rule that would provide the raider with *some* but not too much power to cope with the shareholders' free-riding behavior. This could be done, for example, by setting the freezeout threshold sufficiently high so that the incumbent (perhaps in a coalition with some other shareholders) would have some chance to hold out a freezeout.[32] Of course, the current model is not really suitable for analyzing the impact

[31] As is common in the literature, I am ruling out equilibria in which a bid below the security benefits generated by the incumbent succeeds. Such 'panic equilibria' can be ruled out on the grounds of Pareto-dominance (from the shareholders' perspective, the 'trust equilibrium', i.e., when nobody tenders, Pareto-dominates the 'panic equilibrium') or by the arbitrage argument (a friendly arbitrageur, who would leave control to the incumbent, could overbid the acquirer by ε and make a profit).

[32] At the extreme, if the freezeout threshold were set above $1-\alpha$ in my model, the incumbent would block the freezeout by not selling his share for any b below the expected security benefits of a raider who launches a tender offer.

of the freezeout threshold properly, but, intuitively, a higher threshold should raise the equilibrium bid.

Thus, given the EOR, a "moderate" freezeout rule would yield the equilibrium bid lying somewhere between the bid resulting under the baseline model freezeout rule and the bid resulting in the absence of any freezeout rule, i.e., between $(1-\varphi)X_I$ and $\max\{(1-\varphi)X_I,\ E((1-\varphi)X \mid X > X_{EOR})\}$, where X_{EOR} is the threshold above which the raider launches a tender offer under the EOR but without any freezeout rule. Ideally, the "moderate" rule would make the raider pay exactly X_I in a tender offer, *as if* there were a bid contest between the raider and the incumbent. This, however, would be unfeasible if

$$E((1-\varphi)X \mid X > X_{EOR}) < X_I, \tag{12}$$

because then even the complete elimination of the freezeout rule would result in a bid below X_I. The above inequality is more likely to hold when φ is large, i.e., investor protection is weak. Hence, under weak investor protection, the optimal regulation in the absence of competition by the incumbent is the EOR and the *absence* of any freezeout rule (even without a freezeout rule there will be value-reducing control transfers). Under strong investor protection, i.e., when (12) does not hold, the optimal regulation is the EOR plus a "moderate" freezeout rule.

To sum up the discussion of this subsection, under no competition, the EOR remains a part of the optimal regulation, but freezeouts should be either prohibited or made not too facile for acquirers (e.g., by setting a high freezeout threshold). What also remains true is that introducing any form of the freezeout rule without the EOR is harmful for efficiency.

A remark is in place here. As the work by Burkart et al. (2014) suggests, the likelihood of competition between bidders is likely to be correlated with investor protection: the better investor protection is, the easier it is for potential bidders (including the incumbent) to raise external funds for participating in a bid contest. If this is the case, then, *to the extent* bid competition is endogenous to investor protection, the following statement would be true: the EOR is always a part of the optimal regulation, whereas freezeouts need to be made easier when investor protection is stronger.

7.2 Costly private benefits

Burkart, Gromb, and Panunzi (2000) assume that private benefit extraction is costly for the controlling party, the cost being a convex function of the fraction of diverted value. The controlling party optimally chooses how much to divert. In such a setup, the post-transaction private benefit extraction is higher after a block trade compared to a full-scale takeover, because incentives to divert value rise with a decrease in the controlling party's share.

I am going to argue that making private benefit extraction costly does not affect my qualitative results. Assume that the cost of private benefit extraction is linear in the fraction diverted: $c\psi Y$, where Y is the total value, and the following condition holds:

$$1/2 < c < 1 - \alpha \tag{13}$$

Although this setup is not exactly the same as the one of Burkart, Gromb, and Panunzi (2000), this cost function, in a simple way, allows to capture the idea that diversion negatively depends on the controlling party's stake. Indeed, when choosing ψ, a controlling party with share γ solves

$$\max_{\psi} \gamma(1-\psi)Y + \psi(1-c)Y \tag{14}$$

He/she then chooses to divert the maximum fraction φ when $\gamma < 1 - c$ and 0 when $\gamma > 1 - c$. Thus, due to (13), a holder of share α will choose to divert φ, while a holder of any share above 1/2 will decide not to divert anything.

In this setup, efficiency has two components. First, one can speak about efficiency of control allocation, like in the basic model. Second, there is transaction type efficiency: given X, a full-scale takeover is more efficient than a block trade, because the latter is associated with the deadweight loss from private benefit extraction. The first-best, thus, requires that control is transferred if and only if $X > X_I$ *and* all control transfers are made through tender offers.

7.2.1 Equilibrium structure with freezeouts and without the EOR

Let us go straight to the setup with asymmetric information. The values of the block for the incumbent and the acquirer become respectively

$$v_I \equiv (1-\varphi)X_I + \frac{\varphi(1-c)}{\alpha}X_I; \; v \equiv (1-\varphi)X + \frac{\varphi(1-c)}{\alpha}X \tag{15}$$

Like in the baseline model, let us consider first the case when the freezeout rule is in place, but there is no EOR. The cost of diversion has no effect at the tender offer stage: since a controlling party gets the whole value Y after a full acquisition, the incumbent is still prepared to bid up to X_I. Hence, the winning bid in the tender offer contest is still X_I, and, thus, only types with $X > X_I$ are ready to go for a tender offer.[33]

[33] Like in the baseline model, a tender offer always results in the acquisition of the whole company in equilibrium. Since the security benefits following the acquisition of more than 50% of the shares are

However, block trades become relatively less attractive, compared to the baseline model, as v is now lower due to the cost of diversion.[34] Hence, X' is going to be higher compared to the basic model. Following the same steps as in the basic model one can derive:

$$X' = [1 - \varphi + \alpha\varphi + c\varphi] X_I, \quad (16)$$

$$X'' = \left(1 + \frac{s(s-\alpha)}{1-s}\right) X_I, \text{ where } s \equiv \alpha + \varphi(1 - c - \alpha) \quad (17)$$

Since $1 - \alpha > c$, $s > \alpha$. Notice also that $s < 1$ (for $\varphi = 1$ it reaches the maximum value, $1-c$). Then, we have that $X' < X_I$, and $X'' > X_I$. Since the equilibrium structure is the same as in the basic model, the relationship between the transaction mode and the stock price reaction is also the same.[35] The effect of investor protection on the transaction mode remains the same as well: as φ falls, X' moves to the right and X'' – to the left (since s is increasing in φ). Note that, despite the cost of diversion, inefficient block trades do not disappear, as X' remains below X_I.

7.2.2 Effects of regulation and investor protection

Like in the basic model, since the equilibrium bid is X_I under the freezeout rule, the combination of the freezeout rule and the EOR achieves the first best: by killing block trades[36] it ensures both the optimal transaction mode and the optimal allocation of control.

What happens without the freezeout rule? The first thing to notice is that tender offers will disappear *completely regardless of whether the EOR is present or not.* This is because the raider does not get any private benefits after a successful tender offer, while paying at least the expected security benefits (which constitute the whole value) due to the free-rider problem. Formally, if there is set Θ of raiders who go for a tender offer, a bidder's payoff is $X - \max\{X_I,\ E(X \mid X \in \Theta)\}$. But, unless Θ is singleton, $X - E(X \mid X \in \Theta)$ is obviously negative for the lowest types in Θ, meaning that these types would actually prefer to deviate and abstain from bidding.

X, any non-tendering shareholder would be squeezed out (for $X > X_I$), provided that the raider has collected more than 50%.

[34] The block trade price will also be lower due to lower v_I, but to a lesser extent, because it is a weighted average of v_I and the tender offer price which is still X_I.

[35] Since v_I is still greater than X_I (because $1 - c > \alpha$), the block trade price must exceed X_I as well, because it is a weighted average of v_I and X_I. Consequently, just like in subsection 6.1, it must be that $(1-\varphi)X'' < X_I$, for otherwise type X'' would strictly prefer the tender offer. Hence, the stock price after an announcement of a block trade $(1-\varphi)\left(X' + X''\right)/2 < X_I$.

[36] The formal proof that the EOR kills block trades under the freezeout rule in this modified model is slightly less straightforward than the argument in subsection 6.2.1. It is available from the author upon request.

The above implies that when there is neither the EOR nor the freezeout rule, control would always be transferred by means of a block trade, and it will happen if and only if there are gains from trade between the incumbent and the acquirer, that is, whenever $X > X_I$. Thus, in the absence of any regulation the allocation of control is efficient, but the transaction mode is not.

Since there can be no tender offers in the absence of the freezeout rule, introducing the EOR would either eliminate control transfers altogether or result in block trades for $X > X_I$. Which of the two situations realizes depends on whether it is possible to have an equilibrium in which the block is bought at price v_I, and dispersed shareholders then prefer not to sell at v_I.[37] In such an equilibrium, control transfers occur whenever $X > X_I$, that is, the EOR, has no effect. It can be shown that this equilibrium exists (and is unique) whenever φ is low enough: intuitively, dispersed shareholders prefer not to tender, because, for low φ, v_I is close to X_I, while the expected security benefits are close to $\left(X_I + \overline{X}\right)/2 > X_I$. However, when φ is high this equilibrium does not exist, and control transfers disappear completely. Thus, in this case, the EOR has a very strong negative effect. To summarize, similarly to the basic model, the introduction of the EOR without the freezeout rule is (weakly) harmful for efficiency.

Whether the freezeout rule without the EOR hurts efficiency is a priory ambiguous. On the one hand, it provokes value reducing block trades (X' is below X_I). On the other hand, types above X'' now go for a tender offer instead of a block trade, which is a more efficient transaction mode. Anyway, without the EOR, the freezeout rule is unable to achieve the first best. Thus, like in the basic model, *only* the combination of the EOR and the freezeout rule ensures full efficiency.

In contrast to the basic model, now investor protection always improves efficiency. Recall that in the basic model the danger of stronger investor protection was killing value-increasing tender offers when the freezeout rule was not in place. In the modified model, there are *no* tender offers without the freezeout rule. So, investor protection cannot harm the control allocation efficiency, and it reduces the aggregate loss from private benefit extraction.

The key reason for the absence of the negative effect of investor protection is that now tender offers result in zero post-transaction private benefit extraction. This is of course an extreme assumption. Acquirers are almost always companies rather than individuals. The controlling shareholder or the CEO of an acquiring company would typically hold only a fraction of this company. Therefore, even in the case of a full acquisition of the target, these insiders will only partially own the acquired asset, and, hence, will have

[37] This is the minimum price at which the incumbent would agree to sell his share (he knows that there will be no tender offer if he refuses).

incentives for diverting its value.

If we modify the model so that some private benefit extraction following a successful tender offer becomes optimal for the raider, then tender offers may appear even without the freezeout rule. In this case, stronger investor protection may hamper tender offers under the EOR and in the absence of the freezeout rule through a reduction in private benefits, just like in the basic model.

8 Conclusion

I have developed a model that explains the choice between a block trade and a full-scale acquisition of a firm with a dominant minority blockholder. This choice is determined by the acquirer's ability to generate value in the target firm: among those types who acquire control, higher ability acquirers launch a tender offer and lower ability ones negotiate a block trade with the incumbent blockholder. The model provides a number of implications. First, the paper offers a simple explanation for empirically observed higher announcement returns of targets in tender offer deals as compared to negotiated block trades. Second, consistently with the empirical evidence, the model obtains that legal protection of investors positively affects the incidence of full-scale acquisitions compared to block trades.

The information asymmetry about the value that the acquirer is able to generate in the target firm results in value-reducing block trades. Stronger investor protection helps to eliminate such trades. However, it may overkill takeovers if regulation is suboptimal. Namely, when the equal opportunity rule forces a block acquirer to extend his offer to the remaining shareholders, and there is no possibility to freeze out non-tendering shareholders, stronger investor protection may inhibit some value-increasing takeovers. In my framework, the optimal regulation is a combination of the equal opportunity rule, which eliminates value-reducing block trades, and some form of the freezeout rule, which allows all value-increasing tender offers to happen. However, the freezeout rule should be less favorable to acquirers when the competitiveness of the takeover market is lower, for the risk of value-reducing takeovers rises in the absence of competition.

Overall, the results of this paper highlight that legal rules are interdependent in their effect on the efficiency of the market for corporate control.

Appendix

A. Proofs

Proof of Lemma 1 and Lemma 2. As the proofs for symmetric (Lemma 1) and asymmetric (Lemma 2) information setups are almost the same, they are merged in one proof. Whenever the information asymmetry makes a difference, the proof treats the two setups separately.

I will first consider the equilibrium behavior of the shareholders for given b; then I will find optimal b as a function of X.

Step 1. Showing that any $b < X_I$ will be unsuccessful, and any $b \geq X_I$ will not be overbid by the incumbent.

Suppose the raider bids b. Suppose dispersed holders of more than 1/2 of equity accept the bid if the incumbent does not counter. Suppose the incumbent decides not to counter. If he tenders, he gets b per unit share. If he does not tender, then: if $b < (1-\varphi)X$ he will be frozen out at b, if $b \geq (1-\varphi)X$ he will get $(1-\varphi)X \leq b$ per unit share. So, tendering is weakly better, which means that the incumbent, behaving optimally, obtains payoff b per unit share (or αb in aggregate) if he decides not to counter.

If, on the contrary, the incumbent decides to overbid, his aggregate payoff will be $X_I - (1-\alpha)(b+\varepsilon)$, where ε is arbitrarily small but positive. Thus, the necessary and sufficient condition for the incumbent not to overbid is

$$\alpha b \geq X_I - (1-\alpha)b \Rightarrow b \geq X_I \tag{A.1}$$

Suppose now that dispersed holders of only $\beta \leq 1/2$ tender if the incumbent does not counter, but the incumbent is pivotal: by tendering some fraction of his stake he can make the total amount of shares tendered exceed 1/2, i.e., $\beta + \alpha > 1/2$. Suppose the incumbent tenders $\delta > 1/2 - \beta$. In such a case, the incumbent receives $\delta b + (\alpha - \delta)\min\{X(1-\varphi),\ b\}$, for his remaining shares will be frozen out whenever $b < (1-\varphi)X$. The maximum value of this expression is αb, i.e., when $\delta = \alpha$. However, from not selling shares at all, the incumbent guarantees himself payoff αv_I, which implies that any $b < v_I$ will be unsuccessful (given that dispersed holders of only $\beta \leq 1/2$ tender).

The above analysis implies that any bid below X_I will be unsuccessful: if dispersed holders of more then 1/2 of the shares are expected to tender in the case of the incumbent's passivity, the incumbent will overbid; and if dispersed holders of 1/2 or less are expected to tender in the case of the incumbent's passivity, the incumbent will just not sell his share.

Step 2. Showing that any $b \geq X_I$ will result in acquisition of 100% of the

shares, except when $b = (1-\varphi)X$ under symmetric information.

Now we consider only bids $b \geq X_I$. As we know from (A.1), any such bid will not be overbid. Moreover, in any equilibrium such a bid attracts more than 1/2 of the shares. Indeed, assume that only 1/2 or less shares are tendered. In such a case, the takeover fails. But then, any non-tendering atomistic shareholder would gain from deviating and tendering, for $X_I > (1-\varphi)X_I$, i.e., what he obtains under the incumbent's control.

In contrast, all shareholder tendering is an equilibrium. In such a case, the incumbent cannot affect the takeover outcome by a deviation to not tendering. Thus, for any shareholder (including the incumbent) a deviation to non-tendering is weakly worse: if $b < (1-\varphi)X$ such a shareholder will be frozen out at b, while if $b \geq (1-\varphi)X$ he will get $(1-\varphi)X \leq b$.

There could potentially be other equilibria in which more that a half but less than 100% of the shares are tendered. However, if there is an atomistic non-tendering shareholder in such an equilibrium, then he plays a weakly dominated strategy. Indeed, non-tendering cannot yield more than b to such a shareholder if the tender offer succeeds (see the previous paragraph), and yields him strictly less ($(1-\varphi)X_I < X_I \leq b$) if the tender offer fails. Thus, non-tendering by an atomistic shareholder is eliminated by Assumption 2. Note that the reasoning in this paragraph holds regardless of whether X is common or private knowledge.

Consider now the incumbent. If all dispersed shareholders tender, he cannot affect the outcome of the takeover. Suppose the incumbent does not tender. If $b < (1-\varphi)X$ he will be frozen out at b, while if $b \geq (1-\varphi)X$ he will get $(1-\varphi)X$. Consider first the case when X is common knowledge. When $b > (1-\varphi)X$ the incumbent strictly prefers to deviate and tender. When $b \leq (1-\varphi)X$ he is indifferent between tendering and not. Thus, in the model with symmetric information, given that $b \geq X_I$, all equilibria are characterized by the following:

(i) All dispersed shareholders tender.

(ii) When $b > (1-\varphi)X$, the incumbent tenders too, the raider acquires 100% of the shares at b.

(iii) When $b < (1-\varphi)X$, the incumbent tenders any fraction of his share, the rest is frozen out at b, the raider acquires 100% of the shares at b.

(iv) When $b = (1-\varphi)X$, the incumbent tenders any fraction of his share, the raider does not freeze out the remaining shares.

Consider now the case when X is the raider's private information. We know that tendering yields him b, whereas not tendering cannot yield more than b. Moreover, if among the types who bid b there is a positive measure of types who satisfy $(1-\varphi)X < b$, then not tendering yields strictly less than b. Thus, the strategy of not tendering is weakly dominated, and we eliminate it by Assumption 2.

Thus, in the model with asymmetric information, given that $b \geq X_I$, all shareholders tender in equilibrium.

Step 3. Showing that $b = X_I$ is optimal, given $b \geq X_I$.

As follows from the above, for any $b \geq X_I$, the raider always acquires 100% of the shares at b except for the case $b = (1-\varphi)X$ under symmetric information. In this latter case, however, her payoff is *as if* she acquires the whole company, because she is indifferent between freezing out the incumbent at b and not. Thus, the acquirer's payoff is always $X - b$, and, hence, $b = X_I$ is optimal. ■

Proof of Proposition 2.

Step 1. Finding X', X'', p^* and b^* and showing that the equilibrium with both block trades and tender offers zones exists if and only if $\varphi < \overline{\varphi}$.

Given the equilibrium prices p^* and b^*, the acquirer obtains $\alpha\left[(1-\varphi)X - p^*\right] + \varphi X$ after a block trade and $X - b^*$ as a result of a tender offer. Obviously, p^* must be the same for all types who do a block trade, for otherwise a type who pays more would deviate and pay less by pretending to be a different type. By similar logic, b^* must be the same for all types who go for a tender offer.

Let X' be the type who is indifferent between the block trade and abstaining from any deal:

$$\alpha\left[(1-\varphi)X' - p^*\right] + \varphi X' = 0 \tag{A.2}$$

Let X'' be the type who is indifferent between the block trade and the tender offer:

$$X'' - b^* = \alpha\left[(1-\varphi)X'' - p^*\right] + \varphi X'', \tag{A.3}$$

or

$$(1-\varphi)X'' - b^* = \alpha\left[(1-\varphi)X'' - p^*\right] \tag{A.4}$$

It is straightforward that the acquirer prefers the block trade to abstention if and only if $X > X'$, and the tender offer to the block trade if and only if $X > X''$. Thus, it cannot be in equilibrium that a type doing the block trade has X higher than any type going for the tender offer.

Consider first equilibria in which the sets of types going for the block trade and for the tender offer are both non-empty. That is, $0 \leq X' < X'' < \overline{X}$.We need to determine p^* and b^*. As we already know, due to the bid competition with the incumbent, $b^* = X_I$. To accept the block trade, the incumbent must obtain at least as much after the block trade as in the case of a refusal:

$$\alpha p^* \geq q\alpha v_I + (1-q)\alpha X_I, \tag{A.5}$$

where q and $1-q$ are the probabilities that the raider abstains and goes for the tender offer respectively after a refusal.

Assume first that $X'' < \overline{X}$, i.e., there is a non-zero measure of types who make the tender offer in equilibrium. The raider's payoff from the tender offer is $X - X_I$. Thus, following a refusal to sell the block, any type with $X \leq X_I$ abstains, and any type with $X > X_I$ goes for the tender offer. Thus, given that only types from X' to X'' go for the block trade (and offer price p^*) in equilibrium, $q = (X_I - X') / (X'' - X')$ and $1 - q = (X'' - X_I) / (X'' - X')$. Hence, the acceptance condition becomes

$$\alpha p^* \geq \frac{X_I - X'}{X'' - X'}\alpha v_I + \frac{X'' - X_I}{X'' - X'}\alpha X_I \tag{A.6}$$

Finally, any price below p^* must be rejected by the incumbent, that is, for any $p < p^*$ the following inequality must hold:

$$\alpha p < \mu\alpha v_I + (1-\mu)\alpha X_I, \tag{A.7}$$

where μ is the incumbent's belief that the acquirer who offered p would abstain after rejection.

Applying the Grossman and Perry (1986) credible beliefs concept, one can show that in equilibrium (A.6) must be binding:

$$\alpha p^* = \frac{X_I - X'}{X'' - X'}\alpha v_I + \frac{X'' - X_I}{X'' - X'}\alpha X_I \tag{A.8}$$

The credible beliefs criterion works here as follows. Suppose (A.6) holds as a strict inequality in equilibrium. Let us consider a deviation of the acquirer to $\widetilde{p^*} < p^*$ such that (A.6) continues to hold at $\widetilde{p^*}$ and the corresponding new values of X' and X'' defined by (A.2) and (A.4) respectively. By continuity, such $\widetilde{p^*}$ must exist. In Figure 4, lowering the block trade price simply shifts the acquirer's payoff from the block trade up. Segment AB is the set of types who do the block trade when the price is p^*. Segment $A'B'$ is the set of types who would do the block trade if the price were $\widetilde{p^*}$. If the incumbent accepts $\widetilde{p^*}$, all types from segment $A'B'$ would want to deviate to $\widetilde{p^*}$, while all other types would not (they would prefer to either abstain or make a tender offer at X_I). At the same time, if the incumbent believes that an acquirer offering $\widetilde{p^*}$ belongs to $A'B'$, he would indeed accept the offer, since (A.6) still holds at $\widetilde{p^*}$. Thus, no equilibrium in which (A.6) holds as a strict inequality survives the credible beliefs refinement.

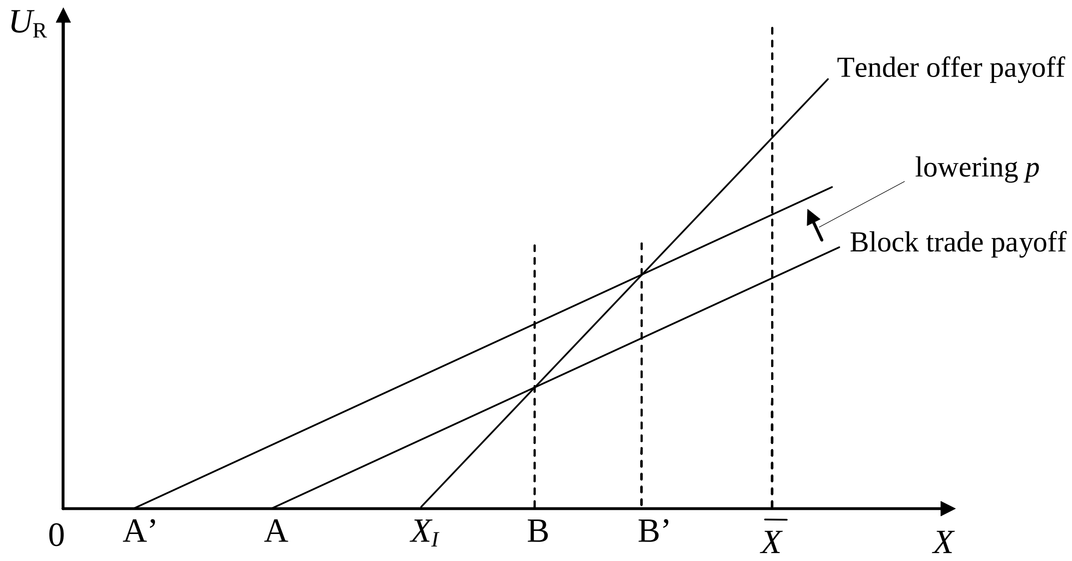

Figure 4. Application of the credible beliefs criterion for the block trade price.

In contrast, the equilibrium in which p^* satisfies (A.8) does survive the refinement. If (A.8) holds, lowering p^* to some $\widetilde{p^*}$ leads to a violation of (A.6). Consequently, the incumbent will reject $\widetilde{p^*}$, provided that he rationally infers who would want to deviate to $\widetilde{p^*}$ (types from segment $A'B'$). To see this, notice that the ratio of segments $|AX_I| / |X_I B| = |A'X_I| / |X_I B'|$, because changing p corresponds to a parallel shift of the block trade payoff function. This means that the probability that a rejected acquirer launches a tender offer remains the same, and, thus, the right hand side of (A.6) does not change. Hence, (A.6) becomes violated whenever p^* falls below the value at which (A.8) holds.

Finally, for any given $p < p^*$ there must exist belief μ such that (A.7) is satisfied. There is generally a continuum of such beliefs for given p. In particular, we can set $\mu = (X_I - X') / (X'' - X')$ for all $p < p^*$. Then, as follows immediately from (A.8), (A.7) holds for all $p < p^*$.

Conditions (A.2), (A.4) and (A.8) form the system of equations from which one can derive the expressions for X', X'' and p^* stated in the proposition. Note that $X'' > X'$ for all $\varphi > 0$. At the same time, $X'' < \overline{X}$ only when $\varphi < \overline{\varphi}$ (by the definition of $\overline{\varphi}$). Thus, the equilibrium with both block trades and tender offers exists if and only if $\varphi < \overline{\varphi}$.

Step 2. Showing that the equilibrium in which all control transfers are made through block trades exists if and only if $\varphi \geq \overline{\varphi}$.

Let us call the threshold above which the acquirer implements the block trade in such an equilibrium by X_{BT}. Just as in equilibria with block trades and tender offers, the block trade price should make the incumbent indifferent between accepting and rejecting the offer (in order to satisfy the credible beliefs criterion):

$$\alpha p^* = \frac{X_I - X_{BT}}{\overline{X} - X_{BT}} \alpha v_I + \frac{\overline{X} - X_I}{\overline{X} - X_{BT}} \alpha X_I \tag{A.9}$$

This equation together with (A.2) with X' substituted for X_{BT} yields the expression for X_{BT}:

$$X_{BT} = \frac{\overline{X} + X_I}{2} - \frac{1}{2}\sqrt{\left(\overline{X} - X_I\right)\left(\overline{X} - X_I + \frac{4\varphi(1-\alpha)}{\alpha + \varphi(1-\alpha)} X_I\right)} \tag{A.10}$$

Condition (A.9) ensures that the incumbent will not reject the offer. It also ensures that any lower price will be rejected. However, we also need to make sure that the raider does not have a profitable deviation to a tender offer. It is straightforward that X_{BT} is decreasing in φ. For $\varphi = \overline{\varphi}$, the block trade payoff intersects the tender offer payoff at exactly $\overline{X}$. For any larger φ, both X_{BT} is lower and the block trade payoff is steeper, meaning that there is no profitable deviation to a tender offer for $\varphi \geq \overline{\varphi}$. For $\varphi < \overline{\varphi}$, on the contrary, both X_{BT} is higher and the block trade payoff is flatter. This means, that the block trade payoff intersects the tender offer payoff at some $X < \overline{X}$. Hence, there appears a profitable deviation to a tender offer for high enough types, and an equilibrium with only block trades ceases to exist.

Step 3. Showing that there exists no equilibrium, satisfying the credible beliefs criterion, in which the only mode of control transfers is tender offers.

In such an equilibrium, all types with $X > X_I$ go for a tender offer, whereas all types with $X \leq X_I$ abstain. No profitable deviation to a block trade implies $X - X_I \geq \alpha[(1-\varphi)X - p] + \varphi X$ for *any* p that would be accepted by the incumbent. This condition must hold for all $X > X_I$, including those arbitrarily close to X_I. Hence, it must be that $\alpha[(1-\varphi)X_I - p] + \varphi X_I \leq 0 \Leftrightarrow p \geq v_I$. That is, any p below v_I must be rejected.

Because, by assumption, $\varphi > 0$, the incumbent obtains strictly less than v_I following a tender offer ($X_I < v_I$). It must be then that the incumbent believes that any acquirer who offers $p < v_I$ will launch a tender offer with a sufficiently small probability in the case of refusal. In particular, if p approaches v_I from below, this probability needs to approach zero, for otherwise the incumbent would accept p when it is sufficiently close to v_I.

Consider now an acquirer who deviates and offers $p < v_I$. As it should be clear from the figure below, provided that such an offer is accepted, types from segment AB, and only these types, gain from such a deviation. Will the incumbent then accept the offer if he believes that the acquirer is from segment AB? He believes that, in the case of refusal, types from AX_I will abstain, whereas types from X_IB will go for a tender offer.

Notice that the relative lengths of these segments do not depend on p, because a change in p is just a parallel shift of the block trade payoff. This means, that for *any* p there is a positive, *bounded away from zero*, probability that a rejected acquirer will launch a tender offer. This, in turn, implies that there exists ε such that price $v_I - \varepsilon$ will be accepted by the incumbent. Hence, the equilibrium does not satisfy the credible beliefs criterion.

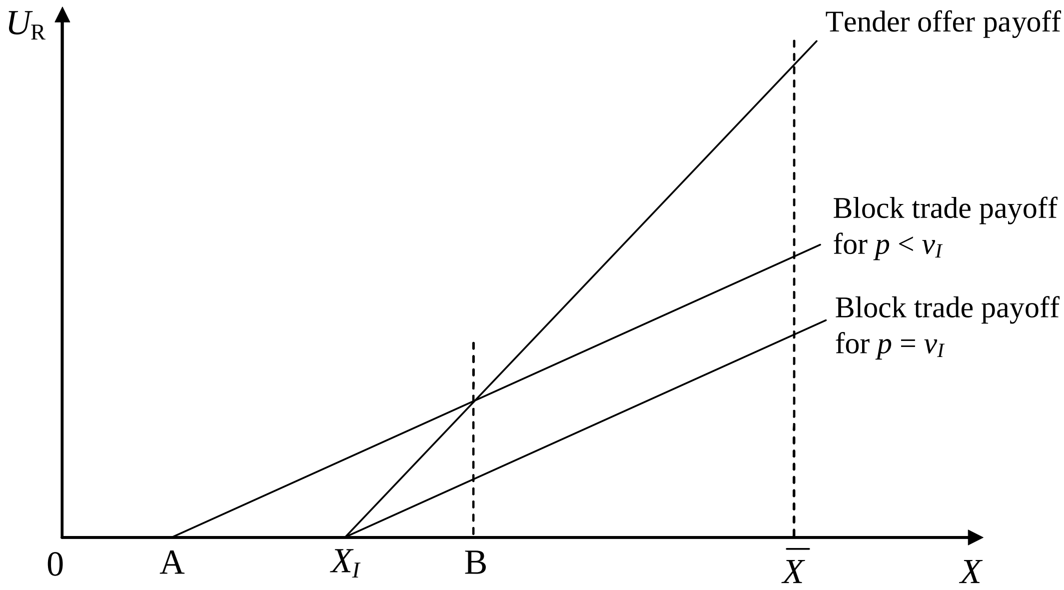

Figure 5. Application of the credible beliefs criterion to an equilibrium with tender offers only.

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B. Model without freezeouts

B.1 Solution

Consider the same game as in the basic model but without the freezeout stage. At the tender offer stage, when dispersed shareholders cannot be frozen out, they will not agree to sell at a price below the expected post-takeover security benefits (Grossman and Hart, 1980; Shleifer and Vishny, 1986; Burkart and Lee, 2015). Thus, for a tender offer to succeed, the bidder needs to offer $\max\{X_I,\ E((1-\varphi)X \mid X \in \Theta)\}$, where Θ is the set of types who launch a tender offer. The equilibrium will be determined by the same set of conditions as (A.2), (A.4) and (A.8) except that the equilibrium bid is not X_I but is determined by

$$b^* = \max\left\{X_I,\ (1-\varphi)\frac{X'' + \overline{X}}{2}\right\}, \tag{B.1}$$

and, thus, in (A.8) X_I needs to be substituted with b^* (since the payoff from a full acquisition is $X - b^*$, the threshold determining the raider's decision after rejection also becomes b^*):

$$\alpha p^* = \frac{b^* - X'}{X'' - X'}\alpha v_I + \frac{X'' - b^*}{X'' - X'}\alpha b^* \tag{B.2}$$

With these modifications, one can derive the expressions for X' and X''. Assume for the moment that $(1-\varphi)\dfrac{X''+\overline{X}}{2} > X_I$. Assume also that $X'' < \overline{X}$, i.e., there is a positive measure of types who go for a tender offer. Then, it can be derived that:

$$X' = \frac{1-\varphi}{1-\alpha+\alpha\varphi}\left[\alpha\overline{X} + (1-2\alpha)X_I\right] < X_I, \tag{B.3}$$

$$X'' = \frac{(1-\varphi)(\alpha\overline{X} - 2\alpha X_I + 2X_I) + \overline{X} - 2X_I}{1-\alpha+\alpha\varphi} > X_I \tag{B.4}$$

Both X'' and $(1-\varphi)\dfrac{(X''+\overline{X})}{2}$ are decreasing in φ. At some point $\dfrac{(1-\varphi)(X''+\overline{X})}{2}$ becomes equal X_I, let us denote this value of φ by $\widehat{\varphi}$. For $\varphi \geq \widehat{\varphi}$, thus, the solution coincides with the one of the basic model.

If we decrease φ, X'' goes up and eventually hits $\overline{X}$. Solving $X'' = \overline{X}$ we find that this happens for $\varphi = \dfrac{\alpha(\overline{X} - X_I)}{\alpha\overline{X} + (1-\alpha)X_I} \equiv \underline{\varphi}$. At this point X' also hits X_I, as one can derive. It can also be shown that $\underline{\varphi} < \widehat{\varphi}$.

Thus, to summarize the analysis so far: for $\varphi > \underline{\varphi}$, there are both block trades and tender offers, and the solution is either given by (B.3) and (B.4) (for $\varphi \in (\underline{\varphi}, \widehat{\varphi})$) or coincides with one of the basic model (for $\varphi \geq \widehat{\varphi}$).

What happens for $\varphi \leq \underline{\varphi}$? The following lemma gives the answer:

Lemma 3 *For $\varphi \leq \underline{\varphi}$, only block trades can occur in equilibrium, and they always happen at price v_I, which implies that they take place if and only if there are gains from trade, i.e., $X > X_I$.*

Proof.

Step 1. Showing that p^* must be equal to v_I.

Assume $p^* < v_I$. This implies that the incumbent is afraid that, if he refuses, there will be a successful tender offer at $b < p^*$ with a positive probability. However, if the whole firm can be acquired at b, type with $X = \overline{X}$ will deviate from the equilibrium. To see this, notice first that, for $\varphi \leq \underline{\varphi}$, $(1-\varphi)\overline{X} > X_I$. This is because $\dfrac{(1-\varphi)(X''+\overline{X})}{2} > X_I$ for $\varphi < \widehat{\varphi}$ by the definition of $\widehat{\varphi}$, and $\underline{\varphi} < \widehat{\varphi}$. Then b cannot exceed $(1-\varphi)\overline{X}$, for $b = (1-\varphi)\overline{X}$ corresponds to the highest possible belief about the post-takeover security benefits. But then type $\overline{X}$ gains more from a full acquisition at b than from a block trade at p^*: $(1-\varphi)\overline{X} - b + \varphi\overline{X} > \alpha\left[(1-\varphi)\overline{X} - p^*\right] + \varphi\overline{X}$ for any $b \leq (1-\varphi)\overline{X}$, given that $b < p^*$.

Any price $p^* > v_I$ will be suboptimal for the acquirer. Suppose $p^* > v_I$. First of all, it must be that $p^* \leq (1-\varphi)\overline{X}$, for otherwise type $\overline{X}$ could gain by acquiring the company by means of a tender offer with $b = (1-\varphi)\overline{X}$. But then the acquirer could launch a tender offer at $b \in (v_I,\ p^*)$. Such a bid guarantees the acquisition of control for if not enough dispersed shareholders tender, the incumbent will find it optimal to tender his share at b (or at least a part of his share so that the raider accumulates more than 50%). At least type $\overline{X}$ will find such a deviation profitable: when $b < p^* \leq (1-\varphi)\overline{X}$, $\gamma\left[(1-\varphi)\overline{X} - b\right] + \varphi\overline{X} > \alpha\left[(1-\varphi)\overline{X} - p^*\right] + \varphi\overline{X}$ for any $\gamma \geq \alpha$.

Step 2. Showing that there is no profitable deviation to a tender offer.

To make sure, we need to check that, for $\varphi \leq \underline{\varphi}$, no acquirer would gain from deviating to a tender offer. It is enough to check it for $\overline{X}$, for if the highest type does not deviate no other type would. A tender offer is least attractive for the raider whenever the shareholders believe that the raider is of type $\overline{X}$ (it can be shown that for $\varphi \leq \underline{\varphi}$ such a belief is credible in the sense of Grossman and Perry, 1986). Then, for type $\overline{X}$ not to deviate it must be that

$$\alpha\left[(1-\varphi)\overline{X} - v_I\right] + \varphi\overline{X} \geq \overline{X} - (1-\varphi)\overline{X} \tag{B.5}$$

or

$$v_I \leq (1-\varphi)\overline{X} \tag{B.6}$$

which turns out to be equivalent to

$$\varphi \leq \underline{\varphi} \tag{B.7}$$

■

Thus, the full solution in the model without freezeouts can be formulated in the following proposition:

Proposition 8 *When there is neither the freezeout rule nor the EOR, the solution is*

i. For $\varphi \leq \underline{\varphi}$, there are no tender offers, a block trade occurs if and only if $X > X_I$.

ii. For $\varphi \in \left(\underline{\varphi},\ \widehat{\varphi}\right)$, there are both block trades and tender offers, and the solution is given by (B.3) and (B.4).

iii. For $\varphi \geq \widehat{\varphi}$, the solution coincides with the one of the basic model (i.e., the one with the freezeout rule and without the EOR).

B.2 Effect of the freezeout rule without the EOR

Comparing the solution of the basic model with the just derived one we, can see what happens if we introduce the freezeout rule in the absence of the EOR. For $\varphi \geq \widehat{\varphi}$ there is obviously no change. For $\varphi \in (\underline{\varphi}, \widehat{\varphi})$, it is easy to derive that X' is lower in the basic model (to make sure, one can show that $\overline{\varphi} > \widehat{\varphi}$, which means that we indeed need to compare values of X'). This is intuitive: with the freezeout rule, the equilibrium tender offer bid is lower, which implies a lower block trade price because the incumbent's disagreement payoff falls. This, in turn, raises X'.

For $\varphi \leq \underline{\varphi}$, the block trade threshold in the basic model is again lower, as $X' < X_I$. Thus, for any $\varphi < \widehat{\varphi}$, the freezeout rule hurts efficiency by increasing the zone of value-reducing block trades.

B.3 Effect of the EOR without the freezeout rule

First of all, if the EOR is introduced, there cannot be equilibria in which a zone with block trades (not followed by a full acquisition) and a zone with full acquisitions coexist. Imagine such an equilibrium exists. Because b^* needs to be equal to the expected security benefits generated by the raider, some of the types who go for a tender offer must suffer a loss from purchasing shares (conditional on obtaining control). Then, it must be that $p^* > b^*$, otherwise such types would gain from purchasing the block at p^* instead. But then, given that the dispersed shareholders tender at price b^*, they would not reject a mandatory offer at price p^*, since this price should exceed the expected security benefits generated by a type who offers p^* (as we know, the range of block purchasers needs to lie to the left of the range of types going for a tender offer).

Thus, there can be three possible types of equilibria: the one with full acquisitions only, the one with block trades only, and the one with block trades followed by a *partial* acquisition of the remaining shares. The second type requires that dispersed shareholders prefer not to tender following a mandatory offer, and the third one requires that dispersed shareholders are indifferent between tendering and not.

Note, that in contrast to the setup without the EOR, "not tendering" in response to a post-block-trade mandatory offer is *not* weakly dominated for a small shareholder. At the moment of his tendering decision the transfer of control has already occurred through a block trade, and, hence, the shareholder's payoff does not depend on strategies of other small shareholders.

The following proposition establishes the equilibria under the EOR in the absence of freezeouts.

Proposition 9 *When there is the EOR, but no freezeout rule, the unique equilibrium satisfying the credible beliefs criterion is characterized by thresholds $\varphi_{TO} < \underline{\varphi}$ and $\varphi_{BT} < \varphi_{TO}$, such that:*

i. For $\varphi \geq \varphi_{TO}$, all types with $X \leq X_{EOR}$ abstain, and all types with $X > X_{EOR}$

acquire the whole company, where $X_{EOR} = \max\left\{X_I,\ \frac{1-\varphi}{1+\varphi}\overline{X}\right\}$*; moreover, at* $\varphi = \varphi_{TO}$ $X_{EOR} = \frac{1-\varphi}{1+\varphi}\overline{X} > X_I$

ii. *For* $\varphi \leq \varphi_{BT}$*, all types with* $X \leq X_I$ *abstain, and all types with* $X > X_I$ *purchase only the incumbent's share*

iii. *For* $\varphi \in (\varphi_{BT},\ \varphi_{TO})$*, all types with* $X \leq \widetilde{X}(\varphi)$ *abstain, and all types with* $X > \widetilde{X}(\varphi)$ *purchase the incumbent's share and the amount of the dispersed equity strictly between* 0 *and* $1-\alpha$*, and* $\widetilde{X}(\varphi) > X_I$ *for all* $\varphi \in (\varphi_{BT},\ \varphi_{TO})$*; moreover,* $\widetilde{X}(\varphi)$ *is an increasing function taking values* X_I *at* φ_{BT} *and* X_{EOR} *at* φ_{TO}*.*

Proof.

Step 1. Equilibrium of the first type – full acquisition.

Let is denote the equilibrium bid in this case by b_{EOR}. The proposition is silent about how exactly the acquisition occurs: the raider can either first buy the block at b_{EOR} and then make a mandatory tender offer, or offer a very low price to the incumbent, get rejected and make a tender offer at b_{EOR}. In either case, the outcome is the same and requires that $b_{EOR} \geq \max\left\{X_I,\ (1-\varphi)\frac{X_{EOR}+\overline{X}}{2}\right\}$. Note that if the acquisition happens in two steps (a block trade at b_{EOR}, followed by a mandatory offer at b_{EOR}), condition $b_{EOR} \geq X_I$ is still required, for if it does not hold, the incumbent would refuse to sell the block in the first step.

Again, one can show that for an equilibrium to satisfy the credible beliefs criterion, it must be that

$$b_{EOR} = \max\left\{X_I,\ (1-\varphi)\frac{X_{EOR}+\overline{X}}{2}\right\} \tag{B.8}$$

Next, X_{EOR} must satisfy the zero-profit condition for the marginal type:

$$X_{EOR} = b_{EOR} \tag{B.9}$$

Conditions (B.8) and (B.9) then yield

$$X_{EOR} = b_{EOR} = \max\left\{X_I,\ \frac{1-\varphi}{1+\varphi}\overline{X}\right\} \tag{B.10}$$

To sustain this equilibrium it must be unprofitable for the acquirer to offer such a price to the blockholder that he accepts it, while other shareholders reject the subsequent mandatory bid.

Suppose $b_{EOR} > v_I$. The raider could offer $p \in [v_I,\ b_{EOR})$ to the incumbent, and the incumbent would agree to sell. Then, at least types with $X_{EOR} < X < b_{EOR}/(1-\varphi)$ would gain from such a deviation: provided that they obtain control, they suffer a loss from buying shares at $b_{EOR} > (1-\varphi)X$, thus acquiring the same amount of shares (which will happen if the dispersed shareholders tender to the mandatory bid at p) or less at a lower price can only benefit them.

Suppose $b_{EOR} \leq v_I$. Any offer below b_{EOR} would be rejected by the incumbent. An offer above b_{EOR} can be a profitable deviation only if it results in a block trade. If we assume that the dispersed shareholders' beliefs after observing any $p > b_{EOR}$ are such that their expectation $E((1-\varphi)X \mid p) < p$, then they will tender to the mandatory offer, and, hence, any such deviation makes the raider worse off. For example, we can assume that upon a deviation to $p > b_{EOR}$, the shareholders believe that the type is randomly drawn from the subset of types who prefer a block trade at p to a full acquisition at b_{EOR}. Because such types have a lower expected X compared to the set $\left[X_{EOR},\ \overline{X}\right]$, it is indeed true that $E((1-\varphi)X \mid p) < p$. Note that this reasoning implies that the credible beliefs criterion is satisfied.

Thus, the first type of equilibria will exist if and only if the obtained b^* satisfies

$$\max\left\{X_I,\ \frac{1-\varphi}{1+\varphi}\overline{X}\right\} \leq v_I, \tag{B.11}$$

which amounts to

$$\varphi \geq \varphi_{TO}, \tag{B.12}$$

where φ_{TO} is the solution of $\frac{1-\varphi}{1+\varphi}\overline{X} = v_I$ (the solution is unique for $\varphi \in [0,\ 1]$). It can be easily derived that $\frac{1-\varphi}{1+\varphi}\overline{X} < v_I$ for $\underline{\varphi}$. Hence, $\varphi_{TO} < \underline{\varphi}$.

Also, clearly, $X_{EOR}(\varphi_{TO}) = \frac{1-\varphi_{TO}}{1+\varphi_{TO}}\overline{X} > X_I$.

Step 2. Equilibrium of the second type – block trade.

First of all, following the logic similar to the one we applied in the proof of Lemma 3, it can be shown that in such an equilibrium $p^* = v_I$ and, thus, block transfers occur if and only if $X > X_I$.

It must also be that the dispersed shareholders do not tender their shares at v_I, which implies that they must believe that v_I is below the expected security benefits of the raider with $X > X_I$

$$v < (1-\varphi)\frac{X_I + \overline{X}}{2} \tag{B.13}$$

or

$$\varphi < \frac{\alpha(\overline{X} - X_I)}{2X_I + \alpha(\overline{X} - X_I)} \equiv \varphi_{BT} \tag{B.14}$$

It can be shown that $\varphi_{BT} < \varphi_{TO}$. Since $\varphi_{TO} < \underline{\varphi}$, then $\varphi_{BT} < \underline{\varphi}$. This ensures no profitable deviation to a tender offer (see (B.6) and (B.7)).

Step 3. Equilibria of the third type – a block trade followed by a partial acquisition of the remaining shares.

Following the logic, similar to the one we applied in the proof of Lemma 3, one can again show that the price offered by the raider must be v_I.

Denote the *total* fraction of equity bought by the acquirer in such an equilibrium by $\beta \in (\alpha,\ 1)$. Let a raider with $X = \widetilde{X}$ be indifferent between acquiring share β and abstaining:

$$\beta\left[(1-\varphi)\widetilde{X} - v_I\right] + \varphi\widetilde{X} = 0, \tag{B.15}$$

which yields

$$\widetilde{X} = \frac{\beta v_I}{\beta(1-\varphi)+\varphi} > X_I \text{ for any } \beta \in (\alpha, 1) \tag{B.16}$$

The dispersed shareholders must be just indifferent between tendering and not tendering, which implies

$$v_I = E\left((1-\varphi)X \mid X > \widetilde{X}\right) = (1-\varphi)\frac{\widetilde{X}+\overline{X}}{2} \tag{B.17}$$

Using (B.16) we obtain

$$v_I = (1-\varphi)\frac{\frac{\beta v_I}{\beta(1-\varphi)+\varphi} + \overline{X}}{2}, \tag{B.18}$$

or, dividing by v_I both sides

$$1 = (1-\varphi)\frac{\frac{\beta}{\beta(1-\varphi)+\varphi} + \frac{\overline{X}}{v_I}}{2} \tag{B.19}$$

This equation implicitly defines the relationship between φ and β such that: for any φ such that β satisfying (B.19) belongs to $(\alpha,\ 1)$, there exists an equilibrium in which all types with $X \geq \widetilde{X}$ purchase the incumbent's share at $p = v_I$, and the dispersed shareholders tender exactly β shares to the mandatory bid.

Moreover, for any φ, β defined by (B.19) is unique (for $\varphi \in (0,\ 1)$), meaning the uniqueness of the equilibrium of the type we consider. Indeed, the right hand side of (B.19) is strictly increasing in β and strictly decreasing in φ (v_I is increasing in φ), implying that $\beta(\varphi)$ is a function and β is increasing in φ in equilibrium. Moreover, because v_I is increasing in φ, (B.17) implies that $\widetilde{X}$ is increasing in φ as well. Finally, one can easily derive that $\widetilde{X}$ equals X_I at φ_{BT} and $X_{EOR} > X_I$ at φ_{TO}. In turn, $\beta = \alpha$ at φ_{BT}, and $\beta = 1$ at φ_{TO}. Thus, the third type of equilibrium exists if and only if $\varphi \in (\varphi_{BT},\ \varphi_{TO})$. ■

Now, by looking at Propositions 8 and 9, we are ready to establish the effects of the EOR in the absence of the freezeout rule. The figure below will be helpful. As $\varphi_{BT} < \varphi_{TO} < \underline{\varphi}$, for $\varphi \leq \varphi_{BT}$, the EOR is irrelevant because it does not preclude block trades. For $\varphi \in (\varphi_{BT},\ \varphi_{TO}]$ the EOR is unambiguously harmful as $\widetilde{X} > X_I$, i.e., some value-increasing takeovers do not happen.

Next, there is a threshold on φ at which X_{EOR} becomes X_I, it is determined by $\frac{1-\varphi}{1+\varphi}\overline{X} = X_I$ yielding $\varphi = \frac{\overline{X}-X_I}{\overline{X}+X_I}$. It is straightforward to show that $\frac{\overline{X}-X_I}{\overline{X}+X_I} > \underline{\varphi}$. Thus, for $\varphi \in \left(\varphi_{TO},\ \underline{\varphi}\right]$, the EOR is unambiguously harmful as well for the same reason ($X_{EOR} > X_I$). For $\varphi > \underline{\varphi}$, the EOR eliminates value-reducing block trades (as $X' < X_I$). Yet, until φ reaches $\frac{\overline{X}-X_I}{\overline{X}+X_I}$, the negative effect of killing some value-increasing takeovers remains too. Finally, for $\varphi \geq \frac{\overline{X}-X_I}{\overline{X}+X_I}$, the EOR is unambiguously beneficial: it prevents value-reducing transfers of control without hurting efficient ones.

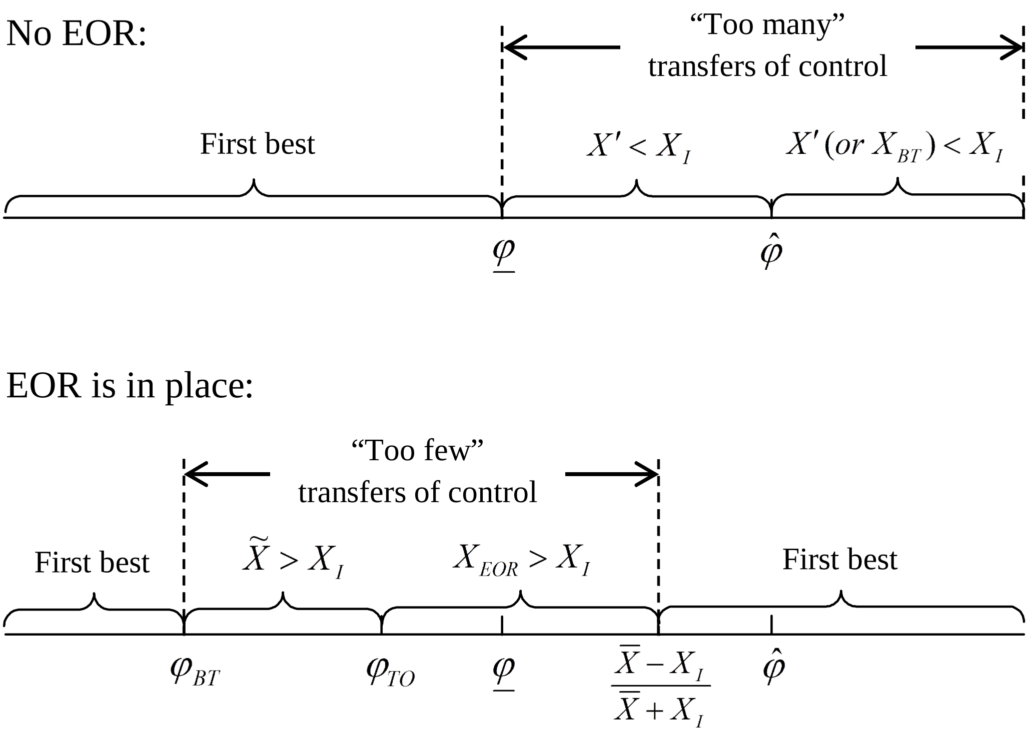

Figure 6. Effect of the EOR in the absence of the freezeout rule.

Thus, we see that, in the absence of the freezeout rule, the EOR unambiguously reduces efficiency when φ is sufficiently small, except for the lowest values of φ ($\varphi \leq \varphi_{BT}$), where the EOR is irrelevant. For high values of φ the EOR kills value-reducing block trades, but, unless φ is sufficiently high ($\varphi \geq \frac{\overline{X}-X_I}{\overline{X}+X_I}$) it also precludes some efficient control transfers.

B.4 Effect of investor protection

For $\varphi \geq \widehat{\varphi}$, the threshold on X above which control transfers occur is defined by Proposition 2 (either X' or X_{BT}), and, hence, it rises as φ falls. For $\varphi \in \left(\underline{\varphi},\ \widehat{\varphi}\right)$, the threshold is defined by (B.4) and continues to increase with a decrease in φ. This means that, in the absence of the EOR, investor protection helps eliminating inefficient block trades, like in the basic model.

What happens under the EOR? As Proposition 9 tells us, $\widetilde{X}$ is increasing in φ, whereas X_{EOR} is decreasing in φ until φ reaches $\frac{\overline{X}-X_I}{\overline{X}+X_I}$. Thus, as we start from high values of φ and improve investor protection, efficiency starts falling as we cross $\frac{\overline{X}-X_I}{\overline{X}+X_I}$ and decreases until φ reaches φ_{TO}. Further improvement in investor protection raises efficiency.

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Степанов, С.

Приобретение корпоративного контроля в фирмах с неконтролирующими крупными акционерами [Электронный ресурс] : препринт WP9/2015/04 / С. Степанов ; Нац. исслед. ун-т «Высшая школа экономики». – Электрон. текст. дан. (500 Кб). – М. : Изд. дом Высшей школы экономики, 2015. – (Серия WP9 «Исследования по экономике и финансам»). – 57 с. (на англ. яз.)

Мы моделируем выбор между покупкой пакета акций у основного акционера компании и публичным тендерным предложением как способами получения контроля над компанией в случае, когда пакет основного акционера не является контрольным. Предполагается, что потенциальные поглотители различаются по своей способности создавать стоимость в компании-цели, и эта способность является частной информацией. В равновесии поглотители высокого типа выбирают тендерное предложение, поглотители среднего типа – покупку лишь доли основного акционера, а поглотители низкого типа не приобретают контроль. Модель генерирует ряд закономерностей. Во-первых, по сравнению с тендерными предложениями частные покупки крупных пакетов сопровождаются более низкой реакцией цены акций компании цели, что соответствует эмпирическим наблюдениям. Некоторые приобретения крупных пакетов снижают стоимость. Правило «обязательного предложения» помогает предотвратить такие сделки. Однако введение подобной нормы должно сопровождаться введением возможности «вытеснения» оставшихся акционеров при приобретении достаточно большого пакета акций, чтобы не помешать сделкам, создающим стоимость. В целом эти две нормы являются взаимодополняющими: введение одной без другой может негативно сказаться на эффективности рынка корпоративного контроля. В работе также показано, что уровень защиты прав акционеров положительно влияет на вероятность тендерных предложений по отношению к частным сделкам с крупными пакетами. Однако при наличии правила обязательного предложения усиление защиты прав акционеров может препятствовать сделкам, создающим стоимость.

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Степанов Сергей

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(*на английском языке*)

Зав. редакцией оперативного выпуска *А.В. Заиченко*
Технический редактор *Ю.Н. Петрина*

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