ISSN 1045-6333

EFFICIENT AND INEFFICIENT SALES OF CORPORATE CONTROL

Lucian Arye Bebchuk

Discussion Paper No. 136

10/93

Harvard Law School
Cambridge, MA 02138

The Program in Law and Economics is supported by a grant from the John M. Olin Foundation.

First Draft 12/90
This Revision 10/93

Comments Welcome

EFFICIENT AND INEFFICIENT SALES OF CORPORATE CONTROL

Lucian Arye Bebchuk*

*Harvard University Law School. I am greatly indebted to Jesse Fried for his many invaluable suggestions throughout my work on this project. For helpful comments and conversations, I am grateful to Victor Brudney, Jacob Glazer, Oliver Hart, Christine Jolls, Marcel Kahan, Louis Kaplow, Ariel Rubinstein, David Scharfstein, Steve Shavell, and participants in two workshops at Harvard. For financial support, I am grateful to the National Science Foundation and to the Harvard Program in Law and Economics (which is supported by the John M. Olin Foundation).

Efficient and Inefficient Sales of Corporate Control

Lucian Arye Bebchuk

Abstract

This paper develops a framework for analyzing transactions in which a controlling interest in a corporation is transferred from an existing controller to a new controller. The paper identifies the circumstances in which, under alternative legal rules, efficient transfers fail to occur or inefficient transfers do occur. It is shown that none of the alternative rules that are in place or have been proposed can ensure that sale-of-control transactions will occur if and only if they are efficient. The analysis goes on to identify the efficiency problems with each rule and to assess the rules' relative performance.

Special attention is given to comparing the market rule, which is followed in the U.S., with the equal opportunity rule, which prevails in some other countries and has been the main contender to the market rule in policy debates. The market rule is superior to the equal opportunity rule in facilitating efficient transfers: while both rules fail to facilitate all such transfers, the market rule enables a wider range of efficient transfers to occur. The market rule, however, is inferior to the equal opportunity rule in discouraging inefficient transfers: such transfers may occur under the market rule but not under the equal opportunity rule. Combining the two effects, the analysis identifies conditions under which one of the two rules is overall superior to the other. For example, the market rule is shown to be superior to the equal opportunity rule if the characteristics of new and existing controllers (their managerial ability and their ability to extract private benefits of control) are drawn from the same distribution. Finally, in addition to the market rule and equal opportunity rule, the paper analyzes the consequences of the shared premium rule, appraisal rights, and several other arrangements.

I. Introduction

The importance of transactions that transfer corporate control is now widely recognized. Because the productivity of corporate assets depends on the ability of those managing the corporation, transactions that transfer control from one group of managers to another have potentially significant efficiency consequences. This paper focuses on an important set of control-shifting transactions — those in which a controlling interest in a corporation is sold from one party to another. Because widely dispersed shareholders face coordination problems, a controlling interest — one that gives its owner effective control of a corporation — may consist of less than 50% of the shares of the corporation.

These "sale-of-control" transactions are different from tender offer acquisitions which have attracted much attention in the last decade. Tender offers or takeover bids are used when ownership of the target firm is dispersed, with no shareholder holding a controlling interest. When a firm does not have a controlling shareholder, a buyer might make a tender offer, hoping that it will attract enough shares to obtain a controlling interest. Because many of the publicly traded firms in the U.S. and other advanced economies do not have a controlling shareholder, tender offers have been, and continue to be, an important device for transferring control of corporations.

In many publicly traded corporations in the U.S. and elsewhere, however, a significant number of shares is concentrated in the hands of a controlling shareholder.[1] In such cases, a buyer generally cannot acquire control unless the existing controlling shareholder agrees to sell to the buyer at least part of its controlling interest. Whether or not such a control-shifting transaction will take place may depend on whether, and to what extent, the law provides minority shareholders with rights to participate in (or otherwise benefit from) the transaction. In the U.S., the general rule has been that minority shareholders do not have a right to participate in sale-of-control transactions. But rules that provide minority shareholders with

[1]Barclay and Holderness (1989) report that at least 20% of listed firms have at least one non-officer who owns at least 10% of shares, and that, in a sample of NYSE and AMEX listed firms, officers and directors own on average 20% of a firm's stock.

certain rights with respect to such transactions are in place in some other countries, and the desirability of such rules has been the subject of long-standing debate among legal scholars and regulators.[2]

In the last decade, economists have devoted much attention to modelling the acquisition of corporate control through tender offers. This line of research has demonstrated that the dispersion of share ownership may lead to inefficiencies in the outcome of tender offers. The literature has identified and analyzed the free-rider problem, which may prevent a takeover from taking place even if it would be efficient (see Grossman and Hart (1980)). The literature has similarly identified and examined the pressure-to-tender problem, which might enable some inefficient takeovers to occur (see, e.g., Bagnoli and Lipman (1988)).

Economists have devoted little attention, however, to modelling transactions in which an existing controlling shareholder sells its control block in a company to an acquirer.[3] This lack of attention might be due in part to the recognition that, in such transactions, the seller's decision whether to sell does not involve the free-rider or pressure-to-tender problems that characterize the decisions of dispersed shareholders facing a takeover bid. As this paper demonstrates, however, the lack of free-rider and pressure-to-tender problems on the seller side does not imply that there are no efficiency problems with sale-of-control transactions. To the contrary, efficiency problems do arise, because transactions between a seller and a buyer of a control block may well have externality effects on minority shareholders. As a result of such externalities, inefficient transfers of control may occur and efficient transfers of control may be frustrated.

[2]See, e.g., Andrews (1965), Easterbrook and Fischel (1982), Clark (1986), and Elhauge (1992).

[3]There is an important body of literature that models other aspects of the presence of large shareholders. Thus, for example, Shleifer and Vishny (1986) present a model in which large shareholders with significant but non-controlling interests monitor the performance of their firm and occasionally acquire control through tender offers. Holmstrom and Tirole (1993), to take another example, analyze the optimal size of a controlling block, given the benefits and costs of market monitoring. But the literature does not generally model transactions in which control blocks are transferred, the effect of such transactions on efficiency, and the optimal design of the relevant legal rules. The only exception that I know of is Kahan (1992). Kahan models the market rule and one version of the equal opportunity rule, but he does not develop a full comparison of the performance of those rules and does not consider the full range of alternative arrangements analyzed in this paper.

This paper develops a framework for analyzing sale-of-control transactions. This framework enables us to identify the circumstances under which a given rule may fail to facilitate all efficient transfers or to discourage all inefficient transfers. As will be shown, none of the alternative rules that are in place or have been proposed can ensure that sale-of-control transactions will occur if and only if they are efficient. The model, however, does enable us to identify the efficiency problem with each rule and to assess the rules' relative performance.

The analysis of the paper is organized as follows. Part II presents the model's framework of analysis. A central feature of the model is that controllers might differ from each other in two respects — first, in their ability to manage and enhance the value of the firm's assets, and second, in their ability to extract private benefits of control. A control transfer from an existing controller to a new controller will be efficient if and only if the new controller can better manage the firm's assets.

Part III analyzes when control transfers will take place under one basic rule, which we refer to as the "market rule." Under the market rule, which has been generally followed in the U.S., minority shareholders enjoy no rights in connection with a sale-of-control transaction. Under this rule, a control block will be sold by the existing controller to an acquirer whenever the value of the control block (including whatever private benefits of control may be captured by the controller) is greater to the acquirer than it is to the existing controller. The analysis shows that the market rule enables inefficient transfers to take place. The reason is that the control block may have a higher value to the new controller than to the existing controller not because the new controller has greater managerial ability, but rather because the new controller has a greater ability to extract private benefits of control. The analysis also shows that the market rule fails to facilitate all efficient transfers; in this regard, however, the market rule turns out to perform better than the alternative rules that are in place or have been proposed.

Part IV examines an alternative to the market rule, the "equal opportunity rule." Under the equal opportunity rule, minority shareholders are entitled to sell their shares to the control buyer on the same terms as the control seller. As will be noted, the equal opportunity approach is found in the U.K.'s City Code and in the rules of some other jurisdictions. It is also included in a recently proposed EEC directive on company law, and has been advocated in the U.S. by some legal scholars. The analysis shows that the equal opportunity rule performs better than the market rule in some cases and worse in other cases. In particular, compared with the market rule, the advantage of the equal opportunity rule is that it prevents all inefficient transfers. Under the equal opportunity rule, transfers that make minority shareholders worse off cannot take place, and consequently inefficient transfers will never occur. At the same time, however, the equal opportunity rule is inferior to the market rule in terms of facilitating efficient transfers: the former prevents a wider range of such transfers than the latter.

Thus, neither of the two basic rules analyzed in Parts III and IV dominates the other by performing better in all cases. The question which naturally arises is whether one of the two rules performs better on the whole, that is, on an expected value basis. Part V seeks to shed light on this question. In particular, it identifies certain conditions -- concerning the distribution of managerial ability and private benefits of control among existing and new controllers -- under which the market rule is overall superior to the equal opportunity rule. To start with, it is shown that the market rule is overall superior to the equal opportunity rule if the differences among controllers in private benefits of control are sufficiently small. More importantly, it is shown that a surprisingly strong and clear result can be established if we assume that the characteristics of existing and new controllers are drawn from the same distribution: under this assumption, the expected efficiency costs of the market rule are unambiguously smaller than those of the equal opportunity rule. Furthermore, even if new controllers are assumed to differ systematically from existing controllers, it is still possible to identify conditions under which the market rule is superior. For example, it is shown that, even if new controllers have a systematic advantage in terms of ability to extract private benefits of control, the market rule is superior as long as the increases in private benefits of control brought about by new controllers are not systematically greater than the existing level of these benefits. Finally, while the analysis of Part V reveals a structural factor that works in favor of the market rule, it also identifies conditions under which the equal opportunity rule is nonetheless superior.

Part VI looks at a third basic rule, the "shared premium" rule. Under the shared premium rule, minority shareholders have the right to receive, on a pro rata basis, a fraction of the premium over market price paid to the controlling shareholder in a sale-of-control transaction. This remedy was given to minority shareholders in the famous case of Perlman v. Feldmann (an approach not followed by subsequent cases), and it has been endorsed by some legal scholars for all sale-of-control transactions. Like the equal opportunity rule, the shared premium rule is inferior to the market rule in terms of facilitating efficient transfers and is superior to it in terms of discouraging inefficient transfers. But the performance of the shared premium rule is not equivalent to that of the equal opportunity rule. For one thing, whereas the equal opportunity rule prevents all inefficient transfers, such transfers are possible under the shared premium rule. The analysis identifies the differences between the performance of the two rules, and suggests that, if the range of differences in ability to extract private benefits of control is not large, the equal opportunity rule is superior to the shared premium rule.

Part VII analyzes the consequences of supplementing the market rule with appraisal rights — rights that entitle minority shareholders to redeem their shares, should they choose to do so, for the estimated value that the shares would have in the absence of the sale-of-control transaction. If the appraisal procedure is accurate — that is, if appraisal rights can be relied on to provide minority shareholders with the precise no-transaction value of their shares — then adding appraisal rights would definitely improve the performance of the market rule. In particular, in such a case, the market rule with appraisal rights would prevent all inefficient transactions. Consequently, assuming that the appraisal procedure is accurate, the performance of the market rule with appraisal rights is shown to dominate the performance of both the market rule and the equal opportunity rule. As the analysis explains, however, there are reasons to believe that the appraisal process may be systematically inaccurate and would not generally provide minority shareholders with the precise no-transaction value of their shares. Consequently, adding appraisal rights to the market rule would not necessarily make the market rule superior to the equal opportunity rule — and may not even lead to an improvement over the market rule.

Part VIII extends the analysis to other legal arrangements for governing sale-of-control transactions. In particular, it examines the "partial opportunity" rule, the possibility of allowing minority shareholders to veto sale-of-control transactions, and the American doctrine that imposes liability on the control seller if the buyer "loots" the firm.

Finally, Part IX discusses two important issues that warrant exploring. One issue concerns the difference between outcomes that are optimal from the perspective of efficiency (which are the focus of the present analysis) and outcomes that are optimal from the perspective of the company's initial shareholders (or, equivalently, those who design the corporate charter). The second, related issue concerns the effect that the rules governing sale-of-control transactions have on incentives to create in the first place an ownership structure with a controlling shareholder.

Except for the proofs of the propositions that state the conditions for occurrence of a control transfer under each of the four basic rules, proofs are relegated to the Appendix.

II. Framework of Analysis

Consider a publicly traded firm that, in Period 0, has an existing controlling shareholder, to which we shall refer as E. In Period 1, a potential new controller, to which we shall refer as N, emerges: N may or may not acquire control from E. In Period 2, the firm operates under the management of either E or N, whichever one ends up with control in Period 1. At the end of Period 2, the firm is liquidated, and its value is divided among its shareholders.

The firm has n shares outstanding throughout these periods. The initial controller, E, owns a block of k shares with the remaining $(n - k)$ shares dispersed among public investors. The control block may consist of a majority of the firm's shares ($k \geq n/2$) but also may not; in publicly traded companies a block that falls short of a majority interest may frequently be sufficient to provide control. We shall refer to the public shareholders of the firm as "minority shareholders," even though k may take on values less than $n/2$.

The controller's identity is important because it may influence the value of two parameters, W and B. $W > 0$ denotes the per share value that the firm's assets will produce in Period 2. (Without loss of generality, one can assume that no value is produced by the firm's assets until then.) W will of course reflect the managerial ability of the controller. $B > 0$ denotes the per share value of the private benefits of control that the controller will extract in Period 2. The controlling shareholder may appropriate value from the firm by, for example, engaging in self-dealing, taking corporate opportunities, or providing itself with excessive salaries and other benefits. Although legal rules somewhat constrain controlling shareholders and reduce their ability to divert value, there is no question that controllers do retain some ability to extract private benefits of control. Indeed, it has been estimated that, in the U.S., these private benefits add up on average to approximately 3-4% of equity value.[4]

N and E may well differ in either W or B or both. Differences in W will reflect the relative abilities of the controller to manage directly or to monitor the management of the company. Similarly, controllers may differ in their ability to divert private benefits of control.[5] For example, a controller that owns other entities that are engaged in lines of business complementary to those of the controlled firm has a greater ability to extract value by engaging in self-dealing or the taking of corporate opportunities than a controller that does not own such entities.[6] Thus, it is reasonable to assume that controllers may well differ in B, though the

[4]See Barclay and Holderness (1989, 1992) and Zingales (1993). Private benefits of control tend to be an even larger fraction of equity value in other countries. See, e.g., Levy (1982) and Zingales (1992). The important role played by private benefits in the market for corporate control has been discussed previously in Grossman and Hart (1980, 1988), Harris and Raviv (1988), and Bebchuk and Kahan (1990).

[5]See Grossman and Hart (1988) and Harris and Raviv (1988a, 1988b).

[6]It might be argued that a new controller could enjoy private benefits of control at least to the same extent as the existing controller simply by duplicating the existing controller's arrangements. This would indeed be the case if the private benefits consisted only of the taking of excessive salary and perks. However, to the extent that the private benefits captured by the existing controller depend on the ownership and control of complementary businesses, duplicating the existing controller's arrangements may be quite difficult. For the existing controller may be able to better manage a complementary business than its potential successor. In the end, if one is willing to assume that controllers might differ in their ability to manage the firm which is the subject of the sale-of-control transaction, one must recognize the possibility that they may differ in their ability to manage other firms

analysis will also consider the special case in which controllers do not differ, or hardly differ, in B.

Let W_e and B_e denote the values of W and B respectively if the existing controller E retains control through Period 2. In such a case, minority shareholders will receive $(W_e - B_e)$ per share, that is, the minority shareholders will not receive their pro rata fraction of the per share value produced, W_e, but rather only their pro rata fraction of the per share value that is left after the private benefits of control are extracted. The controller E will get qua shareholder $(W_e - B_e)$ per share, and in addition will receive private benefits of control totalling nB_e. Thus, the controller will get a total value of $k(W_e - B_e) + nB_e$ *or* $W_e + \frac{(n-k)}{k}B_e$ per share. That is, the controller will get not only its pro rata fraction of the per share value produced, W_e, but also, in addition, that fraction of the private benefits of control that comes at the expense of the minority shareholders.

If N acquires control in Period 1, let W_n denote the per share figure for the total value that N will produce, and let B_n denote the per share value of the private benefits of control that N will be able to extract. It is assumed that W_n may be higher or lower than W_e, and similarly that B_n may be higher or lower than B_e. Finally, let ΔW denote $(W_n - W_e)$, and let ΔB denote $(B_n - B_e)$. A transfer of control will be efficient if and only if $W_n > W_e$, that is, if and only if $\Delta W > 0$. In other words, the transaction will be efficient if and only if N has a greater managerial ability than E.[7]

Under all of the prevailing and proposed rules for sale-of-control transactions, whether control will be transferred depends on whether N and E will agree to transfer some or all of the shares in E's control block to N. It will be assumed that N and E will agree to a transaction transferring control if and only if there is a transaction that will make both of them

as well, and thus in the level of private benefits that controllers can derive from self-dealing and the like.

[7]We assume that the transfer of control does not impose negative externalities or confer positive externalities on groups other than the minority shareholders. This assumption seems reasonable for an analysis that focuses on the consequences of certain basic corporate law rules. To the extent that the transfer of control may impose or confer externalities on other groups (such as debtholders, workers, competitors, and so forth), such externalities would be better addressed by other legal rules or contractual arrangements.

better off.[8] As will be shown, whether E and N will agree to such a transaction may in turn depend on the rights that the law provides to minority shareholders in connection with the transaction.

The operation of the market rule does not depend on the extent to which minority shareholders (or other third parties) are informed about W_n, W_e, B_n, and B_e. But the operation of the equal opportunity rule, the shared premium rule, and appraisal rights may depend on what is known by those other than E and N. The analysis will in such cases assume that W_n, W_e, B_n, and B_e are known to the market, but it will also consider the consequences of imperfect information concerning some or all of these parameters.

III. THE MARKET RULE

Under the so-called market rule, the seller is free to sell its control block at any price that the acquirer is willing to pay, and minority shareholders have no entitlement to participate in, or otherwise benefit from, the transaction. Minority shareholders are thus, in effect, forced to exchange their shares in the seller-run firm for shares in the buyer-run firm. This is the rule that essentially governs sale-of-control transactions in the U.S.[9]

A. The Outcome Under the Market Rule

A control block of k shares provides a controller with private benefits worth nB and value qua shareholder of $k(W - B)$. Thus, the total value of the k-share block to the controller is $kW + (n-k)B$. The first term represents the controller's claim on its pro rata fraction of the total value that is produced, whereas the second term represents the extent to which the controller receives more than its proportionate share of the firm's value due to the presence of private benefits of control. $(n-k)B$ is thus the amount transferred from the minority

[8] If W_n, W_e, B_e, and B_n are common knowledge among N and E, then bargaining theory would indeed suggest that the parties will agree to a transaction if there are gains to be shared between them. If there is some informational asymmetry concerning these values, however, the parties may fail to agree to a mutually beneficial transaction and may fail to capture the potential gains from trade.

[9] The "looting" exception to the U.S. rule will be discussed in Section VIII.3.

shareholders. Accordingly, the minority shareholders' pro rata fraction of the total value produced is reduced by the same amount, $(n\text{-}k)B$, so that they receive a total of $(n\text{-}k)W - (n\text{-}k)B$. Thus, the per share value of the control block is $W+\frac{(n-k)}{k}B$, whereas the per share value of minority shares is $(W - B)$. Under the market rule, there will be a transaction transferring a control block from E to N if and only if E and N can find a price for the control block that will make both of them better off. This will be the case if and only if the value of the control block to N is higher than the value of this block to E. Thus we have the following Proposition:

Proposition 1: Under the market rule, a transfer of control will occur if and only if:

$$W_n + \left(\frac{n-k}{k}\right) B_n > W_e + \left(\frac{n-k}{k}\right) B_e. \tag{1}$$

B. The Efficiency Costs of the Market Rule

From Proposition 1, it is possible to derive two corollaries concerning the ways in which the outcome under the market rule may differ from the efficient outcome.

Corollary 1 (inefficient transfers): under the market rule, an inefficient transfer of control will take place if and only if:

$$\begin{gathered} W_n - W_e = \Delta W < 0 , \quad \textit{and} \\ \left(\frac{n-k}{k}\right)(B_n - B_e) = \left(\frac{n-k}{k}\right)\Delta B > -\Delta W ; \end{gathered} \tag{2}$$

or, equivalently, if and only if

$$-\left(\frac{n-k}{k}\right)\Delta B < \Delta W < 0 . \tag{3}$$

Remarks: (1) Even if N is a worse manager than E, N nevertheless will place a higher value on the control block than E if N expects to extract enough additional private benefits of control to offset the decline in the value of the control block due to N's inferior managerial skills. Minority shares will decline in value following an inefficient transfer, both because the total value of the firm's assets will fall under N and because N will extract more private benefits from minority shareholders. Thus, the inefficient transaction will take place because, under the market rule, E and N will not internalize the negative externality that the transaction imposes on the minority shareholders.

(2) The empirical evidence does not rule out the possibility that inefficient transfers do take place under the prevailing market rule. Studies indicate that, on average, the market price of minority shares rises following a transfer of a control block.[10] In many cases, however, transfers of control lead to a decline in the market price of minority shares.[11] Thus, it is possible that, under the existing state of the law, inefficient transfers do take place in situations in which the acquirer has a greater ability to extract private benefits of control.

Corollary 2 (efficient transfers): Under the market rule, an efficient transfer of control will not take place if and only if:

$$W_n - W_e = \Delta W > 0 \ , \quad \textit{and}$$
$$\Delta W < \left(\frac{n-k}{k}\right)(B_e - B_n) = -\left(\frac{n-k}{k}\right)\Delta B \ ; \tag{4}$$

or, equivalently, if and only if

$$0 < \Delta W < -\left(\frac{n-k}{k}\right)\Delta B \ . \tag{5}$$

Remarks: (1) When N has a greater managerial ability but lower ability to extract private benefits than E, N will not be able to afford to purchase the control block from E if the

[10]See, e.g., Holderness and Sheehan (1988) (reporting that in 21 transfers of majority share blocks not involving simultaneous offers to minority shareholders, there were average announcement-period abnormal increases in stock prices of 9.41%).

[11]Holderness and Sheehan (1988) report that in the 31 cases of sales of majority blocks examined by them, 19% of the announcement-day and 35% of the announcement-period abnormal returns were negative. These figures are likely to understate the degree to which sale-of-control transactions lead to a decrease in the value of minority shares. First, the 31 cases include 10 in which a simultaneous offer was made to minority shareholders. In these 10 cases, abnormal returns to stock prices were significantly higher than for the sample as a whole. Second, the trades studied involved the acquisition of share blocks larger than necessary to achieve control. The purchase of such blocks is more likely to be motivated by expectations of an increase in the value of the firm than by anticipated private benefits of control.

decrease in private benefits of control following the transfer more than offsets the increase in the value of the control block due to N's superior managerial skills. Note that when N has a higher W and a lower B, a transfer of control would benefit minority shareholders in two ways – by increasing the total value produced and by reducing the size of the private benefits extracted by the controller. But E and N will ignore this positive externality, and for this reason an efficient transfer may not take place.

(2) While the market rule fails to facilitate all efficient transfers, this problem does not provide a reason for opposing the rule. As will be seen, in terms of facilitating efficient transfers, the market rule, albeit imperfect, still performs better than any of the alternative rules that are in place or have been proposed. Thus, the problem of blocked efficient transfers cannot provide a reason to reject the market rule in favor of one of these alternative rules. The market rule will perform worse than the alternative rules only if the problem of inefficient transfers under the rule is sufficiently severe.

Based on the above analysis, the efficiency costs of the market rule on an expected value basis are given by

$$\begin{aligned} C_{MR} = {} & Prob\left(-\left(\frac{n-k}{k}\right)\Delta B < \Delta W < 0\right) E\left[-\Delta W \mid -\left(\frac{n-k}{k}\right)\Delta B < \Delta W < 0\right] + \\ & Prob\left(0 < \Delta W < -\left(\frac{n-k}{k}\right)\Delta B\right) E\left[\Delta W \mid 0 < \Delta W < -\left(\frac{n-k}{k}\right)\Delta B\right]. \end{aligned} \tag{6}$$

The first term of (6) represents the expected costs resulting from the possibility of inefficient transfers taking place under the rule, whereas the second term of the equation represents the expected costs resulting from the market rule failing to facilitate all efficient transfers.

Both types of efficiency costs under the market rule result from the possible differences among controllers in their private benefits of control. To see that this is the case, consider the situation in which all controllers have the same B, that is, B_n always equals B_e. In this case, one can see from Proposition 1 that a transfer will take place under the market rule if and only if the transfer is efficient ($W_n > W_e$). For if E and N have the same ability to extract private benefits of control, then the control block will be more valuable to N than to E if and only if N has a better ability to manage the firm. Thus, if all controllers have the same B, the market rule will discourage all inefficient transfers and will facilitate all efficient ones. More generally, holding other things equal, the expected efficiency costs of the market rule decrease as the difference among controllers in B decreases, an issue to which we will return in Part V.

IV. THE EQUAL OPPORTUNITY RULE

Under the market rule, minority shareholders have no choice but to end up with minority shares in the buyer-run firm. The equal opportunity rule, while not giving minority shareholders the right to veto the sale, does entitle them to participate in the sale on the same terms as the seller.

This Part will analyze two versions of the equal opportunity rule. One version — which we shall refer to as the complete acquisition version — requires the buyer purchasing control to offer to purchase the shares of all the minority shareholders at the price paid to the control seller. This version of the rule can be found in the City Code of the United Kingdom,[12] in some other jurisdictions (such as Spain and Australia), and in a proposed EEC directive on company law.[13] Under this version of the rule, partial acquisitions are not possible unless the minority shareholders choose not to tender all of their shares to the buyer.

A second version of the rule — which is seemingly less "demanding" — will be referred to as the proration version. Under this version of the rule, a potential purchaser of control is not required to purchase all shares but only to extend an equal offer to all shareholders and to accept tendered shares on a pro rata basis. As a result, minority shareholders have the

[12]Although the City Code is merely a voluntary, self-governance code of conduct, its provisions are generally followed.

[13]Amended Commission Proposal for a Thirteenth Council Directive on Company Law, concerning takeover and other general bids, 33 O.J. Eur. Comm. C240/7 (1990). The rule found in the proposed EEC directive actually suffers from considerable ambiguity. The document focuses on "take-over and other general bids" and does not explicitly mention privately arranged sales of control blocks. See Elhauge (1993). Moreover, although the proposed rule calls for an acquirer of at least 33% of a firm's shares to make a bid for all shares, it does not explicitly require the bid price to be the same as the price paid for the first 33% of the shares. See Lüttmann (1992).

right to sell, for the same price, the same percentage of their shares as the control seller. The proration version of the equal opportunity rule was proposed in a classic article by Andrews (1965) and has since become the subject of vigorous debate among legal scholars in the U.S.[14] In contrast to the complete acquisition version, the proration version gives the buyer the option to purchase as few shares as is necessary to exercise control, so long as all shareholders are offered equal treatment and the control seller is willing to retain some minority interest in the new firm. But even though the proration version of the rule seems less demanding at first glance, the analysis below will show that its consequences are largely the same as those of the complete acquisition version.

A. The Outcome Under the Equal Opportunity Rule

1. The Complete Acquisition Version

Proposition 2: Under the complete acquisition version of the equal opportunity rule, a transfer of control will occur if and only if:

$$W_n > W_e + \left(\frac{n-k}{k}\right)B_e\,, \qquad or$$
$$\Delta W > \left(\frac{n-k}{k}\right)B_e\,. \tag{7}$$

Remark: Multiplying equation (7) by k yields the condition that

$$kW_n > kW_e + (n-k)\,B_e\,. \tag{8}$$

The left-hand side of (8) represents a fraction k/n of the total value produced by the firm under the controller N. The right-hand side represents the portion of the total value produced that controller E will enjoy if it retains control; as already noted, if E retains control, it will capture a fraction greater than k/n of the total value produced by the firm. As will be shown in the proof of the Proposition, under the complete acquisition version of the equal opportunity rule,

[14]See, e.g., Andrews (1965), Javares (1965), Easterbrook and Fischel (1982), and Brudney (1983).

if E relinquishes control, E will not be able to receive more than its pro rata fraction of the total value that will be obtained by all of the firm's existing shareholders (E and the minority shareholders). The total value obtained by the existing shareholders if a transaction takes place will in turn never exceed the total value of the firm under N's control. Therefore, the transfer will take place only if E's pro rata fraction of the value produced by the firm under N exceeds E's disproportionately large fraction of the value produced by the firm under E's control.

Proof: The proof will be accomplished in two steps.

(1) Let us suppose that, if E agrees to sell its shares, the minority shareholders will elect to take advantage of N's obligatory offer to buy all of their shares. In this case, a transfer will occur if N and E can find a price that makes both better off. For E to be made better off, the price P paid per share must satisfy (i) $P > W_e + \frac{(n-k)}{k}B_e$. For N, (which must purchase all of the shares), to be made better off, the price P must satisfy (ii) $P < W_n$. From this it follows that a sale-of-control transaction that makes both parties better off will exist if and only if $W_n > W_e + \frac{(n-k)}{k}B_e$.

(2) Next, let us introduce the option that minority shareholders have of not selling their shares to N, and let us show that, even with this option, condition (7) is both necessary and sufficient for a control transfer. To show that (7) is necessary, observe that in any transaction at price P that takes place, having the option cannot make minority shareholders worse off. Therefore, if (7) is not satisfied and, consequently, every transaction that occurs without the option will not make both E and N better off, then giving minority shareholders the option of not selling will not change this.

It remains to show that (7) is a sufficient condition for a transfer. To see this, note that when (7) holds, it is always possible to choose a P that satisfies not only (i) and (ii) but also (iii) $P > W_n - B_n$. With such P, the outcome will be the same as in the case without the option, and the transaction will make both E and N better off.[15] ■

2. The Proration Version

Consider now the situation in which N is permitted to buy a controlling block without offering to buy all of the minority shares. In particular, suppose that N is allowed to purchase only $q < n$ shares (q shares are assumed to be sufficient for control). Under the proration version, N is only required to extend to all shareholders the same offer, and, in the event that any minority shareholders tender, to take up their shares on a pro-rata basis.

Proposition 3: Under the proration version of the equal opportunity rule, a transfer of control will occur if and only if

$$W_n > W_e + \left(\frac{n-k}{k}\right) B_e, \quad or \qquad \Delta W > \left(\frac{n-k}{k}\right) B_e . \tag{9}$$

Remark: Suppose that N pays a price P for each of the q shares it buys. As a result of the transaction, the existing shareholders of the firm (E and the existing minority shareholders) will end up with qP in cash plus $(n\text{-}q)$ minority shares worth $(W_n - B_n)$ each, and they will thus emerge from the transaction with a total value of $qP + (n\text{-}q)(W_n\text{-}B_n)$ in payments and minority shares. If N is going to benefit from the transfer, the total value with which the existing shareholders will end up following a transaction cannot exceed W_n multiplied by the number of shares, n. As will be shown in the proof, under the proration version, E will not be able to capture more than its pro rata fraction $\frac{k}{n}$ of the total obtained by the existing shareholders. Thus, also under the proration version, the transfer will take place if and only if E's pro rata fraction of the firm's value under N exceeds E's larger-than pro rata fraction of the firm's value

[15] It is worth noting, however, that, when $W_n - B_n > W_e + ((n\text{-}k)/k)B_e$, it is possible to have a transaction at a price P that will lead the minority shareholders to hold out and nonetheless will make both E and N better off.

if E retains control.[16]

Proof: The proof will be in two steps.

(1) Assume first that, if E agrees to the transaction and tenders its shares, the minority shareholders will always tender their shares. In this case, under the proration version of the equal opportunity rule, E will be able to sell only a fraction $\frac{q}{n}$ of its shares for the price P and will have a fraction $\left(\frac{1-q}{n}\right)$ of its shares become minority shares with a per share value of $(W_n - B_n)$. Thus, E will end up with a per share value of $\left(\frac{q}{n}\right)P + \left[\frac{(1-q)}{n}\right](W_n - B_n)$ instead of the per share value of $W_e + \left(\frac{n-k}{k}\right)B_e$ it now has. Algebraic rearrangement yields that E will be made better off if and only if P satisfies (i) $P > \frac{n}{q}\left[W_e + \left(\frac{n-k}{k}\right)B_e - \left(1-\frac{q}{n}\right)(W_n - B_n)\right]$. As to N, since a block of q shares will provide N with a per share value of $W_n + \left(\frac{n-q}{q}\right)B_n$, N will be made better off if and only if P satisfies (ii) $P < W_n + \left(\frac{n-q}{q}\right)B_n$. Algebraic rearrangement shows that a P satisfying both (i) and (ii) will exist if and only if condition (9) is satisfied.

(2) Next, let us introduce the minority shareholders' option of not tendering their shares. Following reasoning similar to the one used in step (2) in the proof of proposition 2, it can be shown that, with this option, (9) is still a necessary condition for a transfer. Finally, to see that (9) is a sufficient condition for a transfer, observe that, when (9) is satisfied, it is possible to choose a P that satisfies not only (i) and (ii) but also (iii) $P > W_n - B_n$. With such P, the outcome will be the same as under the case in which the option does not exist, and the transaction will make both E and N better off.[17] ■

3. Comparing the Two Versions

As can be seen from Propositions 2 and 3, transfers of control will take place under

[16]Another way to understand the intuition behind Proposition 3 is by understanding why B_n does not appear in the transfer condition: to the extent that N is expected to extract private benefits of control, N must compensate E (and participating minority shareholders as well) by an offsetting amount. Thus, B_n does not represent a net source of value to N from owning the control block.

[17]It is worth noting, however, that, if $W_n - B_n > (n/q)\,[W_e + ((n-k)/k)B_e - ((1-q)/n)\,(W_n - B_n)]$, then there will exist a transaction P that will lead minority shareholders to hold out and nonetheless will make both E and N better off.

exactly the same conditions under the complete acquisition and proration versions of the equal opportunity rule. The reason for this equivalence can be intuitively explained as follows.

Under both versions of the rule, E will not be able to receive, in the event of a transfer, more than its pro rata fraction *(k / n)* of the total value received by the existing shareholders. The reason is that the minority shareholders have the option to participate on the same terms as E under both versions of the rule. By exercising their option, the minority shareholders will be able to ensure that they will end up with the same per share value as that captured by E. Thus, under both versions of the rule, E will be able to gain from a transfer only if the total value obtained by the existing shareholders exceeds the same minimum threshold.

Furthermore, under both versions of the rule, in order for N to benefit from the transaction, the total value obtained by the existing shareholders cannot exceed the same upper bound. The total value received by the existing shareholders if N purchases q shares is $qP + (n\text{-}q)(W_n\text{-}B_n)$. For N to benefit, the price paid for the block of q shares cannot exceed the value of the block to N, which is $W_n + \frac{(n-q)}{q}B_n$. Thus, the total value with which the existing shareholders can end up cannot exceed $q(W_n + \frac{(n-q)}{q}B_n) + (n-q)(W_n - B_n)$. This bound is equal to nW_n, whether the number of acquired shares q is equal to or lower than n.

Thus, under both versions of the rule, E will not get more than its pro rata fraction of the total value obtained by the existing shareholders — a total value which in turn cannot exceed W_n per share. Consequently, under both versions, the condition for a transfer is that this per share value W_n exceed the per share value to E of its control stake, which is $W_e + \frac{(n-k)}{k}B_e$.

Finally, it is worth noting that the above analysis has assumed that N does not face liquidity constraints that would prevent it from purchasing and holding all n shares of the firm. Suppose, however, that N has resources that enable it to buy only $q < n$ shares. At first glance, this would appear to prevent all the transfers of control under the complete acquisition version in which minority shareholders are expected to tender their shares. However, in such a case, N would be able to purchase all n shares and then resell $(n\text{-}k)$ shares to the market at a price equal to their per share value of $(W_n - B_n)$. Assuming that there are no transaction costs involved in reselling minority shares to the market, this combination of transactions would leave N in exactly the same position as if it had purchased q shares at the start. Thus, even if the potential new controller has limited resources, the performance of the complete acquisition version and the proration version will be still largely equivalent as long as the transaction costs involved in reselling shares are negligible. But if the new controller has liquidity constraints and the transaction costs involved in reselling shares are non-negligible, then the complete acquisition version would make a control transfer less likely because of the need to bear these transaction costs.

B. The Efficiency Costs of the Equal Opportunity Rule

From Propositions 2 and 3, it is possible to derive two corollaries concerning the performance of the equal opportunity rule, both in terms of preventing inefficient transfers and in terms of facilitating efficient transfers.

Corollary 4 (inefficient transfers): Under (the two versions of) the equal opportunity rule, inefficient transfers will not occur. Thus, in terms of preventing inefficient transfers, the equal opportunity rule is superior to the market rule.

Remark: Inefficient transactions may take place under the market rule because, under this rule, a transaction may impose a negative externality on the minority shareholders and E and N will disregard this negative externality when considering a transfer. In contrast, transfers under the equal opportunity rule cannot leave minority shareholders worse off. Indeed, under this rule, if a transaction takes place, minority shareholders will be always made better off by it: they will have the option of selling at least some of their shares for a price $P > W_e + \frac{(n-k)}{k}B_e$, whereas the value of these shares in the absence of the transaction would be only $(W_e - B_e)$. Thus, under the equal opportunity rule, all of the transactions that occur must make all parties, including minority shareholders, better off. Consequently, all transfers that take place under this rule must be efficient.

Corollary 5 (efficient transfers): Under (the two versions of) the equal opportunity rule, an efficient transfer will not take place if and only if:

$$0 < \Delta W < \left(\frac{n-k}{k}\right) B_e \,. \tag{10}$$

Thus, in terms of facilitating efficient transfers, the equal opportunity rule is inferior to the market rule; the former prevents more efficient transfers than the latter.

Remark: The equal opportunity rule impedes efficient transfers because it requires E to forego any advantage over the minority shareholders in the event of a control transfer even though E has an advantage over the minority shareholders in the absence of a transfer. In the absence of a transfer, E enjoys a disproportionately large share of the value produced by the firm because of E's private benefits. In the event of a transfer, however, because N must extend the same offer to all shareholders, E can capture no more than its proportionate fraction of the total value received by the existing shareholders. Even if the total value produced by the N-run firm is greater than the total value of the firm under E, the value of E's disproportionate share of the lower-valued firm may be greater than E's proportionate share of the higher-valued firm. When this occurs, E cannot be induced to sell the control block to N.

Based on the above analysis, the expected efficiency costs under (either version of) the equal opportunity rule are

$$C_{EOR} = Prob\left(0 < \Delta W < \left(\frac{n-k}{k}\right) B_e\right) E\left[\Delta W \mid 0 < \Delta W < \left(\frac{n-k}{k}\right) B_e\right]. \tag{11}$$

It is worth noting that, in contrast to the case under the market rule, the efficiency costs of the equal opportunity rule would not disappear if controllers were assumed not to differ in their ability to extract private benefits of control, that is, if B_n were assumed to equal B_e always. Even if controllers had the same B, there would be some meaningful efficiency costs as long as this uniform level of private benefits B was not trivial.

C. The Minority Shareholders' Option Not to Tender

Under the equal opportunity rule, minority shareholders have an option — but are not required — to participate in the transaction. If the minority shareholders exercise their option, they will emerge from the transaction with the same per share value as E will have. But the minority shareholders may decline to exercise their option. If the share price negotiated by E and N is less than $(W_n - B_n)$, the minority shareholders will be better off not tendering their shares. In this case, they will end up with a higher per share value than E. That is, the minority shareholders will end up with more than their pro rata fraction of the total value received by the firm's existing shareholders.

By eliminating the option element, the equal opportunity rule could be modified to create what may be called the "equal sharing" rule. Under such a rule, whenever E and N negotiate a sale, minority shareholders would be required (rather than given an option) to participate on the same terms as E.[18] For our purposes, the choice between the equal opportunity rule and the equal sharing is not all that significant. For the analysis contained in the proofs of Propositions 2 and 3 implies that both rules will facilitate control transfers under the same set of circumstances. The difference between the two rules will be only in how the surplus from the transfers that do take place will be divided among the parties.

Finally, it should be noted that while the presence of imperfect information on the part of minority shareholders about $(W_n - B_n)$ is irrelevant to an analysis of the equal sharing rule (under which minority shareholders do not make any decisions), the issue of imperfect information is relevant to an analysis of the equal opportunity rule. Under the equal opportunity rule, minority shareholders may be forced to decide, based on imperfect information, whether to exercise their option. To be sure, the minority shareholders can, by tendering their shares, always ensure that they get the same per share value as E. But the minority shareholders may choose not to sell their shares to N if, based on the information

[18]If the equal opportunity rule were to be adopted in the U.S. without any change in existing merger law, then the result would in many cases be wholly equivalent to that of an equal sharing rule. For under existing merger law, a controller with a majority interest can sell the firm for a price it negotiates with the buyer and then distribute the proceeds to all shareholders on a pro rata basis. Thus, a controller with a majority interest would be able to design a sale of its interest in the firm in such a way that minority shareholders get no more than their pro rata fraction of the total value obtained by the existing shareholders.

available to them, they believe that $(W_n - B_n)$ is higher than the negotiated share price.[19]

V. Aggregate Comparison of the Market and Equal Opportunity Rules

As was shown in Parts III and IV, neither the market rule nor the equal opportunity rule dominates the other: each will perform worse than the other in some cases. The question thus naturally arises whether one of the rules performs better over the aggregate of cases. That is, the question is whether one of the rules is characterized by lower expected efficiency costs than the other.

The answer to this question will obviously depend on the assumptions one makes about the ways in which W_n and B_n are distributed relative to W_e and B_e. It is easy to imagine sets of sufficiently extreme assumptions under which either rule would be superior.[20] But it is of more interest to consider the relative performance of the rules using more plausible aassumptions about the distribution of controllers' characteristics. In the analysis presented below, we identify some conditions under which the market rule is preferable to the equal opportunity rule.

A. Similarity in Private Benefits of Control

To begin with the condition that is easiest to identify, the market rule will be superior to the equal opportunity rule if the difference between existing and new controllers in B is

---

[19]The presence of imperfect information could thus lead to inefficient transfers under the equal opportunity rule. Consider a case in which $W_n < W_e$, $B_n > B_e$, and $W_n + ((n\text{-}k)/k)B_n > W_e + ((n\text{-}k)/k)B_e$. In this case, E and N may negotiate a sales price $P > W_e + ((n\text{-}k)/k)B_e$ if they believe that minority shareholders will overestimate $(W_n - B_n)$ by so much that they will choose to keep rather than sell their shares to N.

On the other hand, imperfect information may allow some efficient transfers to take place that would otherwise be blocked by the equal opportunity rule. Consider a case in which $W_e + ((n\text{-}k)/k)B_e > W_n > W_e$ and $W_n + ((n\text{-}k)/k)B_n > W_e + ((n\text{-}k)/k)B_e$. In this case, under the equal opportunity rule, an efficient transfer will not take place if minority shareholders are expected to participate. If, however, E and N believe that minority shareholders will overestimate $(W_n - B_n)$ and consequently not tender their shares, they may be able to negotiate a transfer of control. Thus, overestimates of $(W_n - B_n)$ may lead to either net efficiency costs or net efficiency benefits and thus may make the equal sharing rule either superior or inferior to the equal opportunity rule.

[20]For example, if one assumes that the probability of an efficient transfer is sufficiently small, then the equal opportunity rule would be superior. Likewise, if one assumes that the probability of an inefficient transfer is sufficiently small, then the market rule would be superior.

sufficiently small.

Proposition 4: The expected efficiency costs of the market rule are smaller than those of the equal opportunity rule if the maximal difference between controllers in their private benefits of control, $max|\Delta B|$, is sufficiently small.

This Proposition, which is proved in the Appendix, essentially follows from the conclusions we reached in earlier Parts. We saw in Part III that, as ΔB goes to zero, so do the expected efficiency costs of the market rule. And we saw in Part IV that, for any given B_e, sending ΔB to zero will not affect the expected efficiency costs of the equal opportunity rule.

While this Proposition highlights the importance of differences in B, one cannot derive from it a confident conclusion that the market rule is superior to the equal opportunity rule. Even if one believes that the range of differences in B is not large (or at least not large relative to the range of differences in W), one cannot be confident that the range is sufficiently small to ensure that the condition in the Proposition is satisfied. For the very sources from which B often arises (the ability of a controller to divert value by engaging in self-dealing and taking of corporate opportunities) suggest that controllers may differ substantially in their ability to extract private benefits of control.[21]

B. Symmetry Between Buyers and Existing Controllers

A natural benchmark case to consider is the one in which ΔW and ΔB are symmetrically and independently distributed around zero. That is, while new controllers may have higher or lower values for W or B, new controllers have neither a systematic advantage nor a systematic disadvantage relative to existing controllers.

One assumption that would give rise to such a scenario is that, in every case, W_n is symmetrically distributed around W_e and B_n is symmetrically distributed around B_e. As a result, in every case both ΔW and ΔB will be symmetrically distributed around zero.

[21]The possibility that controllers may differ significantly in their B plays an important role in the analysis of Grossman and Hart (1988), Harris and Raviv (1988a) and Bebchuk and Kahan (1990).

Alternatively, one could assume that W_n and W_e are drawn from the same distribution, and similarly that B_n and B_e are drawn from the same distribution. Here, in the aggregate of cases, both ΔW and ΔB are symmetrically distributed around zero.

Surprisingly, in the case of symmetry, it is possible to establish a strong and clear result about the relative performance of the market rule and the equal opportunity rule.[22]

Proposition 5: Assuming that ΔW and ΔB are both symmetrically and independently distributed around zero, the market rule is characterized by lower expected efficiency costs than the equal opportunity rule.

Remarks: (1) The intuition behind this result, which is proved in the Appendix, may be explained as follows. Under the market rule, there may be an efficiency problem both when $\Delta B > 0$ (an inefficient transfer will occur if $0 < \Delta W < \Delta B$) and when $\Delta B < 0$ (an efficient transfer will be prevented if $0 < -\Delta W < -\Delta B$). Under the assumed conditions of symmetry, the expected efficiency costs resulting from a given positive ΔB are the same as those resulting from a negative ΔB with the same absolute value. Consequently, the size of the total expected efficiency costs depends on the distribution of $|\Delta B|$. The further away from zero $|\Delta B|$ is distributed, the greater the total expected efficiency losses.

In contrast, under the equal opportunity rule, the magnitude of the efficiency problem depends on the distribution of B_e. The further from zero B_e is distributed, the greater the expected efficiency costs of the rule (from efficient transfers blocked when $0 < \Delta W < B_e$).

The assumption that ΔB is symmetrically distributed around zero implies that the distribution of $|\Delta B|$ is stochastically dominated by the distribution of B_e. This ensures that the expected efficiency costs of the market rule are smaller than those of the equal opportunity rule.

This analysis highlights the structural factor that works for the market rule in a comparison with the equal opportunity rule: the problems of the market rule depend on the

[22] I am grateful to Jesse Fried for the proof of this proposition.

magnitude of $|B_n\text{-}B_e|$, whereas the problems of the equal opportunity rule depend on the magnitude of B_e. Under the assumed conditions of symmetry, this factor is sufficient to make the market rule overall superior.

(2) Indeed, under the assumed conditions of symmetry, the expected efficiency costs of the market rule may be substantially lower than those of the equal opportunity rule. Consider the following example, which assumes that W_n is symmetrically and uniformly distributed around W_e and that B_n is symmetrically and uniformly distributed around B_e. In this case, if $max\ (\Delta W) > \frac{(n-k)}{k}\ max\ (\Delta B)$, as is likely to be the case,[23] then computation indicates that the expected efficiency costs of the market rule are less than 1/3 of the expected efficiency costs of the equal opportunity rule.

C. Asymmetry Between Buyers and Existing Controllers

While the symmetric case is a natural benchmark case to consider, it is possible to argue that potential buyers may systematically differ in their characteristics from existing controllers. Indeed, one can think of reasons for systematic differences in two opposite directions. On the one hand, it may be argued that existing controllers are the product of a selection process that put them in control in the first place, and that, as a result, their W and B may be systematically (though not always) higher than those of potential buyers.[24] On the other hand, it may be argued that existing controllers may have already exhausted some of the modes available to them in creating or diverting value, and that, as a result, new controllers may have systematically (though not always) higher W and B. Below we therefore explore the implications of systematic difference in characteristics. The analysis shows that the structural factor working in favor of the market rule in the symmetric case continues to operate in the

[23]Barclay and Holderness (1989) find that the premium paid for majority control blocks in publicly traded U.S. firms – a reasonable estimate of the magnitude of private benefits of control – averages 4% of market equity value. Since stock market value would understate total equity value by not capturing the private benefits diverted by the controller, their findings imply that on average private benefits of control amount to less than 4% of total equity value. Zingales (1993), employing a different methodology, concludes that in the U.S. private benefits represent about 3% of equity value.

[24]See Bebchuk and Kahan (1990) for a consideration of a similar argument in the context of proxy contests.

asymmetric case. The analysis also shows, however, that there are distributional assumptions under which the equal opportunity rule is nonetheless superior to the market rule.

1. Asymmetry Only in B

It turns out that symmetry in W alone is sufficient to ensure the superiority of the market rule, even if buyers have systematically higher B, as long as the increases in B brought about by new controllers are not too large relative to the existing level of B.

Proposition 6: Assuming that ΔW and ΔB are independently distributed, and that ΔW is symmetrically distributed around zero, a sufficient condition for the market rule to be superior to the equal opportunity rule is that (i) B_n does not exceed $2B_e$, or, more generally, (ii) the distribution of $|B_n - B_e|$ is stochastically dominated by the distribution of B_e.

Remark: The intuition behind the result, which is proved in the Appendix, is as follows. As noted earlier, when ΔW is symmetrically distributed around zero, the expected efficiency costs of the market rule depend on how far the distribution of $|B_n - B_e|$ is from zero, whereas the expected costs of the equal opportunity rule depend on how far the distribution of B_e is from zero. Consequently, when the distribution of $|B_n - B_e|$ is closer to zero than the distribution of B_e, the efficiency costs of the market rule are smaller than those of the equal opportunity rule.

2. Asymmetry in Both W and B

Let us denote $Prob(W_n > W_e)$ by θ_W and $Prob(B_n > B_e)$ by θ_B. Our interest now is in examining the case in which both $\theta_W \neq 1/2$ and $\theta_B \neq 1/2$. To explore this case, we make the following simplifying assumptions. We assume that, in every given case, ΔW is distributed as follows: conditional on $\Delta W > 0$, ΔW is distributed uniformly on $(0,w)$, and conditional on $\Delta W < 0$, ΔW is distributed uniformly on $(-w,0)$. Thus, the density function of ΔW is $(1-\theta_W)/w$ on $(-w,0)$ and θ_W/w on $(0,w)$. Similarly, we assume that, conditional on $\Delta B>0$, ΔB is distributed uniformly on $(0,b)$ and that, conditional on $\Delta B < 0$, ΔB is distributed uniformly on $(-b,0)$. (Given that $B_n > 0$, it follows that b must be less than B_e.) Thus, the density function of ΔB is $(1-\theta_B)/b$ on $(-b,0)$ and θ_B/b on $(0,b)$. Finally, we assume that $B_e < max(\Delta W)$ and, as before, that ΔW and ΔB are independently distributed.

For this uniform distribution example, one can establish a surprisingly strong and clear result, which is proved in the Appendix, concerning how the market rule compares with the equal opportunity rule.

Proposition 7: In the uniform distribution case described above:

(a) If $\theta_W = \theta_B$ (that is, N is equally likely to have a higher W as it is to have a higher B), then the market rule is characterized by lower expected efficiency costs than the equal opportunity rule.

(b) A sufficient condition for the market rule to be superior to the equal opportunity rule is that $\theta_W > (\theta_B/(2(1 + \theta_B))$.

Remarks: (1) From the analysis in the proof of Proposition 7, it follows that when $\theta_W = \theta_B$, then C_{MR}, the expected efficiency cost of the market rule, is less than $(2/3)(1-\theta_W)$ of C_{EOR}, the expected efficiency cost of the equal opportunity rule. Thus, C_{MR} is always less than $2/3$ of C_{EOR} and, for $\theta_W > (1/2)$, C_{MR} is less than $1/3$ of C_{EOR}.

(2) Part (b) of Proposition 7 implies that $\theta_W > (1/2)\theta_B$ is always a sufficient condition for the market rule to be superior. Furthermore, for $\theta_B < (1/2)$, $\theta_W > (1/6)\theta_B$ is also a sufficient condition for market rule's superiority.

Thus, in the considered uniform case, even if potential buyers have a systematic disadvantage in W relative to the existing controllers, the market rule will still be superior to the equal opportunity rule as long as potential buyers have a similar systematic disadvantage in B. The equal opportunity rule will be superior only if the standing of potential buyers (relative to existing controllers) in terms of W is substantially worse than their relative standing in terms of B.

3. The Possibility that the Equal Opportunity Rule is Superior

The analysis of this part has identified several conditions or benchmark cases under which the market rule is superior to the equal opportunity rule. In doing so, the analysis has highlighted a structural difference between the rules' performance that works in favor of the market rule. The efficiency costs of the market rule depend on the distribution of $(B_n\text{-}B_e)$, whereas the efficiency costs of the equal opportunity rule depend on the distribution of B_e. And, in the various benchmark cases that have been examined, the former distribution is closer to zero than the latter.

While the above results shed light on the difference between the two rules' performance, it should be emphasized that one cannot draw from them a confident conclusion that the market rule is superior. The reason is that it is also possible to identify assumptions concerning the distributions of ΔW and ΔB under which the equal opportunity rule is superior. For example, suppose that new controllers have neither systematic advantage or disadvantage in terms of B, but that they have a systematic disadvantage in terms of W. If this disadvantage in W is sufficiently substantial, the equal opportunity rule will be superior. Our current knowledge does not enable us to rule out this assumption about the distributions of B and W as an implausible description of the world.[25] Thus, more theoretical or empirical work on the distributions of W and B must be done before the analytical results of this paper can yield a definite ranking of the market and equal opportunity rules.

VI. THE SHARED PREMIUM RULE

Under the shared premium rule, minority shareholders are entitled to receive their proportionate fraction of the control premium paid to the existing controller in a sale-of-control transaction. The control premium is defined as the difference between the per share acquisition price (P) and the pre-transfer market price (P_0), multiplied by the size of the control block, which comes to $k(P - P_0)$. The minority shareholders' fractional share of the control

[25]To establish the initial plausibility of this scenario, one may suggest the following story. Before a firm goes public, its ownership may move hands until it gets into the hands of the owner that will sell to the public a minority of the firm's shares and become the initial controlling shareholder. This process will tend to produce initial controllers with a high W. But because a high B will not make the firm more valuable to an owner (a high B will be fully reflected in the price the public will be willing to pay for shares), the process will not result in initial controllers with a systematically high B. Consequently, compared with the initial controllers, emerging potential buyers will have a systematic disadvantage in W but not in B.

premium would thus be $\frac{(n-k)}{n}k(P-P_0)$. In the famous sale-of-control case of Perlman v. Feldmann, the remedy ordered by the court provided the minority shareholders with their pro rata fraction of the control premium. (See Clark (1986) for a good account and discussion of this case.) While this approach was not followed by subsequent cases, some legal scholars (most notably Berle (1959)) have advocated providing minority shareholders with a right to such sharing in all sale-of-control transactions. Their reasoning was that control is a corporate asset that belongs to all of the corporation's shareholders equally, and that the proceeds from the sale of such a corporate asset should be distributed to all shareholders on a pro rata basis.

At first glance, it might seem that the shared premium rule has similar consequences to those of the equal opportunity rule; both rules, it might appear, seek to put the minority shareholders and existing controllers on equal footing following a sale-of-control transaction. As the analysis below demonstrates, however, the shared premium rule does not produce the same outcomes as — and therefore does not perform equivalently to — the equal opportunity rule.

A. The Outcome Under the Shared Premium Rule

<u>Proposition 8</u>: Under the shared premium rule, a transfer of control will occur if and only if

$$\left[W_n + \left(\frac{n-k}{k}\right) B_n\right] - \left[W_e + \left(\frac{n-k}{k}\right) B_e\right] > \left(\frac{n-k}{k}\right) \left[W_e + \left(\frac{n-k}{k}\right) B_e - P_0\right] \qquad \textbf{(12)}$$

that is,

$$\Delta W + \left(\frac{n-k}{k}\right) \Delta B > \left(\frac{n-k}{k}\right) \left[W_e + \left(\frac{n-k}{k}\right) B_e - P_0\right]. \qquad \textbf{(13)}$$

<u>Remarks</u>: (1) Under the shared premium rule, it is not sufficient for a transfer to take place that the per share value of the control block to N, $(W_n + \frac{(n-k)}{k}B_n)$, exceed the per share value of the block to E, $(W_e + \frac{(n-k)}{k}B_e)$. Rather, the gap between the two must exceed

$$\left(\frac{n-k}{k}\right) \left[W_e + \left(\frac{n-k}{k}\right) B_e - P_0 \right]. \qquad \textbf{(14)}$$

The reason for this is as follows. Suppose that E were allowed to keep the whole control premium (as is the case under the market rule). The control premium of $(P - P_0)$ per share would not represent net profit from the transaction. In the absence of the transaction, the shares in the control block would be worth to the controller not P_0 but rather $W_e + \frac{(n-k)}{k}B_e$ per share. Thus, of the control premium paid to E, $k(P - P_0)$, a part equalling $k[W_e + \frac{(n-k)}{k}B_e - P_0]$ represents not profit but rather compensation for the value over P_0 per share that E would have enjoyed in the absence of the transaction. Requiring E to share the control premium with the minority shareholders thus forces E not only to share its profit with the other shareholders but also to pass on to these shareholders part of the amount that E receives to make E as well off as it would have been without the transaction. Therefore, if a transaction with $P = W_e + \frac{(n-k)}{k}B_e$ were agreed upon by E and N, under the shared premium rule the transaction would produce for E a per share loss of

$$\left(\frac{n-k}{n}\right)\left[W_e + \left(\frac{n-k}{k}\right)B_e - P_0\right]. \tag{15}$$

Thus, for E to benefit from the transaction, the per share price that E receives must exceed $W_e + \frac{(n-k)}{k}B_e$ by at least enough to offset E's obligation to make the above transfer to the minority shareholders. (Note also that E will not fully capture any increase in P beyond this threshold but rather will have to share part of it with the other shareholders.) It can be shown that for E to break even, the price P paid for each of the k control shares must exceed $W_e + \frac{(n-k)}{k}B_e$ by an amount equal to the value of (14). For this reason, the transaction will take place if and only if the per share value of the control block under N exceeds its per share value under E by more than the value of (14).

(2) It is worth explaining why the shared premium rule produces different outcomes than the equal opportunity rule. Under the equal opportunity rule, minority shareholders, if they choose to participate in the transaction, end up with the same per share value as E. In contrast, under the shared premium rule, the minority shareholders may end up with a per share value that is lower or higher than that obtained by E. E receives P_0 for each of its k

shares plus its pro rata fraction of the control premium. The minority shareholders, in turn, end up with minority shares worth $(W_n - B_n)$ per share plus their pro rata fraction of the control premium. Since $(W_n - B_n)$ may be higher or lower than P_0, the minority shareholders may end up with a higher or a lower per share value than E.

Proof: A transfer of control will occur if and only if there exists a P such that, in a transaction at a price P, N will be made better off:

$$k\left[W_n + \left(\frac{n-k}{k}\right) B_n - P\right] > 0 \ , \tag{16}$$

and E also will be made better off:

$$k\left[P - \left(W_e + \left(\frac{n-k}{k}\right) B_e\right)\right] - k\left(\frac{n-k}{n}\right)(P - P_0) > 0 \ , \tag{17}$$

where $k\frac{(n-k)}{n}(P - P_0)$ is the minority shareholders' pro rata share of the control premium. Such a P can be shown to exist if and only if

$$W_n + \left(\frac{n-k}{k}\right) B_n > W_e + \left(\frac{n-k}{k}\right) B_e + \left(\frac{n-k}{k}\right)\left[W_e + \left(\frac{n-k}{k}\right) B_e - P_0\right] . \ \blacksquare \tag{18}$$

It is worth noting that under the shared premium rule, P_0, which affects the size of the control premium, may differ from $(W_e - B_e)$. This is the case even if the market knows in Period 0 the value of $(W_e - B_e)$; the reason is that P_0 will reflect the possibility of a transfer in which the minority shareholders will receive an amount other than $(W_e - B_e)$.[26] Only if the market knows $(W_e - B_e)$ in Period 0 and the likelihood of a control sale in Period 1 is insignificant can we assume that P_0 will not differ significantly from $(W_e - B_e)$.

---

[26]Under the shared premium rule, with perfect information in Period 0 about $(W_e - B_e)$, the Period 0 price, P_0, will equal *Prob (no transfer)* $(W_e - B_e)$ + *Prob (transfer)* $E\ [W_n - B_n + (k/n)(P - P_0)\,|\,transfer]$.

B. The Efficiency Costs of the Shared Premium Rule

Corollary 6 (inefficient transfers): Under the shared premium rule, an inefficient transfer will take place if and only if

$$-\left(\frac{n-k}{k}\right)\Delta B + \left(\frac{n-k}{k}\right)\left[W_e + \left(\frac{n-k}{k}\right)B_e - P_0\right] < \Delta W < 0 \ . \tag{19}$$

Thus, in terms of preventing inefficient transfers, the shared premium rule is superior to the market rule but inferior to the equal opportunity rule.

Remark: The reason that the shared premium rule does not prevent all inefficient transfers, as does the equal opportunity rule, is as follows. Recall that the equal opportunity rule prevents inefficient transfers by preventing E and N from ever imposing a negative externality on minority shareholders. Under the equal opportunity rule, minority shareholders emerge from any sale with at least the same per share value as E, which leaves them better off than they were before the sale, when their shares were worth less than the shares in E's control block. As to the shared premium rule, while the rule provides minority shareholders with a portion of the control premium, these shareholders may still emerge worse off from the sale in the event that N is able to extract enough private benefits from the firm so that the reduction in the market price of minority shares following the transfer exceeds their fraction of the control premium. Thus, because the shared premium rule cannot ensure that minority shareholders will never be hurt by a control transfer, it will not prevent all inefficient transfers.

Corollary 7 (efficient transfers): Under the shared premium rule, an efficient transfer will not occur if and only if

$$0 < \Delta W < -\left(\frac{n-k}{k}\right)\Delta B + \left(\frac{n-k}{k}\right)\left[W_e + \left(\frac{n-k}{k}\right)B_e - P_0\right]. \tag{20}$$

Thus, in terms of facilitating efficient transfers, the shared premium rule is inferior to the market rule. In this regard, the shared premium rule neither dominates, nor is dominated by, the equal opportunity rule.

C. The Consequences of Limited Differences in B

As the analysis above demonstrates, in general the shared premium rule neither dominates nor is dominated by the equal opportunity rule. The analysis below suggests, however, that if the range of differences among controllers in B is not all that large, then the comparison will tend to favor the equal opportunity rule. To see this point, let us assume for simplicity that $P_0 = W_e - B_e$. This simplifying assumption allows us to establish the following result (which is proved in the Appendix).

Proposition 9: Assuming that $P_0 = W_e - B_e$, then, if $\Delta B < \frac{(n-k)}{k} B_e$, the equal opportunity dominates the shared premium rule.

Remark: This result can be intuitively explained as follows. When the possible increase in private benefits is lower than the bound specified in the Proposition, the benefit conferred by the shared premium rule on minority shareholders is sufficiently large that the rule, while preventing all inefficient transfers, obstructs a wider range of efficient transfers than does the equal opportunity rule.

VII. THE MARKET RULE WITH APPRAISAL RIGHTS

We have seen that, under the market rule, some inefficient transactions may take place. These inefficient transactions take place because, even though the new controller has lower managerial ability, it has greater ability to extract private benefits of control. This Part discusses the question of whether this problem may be addressed — and the performance of the market rule improved — by providing minority shareholders with appraisal rights. State corporation statutes typically provide shareholders with appraisal rights in connection with certain "fundamental" corporate transactions (such as mergers). When a transaction triggers appraisal rights, shareholders have the option of redeeming their shares for the estimated value that their shares would have in the absence of the transaction (as determined by a court). Although current law does not offer shareholders appraisal rights in the context of sale-of-control transactions,[27] one may want to consider whether extending appraisal rights to these transactions would be desirable.

As the analysis below demonstrates, the extent to which adding appraisal rights would improve the performance of the market rule depends on the reliability of the appraisal process. Section A considers the situation in which $(W_e - B_e)$ and $(W_n - B_n)$ can be accurately determined; in that case, the market rule with appraisal rights is superior to the market rule, the equal opportunity rule, and the shared premium rule. Section B considers the possibility and consequences of courts' inability to observe $(W_e - B_e)$ as well as those of minority shareholders' inability to observe $(W_n - B_n)$.

A. "Perfect" Appraisal Rights

Let us first suppose that, in Period 1, the value of $(W_e - B_e)$ is observable. Accordingly, if E sells its control block to N, and minority shareholders choose to exercise their appraisal rights, then the minority shareholders will get the precise value of their shares in the absence of the transaction, $(W_e - B_e)$.

Proposition 10: If appraisal is always accurate, then, under the market rule with appraisal rights, a transfer of control will take place if and only if

$$\begin{aligned} &(a) \quad W_n + \left(\frac{n-k}{k}\right) B_n > W_e + \left(\frac{n-k}{k}\right) B_e \,; \quad and \\ &(b) \quad W_n > W_e \,. \end{aligned} \tag{21}$$

Proof: Consider a transaction in which E sells its control block to N for a price P per share. The transaction will make E better off if and only if

[27] In the unusual event that minority shareholders are able to prove that the selling shareholder breached its fiduciary duty by recklessly selling its control block to a buyer that later looted the firm, minority shareholders may recover from the selling shareholder the pre-transfer value of their shares. The looting doctrine thus gives minority shareholders an equivalent of the appraisal remedy in exceptional cases. See Section VIII.3.

$$P > W_e + \left(\frac{n-k}{k}\right)B_e \ . \tag{22}$$

As to N, supposing that there are no appraisal rights, the transaction will change N's wealth by $k\left[P - \left(W_n + \left(\frac{n-k}{k}\right)B_n\right)\right]$. In addition, if $W_e - B_e < W_n - B_n$, the minority shareholders will exercise their appraisal rights, because such exercise would provide them with an extra value of $\left[(W_e - B_e) - (W_n - B_n)\right]$ per share. Thus, the introduction of appraisal rights will impose on N a loss of $(n-k)\ max\left[(W_e - B_e) - (W_n - B_n)\ ,\ 0\right]$. Accordingly, the transaction will make N better off if and only if

$$k\left[P - \left(W_n + \left(\frac{n-k}{k}\right)B_n\right)\right] + (n-k)\ \ max\left[(W_e - B_e) - (W_n - B_n)\ ,\ 0\right] > 0\ \ , \tag{23}$$

or, after algebraic rearrangement,

$$P < W_n + \left(\frac{n-k}{k}\right)B_n - \left(\frac{n-k}{k}\right)\ \ max\left[(W_e - B_e) - (W_n - B_n)\ ,\ 0\right] . \tag{24}$$

Algebraic rearrangement can show that a P satisfying both (22) and (24) will exist if and only if (21)(a) and (21)(b) are satisfied. ■

<u>Corollary 8</u> (inefficient transfers): Under the market rule with accurate appraisal rights, no inefficient transfers will take place. Thus, in terms of preventing inefficient transfers, the market rule with accurate appraisal rights performs as well as the equal opportunity rule and better than either the market rule or the shared premium rule.

<u>Remark</u>: When appraisal rights price minority shares at their precise no-transaction value, they eliminate the possibility that a negative externality will be imposed on minority shareholders. Because under such conditions control transfers cannot leave minority shareholders worse off than in the absence of the transfer, and because transfers will not take place unless both E and N are made better off by them, all transfers necessarily will be efficient.

<u>Corollary 9</u> (efficient transfers): Under the market rule with accurate appraisal rights, efficient transfers will not take place if and only if

$$0 < \Delta W < \left(\frac{n-k}{k}\right)(B_e - B_n) , \quad or$$

$$0 < \Delta W < -\left(\frac{n-k}{k}\right)\Delta B . \tag{25}$$

Thus, in terms of facilitating efficient transfers, the market rule with accurate appraisal rights performs as well as the market rule and better than either the equal opportunity rule or the shared premium rule.

Remark: As under the market rule, not all efficient transfers will occur. If an efficient transfer would create a positive externality for minority shareholders, minority shareholders will not exercise their appraisal rights. In this case, the existence of appraisal rights will be irrelevant, and efficient transfers will be prevented under exactly the same circumstances as under the market rule without appraisal rights.

The above two corollaries imply two additional corollaries concerning the overall performance of the market rule with accurate appraisal rights.

Corollary 10: The market rule with accurate appraisal rights is superior to the market rule.

Corollary 11: The market rule with accurate appraisal rights is superior to both the equal opportunity rule and the shared premium rule.

Thus, if one believes that the value of minority shares in the absence of a sale-of-control transaction is generally observable with sufficient precision, then, if the market rule is used, one should support supplementing the rule with appraisal rights. Similarly, if one believes that appraisal is sufficiently accurate, then, even if one is concerned that the problem of inefficient transfers is severe, one should still prefer supplementing the market rule with appraisal rights to replacing it with either the equal opportunity rule or the shared premium rule.

B. Imperfect Appraisal Rights

1. The Consequences of Inaccurate Appraisal

Suppose that if minority shareholders exercise their appraisal rights, the court will provide them with a per share value A known in advance to the various parties involved: the minority shareholders, E, and N. If the appraisal may be inaccurate — and A may therefore differ from the no-transaction value of $(W_e - B_e)$ — then the conclusions reached above concerning the performance of appraisal rights must be revised.[28]

First, suppose that A may fall below $(W_e - B_e)$. In this case, it will no longer be true that appraisal rights will ensure that a sale-of-control transaction will never impose a negative externality on minority shareholders. Consequently, it will no longer be the case that the market rule with appraisal rights will prevent all inefficient transfers and thus dominate the equal opportunity rule. (Note, however, that as long as A may only fall below $(W_e - B_e)$, and not above it, it will still be the case that the market rule with appraisal rights is superior to the market rule.)

Next, consider the possibility that A may take on a value exceeding $(W_e - B_e)$, providing minority shareholders with "excessive" compensation. In such a case, the market rule with appraisal rights may prevent more efficient transfers than the market rule. Consequently, it may no longer be true that adding appraisal rights would improve the performance of the market rule.

2. Reasons for Inaccurate Appraisal

A full analysis of the reasons that courts may inaccurately measure the no-transaction value of minority shares in the absence of a transfer is beyond the scope of this paper (see Bebchuk and Fried (1993) for such an analysis). But it is worthwhile to point out briefly some

[28]The analysis below continues to assume, for simplicity and without loss of generality, that minority shareholders know $(W_e - B_e)$ in Period 1. The analysis below also assumes that minority shareholders know $(W_n - B_n)$ in Period 1 and can thus make an informed decision about whether or not to tender their shares for the appraised value A. The consequences of imperfect information about $(W_n - B_n)$ will be discussed below.

of these reasons. To illustrate the issues, let us consider them in the context of one concrete appraisal method: suppose that courts would provide minority shareholders that seek appraisal rights with the market value of their shares prior to the transaction, that is, in Period 0. Let us denote the market price of shares in Period 0 by P_0 and examine why P_0 may differ from $(W_e - B_e)$.

To begin with, suppose that, in Period 0, the market knows all of the relevant parameters. Even in this case, P_0 may well differ from $(W_e - B_e)$. This is because P_0 will reflect not only the value that the minority shareholders will get in the absence of a transfer (which is $W_e - B_e$) but also what they will get in the event of a transfer. If control is transferred, the minority shareholders will receive either P_0 (if they seek appraisal) or more (if they elect not to seek appraisal because $(W_n - B_n)$ exceeds P_0). In this case, one can establish the following proposition, which is proved in the Appendix.

Proposition 11: When appraisal is based on the pre-transaction market price of minority shares, P_0, and the market knows all of the relevant parameters in Period 0, then $P_0 > W_e - B_e$.

Furthermore, in Period 0 the market may not know some information about the value of the firm which N and E do know in Period 1 when considering the transaction. (For present purposes, it does not matter whether the market knows this information in Period 1.) To consider the consequences of such imperfect information, suppose that $W_e - B_e = M + \varepsilon$, where ε is a zero-mean disturbance with a density function that is positive in $(-e, e)$ and otherwise zero. And suppose that, in Period 0, the market knows only M but not ε. In such a case, it is possible to establish the following proposition, which is proved in the Appendix.

Proposition 12: When the market is imperfectly informed in Period 0 about $(W_e - B_e)$, then P_0 may be higher or lower than $(W_e - B_e)$.

Thus, there are at least two reasons to believe that an appraisal process based on the pre-transaction market price may be inaccurate. As a result, the appraisal process may either "over-compensate" or "under-compensate" minority shareholders.[29]

3. Incomplete Information About $(W_n - B_n)$

Thus far we have focused on the possibility that the appraisal process is not capable of estimating $(W_e - B_e)$ with precision. To this end, we have assumed that in Period 1 the minority shareholders know the value of $(W_n - B_n)$ and thus can determine with certainty whether $(W_n - B_n)$ is higher or lower than the appraisal consideration. But suppose that in Period 1 the minority shareholders are imperfectly informed about $(W_n - B_n)$. In this case, the provision of appraisal rights may not prevent all inefficient transfers even if the appraisal process is accurate. For in such a case, one cannot rule out the possibility that the minority shareholders will be hurt by a control transfer (a result that N and E, with superior information about $(W_n - B_n)$, may anticipate).

VIII. OTHER LEGAL ARRANGEMENTS

A. The Partial Opportunity Rule

The equal opportunity rule may be modified to allow minority shareholders to participate only partially in sale-of-control transactions. Under such a "partial opportunity" rule, which has been applied by the Tel-Aviv Stock Exchange, minority shareholders have the right to sell the buyer of a control block a specified fraction α of their shares ($0 < \alpha < 1$) at the same price P paid to the control seller. Thus, if N acquires control from E, the rule would require N to offer to purchase $\alpha(n-k)$ shares from the minority shareholders.[30] The partial

[29]Suppose that instead of relying on P_0, courts would base the appraisal value on an independent estimate – derived wholly or in part from expert testimony – of $(W_e - B_e)$. In this case, the first problem noted above does not exist. But the appraisal process may still lead to over- or under-compensation as long as the court or its experts do not have all of the information about $(W_e - B_e)$ possessed by N and E. For a comparison of market-based and expert-based appraisal, see Bebchuk and Fried (1993).

[30]A less stringent version of the rule would require N to offer to purchase the same proportion of the $\alpha(n-k)$ shares as the proportion of the k shares it offered to acquire from E. This version would be analogous to the proration version of the equal opportunity rule. As under the equal opportunity rule, it can be demonstrated that the condition for a transfer to occur is the same under this alternative version and the version considered in the text.

opportunity rule is in effect a hybrid between the equal opportunity rule and the market rule, with the magnitude of α determining which of the two rules it most closely resembles.

Using the same method of analysis employed in the proofs of earlier propositions, it is possible to establish the following proposition (which is proved in the Appendix).

Proposition 13: Under the partial opportunity rule, a transfer of control will occur if and only if

$$W_n + \left(\frac{(n-k)\,(1-\alpha)}{k + \alpha(n-k)}\right)B_n > W_e + \left(\frac{n-k}{k}\right)B_e \,. \tag{26}$$

From the fact that $0 < \frac{(n-k)(1-\alpha)}{k+\alpha(n-k)} < \frac{(n-k)}{k}$ for any $0 < \alpha < 1$, we can draw the following corollaries.

Corollary 12 (inefficient transfers): In terms of preventing inefficient transfers, the partial opportunity rule is superior to the market rule but inferior to the equal opportunity rule.

Corollary 13 (efficient transfers): In terms of facilitating efficient transfers, the partial opportunity rule is inferior to the market rule and superior to the equal opportunity rule.

An interesting question, which we leave open, is whether, under plausible assumptions concerning the distribution of controllers' characteristics, it is generally possible to design a partial opportunity rule that is superior, on an expected value basis, to both the market rule and the equal opportunity rule.

B. Requiring Minority Shareholder Approval

We have seen that, under the market rule, inefficient transfers may take place when N can extract greater private benefits of control than E. As an alternative to the use of the equal opportunity rule or the shared premium rule, one may consider addressing this problem by requiring that any transfer of a control block obtain prior approval by a specified majority of the minority shareholders. To win the minority shareholders' approval for a transaction, the parties to the transaction may choose to provide the minority shareholders with the opportunity to participate in the transaction in some way or receive some other benefit.

In evaluating such an approval requirement, it is most natural to compare it with the performance of the equal opportunity rule. While a full comparison is beyond the scope of this paper, some relevant considerations are worth noting briefly. Recall that the efficiency costs arising under the equal opportunity rule result from the prevention of some efficient transfers. The question thus is whether a shareholder approval requirement would block more or fewer efficient transfers than the equal opportunity rule. To answer this question, it would be necessary to analyze fully the following differences between the performance of the equal opportunity rule and a shareholder approval requirement. On the one hand, there may be some efficient transfers that would not take place under the equal opportunity rule but may take place under a shareholder approval requirement. The reason is that under such a requirement the minority shareholders may agree to a control transfer that would give them a lower per share value than that received by E. On the other hand, there may be some efficient transfers that would take place under the equal opportunity rule but would be blocked by minority shareholders under the approval requirement. The reason is that under the shareholder approval rule, minority shareholders may reject a sale-of-control transaction that would give them the same per share value as received by E and insist upon an even greater portion of the gains that would arise from the transfer.

C. Liability for "Looting"

Although in the U.S. sale-of-control transactions are generally governed by the market rule, the law does impose liability on existing controllers in exceptional circumstances. In particular, if E should have anticipated that N would "loot" the corporation, and if N indeed does loot the corporation, then E must compensate the minority shareholders for their losses arising out of the sale-of-control transaction (see Elhauge (1992)).

The "looting" cases are presumably cases in which B_n is quite large and $(W_n - B_n)$ is substantially less than the pre-transaction value of minority shares. By requiring existing controllers to compensate minority shareholders in such cases, liability for looting may well prevent some inefficient transfers.[31] Thus, this doctrine improves the performance of the market rule in preventing inefficient transfers.[32] Nevertheless, this doctrine does not prevent all inefficient transfers. The reason is that liability for looting is not triggered in every case in which $(W_n - B_n)$ is less than $(W_e - B_e)$ (even if E knows or should have known that the value of minority shares would decrease following the transaction). Rather, minority shareholders will receive redress only when the large extraction of private benefits by N constitutes "looting" in the sense that it results from violations of the law (e.g., outright theft or embezzlement). Thus, if N is able to extract larger private benefits of control within the bounds of the law, the looting doctrine provides no remedy for minority shareholders.

Finally, it is worth noting that if B_n and B_e were observable to courts, it would be possible to prevent inefficient transfers by imposing liability for every increase in private benefits of control. Suppose that in every transfer with $B_n > B_e$, the minority shareholders would be entitled to receive (either from N or from E) an amount of $(B_n - B_e)$ per share. It can be shown that requiring such compensation would prevent all inefficient transfers. But it is doubtful that courts can observe $(B_n - B_e)$ accurately, and, thus, imposing this liability would be unlikely to work effectively.

IX. Remarks on Private Optimality

A. The Difference between Private and Social Optimization

Before closing, it is important to emphasize the difference in our context between the perspectives of social and private optimality. The analysis of this paper has focussed on the perspective of efficiency, that is, social optimality. From that perspective, a transfer of control

[31] As looters could also be better managers, liability under this doctrine may also be imposed in connection with efficient transfers that leave minority shareholders worse off. However, in theory, these transfers would not be deterred because there would be a gain to be shared by E and N even after the minority shareholders were fully compensated for their damages.

[32] If B_n is not known to E without making significant expenditures, then the consequence of imposing liability may be to force E to incur such expenses in all cases (or raise the reservation price by the amount of the expected liability), and this may prevent some efficient transfers. See Easterbrook and Fischel (1982).

is judged by its effect on total value, including whatever value is captured by the buyer. But it is possible also to examine a control transfer from the perspective of the corporation's initial shareholders — or, equivalently, from the perspective of those who design the corporate charter (whose interests generally lie in maximizing the wealth of the corporation's initial shareholders). From this private optimization perspective, a control transfer is judged by how it affects the total value in the hands of the corporation's initial shareholders; value captured by the outside buyer does not count.[33]

Thus, how the outcomes produced by two sale-of-control rules compare from the perspective of efficiency need not overlap with how the outcomes compare from the perspective of private optimality. From the perspective of private optimality, what matters is not only the effect of the rule on total value (as is the case from the efficiency perspective) but also its effect on the value that outside buyers will capture. Some preliminary analysis that I have undertaken suggests that rules may well differ in how the surplus will tend to be divided in transactions taking place under them. In particular, assuming that the surplus will be divided according to the Nash Bargaining Solution, my research has suggested that, in those transactions that will take place under both the equal opportunity rule and the market rule, the choice of rule will substantially affect the division of surplus.

The difference between the perspectives of private and social optimality in our context has important implications. To begin with, this difference implies that one cannot easily make inferences from the choices made by charter designers (and, in particular, from whether charters commonly opt out of the established legal arrangement) as to what the socially optimal arrangement for sale-of-control transactions is. Relatedly, this difference implies that the sale-of-control context may well be one in which mandatory legal rules are desirable. In any event, what is clear is that further research is warranted on the extent to which, and the direction in which, the privately optimal sale-of-control rule diverges from the socially optimal one.

---

[33]The distinction between corporate arrangements that are socially optimal and those that are privately optimal was first highlighted by Grossman and Hart (1980) in the takeover context. Bebchuk and Kahan (1990) examine this distinction in the context of proxy contests.

B. The Effect of Sale-of-Control Rules on the Initial Ownership Structure

There is a second and related issue that calls for further research. The analysis in the paper has taken as given the existence of corporations that have controlling shareholders to begin with. Taking the incidence of such corporations as given, we have focussed on how sale-of-control rules affect the efficiency of the process by which existing controllers may be replaced by new ones. But the rules are likely also to have — and this is an issue that would be important to explore — an effect on the ex ante incentive of corporate designers to create structures with controlling shareholders.

Consider an entrepreneur who sets up a corporation and sells its shares. And suppose that the entrepreneur can choose to pursue one of the following structures: (i) a complete ownership structure, with a single shareholder owning all the equity, (ii) a controlling shareholder structure, with a controlling interest in the hands of one shareholder and the rest of the equity dispersed, and (iii) a dispersed ownership structure, with no shareholder holding a controlling interest. The entrepreneur will have an incentive to choose the structure that will maximize the expected value that the corporation's initial shareholders can expect to receive. This expected value may in turn partly depend on the effect that the ownership structure will have on what will happen in the event that a new management team will emerge as a potential successor to the initial management. In particular, for any ownership structure, the entrepreneur will seek to determine: (1) the effect of the ownership structure on the expected total value that will be produced by future control transfers, and (2) its effect on the expected fraction of total value that will be captured by the new controller in future control transfers.

The substantial literature on takeovers has done much to shed light on the answers to questions (1) and (2) for the case in which the initial ownership structure is one of dispersed ownership. The analysis of this paper, in turn, can contribute to an understanding of the answers to these questions for the case of a controlling shareholder structure. (In particular, the analysis has examined question (1) and has provided the framework for analyzing question (2).) Thus, this paper provides elements that are necessary for a full analysis of the choice of the initial ownership structure in corporations.

APPENDIX

Proof of Proposition 4:

Recall from (6) that the efficiency costs of the market rule, C_{MR}, are given by

$$Prob\,(-\frac{(n-k)}{k}\,\Delta B < \Delta W < 0)\,E\,[-\Delta W|-\frac{(n-k)}{k}\,\Delta B < \Delta W < 0] +$$
$$Prob\,(0 < \Delta W < -\frac{(n-k)}{k}\,\Delta B)\,E\,[\Delta W|0 < \Delta W < -\frac{(n-k)}{k}\,\Delta B]$$

where $-\Delta B = B_e - B_n$.

As $max|\Delta B|$ approaches 0 (that is, B_n approaches B_e), the values of $-\frac{(n-k)}{k}\,\Delta B$, $E\,[\Delta W|0 < \Delta W < -\frac{(n-k)}{k}\,\Delta B]$, $E\,[\Delta W|-\frac{(n-k)}{k}\,\Delta B < \Delta W < 0]$ — and hence C_{MR} — all approach 0. ■

Proof of Proposition 5:

The proof is in two steps. First, it will be shown that, given the assumption of symmetry, the efficiency costs from efficient transfers blocked under the market rule are less than half of the efficiency costs of the equal opportunity rule.

Recall from (6) that the efficiency costs from efficient transfers blocked under the market rule, which we denote below by $C_{MR}(eff)$, are given by

$$Prob\,(0 < \Delta W < \frac{(n-k)}{k}\,(B_e - B_n)\,E\,[\Delta W|0 < \Delta W < \frac{(n-k)}{k}\,(B_e - B_n)].$$

Recall from (11) that the efficiency costs of the equal opportunity rule, C_{EOR}, are given by

$$Prob\,(0 < \Delta W < \frac{(n-k)}{k}\,B_e)\,E\,[\Delta W|0 < \Delta W < \frac{(n-k)}{k}\,B_e].$$

The assumption of symmetry implies that $Prob\,(B_e > B_n) = 1/2$ and that $Prob\,(0 \leq \Delta W \leq \frac{(n-k)}{k}\,(B_e - B_n)) = Prob\,(B_e > B_n)\,Prob\,(0 \leq \Delta W \leq \frac{(n-k)}{k}\,(B_e - B_n)|B_e > B_n)$. From this it follows that

$$Prob\left(0 \leq \Delta W < \left(\frac{n-k}{k}\right)(B_e - B_n)\right) = \frac{1}{2}\,Prob\left(0 \leq \Delta W \leq \left(\frac{n-k}{k}\right)(B_e - B_n) \mid (B_e > B_n)\right). \quad \textbf{(A1)}$$

Since $Prob\,(0 < \Delta W < \frac{(n-k)}{k}\,(B_e - B_n)|(B_e > B_n)) < Prob\,(0 < \Delta W < \frac{(n-k)}{k}\,B_e)$, and $E\,[\Delta W|0 < \Delta W < \frac{(n-k)}{k}\,(B_e - B_n)] < E\,[\Delta W|0 < \Delta W < \frac{(n-k)}{k}\,B_e]$, it follows from (A1) that

$$C_{MR}(eff) < \frac{1}{2}\,C_{EOR}\,. \quad \textbf{(A2)}$$

The second step in the proof is to show that the efficiency costs from inefficient transfers taking place under the market rule, which we denote by $C_{MR}(ineff)$, equal $C_{MR}(eff)$. From (6), recall that $C_{MR}(ineff) = Prob\ (-\frac{(n-k)}{k}\ \Delta B < \Delta W < 0)\ E\ [-\Delta W|-\frac{(n-k)}{k}\Delta B < \Delta W < 0]$.

The assumed conditions of symmetry of ΔB and ΔW imply that $Prob\ (-\frac{(n-k)}{k}\ \Delta B < \Delta W < 0) = Prob\ (0 < \Delta W < -\frac{(n-k)}{k}\ \Delta B)$, and that $E\ [-\Delta W|-\frac{(n-k)}{k}\ \Delta B < \Delta W < 0] = E\ [\Delta W|0 < \Delta W < -\frac{(n-k)}{k}\ \Delta B]$. From this it follows that

$$C_{MR}(ineff) = Prob\left(0 < \Delta W < -\left(\frac{n-k}{k}\right)\Delta B\right) E\left[\Delta W \mid 0 \le \Delta W < -\left(\frac{n-k}{k}\right)\Delta B\right] \tag{A3}$$

$$= C_{MR}(eff)\ .$$

From (A2) and (A3), it follows that $C_{MR} = C_{MR}(eff) + C_{MR}(ineff) < C_{EOR}$. ■

Proof of Proposition 6:

Let us use the same notation as in the proof of Proposition 5. Given that ΔW is distributed symmetrically around zero, we have

$$\begin{aligned} C_{MR}(ineff) &= Prob\left(0 < -\Delta W < \left(\frac{n-k}{k}\right)\Delta B\right) E\left(-\Delta W \,|\, 0 < -\Delta W < \left(\frac{n-k}{k}\right)\Delta B\right) = \\ &= Prob\left(0 < \Delta W < \left(\frac{n-k}{k}\right)\Delta B\right) E\left(\Delta W \,|\, 0 < \Delta W < \left(\frac{n-k}{k}\right)\Delta B\right). \end{aligned} \tag{A4}$$

And thus we have

$$C_{MR}(eff) + C_{MR}(ineff) = Prob\left(0 < \Delta W < \left|\left(\frac{n-k}{k}\right)\Delta B\right|\right) E\left(\Delta W \,|\, 0 < \Delta W < \left|\left(\frac{n-k}{k}\right)\Delta B\right|\right). \tag{A5}$$

Therefore, assuming that the distribution of $|\Delta B|$ is stochastically dominated by the distribution of B_e, comparing (A5) with C_{EOR} (as given by (11)) indicates that $C_{MR}(eff) + C_{MR}(ineff) < C_{EOR}$. ■

Proof of Proposition 7:

Recall from (11) that C_{EOR}, the efficiency costs of the equal opportunity rule, are given by $Prob\ (0 < \Delta W < \frac{(n-k)}{k}\ B_e)\ E\ [\Delta W|0 < \Delta W < \frac{(n-k)}{k}\ B_e]$. In the uniform distribution case described in the text,

$$C_{EOR} = \int_0^{\left(\frac{n-k}{k}B_e\right)} \Delta W \left(\frac{\theta_W}{w}\right) d\Delta W = \left(\frac{\theta_W}{2w}\right)\left(\frac{n-k}{k}\right)^2 B_e^2 . \quad \textbf{(A6)}$$

Recall from (6) that the efficiency costs from efficient transfers blocked under the market rule, which we denote below by $C_{MR}(eff)$, are given by *Prob* $[0 < \Delta W < -\frac{(n-k)}{k}\Delta B]$ E $[\Delta W | 0 < \Delta W < -\frac{(n-k)}{k}\Delta B]$; and that the efficiency costs from inefficient transfers enabled by the market rule, which we denote by $C_{MR}(ineff)$, are given by *Prob* $[-\frac{(n-k)}{k}\Delta B < \Delta W < 0]$ E $[-\Delta W | -\frac{(n-k)}{k}\Delta B < \Delta W < 0]$. Therefore, under our uniform distribution assumptions,

$$C_{MR}(eff) = \int_{-b}^{0}\int_0^{-\left(\frac{n-k}{k}\right)\Delta B} \Delta W \left(\frac{\theta_W}{w}\right)\left(\frac{1-\theta_B}{b}\right) d\Delta W d\Delta B = \left(\frac{(1-\theta_B)\theta_W}{6w}\right)\left(\frac{n-k}{k}\right)^2 b^2 \quad \textbf{(A7)}$$

and

$$C_{MR}(ineff) = \int_0^{b}\int_{-\left(\frac{n-k}{k}\right)\Delta B}^{0} (-\Delta W) \left(\frac{1-\theta_W}{w}\right)\left(\frac{\theta_B}{b}\right) d\Delta W d\Delta B = \left(\frac{(1-\theta_W)\theta_B}{6w}\right)\left(\frac{n-k}{k}\right)^2 b^2 . \quad \textbf{(A8)}$$

Thus, $C_{MR} = C_{MR}(eff) + C_{MR}(ineff) =$

$$\left[(1-\theta_B)\theta_W + (1-\theta_W)\theta_B\right]\left(\frac{n-k}{k}\right)^2\left(\frac{b^2}{6w}\right) . \quad \textbf{(A9)}$$

Since, by assumption, $b < B_e$, it follows that a sufficient condition for C_{MR} to be less than C_{EOR} is that

$$(1-\theta_B)\theta_W + (1-\theta_W)\theta_B < 3\theta_W , \quad \textbf{(A10)}$$

or equivalently, that

$$\theta_W > \left(\frac{\theta_B}{2(1+\theta_B)}\right) . \quad \textbf{(A11)}$$

If $\theta_W = \theta_B$, then condition (A11) is always satisfied. Indeed, if $\theta_W = \theta_B$, then

$$\left(\frac{C_{MR}}{C_{EOR}}\right) < \left(\frac{2}{3}\right)(1-\theta_W) . \quad ■ \quad \textbf{(A12)}$$

Proof of Proposition 9:

If $P_0 = W_e - B_e$, then condition (13) for a transfer to take place under the shared premium rule can be rearranged to yield

$$\Delta W > \left(\frac{n-k}{k}\right)B_e + \left(\frac{n-k}{k}\right)\left[\left(\frac{n}{k}\right)B_e - B_n\right]. \qquad \textbf{(A13)}$$

If $B_n < (n/k)B_e$, the right-hand side of (A13) is positive, and the shared premium rule, like the equal opportunity rule, will prevent all inefficient transfers. Furthermore, comparison of (A13) and (7) (the condition for transfers under the equal opportunity rule) indicates that the shared premium rule will prevent a wider range of efficient transfers than will the equal opportunity rule. ■

Proof of Proposition 11:

If the appraisal value is $A = P_0$, and the market knows $(W_e - B_e)$, then $P_0 = Prob$ *(no transfer)* $(W_e - B_e)$ + *Prob (transfer and exercise of appraisal)*P_0 + *Prob (transfer and no exercise of appraisal)* E [W_n-B_n|*transfer and no exercise of appraisal*]. Under the assumptions of the model, there is a positive probability of a transfer in which appraisal rights are not exercised. Appraisal rights will not be exercised only if $W_n - B_n > P_0$. It thus follows that P_0 is a weighted average of $(W_e - B_e)$ and some higher value and, thus, that it will exceed $(W_e - B_e)$. ■

Proof of Proposition 12:

If the appraisal value is $A = P_0$ and the market expects $(W_e - B_e)$ to equal $(M + \varepsilon)$, then P_0 = *Prob (no transfer)* ($M + E$ [ε|*no transfer*]) + *Prob (transfer and exercise of appraisal)* P_0 + *Prob (transfer and no exercise of appraisal)* E_0[$W_n - B_n$|*transfer and no exercise of appraisal*].

From the reasoning in proof of proposition 11, it follows that $P_0 > M + E$ [ε|*no transfer*]. If the realization of ε is sufficiently large in Period 1 ($\varepsilon > P_0 - M > E$ [ε|*no transfer*]), $W_e - B_e = M + \varepsilon$ will be greater than P_0. For ε sufficiently small ($\varepsilon < P_0 - M$), $W_e - B_e = M + \varepsilon$ will be less than P_0. ■

Proof of Proposition 13:

Suppose that, if E agrees to sell its control block, then the minority shareholders will necessarily take advantage of N's obligatory offer to purchase $\alpha(n\text{-}k)$ of their shares. In such a case, N will purchase $\alpha(n\text{-}k) + k$ shares for P, and N will be made better off if and only if

$$W_n + \left(\frac{(n-k)(1-\alpha)}{k + \alpha(n-k)}\right) B_n - P > 0 \ . \tag{A14}$$

E in turn will be made better off if and only if

$$P - \left(W_e + \left(\frac{n-k}{k}\right) B_e\right) > 0 \ . \tag{A15}$$

It follows that a transaction price that will make both N and E better off will exist if and only if

$$W_n + \left(\frac{(n-k)(1-\alpha)}{k + \alpha(n-k)}\right) B_n > W_e + \left(\frac{n-k}{k}\right) B_e \ . \tag{A16}$$

Finally, introducing the minority shareholders' option of not tendering, and following the same reasoning as in step (2) in the proofs of propositions 2 and 3, it can be shown that (A16) continues to be both necessary and sufficient for a control transfer. ■

REFERENCES

Andrews, William D. (1965), "The Stockholder's Right to Equal Opportunity in the Sale of Shares," Harvard Law Review, Vol. 78, pp. 505-563.

Bagnoli, M and B. Lipman (1988), "Successful Takeovers without Exclusion," The Review of Financial Studies, Vol. 1, pp. 89-110.

Barclay, Michael J. and Clifford G. Holderness (1989), "Private Benefits from Control of Public Corporations," Journal of Financial Economics, Vol. 25, pp. 371-395.

---------(1992), "The Law and Large-Block Trades," Journal of Law & Economics, Vol. 35, pp. 265-294.

Bebchuk, Lucian A. and Marcel Kahan (1990), "A Framework for Analyzing Legal Policy Towards Proxy Contests," California Law Review, Vol. 78, No. 5, pp. 1071-1135.

Bebchuk, Lucian A. and Jesse M. Fried (1993), "Corporate Appraisals and Freezeouts," Harvard Law School, mimeo.

Berle, Adolf A. (1958), "Control in Corporate Law," Columbia Law Review, Vol. 58, pp. 1212-1225

Clark, Robert C. (1986), Corporate Law, pp. 482-496.

Easterbrook, Frank H. and Daniel R. Fischel (1982), "Corporate Control Transactions," Yale Law Journal, pp. 698-737.

Elhauge, Einer (1992), "The Triggering Function of Sale of Control Doctrine," The University of Chicago Law Review, Vol. 59, No. 4, pp. 1465-1531.

---------(1993), "Toward a European Sale of Control Doctrine," forthcoming in American Journal of Comparative Law.

Grossman, Sanford J. and Oliver D. Hart (1980), "Takeover Bids, the Free-rider Problem, and the Theory of the Corporation," Bell Journal of Economics, Vol. 11, pp. 42-64.

--------- (1988), "One Share-One Vote and the Market for Corporate Control," Journal of Financial Economics, Vol. 20, pp. 175-202.

Harris, Milton and Artur Raviv (1988a), "Corporate Governance: Voting Rights and Majority Rules," Journal of Financial Economics, Vol. 20, pp. 203-235.

--------- (1988b), "Corporate Control Contests and Capital Structure," Journal of Financial Economics, Vol 20, pp. 55-86.

Holderness, Clifford G. and Dennis P. Sheehan (1988), "The Role of Majority Shareholders in Publicly Held Corporations: An Exploratory Analysis," Journal of Financial Economics, Vol. 20, pp. 317-346.

Holmstrom, Bengt and Jean Tirole (1993), "Market Liquidity and Performance Monitoring," Journal of Political Economy, Vol. 101.

Javares, George B. (1965), "Equal Opportunity in the Sale of Controlling Shares: A Reply to Professor Andrews," University of Chicago Law Review, Vol. 32, pp. 420-427.

Kahan, Marcel (1992), "Sales of Corporate Control," New York University School of Law, mimeo.

Levy, Haim (1982), "Economic Valuation of Voting Power of Common Stock," Journal of Finance, Vol. 38, pp. 79-93.

Lüttmann, Ruth (1992), "Changes of Corporate Control and Mandatory Bids," International Review of Law and Economics, Vol. 12, pp. 497-516.

Shleifer, Andrei and Robert W. Vishny (1986), "Large Shareholders and Corporate Control," Journal of Political Economy, Vol. 94, pp. 461-488.

Zingales, Luigi (1992), "The Value of the Voting Right: A Study of the Milan Stock Exchange Experience," CRSP Working Paper, No. 369.

--------- (1993), "The Value of the Voting Right in the United States," University of Chicago, mimeo.