

Private Benefits: Ownership vs. Control

Bill Hu^{*1}

University of Memphis

Joon Ho Hwang^{*2}

Korea University

Abstract

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^{*1} Fogelman College of Business and Economics, University of Memphis, Memphis, TN 38152; Tel: 901-678-5930; Email: huxiankui@gmail.com

^{*2} Corresponding author : Business School, Korea University, Anam-dong, Seongbuk-Gu, Seoul 136-701, KOREA; Tel: +82-2-3290-2830; Fax: +82-2-922-7220; Email: joonhwang@korea.ac.kr

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I. Introduction

The literature defines private benefits as “benefits that accrue to managers or controlling shareholders, but not to minority shareholders.” Given the importance of private benefits – in the sense that many issues in corporate governance arise from agency problems, and private benefits are at the heart of agency problems – numerous studies have examined private benefits. The seminal articles of Jensen and Meckling (1976) and Demsetz and Lehn (1985) discuss private benefits and cite both pecuniary and non-pecuniary private benefits. Later, Barclay and Holderness (1989) find a way to quantify the size of private benefits by using block trade premium and reiterate that private benefits can be pecuniary or non-pecuniary.¹ However, thus far, no study has come up with a means of estimating non-pecuniary private benefits. This paper fills the gap by introducing a way of estimating non-pecuniary private benefits by decomposing private benefits into an ownership component and a control component.

As a controlling party will use corporate resources to his or her benefit only when it is difficult or impossible to prove these actions in court, private benefits are inherently difficult to measure. Despite these difficulties, Barclay and Holderness (1989) find a means of estimating private benefits using block premium, which is measured by the difference between the price per share paid for the block of common stock and the market price of the stock following the block transaction. The rationale for this measure is as follows. If all shareholders receive benefits in proportion to their fractional ownership, blocks should trade at the exchange price. However, if blockholders can enjoy benefits that do not accrue to minority shareholders, then blocks will trade

¹ Subsequent studies that use block premiums to examine various topics in private benefits include Mikkelsen and Regassa (1991), Nicodano and Sembenelli (2004), and Dyck and Zingales (2004). La Porta, et al. (1997, 1998, 2000), Johnson, et al. (2000), Jiraporn and Gleason (2007), and many other studies too numerous to mention, also examine issues related to private benefits.

at a premium to the post-announcement exchange price.² Using a sample of 63 block trades during 1978-82, Barclay and Holderness (1989) find that the block premium averages 16 percent of the post-announcement exchange price.

As noted by Jensen and Meckling (1976), Demsetz and Lehn (1985), and Barclay and Holderness (1989), private benefits can be either pecuniary or non-pecuniary. Pecuniary private benefits are private benefits which can be stated in monetary terms, e.g., excessive salary or the tunneling of the company's resources. Non-pecuniary private benefits are private benefits which cannot be stated in monetary terms, e.g., the pride of becoming a large owner, becoming part of the business network, interacting with influential businessmen, politicians, and celebrities, and enjoying the recognition, fame, and prestige that accompany one's heightened social status. However, due to their nature, non-pecuniary private benefits can evade easy measurement. In this study, we find a way to measure non-pecuniary private benefits by noting that all pecuniary private benefits must involve some control of the firm. For example, the tunneling of the company's resources involves the exercise of control in the company. Therefore, we estimate the level of non-pecuniary private benefits by examining the size of private benefits when the blockholder's likelihood of exercising control in company is zero (or very close to zero). This can be achieved if we can decompose the sources of private benefits into those that stem from the exercise of control and those that stem from having just ownership of the company.

What are private benefits of ownership? Private benefits of ownership are benefits that one gets by just owning a block of shares. These benefits are something other than benefits from a

² Barclay and Holderness (1989) measure the premium by using the post-announcement price as a benchmark because the price that follows the block trade announcement will incorporate the expected change in the cash flow of the company. Therefore, the post-announcement exchange price will reflect the shared benefits (represented by the cash flow rights) of the block trade, whereas the privately negotiated block trade price will reflect both private and shared benefits. Thus, the difference between the block trade price and the post-announcement exchange price will reflect only private benefits.

claim on future cash flows, since cash flows accrue to all shareholders and therefore are not private benefits. The aforementioned examples of non-pecuniary private benefits (e.g., the pride of becoming a large owner, becoming part of the business network, interacting with businessmen and celebrities, and enjoying the recognition, fame, and prestige that accompany one's heightened social status) do not accrue to minority shareholders and the blockholder can enjoy these benefits without the need to exert control in the company's decision making process. Therefore, these benefits represent private benefits of ownership.

To decompose private benefits into those arising from ownership and those arising from control, we use data on block trades. Block trades are a good source of data for this research for the following reasons. First, following Barclay and Holderness (1989), we can estimate private benefits by calculating the block premium that is associated with a block trade. Second, we can decompose private benefits into ownership and control, because people who acquire blocks of shares are often powerful enough to exercise control in the company (Holderness and Sheehan (1988)). Blockholders, in addition to owning different portions of a company's shares, vary in terms of how much control they exercise over the firm. For example, person A, who owns 10 percent of the shares of company X, may be very active in the firm's decision making process, while person B, who holds 20 percent of the shares of company Y, may be passive in exercising control in the company.

Therefore, because every blockholder is unique with respect to his or her ownership level and control level, we can decompose private benefits into ownership and control.³ First, with regard to the ownership level, we use the percentage of shares acquired in the block trade. Then,

³ It is likely that greater ownership will accompany greater control of the company. However, as long as the ownership level and control level are not perfectly correlated, it is possible to decompose private benefits into ownership and control. The example concerning persons A and B in the paragraph above illustrates this point.

we measure private benefits of ownership by the marginal effect of the percentage of shares acquired on the block premium. Second, with regard to measuring the control level, we estimate the likelihood of top executive turnover within one year following the block trade. This measure is created by first examining whether there was a top executive turnover within one year of the block transaction and then constructing an implied probability of top executive turnover at the time of the block trade. The assumption here is that the most significant control activity that a blockholder can exercise is to replace the top executive of the company; thus, control activities are best reflected by change in the top executive.⁴ Then, we measure private benefits of control by the marginal effect of the probability of top executive turnover on the block premium. The above tasks are achieved by using a two-stage regression model, where both the block premium and the top executive turnover are treated as endogenous variables.

We find that private benefits, as measured by the block premium, increase slowly with respect to the level of ownership but increase rapidly with respect to the blockholder's likelihood of exercising control in the company. Interestingly, however, we find that even when there is very small chance of exercising control in the company, investors are willing to pay a premium to become blockholders. These non-pecuniary private benefits range from 0.61% to 5.92% of the share price. The proportion of non-pecuniary private benefits to total private benefits ranges from 18% (for a 5% increase in ownership) to 29% (for a 50% increase in ownership). This shows that non-pecuniary private benefits comprise a non-trivial portion of total private benefits.

We would like to note that our empirical method is not without limitations.⁵ First, the use of the likelihood of executive turnover for measuring the blockholder's expected level of control may not be perfect since there may be other, less significant, ways of exercising control in the

⁴ Holderness and Sheehan (1988) find that many corporate majority shareholders place their representatives in top management positions.

⁵ We would like to thank the referee for pointing out this limitation of the estimate.

company.⁶ If this is the case, our measure of ownership level will incorporate residual control activities that are not captured by the likelihood of top executive turnover. Therefore, we may be underestimating the control level, and overestimating the ownership level. Second, as Dyck and Zingales (2004) noted, the block premium estimate used in Barclay and Holderness (1989) can improperly estimate private benefits. There is no bias in the estimate only when the block trade price reflects the buyer's willingness to pay (i.e., the seller has all the bargaining power) or when security values (i.e., the benefit from cash flow rights) are the same for the buyer and the seller. If that is not the case, the bias becomes greater as the seller's bargaining power becomes smaller.⁷ However, Dyck and Zingales (2004) find that in countries with lower levels of private benefits, the seller has greater bargaining power, and that the US shows one of the lowest levels of private benefits. Therefore, we think our sample of block trades from the US is minimally affected by the bias of the block premium measure.

The rest of the paper is organized as follows. In Section II, we describe the data and descriptive statistics. The decomposition of private benefits into ownership and control, and the measurement of non-pecuniary private benefits are examined in Section III. We conclude this study in Section IV.

⁶ In one of our robustness tests, we check for the likelihood of other possible control activities such as board turnover, changes in capital expenditure, changes in leverage, etc. However, the possible criticism is not fully eliminated because the above alternative specifications of control activities still do not represent all types of control activities.

⁷ The exact size of the bias is $\alpha(1-\lambda)(Y_b - Y_s)$, where $\alpha \in [0,1]$ is the fractional size of the block, $\lambda \in [0,1]$ is the bargaining power of the shareholder who is selling the block, and Y_b (Y_s) is the security value of the buyer (seller).

II. Data

A. Data Formation

We collect block trade data over 1987-2005 from the SDC Mergers and Acquisitions database. Transactions must involve the transfer of a block of shares that comprises between 5% (inclusive) and 50% (exclusive) of the shares outstanding and must be classified as “block purchase” in the acquisition technique category of the SDC Mergers and Acquisitions database. The lower cutoff point of 5% is used for our dataset because it is the point that triggers a mandatory filing to the SEC with regard to the block transaction. The upper cutoff point is 50% since we want to examine how block premium changes with regard to different levels of control in the company, whereas if someone acquires 50% or more of a company’s share, she will then have gained full control of the company. Therefore, because our sample consists of block trades that involve *partial* control of the company, it allows us to observe cross-sectional variations in the levels of ownership and control.⁸

From our initial sample size of 1,804, there must be information about the price paid per share for the block transaction and the exchange price one day after the announcement of the block trade. We exclude cases where the price paid per share may not be objectively valued, such as transactions involving convertible bonds, options, and warrants,.

To rule out instances where the transaction price may not reflect private benefits, we exclude cases where either the target or the acquirer is either a government agency or a subsidiary of the other party. We further exclude transactions that are open market repurchases, tender offers, spinoffs, recapitalizations, self-tenders, exchange offers, repurchases, and acquisition of remaining interest. Also, to stay away from block trades that are driven by takeover motives, we rule out block trades which happen within six months before a merger or acquisition that involves

⁸ This selection criterion also excludes cases where the final shareholding – after the block trade – of the new blockholder becomes 50% or more, since these block trades will entail full control of the company.

the block-trading company, and block trades that are accompanied by an indication of either a takeover or a tender offer for the remaining shares, as inferred from reading the SDC synopsis.

Although the parties of the block transaction can be either insiders or outsiders of the company, Barclay and Holderness (1989) note that purchasers of the trade are typically outsiders and not one of the firm's directors or officers. For the objective of our paper, we restrict our sample to only those block transactions where both parties are not affiliated with the company and where the block purchaser is not a current blockholder of the company. The reason behind this selection criterion is that it is unclear how accurately the block premium will reflect private benefits when insiders or current blockholders take part in the transaction. For example, insiders or current blockholders who purchase a block of shares may already possess significant controlling power within the company, in which case they will not pay extra for the block. Similarly, in the case of insiders selling a block, they may still retain control of the firm even after the trade and thus will not worry about losing their private benefits. By focusing on new outside purchasers, we are able to conduct a cleaner measurement of private benefits.

We identify insider ownership and the percentage of outsiders among board members of the company whose block is traded. We collect these data from the firm's proxy statement with the most recent record-date prior to the block transaction. We search the LexisNexis Company Profiles to identify top executive turnovers within one year after the block transaction. A top executive is defined as the CEO or, if a firm has no CEO, the president. As in previous studies (e.g., Weisbach (1988) and Denis, et al. (1997)), we exclude from our sample those cases where top executive turnovers occur either as part of the normal retirement process or due to death or illness. The criterion for normal retirement is that the turnover takes place between the ages of 64 and 66 for the top executive. With these criteria, the size of our final sample is 738.

B. Summary Statistics

Table 1 reports descriptive statistics for the 738 block trades sample and for subsamples of two categories of block trades: those followed by top executive turnover within one year of the block transaction and those that are not followed by top executive turnover within one year of the block trade.

[Table 1]

Following Barclay and Holderness (1989), the block premium is defined as follows.

$$\% \text{ Block Premium} \equiv \left[\frac{(\textit{Privately negotiated block trade price}) - (\textit{one day after exchange price})}{\textit{one day after exchange price}} \right] \times 100$$

.....(1)

The block premium averages 9.31% for the whole sample. This figure is smaller than the average block premium of 16% reported by Barclay and Holderness (1989). The difference may arise from the difference in the sample periods: 1978-1982 in the case of Barclay and Holderness (1989) and 1987-2005 in this study. Also, by using the SDC database, we are able to construct a sample of 738 block trades whereas Barclay and Holderness (1989) searched the Wall Street Journal to identify 63 block trades. While the Wall Street Journal may report only newsworthy events, our sample includes block trades that are less dramatic.

For block trades that are followed by top executive turnover within one year of the block trade, the premium averages 17.80%. However, for trades that are not followed by top executive turnover within one year, the premium averages only 6.92%. The difference is significant at the 1% level. This difference in the block premium indicates that there may be benefits to having

control over the firm, as indicated by the change in the top executive, over and above the benefits of just owning a block of shares of the firm.

Also, more shares of the company (15.37% vs. 11.67%) are acquired for block trades that result in subsequent top executive turnover. This implies that the acquirer is more likely to exercise control in the firm as she holds more shares of the firm.

Table 1 also displays that on average, insiders control 7.83% of the firm's shares in our sample. Insider ownership includes shares owned by individuals related to a member of the top management team, employee pension or stock option plans, trusts for which managers have some voting authority, and any other blocks of shares over which a member of the top management team has voting authority. By way of comparison, Morck, et al. (1988) report that the average ownership of all officers and directors is 10.6% in a sample of 371 Fortune 500 firms and Mikkelsen and Partch (1989) report an average insider ownership of 19.6% in a random sample of New York and American Stock Exchange firms. Our sample firms therefore have smaller insider ownership. This is consistent with Bethel et al. (1998), who find that companies with high insider ownership are less likely to experience block share purchases. The low insider ownership of our sample implies that block trades of 5% or more shares of the company can confer significant amount of controlling power to the new blockholder.

Consistent with previous studies (e.g., Mikkelsen and Partch (1989) and Denis, et al. (1997)), firms that experience top executive turnover have worse performance. However, with respect to insider ownership, the fraction of firms with outsider-dominated boards, and the fraction of firms where the top executive is a member of the founding family, we do not find significant differences between firms with top executive turnover and firms without top executive turnover within one year of the block trade.

III. Results on Private Benefits

A. Determinants of Block Premium

Table 2 shows the results of a cross-sectional regression of block premiums using the following model.

$$\begin{aligned} \text{Block premium}_i = & \alpha + \beta_1 \cdot (\text{percentage of shares acquired})_i \\ & + \beta_2 \cdot (\text{top executive turnover dummy})_i + \beta_3 \cdot (\text{prior firm performance})_i \\ & + \beta_4 \cdot \log(\text{firm size})_i + \beta_5 \cdot (\text{leverage})_i + \beta_6 \cdot (\text{tangibility of assets})_i \\ & + \beta_7 \cdot (\text{individual acquirer dummy})_i + \beta_8 \cdot (\text{acquirer is in the same industry dummy})_i \\ & + \beta_9 \cdot (\text{bank acquirer dummy})_i + \sum \beta_j \cdot (\text{industry dummies})_i + \sum \beta_h \cdot (\text{year dummies})_i \\ & \dots\dots\dots(2) \end{aligned}$$

Possible factors that can affect the premium can be categorized into the ownership level of the company, whether the block trade is actually associated with control activities within the firm, and control variables which capture characteristics of the block-traded company and of the acquirer.

[Table 2]

A larger fractional ownership gives the blockholder more power in terms of having greater voting rights. Larger ownership also provides greater protection from a hostile takeover or proxy contest. Beyond a certain point, however, few additional private benefits will result from increased fractional ownership if the blockholder holds a sufficient amount of shares. There are also costs to owning a large portion of shares, such as monitoring costs or the costs that ensue from a possible lack of diversification in the owner's portfolio. This means that blockholders may not want to accumulate shares beyond a certain threshold. If the threshold varies by firm, there may be no discernible relationship between fractional ownership and block premium. Barclay and

Holderness (1989) and Dyck and Zingales (2004) show a positive relationship between block premium and the size of shares acquired. The results in Table 2 confirm that the block premium tends to be greater as the fractional size of the block increases.⁹

To examine how the size of private benefits is related to an actual control activity as manifested through top executive replacement, we examine cases of top executive turnover within one year after the announcement of the block trade.¹⁰ In the regression, we include a dummy variable for block trades that are followed by a top executive turnover within one year of the announcement of the block trade. The results show that block premiums are indeed larger for trades that are followed by change in the top executive. The expected block premium goes up by 7.86% for block trades that are followed by top executive turnover in the firm within one year of the block trade. Assuming that block premiums for trades that are followed by top executive turnover reflect private benefits of having control of the company in addition to private benefits of ownership, the results suggest that there are private benefits from having control of the firm (as reflected by the coefficient of the top executive turnover variable) over and above the benefits from having just the ownership of the firm (as reflected by the coefficient of the percentage of shares acquired variable).

We use the following control variables to capture the characteristics of the block-traded company. First, the size of private benefits will be greater if the firm is performing well and smaller if the firm is having financial difficulties (Barclay and Holderness (1989)). We measure the prior year's market-adjusted stock return using the percentage of common stock return for the 12 months ending two months before the block trade announcement minus the return on the

⁹ When we include the square term of the percentage of shares acquired, its coefficient is not significant at the conventional level.

¹⁰ Holderness and Sheehan (1988) show that for trades of majority blocks of stock, 71% of block trades involve turnovers among the three top managers within one year of the trade and conclude that many large shareholders place their representatives in top management positions.

CRSP equal-weighted index.¹¹ Second, firm size may affect the block premium. On one hand, block premium may increase with firm size because larger firms offer potentially greater benefits, both pecuniary and non-pecuniary (Barclay and Holderness (1989)). On the other hand, the costs of being a blockholder may also increase with firm size, as larger firms are more likely to be monitored closely by security analysts, government officials, and institutional investors. We measure firm size as the natural logarithm of the firm's book value of total assets.¹² Third, the size of debt may affect the block premium. However, a priori relationship between private benefits and debt is not clear. Debt can have a negative effect on private benefits by constraining access to free cash flow (Jensen (1986)). In contrast, debt can also increase one's effective control over corporate assets (Harris and Raviv (1988) and Stulz (1988)), thereby increasing the size of private benefits. Fourth, private benefits may also be related to the tangibility of assets because acquirers of the block can face more difficulty in diverting resources if assets are tied down and easily observable. Finally, private benefits may also differ across industries. Demsetz and Lehn (1985) suggest that owners of companies in the media, entertainment, and sports industries enjoy greater private benefits. We capture industry differences by categorizing companies whose blocks are traded into their major industry groups based on the two-digit SIC code. Manufacturing (wherein the two digits of the SIC code lie in the range of 20-39) is the most common industry group and is the excluded category in our regression.

We also use the following control variables, which capture the characteristics of the acquirer. First, we include a dummy variable for acquisition by individuals because individuals, compared to corporate blockholders, have the added benefit of consuming perquisites (Demsetz and Lehn (1985)). Second, in the case where the acquirer is a corporation rather than an

¹¹ We also use the CRSP value-weighted index as an alternative benchmark. The results are similar.

¹² The results do not change if we measure firm size by the firm's market value of equity plus book value of debt.

individual, there may be more private benefits for the acquirer to enjoy if the acquiring company is in the same industry as the target company. Thus, we include a dummy variable that takes a value of one when the acquiring company is in the same industry group as the target company based on the two-digit SIC code. Finally, if the acquirer is a financial company, it may acquire shares mainly for financial reasons and not for the consumption of private benefits. Thus, we include a dummy variable that takes the value of one when the acquirer is a financial company.

The results in Table 2 show that the block premium is marginally larger for firms that have better prior performance. As for the tangibility of assets, whereas Dyck and Zingales (2004) find an insignificant relationship between block premium and the tangibility of assets in their international study, we find a negative and significant relationship (at the 10% level) between block premium and the tangibility of assets. As for different industries of the block-traded companies, only the retail trade industry group dummy turns out to be a significant factor of block premium.¹³

B. Determinants of Top Executive Turnover

A possible shortcoming of the approach used in the previous section is the endogeneity of top executive turnover. This is because whether or not the top executive will be replaced after the block trade is not an event that is known with certainty at the time of the block trade. Hence, the acquirer of the block cannot be certain whether the top executive will be replaced soon after the block trade. Rather, the new blockholder can only guess the likelihood of top executive turnover. This likelihood of top executive turnover will be different for each block trade because circumstances surrounding the block trade will be unique for each block trade. These

¹³ When we instead assign a dummy variable for firms in the media, entertainment, and sports industries, whose first two digits of the SIC code are 27, 48, 78, 79 or the first three digits is 731, the dummy variable remains insignificant.

circumstances will be a function of various factors, such as prior firm performance, ownership structure, and board characteristics, which have been shown in previous literature to affect the likelihood of top executive turnover. Certain circumstances surrounding a block trade may indicate greater likelihood of top executive turnover than for other block trades. Under those situations where the current top executive position is at risk at the time of the block trade, the acquirer may be willing to pay more for a block of shares in anticipation of exercising control in the company.

Thus, in this section, we estimate the implied probability of the blockholder's exercising control of the firm, as manifested by the likelihood of top executive turnover, at the time of the block trade. Later, in Section 3.C, we measure how the block premium changes with respect to this implied probability of top executive turnover.

We estimate logit regressions relating the probability of top executive turnover to firm performance, ownership characteristics, and board composition. Model 1 is the basic model whereas Model 2 includes interaction terms between prior firm performance and ownership structure/board composition variables that have been shown in previous literature to influence the likelihood of management turnover.

$$\begin{aligned}
 \text{MODEL 1} : \text{ Top executive turnover dummy}_i &= \alpha + \beta_1 \cdot (\text{percentage of shares acquired})_i \\
 &+ \beta_2 \cdot (\text{prior firm performance})_i + \beta_3 \cdot (\text{insider ownership})_i \\
 &+ \beta_4 \cdot (\text{outsider dominated board dummy})_i + \beta_5 \cdot (\text{top exec. is founding family dummy})_i \\
 &+ \beta_6 \cdot \log(\text{firm size})_i
 \end{aligned}$$

$$\begin{aligned}
 \text{MODEL 2} : \text{ Top executive turnover dummy}_i &= \alpha + \beta_1 \cdot (\text{percentage of shares acquired})_i \\
 &+ \beta_2 \cdot (\text{prior firm performance})_i + \beta_3 \cdot (\text{dummy for } 5\% < (\text{insider ownership}) < 25\%)_i \\
 &+ \beta_4 \cdot (\text{dummy for } (\text{insider ownership}) > 25\%)_i + \beta_5 \cdot (\text{outsider dominated board dummy})_i \\
 &+ \beta_6 \cdot (\text{top exec. is founding family dummy})_i + \beta_7 \cdot \log(\text{firm size})_i \\
 &+ \beta_8 \cdot (\text{prior firm performance})_i \cdot (\text{dummy for } 5\% < (\text{insider ownership}) < 25\%)_i \\
 &+ \beta_9 \cdot (\text{prior firm performance})_i \cdot (\text{dummy for } (\text{insider ownership}) > 25\%)_i \\
 &+ \beta_{10} \cdot (\text{prior firm performance})_i \cdot (\text{outsider dominated board dummy})_i
 \end{aligned}$$

.....(3)

[Table 3]

The explanations for some of the independent variables are as follows. First, we include the percentage of shares acquired in the block trade because a blockholder who owns a greater proportion of a firm's shares has more voting power in the company and has more incentive to work towards value-increasing activities such as replacing incompetent CEOs. Second, we include the insider ownership variable because more managerial shareholdings may better align the interests of managers and shareholders, and provide managers with a greater incentive to invest in value-increasing activities (Jensen and Meckling (1976), DeAngelo and DeAngelo (1985)). However, greater inside shareholdings can also entrench management by making it more difficult to transfer control and remove a manager (Stulz (1988), Mikkelsen and Partch (1989), Denis, et al. (1997)). Third, we include the outsider-dominated board dummy because studies suggest that internal monitoring is improved by having a higher fraction of outside directors (Weisbach (1988), Byrd and Hickman (1991), and Brickley et al. (1994)). Following the classification used by Denis, et al. (1997) and Weisbach (1988), we categorize a board as outsider-dominated if at least 60% of the company's board members are outsiders.¹⁴ Finally, we include the founding family dummy because according to Morck et al. (1988), the manager's status as the founder of the firm may be conducive to managerial entrenchment, and Denis, et al. (1997) empirically show that the top executive is less likely to be replaced if he or she is a member of the founding family.

The results of logit regressions are provided in Table 3. Numbers in the table refer to marginal effects where derivatives are evaluated at mean values of the variables. The marginal effects reported in Table 3 will change accordingly as the values of some independent variables

¹⁴ A director is an outside director when he or she is not an employee of the company, has no family connection with the management of the company, and has no business dealings with the company.

change in our subsequent analyses. The results in Table 3 are mostly consistent with previous empirical studies on top executive turnover. The likelihood of top executive turnover is positively related to the block size¹⁵ and negatively related to prior firm performance, insider ownership, and the company-founder dummy. We also find that an outsider-dominated board alone does not affect the likelihood of top-management turnover, which is consistent with the results of Weisbach (1988) and Denis, et al. (1997).

In Model 2 of Table 3, we consider the possible effects of insider ownership and the existence of outsider-dominated boards on the sensitivity of top executive turnover to performance. Following Ai and Norton (2003) and Powers (2005), the coefficients of interaction terms and the tests for the statistical significance thereof are based on the cross-partial derivative of the expected value of the dependent variable, after allowing for the nonlinearity of the model. Denis, et al. (1997) find a weaker relationship between performance and turnover in firms with high insider ownership. Also, the existence of an outsider-dominated board is found to have a significant influence on the sensitivity of turnover to performance by Weisbach (1988), whereas it is shown to be insignificant by Denis, et al. (1997). We follow Denis, et al. (1997) and Morck et al. (1998) and classify firms into three categories of managerial ownership: at most 5%, between 5% and 25%, and greater than 25%.

The results of Model 2 in Table 3 show that firms with insider ownership that exceeds 25% have 55% less probability of top-management turnover. The results also show that insider ownership has a significant impact on the sensitivity of turnover to performance. The probability of turnover is negatively related to performance when insider ownership is less than 5%.

¹⁵ In our sample, 17% of block trades involve the largest blocks at these firms. If we include a dummy variable for block trades that represent the largest blocks of the company, along with the block size variable, the coefficient for the dummy variable is not statistically significant. If we include the dummy variable but not the block size variable, the coefficient for the dummy variable is marginally significant at the 10% level.

However, the positive coefficient (0.009) on the interaction of the prior performance variable with the dummy variable denoting an insider ownership between 5% and 25% indicates that the probability of turnover is significantly less sensitive to performance for firms in this ownership structure category. In fact, for firms with insider ownership between 5% and 25%, the likelihood of top executive turnover is almost unaffected by the past performance of the company ($-0.011 + 0.009 = -0.002$). This is consistent with the finding of Denis, et al. (1997).

Surprisingly, we find that firms with outsider-dominated boards manifest less sensitivity of top-management turnover to performance. This result is contrary to that of Weisbach (1988), who finds a stronger association between prior performance and the probability of top executive turnover for companies with outsider-dominated boards. The difference may occur because our sample firms are confined to companies whose blocks are traded. And during times of possible control contest, an existing insider of the company may not continue to be aligned with the incumbent managers. Insiders may push towards replacing the top executive when opportunities arise (in this case, the entry of a new blockholder coupled with poor firm performance) for gaining control of the company or being a part of the team that gains control. Thus, for block-traded companies, it is possible to observe greater sensitivity of top-management turnover to performance for companies with insider-dominated boards, which is equivalent to observing less sensitivity of top-management turnover to performance for companies with outsider-dominated boards.

C. Two-Stage Regression

After computing the likelihood of top executive turnover at the time of the block trade, we now measure how the block premium changes with respect to this implied probability of top executive turnover. We run a recursive equation model where the first equation has a

dichotomous endogenous variable (top executive turnover) and the second equation has a continuous endogenous variable (block premium).

The basic model is stated below.

First – stage Equation :

$$\begin{aligned} \text{Top executive turnover dummy}(T/O)_i &= \alpha + \beta_1 \cdot (\text{percentage of shares acquired})_i \\ &+ \beta_2 \cdot (\text{prior firm performance})_i + \beta_3 \cdot (\text{insider ownership})_i \\ &+ \beta_4 \cdot (\text{outsider dominated board dummy})_i + \beta_5 \cdot (\text{top exec. is founding family dummy})_i \\ &+ \beta_6 \cdot \log(\text{firm size})_i \end{aligned}$$

Second – stage Equation :

$$\begin{aligned} \text{Block premium}_i &= \alpha + \beta_1 \cdot (\text{percentage of shares acquired})_i + \beta_2 \cdot (\widehat{T/O})_i \cdot 100 \\ &+ \beta_3 \cdot (\text{prior firm performance})_i + \beta_4 \cdot \log(\text{firm size})_i + \beta_5 \cdot (\text{leverage})_i \\ &+ \beta_6 \cdot (\text{tangibility of assets})_i + \beta_7 \cdot (\text{individual acquirer dummy})_i \\ &+ \beta_8 \cdot (\text{acquirer is in the same industry dummy})_i + \beta_9 \cdot (\text{bank acquirer dummy})_i \\ &+ \sum \beta_j \cdot (\text{industry dummies})_i + \sum \beta_h \cdot (\text{year dummies})_i \end{aligned} \dots\dots\dots(4)$$

The results for the two-stage regression of block premium are shown in Table 4. This is the main regression in this study. Model 1, the basic model, includes the probability of top executive turnover variable (T/O1) from Model 1 of Table 3 as an explanatory variable. Model 2 includes the probability of top executive variable (T/O2) from Model 2 of Table 3 as an explanatory variable.

[Table 4]

The results in Table 4 show that both the percentage of shares acquired and the probability of top-management turnover significantly affect the block premium. The positive coefficient of the percentage of shares acquired implies there are private benefits from having ownership of the firm. According to Model 1, owning 20% more shares of the firm increases the

block premium by approximately 2.6%. The positive coefficient of the probability of top executive turnover variable indicates there are private benefits from having control of the company over and above private benefits that arise from just owning the company. In a hypothetical case of going from having no likelihood of top executive turnover within a year of the block trade to having 100% chance of top executive turnover within a year of the trade, the block premium jumps by more than 9%.

The relationship between prior firm performance and block premium becomes statistically insignificant in the two-stage regression model. In our model, prior firm performance influences the block premium in two ways. The first is an indirect way through the likelihood of top executive turnover variable. Better-performing firms are less likely to replace their top executive as shown in the first-stage equation in (4), the results of which are shown in Table 3. This lower likelihood of top executive turnover will result in a smaller block premium in the second-stage equation in (4). Second, in a direct way, better-performing firms are associated with larger block premiums because blockholders anticipate enjoying more private benefits from better-performing firms after controlling for the likelihood of top executive turnover. Therefore, we find that prior firm performance, after explaining the likelihood of top executive turnover in the first-stage equation, has a statistically insignificant influence on block premium in the second-stage equation.

The coefficient of the tangibility of assets variable is significantly negative, as in Table 2. Therefore, blockholders seem to anticipate having more private benefits from companies that have a higher proportion of intangible assets. The results for other control variables are mostly similar to those in Table 2. The difference from Table 2 is the coefficient of the individual acquirer dummy variable. In Table 2, we find that individual acquirers are associated with smaller, albeit not statistically significant, block premiums. The result for the better-specified model in Table 4 shows that the coefficient of the individual acquirer dummy is now positive and significant at the 10% level. This is consistent with Holderness and Sheehan (1988), who find that

block premiums are larger for individuals than they are for corporations. This also supports the argument of Demsetz and Lehn (1985) that individuals, compared to corporate blockholders, have the added benefit of being able to consume perquisites.

In Models 3 and 4, we include the interaction term between the percentage of shares acquired and the probability of top executive turnover. Model 3 uses the probability of top executive turnover as defined by Model 1 of Table 3, and Model 4 uses the probability of top executive turnover as defined by Model 2 of Table 3. The interaction term between the percentage of shares acquired and the probability of top executive turnover is significant at the 10% level in Model 3 and significant at the 5% level in Model 4. This suggests that private benefits from having ownership and control reinforce each other. The results for other variables are similar to those in Models 1 and 2.

In Model 5, we include square terms for the probability of top executive turnover and the percentage of shares acquired. The square term of the probability of top executive turnover is statistically significant at the 5% level whereas the square term of the percentage of shares acquired is not significant. Thus, the block premium increases at an increasing rate with respect to the implied probability of top executive turnover. However, block premium does not increase at an increasing rate with respect to the fraction of shares acquired. This suggests that private benefits increase at an increasing rate as the new blockholder is more likely to exercise control over the firm, but increase only at a constant rate as the blockholder's ownership level rises.

Figure I captures the essence of this paper. It shows a three-dimensional plot depicting the relationship among block premium, block size, and the probability of top executive turnover. On the basis of Model 5 of Table 4, we calculate the expected values of the block premium for different values of the block size and the probability of top executive turnover within a year of the block transaction. Except for the block size variable, all right hand side variables in the first-stage regressions of Equation (4) that explain the probability of executive turnover are chosen so that they lie within the same standard deviation from their respective means. For all other variables in

the second-stage regression of Equation (4) for estimating the block premium given a certain block size and probability of executive turnover, we use their mean values.

[Figure I]

As can be seen in the graph, private benefits, as measured by the block premium, increase slowly with respect to the ownership level, as measured by the percentage of shares acquired, and increase rapidly with respect to the likelihood of exercising control, as measured by the probability of top executive turnover within a year of the block trade.

We show numerical examples in Table 5.¹⁶ For a ten-percent block trade, the expected block premium is: 1.20% if there is a 0% likelihood of subsequent top executive turnover; 5.75% if there is a 25% likelihood of subsequent top executive turnover; and 12.80% if there is a 55% likelihood of subsequent top executive turnover. However, for a 25% block trade, the expected block premium is: 2.38% if there is a 0% percent likelihood of subsequent top executive turnover; 9.68% if there is a 25% likelihood of subsequent top executive turnover; and 19.48% if there is a 55% likelihood of subsequent top executive turnover. Thus, the block premium increases at an increasing rate with respect to the probability of top executive turnover, holding everything else constant.

However, with respect to the percentage of shares acquired, the block premium increases at a constant rate, holding everything else constant. For example, for block trades that have a 25%

¹⁶ The numbers in Table 5 are out-of-sample estimates of block premiums for a given block size and probability of executive turnover. Even when the block size is less than 50% of the firm's shares, other variables can cause the probability of executive turnover to be 100%, as can be seen from the first-stage regression of Equation (4) and Table 3.

probability of top executive turnover, the expected block premium is: 5.75% for a block trade with a block size of 10%; 9.68% for a block size of 25%; and 13.61% for a block size of 30%.

[Table 5]

Table 5 also gives us a measure of non-pecuniary private benefits. For the blockholder to enjoy pecuniary private benefits, they need to have some control over the firm's activities. For example, pecuniary benefits such as receiving excessive salary or tunneling through self-dealing transactions all require exercising control in the company. On the other hand, blockholders can enjoy non-pecuniary private benefits even without exercising any control in the company. For example, the feeling of being a 'proud owner' of a company, becoming part of the business network, interacting with influential and well-known businessmen, politicians, and celebrities, achieving higher social status, and enjoying the recognition, fame, and prestige that accompany the higher social status, can be achieved without exercising control. Therefore, the block premium when the likelihood of top executive turnover is zero (or very close to zero) can be used to estimate the non-pecuniary private benefits. The results in Table 5 show that even when there is little chance of exercising control in the company, some investors are willing to pay a premium to be a blockholder. It is at this extreme where the blockholder has very little chance of exercising control in the company that we measure the non-pecuniary private benefits. In our sample, non-pecuniary private benefits range from 0.61% (for a block trade of 5% of the firm's shares) to 5.92% (for a block trade of 50% of the firm's shares) of the share price. The fraction of non-pecuniary benefits out of the total private benefits ranges from 18% (for a block trade of 5% of the firm's shares) to 29% (for a block trade of 50% of the firm's shares) when total private benefits are computed at the mean values of the variables. This shows us that although non-

pecuniary private benefits are smaller in size than pecuniary private benefits, non-pecuniary private benefits constitute a non-trivial portion of the total private benefits.¹⁷

As one must be quite wealthy to purchase a block of shares, we think that becoming a large owner of a company is another way of pursuing the ‘lifestyles of the rich and famous’ and that considerable non-pecuniary benefits must be embedded in the premium these blockholders pay to acquire blocks of shares. The reason blocks are traded at a premium even when there are only private benefits of ownership or non-pecuniary benefits may have resemblance to why people pay an extraordinary price to acquire a piece of art or a wine collection.¹⁸

D. Robustness Tests

D1. Subsample of Positive Block Premiums

Some blocks of shares are traded at a discount rather than at a premium. This is because the ownership of a block of shares not only brings benefits, but also costs, such as monitoring costs, inventory costs, and the costs of possibly carrying an undiversified portfolio. If these costs outweigh the benefits, block trades will occur at a discount. Therefore, it should be noted that the block premium is a net-benefit measure of private benefits. However, to avoid the possible ambiguity of interpreting negative net private benefits, we examine if our results hold for the subsample of block trades with positive block premiums. This subsample, as was shown in Table 1, consists of 514 block trades, or 69.65% of our entire sample.

We repeat the same test procedures for the subsample of block trades that occur at a positive premium. The results reported in Panel A of Table 6 are similar to those in Table 5,

¹⁷ One may argue that the blockholder has both pecuniary and non-pecuniary private benefits, when she has control of the company. In this case, our measure of non-pecuniary private benefits when the control level is zero may represent a lower bound of the true size of non-pecuniary private benefits. This strengthens our finding that non-pecuniary private benefits comprise a sizable amount relative to the total private benefits.

¹⁸ See Rachman (1999) for the evidence on the prices of wine.

which reports the results for the whole sample of block trades.¹⁹ Thus, our results are robust to whether block trades occur at a premium or a discount.

[Table 6]

D2. Other Control Activities

Although replacing the top executive is the most significant manifestation of a control activity, there can be other ways in which the blockholder can exert influence in the firm. Thus, besides examining only the changes in the top executive position, we check how expected changes in board members, investment policy (capital expenditure and R&D), and financial policy (leverage and dividend payout) affect the size of private benefits.

Panel B of Table 6 shows the results of alternative specifications for the recursive regression model of estimating the block premium. The effect of the likelihood of board turnover on the block premium is examined in Model 1. Using a similar methodology that was used to explain top executive turnover, the probability of board turnover is the implied probability of board turnover at the time of the block trade and is created from the first-stage logit regression where the explanatory variables are prior firm performance, percentage of shares acquired, log of firm size, insider ownership, and outsider-dominated board dummy. The results show that the expected likelihood of board turnover is not a statistically significant factor of the block premium.

The effects of the expected changes in capital expenditure and R&D on the block premium are shown in Models 2 and 3, respectively. The change in capital expenditure variable is the implied change in capital expenditure at the time of the block trade and is created from the first-stage logit regression where the explanatory variables, following Bertrand and Schoar (2003), are cash flow, Tobin's Q, and the log of firm size. The change in R&D variable is

¹⁹ For brevity, in Table 6, we only report coefficients of interest. Full results are available upon request.

constructed in the same way. The results show that the expected change in capital expenditure positively affects the size of the block premium, whereas the expected change in R&D is not a significant determinant of the block premium. Under the situation where capital expenditure is expected to increase by 100%, the block premium increases by 1.7%. This implies that increased capital expenditure, such as investing in pet projects, may be one way through which private benefits are realized.

The effects of the expected changes in leverage and dividend payout ratio are shown in Models 4 and 5, respectively. The change in leverage is the implied change in leverage at the time of the block trade and is created from the first-stage logit regression where the explanatory variables, following Bertrand and Schoar (2003), are cash flow, ROA, and the log of firm size. The change in the dividend payout ratio is constructed in the same way. The results show that both measures of financial policy are not significant determinants of the block premium.

To summarize, when we measure private benefits that result from additional control activities, the change in capital expenditure is the only variable that significantly affects the block premium. This suggests that capital expenditure may be one channel where the block owner can extract private benefits from the company. However, the likelihood of increasing capital expenditure seems to have much smaller economic significance than the likelihood of top executive turnover. A 50% increase in the expected capital expenditure increases the block premium by only 0.85%, whereas a 50% increase in the likelihood of top executive turnover increases the block premium by 4.6%.²⁰

²⁰ Another thing to note is that the goodness-of-fit of the model under alternative control activity is much lower than the goodness-of-fit of the model using top executive turnover, which was shown in Table 4.

IV. Conclusion

Non-pecuniary private benefits noted in studies such as Jensen and Meckling (1976), Demsetz and Lehn (1985), and Barclay and Holderness (1989) are inherently difficult to measure. In this study, we provide an estimate of non-pecuniary private benefits by using the block premium that is associated with block trades. We first decompose private benefits into benefits that accrue from having ownership of the firm and benefits that accrue from having control of the firm. This decomposition is possible because each block trade, which results in partial ownership and partial control of the company, is different with respect to both the level of ownership and the level of control that it brings to the new blockholder. The decomposition allows us to quantify the amount of pecuniary and non-pecuniary private benefits. Although much of private benefits arise from having control over the firm, private benefits that do not involve control over the firm, or non-pecuniary private benefits, account for a non-trivial amount of total private benefits.

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Table 1
Summary Statistics

This table gives means and medians of several variables for 756 firms whose blocks are traded between 1987 and 2005, identified through the SDC Mergers and Acquisition database. Firms belong to subsequent CEO Turnover group if there is a turnover in the top executive position of the firm within one year after the block trade. The incidence of top executive turnover is found through a search of the LexisNexis Company Profiles. Block premium (%) is defined as $100 \times \{(\text{price per share paid for the block}) - (\text{exchange price one day after the announcement of the transaction})\} / (\text{exchange price one day after the announcement of the transaction})$. Percent of shares acquired is the percentage of the firm's equity that is acquired in the block transaction. Transaction value is the number of shares acquired in the block transaction multiplied by the trading price of the block. Prior firm performance is the percentage of common stock return for the 12 months ending two months before the block trade announcement minus the return on the CRSP equal-weighted index. Leverage is measured as the book value of long-term debt over the book value of assets. Insider holding variable is the percentage of shares owned by officers and directors and includes those shares owned by individuals related to a member of the top-management team, employee pension or stock option plans, trusts for which managers have some voting authority, and any other blocks of shares over which a member of the top management team has voting authority. Outsider-dominated board dummy is a dummy variable that takes the value of 1 when more than 60% of the board's directors are outsiders of the company. Top exec is founding family dummy variable is a dummy variable that takes the value of 1 when the top executive is a member of the founding family. Individual acquirer dummy is a dummy variable that takes the value of 1 when the acquirer is an individual. Data on block premium, percentage of shares acquired, transaction value, individual purchaser dummy, total assets, and market value of equity are from the SDC Mergers and Acquisition database. Data on leverage are from Compustat for the year prior to the block transaction. Data on prior firm performance are from CRSP. Data on board composition and ownership structure are from the last proxy statements (according to the record date) prior to the block trade. Dollar values are in millions. Significant differences between the two groups are indicated at the 10%, 5%, and 1% levels by *, **, and ***, respectively, according to the t-test.

	Whole sample		Subsequent CEO Turnover		No subsequent CEO Turnover		Difference in mean
	mean	median	mean	median	mean	median	
Block premium (%)	9.31	7.42	17.80	13.45	6.92	5.26	10.88***
Firms with positive premium (%)	69.65	-	75.44	-	68.02	-	3.52
Percent of shares acquired (%)	12.48	9.33	15.37	13.78	11.67	8.40	3.70**
Transaction value (mil)	51.40	12.79	57.46	15.83	49.70	11.07	7.76
Prior firm performance (%)	7.72	5.87	-3.96	1.34	11.01	7.33	-14.97*
Total asset (mil)	758.12	88.95	713.40	76.62	770.70	92.94	-57.30
Leverage	0.42	0.39	0.51	0.43	0.39	0.38	0.12
Insider holding (%)	7.83	2.84	6.13	2.03	8.31	3.01	-2.18
Institutional ownership (%)	25.49	20.26	24.28	19.88	25.83	20.40	-1.56
Outsider dominated board dummy	0.81	1	0.85	1	0.80	1	0.05
Board size	7.47	7	7.01	7	7.60	7	-0.59
Top exec is founding family dummy	0.18	0	0.17	0	0.18	0	-0.01
Individual acquirer dummy	0.16	0	0.13	0	0.17	0	-0.04
Sample size	738		162		576		

Table 2
Determinants of Block Premium

This table shows the results of a cross-sectional regression of block premiums. Block premium (%) is defined as $100 \times \{(\text{price per share paid for the block}) - (\text{exchange price one day after the announcement of the transaction})\} / (\text{exchange price one day after the announcement of the transaction})$. Percentage of shares acquired is the percentage of the firm's equity that is acquired in the block transaction. Top executive turnover dummy is a dummy variable that takes the value of one if the block-traded firm experiences a top executive turnover within one year after the block trade. Prior firm performance is the percentage of common stock return for the 12 months ending two months before the block trade announcement minus the return on the CRSP equal-weighted index. Log of firm size is the natural logarithm of the book value of assets. Leverage is the book value of long-term debt over the book value of assets. Tangibility of assets is fixed assets over total assets. Acquirer is in the same industry dummy is a dummy variable that takes a value of 1 when the acquiring company is in the same industry group as the target, based on the two-digit Standard Industrial Classification (SIC) code. Bank acquirer dummy is a dummy variable that takes the value of 1 when the acquirer is a financial company. Major industry group dummies are based on the two-digit Standard Industrial Classification (SIC) code. Significant coefficients are indicated at the 10% and 5% levels by * and **, respectively.

Category of independent variables	Independent variables	Dependent variable : Block premium (%)	
		coefficient	p-value
Ownership level	Percentage of shares acquired (%)	0.08**	0.01
Control activity	Top executive turnover dummy	7.86**	0.04
Characteristics of the block	Prior firm performance (%)	0.003	0.11
	Log of firm size (mil)	-0.73	0.76
	Leverage	0.41	0.17
	Tangibility of assets (%)	-0.13*	0.07
Characteristics of the acquirer	Individual acquirer dummy	-2.80	0.22
	Acquirer is in the same industry dummy	0.65	0.15
	Bank acquirer dummy	-2.86	0.30
Industry dummies	Industry - agriculture, forestry, fishing	-1.91	0.51
	Industry - mining	-2.50	0.68
	Industry - construction	0.43	0.33
	Industry - transportation and utilities	2.63	0.60
	Industry - wholesale trade	-1.23	0.25
	Industry - retail trade	3.10	0.10
	Industry - finance, insurance, real est.	1.67	0.60
	Industry - services	-2.02	0.23
R^2		0.34	

Table 3
Determinants of Top executive Turnover

This table shows the estimates of logit models relating the probability of top executive turnover to firm performance, ownership characteristics, and other potential determinants of turnover. Numbers are marginal effects where derivatives are evaluated at mean values. The dependent variable is the top executive turnover dummy variable, which takes the value of 1 if the block-traded firm experiences a top executive turnover within one year after the block trade. Percentage of shares acquired is the percentage of the firm's equity that is acquired in the block transaction. Prior firm performance is the percentage of common stock return for the 12 months ending two months before the block trade announcement minus the return on the CRSP equal-weighted index. Insider ownership variable is the percentage of shares owned by officers and directors and includes shares owned by individuals related to a member of the top management team, employee pension or stock option plans, trusts for which managers have some voting authority, and any other blocks of shares over which a member of the top management team has voting authority. Outsider-dominated board is a dummy variable that takes a value of 1 when more than 60% of the board's directors are outsiders. Top exec is founding family dummy variable is a dummy variable that takes the value of 1 when the top executive is a member of the founding family. Firm size is the natural logarithm of the book value of assets. The coefficients of interaction terms are based on the cross-partial derivative of the expected value of the dependent variable. Dollar values are in millions. P-values are in parentheses. Significant coefficients are indicated at the 10%, 5%, and 1% levels by *, **, and ***, respectively.

Category of independent variables	Independent variables	Dependent variable : Top executive turnover	
		Model 1	Model 2
Block size	Percentage of shares acquired (%)	0.051** (0.04)	0.049** (0.04)
Firm performance	Prior firm performance(%) (RET)	-0.010* (0.08)	-0.011* (0.09)
	Insider ownership (%)	-0.011** (0.04)	
Ownership structure	Dummy for 5%<(insider ownership)<25%		-0.219* (0.09)
	Dummy for (insider ownership)>25%		-0.545** (0.03)
Board Composition	Outsider dominated board dummy	-0.154 (0.64)	-0.073 (0.56)
Status of top executive	Top exec is founding family dummy	-0.233* (0.07)	-0.206* (0.08)
Firm size	Log of firm size (mil)	-0.032* (0.07)	-0.034* (0.07)
	RET*[Dummy for 5%<(insider ownership)<25%]		0.009** (0.04)
Interaction terms	RET*[Dummy for (insider ownership)>25%]		-0.004 (0.18)
	RET*[Outsider dominated board dummy]		0.006** (0.03)
	Pseudo R ²	0.118	0.129

Table 4
Two-Stage Regression of the Block Premium

This table shows the results of a recursive regression model for estimating the block premium, wherein the probability of top executive turnover is treated as endogenous. The block premium (%) is defined as $100 \times \{(\text{price per share paid for the block}) - (\text{exchange price one day after the announcement of the transaction})\} / (\text{exchange price one day after the announcement of the transaction})$. Percentage of shares acquired is the percentage of the firm's equity that is acquired in the block transaction. Probability of top executive turnover is the implied probability of top executive turnover at the time of the block trade and is created from a logit regression of Table 3. This probability is then multiplied by 100. Probability of executive turnover_1 is the implied probability of turnover from Model 1 in Table 3. Probability of executive turnover_2 is the implied probability of turnover from Model 2 in Table 3. Prior firm performance is the percentage of common stock return for the 12 months ending two months before the block trade announcement minus the return on the CRSP equal-weighted index. Log of firm size is the natural logarithm of the book value of assets. Leverage is the book value of long-term debt over the book value of assets. Tangibility of assets is fixed assets over total assets. Acquirer is in the same industry dummy is a dummy variable that takes a value of one when the acquiring company is in the same industry group as the target based on the two-digit SIC code. Bank acquirer dummy is a dummy variable that takes the value of 1 when the acquirer is a financial company. Major industry group dummies based on the two-digit SIC code and year dummies are included in the regression (not reported). Dollar values are in millions. P-values are in parentheses. Significant coefficients are indicated at the 10%, 5%, and 1% levels by *, **, and ***, respectively.

Category of independent variables	Independent variables	Dependent variable: block premium (%)				
		Model 1	Model 2	Model 3	Model 4	Model 5
Ownership level	Percentage of shares acquired (%) (Block)	0.129** (0.04)	0.140** (0.04)	0.096** (0.03)	0.098** (0.04)	0.118** (0.03)
Control level	[Prob of top executive turnover_1](%)(T/O1)	0.092** (0.01)		0.073** (0.02)		
	[Prob of top executive turnover_2](%)(T/O2)		0.095** (0.02)		0.041** (0.02)	0.022** (0.02)
Characteristics of the block	Prior firm performance (%)	0.001 (0.13)	0.002 (0.14)	0.001 (0.11)	0.003 (0.12)	0.002 (0.14)
	Log of firm size (mil)	0.019 (0.66)	-0.039 (0.69)	0.018 (0.78)	-0.015 (0.75)	-0.008 (0.67)
	Leverage	0.292 (0.10)	0.268 (0.11)	0.317* (0.09)	0.325 (0.10)	0.319* (0.09)
	Tangibility of assets (%)	-0.119* (0.06)	-0.103** (0.04)	-0.098** (0.04)	-0.113** (0.03)	-0.102** (0.03)
Characteristics of the acquirer	Individual acquirer dummy	2.325* (0.09)	2.658* (0.10)	1.881* (0.09)	1.790 (0.11)	1.884* (0.09)
	Acquirer is in the same industry dummy	0.652 (0.13)	0.684 (0.17)	0.527 (0.11)	0.403 (0.15)	0.483 (0.11)
	Bank acquirer dummy	-4.371 (0.29)	-4.964 (0.26)	-4.688 (0.27)	-4.580 (0.24)	-4.371 (0.26)
Square and interaction terms	Block * T/O1			0.012* (0.08)		0.011** (0.04)
	Block * T/O2				0.018** (0.03)	
	[Prob of top executive turnover_2] ²					0.002** (0.04)
	[Percentage of shares acquired] ²					0.009 (0.46)
	Adjusted R ²	0.27	0.25	0.28	0.30	0.33

Table 5
Average Percentage Block Premiums for Different Block Sizes and Probabilities of Top executive Turnover

In this table, we calculate block premiums according to Model 5 of Table 4, given different values of the block size (percentage of shares acquired) and the implied probability of top executive turnover. Right hand side variables (except for the block size) in the first-stage regression of Eq. (4) for explaining the probability of executive turnover are chosen so that they lie within the same standard deviation from their respective means. For all other variables in the second-stage regression of Eq. (4) for estimating the block premium, given a certain block size and probability of executive turnover, we use the mean values.

Probability of top executive turnover	Block size as a percentage of firm's equity						
	5	10	15	20	25	30	50
0	0.61	1.20	1.79	2.38	2.97	3.56	5.92
10	1.58	2.72	3.86	5.00	6.14	7.28	11.84
20	2.95	4.64	6.33	8.02	9.71	11.40	18.16
25	3.79	5.75	7.72	9.68	11.65	13.61	21.47
30	4.72	6.96	9.20	11.44	13.68	15.92	24.88
40	6.89	9.68	12.47	15.26	18.05	20.84	32.00
50	9.46	12.80	16.14	19.48	22.82	26.16	39.52
75	17.64	22.35	27.07	31.78	36.50	41.21	60.07
100	28.31	34.40	40.49	46.58	52.67	58.76	83.12

Table 6
Robustness Tests of Block Premium Regressions

Panel A shows the results of recursive regression models for estimating the block premium for a subsample of block trades with positive block premiums. The subsample consists of 514 block trades. Probability of executive turnover_1 is the implied probability of turnover from Model 1 in Table 3. Probability of executive turnover_2 is the implied probability of turnover from Model 2 in Table 3. The control variables used are the same as in Table 4 (not reported). Panel B shows the results of alternative specifications of control activities for the recursive regression models for estimating the block premium. In Model 1, Prob of board turnover is the implied probability of board turnover within one year of the block trade. Explanatory variables used for board turnover are prior firm performance, percentage of shares acquired, log of firm size, insider ownership, and outsider-dominated board dummy. In Models 2 and 3, changes in capital expenditure and R&D expenditure are the implied changes in capital structure and R&D, respectively. Explanatory variables used are cash flow, Tobin's Q, and log of firm size. In Models 4 and 5, changes in leverage and dividends are the implied changes in leverage and dividends/earnings, respectively. Explanatory variables used are cash flow, ROA, and log of firm size. The control variables used in the second-stage regression (not reported) are the same as in Table 4, except for the exclusion of the leverage variable. P-values are in parentheses. Significant coefficients are indicated at the 10%, 5%, and 1% levels by *, **, and ***, respectively.

Panel A: Two-stage regression of the block premium for block trades with positive premiums.

Category of independent variables	Independent variables	Dependent variable: block premium (%)	
		Model 1	Model 2
Ownership level	Percentage of shares acquired (%) (Block)	0.132** (0.05)	0.145** (0.03)
Control level	[Prob of top executive turnover_1](%)(T/O1)	0.094*** (0.01)	
	[Prob of top executive turnover_2](%)(T/O2)		0.093** (0.02)
Adjusted R ²		0.31	0.29

Panel B: Alternative specifications of two-stage regression of the block premium.

Category of independent variables	Independent variables	Dependent variable: block premium (%)				
		Model 1	Model 2	Model 3	Model 4	Model 5
Ownership level	Percentage of shares acquired (%)	0.061** (0.03)	0.055** (0.04)	0.563** (0.04)	0.054** (0.03)	0.057** (0.04)
	Prob of board turnover (%)	0.002 (0.23)				
	Change in capital expenditure (%)		0.017** (0.06)			
Control level	Change in R&D expenditure (%)			0.001 (0.42)		
	Change in leverage (%)				0.002 (0.12)	
	Change in dividends (%)					0.000 (0.41)
Adjusted R ²		0.08	0.17	0.06	0.09	0.11

Figure I
Relationship between Block Premium, Percentage of Shares Acquired,
and the Probability of Top executive Turnover

Figure I shows a three-dimensional plot that depicts the relationship among the block premium, the percentage of shares acquired, and the probability of top executive turnover, according to Model 5 of Table 4.

