Estimating the Private Benefits of Control from Block Trades: Methodology and Evidence

by

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Abstract

We examine 54 large block transactions, and find that private benefits, as a proportion of firm's market value, decrease with firm's size, leverage and profitability, and increase when an individual or family control the firm. There is also some evidence that private benefits are larger when the wedge between the control group's proportion in vote and proportion in equity increases. Interestingly, average private benefits are almost identical when we switch from estimation based on buyer rationality to estimation based on seller-rationality. Last, our findings suggest that when the control group comprises a few partners, private benefits are divided according to each partner proportion in the control group (rather than according to each partner power within the control group).

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Abstract

We examine 54 large block transactions, and find that private benefits, as a proportion of firm's market value, decrease with firm's size, leverage and profitability, and increase when an individual or family control the firm. There is also some evidence that private benefits are larger when the wedge between the control group's proportion in vote and proportion in equity increases. Interestingly, average private benefits are almost identical when we switch from estimation based on buyer rationality to estimation based on seller-rationality. Last, our findings suggest that when the control group comprises a few partners, private benefits are divided according to each partner proportion in the control group (rather than according to each partner power within the control group).

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1. Introduction

It is widely recognized that the group that controls the firm extracts from it some private benefits, i.e., some extra benefits that do not accrue to small ordinary shareholders from the public. Private benefits appear in many forms - from explicit "tunneling" (i.e., diverting funds from the firm into the control-holder's pockets), to indirect subtle actions (such as generous contributions by the firm to the community) which essentially serve to promote control-holder's social prestige.

The magnitude of the private benefits of control is non-trivial, as evidenced most directly by the prices of large control-transfer block trades. In control-transfer block trades, the buyer usually pays a large premium over the shares' market price. This price premium compensates the seller for the lost private benefits, and the buyer is willing to pay it in view of her or his own future private benefit consumption.

The purpose of the paper is twofold. First, we formalize and elaborate existing methodologies for estimating private benefits from large block trades, addressing both partial and full control transfers. Notably, in the empirical work we find that the estimates of private benefits based on seller rationality are, on average, almost identical to those derived from buyer rationality. More interestingly, our evidence suggests that when few partners share control over the firm, private benefits are divided within the control group according to each partner proportion in the control group vote.

Second, we examine some characteristics and potential determinants of private benefits. Using a sample of 54 large block trades in Israel, an economy with above median private benefits, we find that the ratio of private benefits to firm's market

value is inversely related to firm's size, leverage and profitability, and is larger when a single individual or family controls the firm. We also find some (weaker) evidence that private benefits increase when the wedge between control group's proportion in vote and proportion in equity increases.

The paper is organized as follows. Section 2 provides some background on private benefits and their potential determinants. Section 3 presents a model for estimating private benefits from block transactions. Section 4 describes the sample and data. Section 5 presents our empirical results, and Section 6 offers a brief summary and conclusions.

2. Private Benefits of Control and Their Variation across Firms

2.1. Private benefits of control

Private benefits of control have many facets (see Ehrhardt and Nowak (2003)), and can be grossly divided into pecuniary (direct) and non-pecuniary benefits. Pecuniary benefits include, first of all, "tunneling" or "self dealing" proceeds, that is proceeds attained by diverting cash flows from the firm into controlholder pockets. Controlholders or firms they fully own may transact with the firm on a routine basis or sell assets to the firm at economically unreasonable prices, and these transactions effectively loot the firm. Another common form of tunneling is paying excessive compensation to the controlholders and their relatives for any management position they occupy. Djankov, LaPorta, Lopez-De-Silanes and Shleifer (2006) have recently proposed and estimated an anti-self-dealing index for 72 countries, based on the difficulties (hurdles) self dealing faces in these economies.

The second form of pecuniary benefits is "dilution" proceeds, which are proceeds that controlholders extract from non-control shareholders. Controlholders may organize private placements for themselves at favorable prices, issue stock or debt for self-serving reasons at self-serving prices, and even trade on the market at unreasonable prices (based on their inside information).

Several researchers highlight the non-pecuniary private benefits. These include: 1) the amenities that controlholders receive, from nice offices through generous expense accounts to private jets (Yermack, 2006); and 2) the prestige and social status that the controlholders receive. Controlholders may use firm funds for gaining public prestige (through large contributions to the community) and social status (by helping friends and relatives).

The corporate law and public opinion attempt to limit private benefits consumption. In a cross-country comparative study, Dyck and Zingales (2004) find evidence suggesting that the law system, media coverage, and law and tax enforcement can restrain private benefits. However, there is no way to rout out private benefits, and they are commonly accepted as a necessary evil.

A more sophisticated view accepts private benefits as a necessary toll for the leadership position that controlholders serve. Large controlling shareholders invest a lot of efforts and typically succeed in promoting firm market value – see Shleifer and Vishny (1986). Thus, controlholders deserve some extra compensation (i.e., private benefits). The success of controlholders is especially sizeable in family controlled firms (Anderson and Reeb, 2003, and Andres, 2006), which explains why family and closely held firms are so widespread around the globe (LaPorta, Lopez-de-Silanes and Shleifer, 1999).

The prevalence of concentrated ownership stems also from the fact that the alternative - disperse ownership firms (with no controlholder) - is also problematic. In disperse ownership firms the CEO also extracts private benefits from the firm, as CEO's interests diverge from those of the shareholders. It is possible that the agency cost of concentrated ownership is less than that of the dispersed ownership CEO. In fact, McConnell and Servaes (1990) find that a firm's relative valuation, approximated by Tobin's Q, is maximized when about 50% of firm's equity is held by controlholders. Evidently, closely-held companies are not the worse form of business organization.

Another possible justification for the private benefits of control is that private benefits are necessary compensation for the non-diversified position that controlholders assume. Frequently, most of the controlholder's wealth is invested in the firm. The cost of this non-diversified position is enormous (see Meulbroek (2001), for example). Thus, only the consumption of private benefits can balance the score for controlholders.

Last, since private benefits consumption is expected, rational investors take it into account. Roosenboom and Schramade (2006) present evidence on how French firms' IPO prices decrease with controlholders power and ability to extract private benefits. Hence, expected or normal levels of private benefits consumption do not really surprise or offend minority investors.

2.2. Factors affecting private benefits consumption

Many factors have been suggested as potentially influencing the level of private benefits consumption. We divide these factors into three groups.

2.2.1. Ownership structure

Firms that are closely held provide controlholders with an opportunity to extract significant private benefits. The key factors in this context are the ability and motivation of controlholders to expropriate the firm. As the proportion of firm vote held by controlholders increases, they possess more power to exploit the firm, but have less motivation to do so because (when their percentage in vote equals their percentage in equity) every dollar they wheedle out of the firm costs them more. Thus, the first ownership structure variable that might affect private benefits intensity is the percentage vote of the control group. In their study of block trades, Barclay and Holderness (1989), BH hereafter, present evidence that block buyers pay higher premia over market price for larger blocks.[1] Block buyers rationally pay higher premia only if they foresee higher private benefits. This suggests that private benefits increase with the percentage of holdings.

A second important variable is the structure of the control group. When control is in the hands of a single person or family, the control group is, most probably, more cohesive and more cooperative in extracting private benefits, relative to firms that are controlled by several business partners. Thus, all other things equal, family firms should exhibit higher private benefits. BH find higher block premiums when block buyer is an individual, which supports the proposition of higher private benefits in family firms. Other researchers such as Volpin (2002) and Bennedsen and Nielsen (2006), show that family ownership discounts firm's relative valuation (Tobin's Q), presumably because of relatively large private benefits consumption.

[1] In fact, BH restrict their conclusion only to blocks in the range 25% to 50%. Below 25% the block premium is insignificantly related to block size, and above 50% BH have too few observations.

Last is the wedge between percentage in vote and percentage in equity. For example, in pyramids - when firm A is a partly owned subsidiary of a mother firm that has controlholders - a wedge is created between controlholders percentage in firm A's equity and their percentage in firm A's vote. Mother firm controlholders control firm A's vote, owning only a relatively low percentage of firm A's equity. These low equity holdings reduce controlholders loss when expropriating the subsidiary firm, which should lead to higher private benefits in firms at the bottom of the pyramid. Another common instrument for decreasing the percentage of equity holdings without losing control is dual class share financing, i.e., the issuance of inferior or even non-voting shares. Thus, controlholders in dual class share firms may optimally extract more private benefits. Several researchers, e.g. Cronqvist and Nilsson (2003), Maury and Pajuste (2005), and Bennedsen and Nielsen (2006) show that a disproportion between controlholders' percentage in vote and percentage in equity reduce firm valuation (Tobin's Q), presumably because of their increased private benefits consumption.

It is noteworthy that ownership structure might be endogenous. That is, it is possible, as Bebchuk (1999) suggests, that the availability of private benefits determines firm ownership structure rather than vice-a-versa.

2.2.2. External monitoring

Close monitoring by financial institutions and/or investors that do not belong to the control group is likely to cut controlholders' private benefits. This is because close monitoring makes it more difficult to extract private benefits, i.e., increases controlholders' perceived and actual "cost" of legal expropriation (see, for example, the model of LaPorta, Lopez-de-Silanes, Shleifer and Vishny, 2002).

In a cross-country study, differences in the legal system, law enforcement and even media power affect the level of private benefits (Dyck and Zingales, 2004). However, within a single country, there are three main monitoring devices. The first is debtholders' monitoring. Banks, for example, have plenty of timely information on firm's business, and may resist wild private benefits extraction that may destabilize the firm or endanger the bank's debt. BH find an insignificant impact of leverage on private benefits in their overall sample, suggesting that the restraining power of debt may be small.

The second monitoring body comprises firm institutional investors. Institutional investors presumably protect small investors' interests and fight abnormal private benefits. Almazan, Hartzell and Starks (2005) find that U.S. institutional investors restrain CEO compensation and increase CEO pay performance sensitivity. However, it is unclear how influential are institutional investors vis-à-vis controlholders in closely held firms.

Third, monitoring by outside directors on firm's board (directors that do not belong to the control group) could restrain private benefits. Increasing the proportion of outside directors on the Board is one of the instruments of Sarbanes Oxley and U.S. exchanges to mitigate CEO agency problems, and as Chhaochharia and Grinstein (2006) show it decreased CEO compensation by 20-25%. Again, the impact of outside directors in closely held firms, where the majority of directors belong to the control group, may be much less spectacular than in the U.S.

2.2.3. Firm characteristics

The extent of private benefits extraction may also depend on several firm characteristics. Previous literature conventionally employs firm size. On one hand, it

is more difficult to monitor larger firms, facilitating higher private benefits in these firms. On the other hand, there is more intensive regulatory, analyst and media coverage of larger firms, which should deter controlholders from private benefits extortion and reduce the proportion of private benefits extraction in large firms. BH find that their estimate of the ratio of private benefits to firm equity is negatively yet insignificantly related to firm size.

Second, firm risk may complicate monitoring, and facilitate the camouflaging of private benefits consumption. However, in volatile firms, controlholders may also be cautious not to consume too much private benefits in order not to destabilize the firm. BH find that in their overall sample firm stock standard deviation does not affect private benefits.

Last, firm profitability (for example, its Return on Assets), may be a factor. Here, again, the correlation and even causality between profitability and private benefits is arguable. On one hand, high profitability tempts controlholders to increase their private benefits consumption. On the other hand, high profitability may reflect low private benefits consumption.

3. Estimating the Private Benefits of Control

3.1. Existing methodologies

Extant literature offers two methods for estimating the private benefits of control: 1) based on the price premium of superior- over inferior-vote shares, and 2) based on the price premium paid for a control-transferring block of shares.

The first method requires the existence (and active trading) of dual class shares, and argues that the price premium of superior vote shares is justified in view of prospective future control contests. When a control contest develops, the price of the superior-vote share soars (see Zingales (1995)) because the contestants need the vote for gaining control. Hence, the current price premium of superior vote shares depends on two factors: a) the probability of an imminent control contest and b) the price premium in case of a control contest. Both these factors depend critically on the strategic power of public-held (i.e., non-controlholders) shares, which can be represented by public shares' combined Shapley value.[2] Empirical studies such as Zingales (1994) and Chung and Kim (1999) confirm existence of a positive correlation between public shares' Shapley's value and the price premium on superior-vote shares.

The weakness of the dual class methodology is that the estimation method yields at best an estimate of the average private benefits across sample firms – see Chung and Kim (1999) regression method, for example. The estimation also ignores much of the cross-sectional variation in the probability of a future control contest. (It assumes that the probability of a control contest depends on the Shapley Value of public shares only). Thus, the dual class methodology is somewhat tenuous.

The second methodology for estimating the private benefits of control is more direct and can be employed to assess firm by firm private benefits. When control over the firm is transferred, the buyer pays (and the seller receives compensation) also for the private benefits that they plan to (used to) consume. Barclay and Holderness (1989) were the first to suggest that the premium (over market price) paid for a control-

[2] The Shapley value of Milnor and Shapley (1978) measures the strategic power of a player (say the public), by calculating how pivotal are the player (i.e., public) shares for building a majority vote

transfer block of shares reflects the value of private benefits. According to Barclay and Holderness:

(1) $PB = N_b (P_b - P_M)$,

where PB is the value of private benefits, N_b is the number of shares in the block, P_b is the per-share block price, and P_M is the market price of the share one day after the block transaction is announced.

Dyck and Zingales (2004) point out that equation (1) is accurate only for full-control-transfer block trades when the seller has maximum negotiation power and extracts the buyer's entire surplus. Dyck and Zingales (2004) further extend the Barclay and Holderness PB estimation formula by allowing a continuous distribution of negotiating power, from maximum power to block seller to maximum power to block buyer. Still, the practical application of Dyck and Zingales' formula is difficult (if not impossible) because it requires knowledge of the bargaining power of buyer and seller in each transaction. Dyck and Zingales (2004) show how to estimate an average bargaining power across the sample transactions, which should be appropriate for some inference on average private benefits, but does not solve the individual firm by firm inference problems.

In this study, we extend estimation to partial control-transfer block trades. Previous literature excludes cases of partial control transfer, where control before and/or control after the block transaction is shared by a few business partners. We find that a considerable proportion of the large block trades in our sample are partial control-transfers. Hence, the extension is necessary for our study, and we believe it could prove helpful for future researchers as well.

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coalition within the firm.

Our approach also reverses from Dyck and Zingales' relative bargaining power formula to the more basic buyer– and seller-rationality concepts of Nicodano and Sembenelli (2000). This is because there does not exist (at least we could not find) any established methodology for estimating the relative bargaining power of block buyer and seller on a transaction by transaction basis, and because without such a transaction specific relative bargaining power estimate it is impossible to assess our main research goal - the firm's private benefits. Furthermore, the private benefits foreseen by the block buyer may differ from those of the block seller. The adoption of Nicodano and Sembenelli's (2000) concepts allows us to generate two firm-specific (biased) private benefits estimates, one for the block seller and one for the buyer. The next subsection presents our estimation method.

3.2. Our methodology for estimating the private benefits of control

3.2.1. An estimation method based on buyer's rationality

Before the transaction the value of the block buyer investment in the firm is:

$$(2) \quad w_0 \cdot Y_0 \cdot [1 - B_0] + \pi_0^P \cdot Y_0 \cdot B_0$$

where w_0 is block buyer's initial holdings as a proportion of firm equity, Y_0 is firm's equity value (before private benefits are consumed), B_0 is firm's total private benefits consumption as a proportion of firm's equity value in the period before the block sale, and π_0^P is block buyer's initial share in private benefits.

The post-transaction value of block buyer's investment in the firm is:

$$(3) \quad (w_0 + w) \cdot Y_1 \cdot (1 - B_1) + \pi_1^P \cdot Y_1 \cdot B_1$$

where w is the block purchased as a proportion of firm's equity, and the index 1 denotes the post-transaction situation.

Last, the buyer's Block Payment, BP, may be expressed as:

$$(4) \quad BP = w \cdot Y_1 \cdot [1 - B_1][1 + prem]$$

where prem is the premium that the buyer paid relative to the post-trade market price, i.e., 1+ prem equals the ratio of block price per share to market post-trade price.

Now, if the block buyer is rational, the buyer's gain must exceed BP, which implies (based on the above equations) that

$$(5) \quad (w_0 + w) Y_1 [1 - B_1] + \pi_1^P Y_1 B_1 - w_0 Y_0 [1 - B_0] - \pi_0^P Y_0 B_0 \geq w Y_1 [1 - B_1](1 + prem)$$

Equation (5) is our basic buyer rationality model. It is essentially a generalization of Barclay and Holderness' (1989) implicit model. If we restrict ourselves, as Barclay and Holderness did, to cases where the buyer has no previous holdings (w_0 =0, π_0^P=0) and full control afterwards (π_1^P=1), we obtain the Barclay and Holderness formula for b: $b = w \cdot prem$.[3]

Practical estimation based on equation (5) distinguishes between the following two cases:

1) Block buyer has no prior holdings.

   In such a case equation (5) becomes:

   $$(6) \quad b_1 \geq \frac{w \cdot prem}{\pi_1^P}$$

   where $b_1 = B_1/(1 - B_1)$ is firm's total private benefits as a proportion of the market value of firm's equity, in the period after the block sale.

[3] To obtain Barclay and Holderness formula for b divide their estimated private benefits (see our equation (1)) by $N \cdot P_M$ (the total market value of firm equity after the block announcement).

2) Block buyer has prior holdings.

In such a case, an effective way to progress is to assume that total private benefits' consumption does not change (B_0=B_1). Equation (5) becomes:

$$(7.1) \quad b \geq \frac{w \cdot y_1 \cdot prem - w_0 \cdot (y_1 - y_0)}{\pi_1^P y_1 - \pi_0^P y_0}$$

where y is the market value of firm's equity and b is as defined above.

Dividing equation (7.1) by y_0 we get:

$$(7.2) \quad b \geq \frac{w \cdot (1 + r_i) \cdot prem - w_0 \cdot r_i}{\pi_1^P \cdot (1 + r_i) - \pi_0^P}$$

where $r_i = (y_1 - y_0)/ y_0$ is firm's stock return in response to the transaction. This return can be approximated by the stock Cumulative Abnormal Return (CAR) around the block trade announcement. Note that equation (7.2) reduces to equation (6) when the buyer has no previous holdings (w_0 =0, π_0^P =0).

The practical estimation of private benefits in this case further assumes that block sellers possess full bargaining power. Hence, the block premium paid by the buyer exhausts all buyer expected future private benefits. In such a case all our inequalities, i.e., equations (5) through (7) become equalities.

Equations (6) and (7.2), with an equal sign replacing the ≥ sign, serve to estimate private benefits in our study. There is a clear difference between them. Equation (6) does not require the additional assumption of unchanged private benefits. Thus, estimates based on (6) should be more accurate than estimates based on equation (7.2).

3.2.2. An estimation method based on seller's rationality

The derivation hereafter follows the same logical steps as the previous ("buyer rationality") one. Before the transaction the value of the block seller investment in the firm is:

$$(8) \quad \alpha \cdot Y_0 \cdot [1 - B_0] + \pi_0^S \cdot Y_0 \cdot B_0$$

where α is seller's holdings as a proportion of firm equity, Y_0 is firm's equity value (before private benefits are consumed), B_0 is firm's total private benefits' consumption as a proportion of firm's equity value, and π_0^s is seller's share in private benefits.

The post-transaction value of block seller's investment in the firm is:

$$(9) \quad (\alpha - w) \cdot Y_1 \cdot (1 - B_1) + \pi_1^S \cdot Y_1 \cdot B_1$$

where w is the block sold as a proportion of firm's equity, and the index 1 denotes the post-transaction situation.

To complete the picture, seller's post-transaction wealth also includes the Block Proceeds, BP, expressed as:

$$(10) \qquad BP = w \cdot Y_0 \cdot [1 - B_0][1 + PREM]$$

where PREM is the premium that the buyer paid relative to the pre-trade market price, i.e., 1+ PREM equals the ratio of block price per share to market pre-trade price.

We now assume that the seller is rational, hence BP must be equal or exceed the seller's wealth gain, and

$$(11) \quad \alpha Y_0[1 - B_0] + \pi_0^S Y_0 B_0 - (\alpha - w) Y_1 (1 - B_1) - \pi_1^s Y_1 B_1 \leq \alpha Y_0 [1 - B_0](1 + PREM)$$

Practical estimation based on equation (11) distinguishes between the following two cases:

1) Seller sells all her holdings.

   In such a case equation (11) becomes:

$$(12) \qquad b_0 \le \frac{\alpha \cdot PREM}{\pi_0^S} = \frac{w \cdot PREM}{\pi_0^S}$$

   where $b_0 = B_0/(1- B_0)$ is firm's total private benefits as a proportion of the market value of firm's equity, in the period before the block sale.

2) Block seller does not sell all her holdings.

   In such a case, an effective way to progress is to assume that total private benefits' consumption does not change ($B_0=B_1$). Equation (11) becomes:

$$(13.1) \quad b \le \frac{w \cdot y_0 \cdot PREM + (\alpha - w)(y_1 - y_0)}{y_0 \cdot \pi_0^S - y_1 \cdot \pi_1^S}$$

   where b is as defined above.

   Dividing equation (13.1) by y_0 we get:

$$(13.2) \quad b \le \frac{w \cdot PREM + (\alpha - w) \cdot r_i}{\pi_0^S - (1 + r_i) \cdot \pi_1^S}$$

   where $r_i = (y_1 - y_0)/ y_0$ is firm's stock return in response to the transaction, which can be approximated by the stock Cumulative Abnormal Return (CAR) around the block trade announcement.

The practical estimation of private benefits in this case further assumes that block buyers possess full bargaining power. Hence, the block premium paid by the buyer is minimal, i.e., equals seller's private benefits. In such a case the inequalities in equations (11) through (13) become equalities.

Equations (12) and (13.2), with an equal sign replacing the ≤ sign, serve to estimate private benefits in our study. There is a clear difference between them.

Equation (11) does not require the additional assumption of unchanged private benefits. Thus, estimates based on (11) should be more accurate than estimates based on equation (13.2).

4. Sample and Data

4.1. Sample construction

Every block transaction in Israel has to be reported to the Tel-Aviv Stock Exchange (TASE) and the Israeli Securities Authority, which immediately publish this news to the public. The sample block trades are extracted from two data bases. We use IFAT (a private vendor) for block trades in 1993-99 and Maya (the TASE free of charge data base which starts on year 2000) for 2000-2005.

We employed numerous screening criteria, most of which have been suggested by Dyck and Zingales (2004). First, we exclude block trades of less than 10% of firm's vote and trades where the assembled buyer power is less than 20%. Such small blocks do not really confer control. Second, we exclude trades where the block buyer does not enter the control group. We conclude that the block buyer enters the control group if she appoints at least one Director and/or signs a voting agreement with other members of the control group. In Israeli firms, the control group appoints all non-external Directors. External Directors are appointed by law, are a minority on the Board, and serve to defend public's interests. Third, we exclude trades where the announcement does not include full details about the terms of the deal, identifying the seller and buyer, the size of the block and the cash proceeds. Non-cash deals that include payment in stocks or bonds are omitted because of difficulties in assessing the true value of the involved securities. Fourth, block transactions between a mother firm

and its subsidiary or between subsidiaries are omitted because it is difficult to judge the objectivity of these deals. Fifth, we exclude block trades in stocks that did not trade on the TASE (had zero volume) from one week before to one week after the block trade announcement. This is because our estimation methodology requires some reliable market price data in that event window. Last, we exclude 5 block transactions with negative block premiums, i.e, with block prices below market prices. These transactions imply negative private benefits or negative costs, and are typical of firms in financial distress – see Barclay and Holderness (1989).

The final sample comprises 54 block trades with full details on the terms of the deal.

4.2. Variable construction

For the 54 block trades in our sample we collected data on the pre- and post-transaction ownership structure of each company involved from "Article 24" of the company's Annual Report (available electronically from IFAT). The information disclosed in Article 24 is quite extensive. It specifies the exact holdings of every member in the control group and identifies the person (ultimate owner) of each company that belongs in the control group. Using Article 24 we compute the % in vote and % in equity of the ultimate owners. Our calculations apply the by now standard methodology (see Claessens, Djankov and Lang, 2000, and Faccio and Lang, 2002, for example), which takes into account pyramids and cross-holdings. It is noteworthy that relative to previous studies our % vote and % equity data are accurate, as we do not have any mysterious unlisted firms in the control group that we do not know who hides behind them.

Article 24 also discloses any family ties between the controlholders, which serves to classify our firms as either family- or non-family-controlled firms. Information about family ties is also provided in Article 26 that presents personal data on all firm's Directors. Article 26 helps us verify that the block seller and buyer are part of the control group (i.e., appoint at least one Director). Article 24 is also useful for this purpose, as it reports on any voting agreement between large shareholders.

Articles 24 and 26 also serve to compute Institutional investor holdings (detailed in Article 24) and the percentage of external directors (from Article 26). In fact, external directors in our sample are directors from the public who are professionally adept and whose duty is to protect the small (minority) investors' interests in the firm. The Israeli law obliges each publicly traded firm to appoint at least two external directors. It is rare that an Israeli firm has an outside director other than the law-mandated external directors. Hence, external directors in our sample are different than the usual definition of outside directors in the U.S..

Stock price and return data are from PREDICTA (a commercial data base). We use these data for two proposes: 1) to calculate the block price premiums – prem and PREM of equations (6), (7.2), (12), and (13.2); and 2) to calculate the Cumulative Abnormal Return (CAR) around the block trade announcement. CAR is our estimate of r_i in equations (7.2) and (13.2), and it is designed to measure the stock price response to the block transaction.

Practically, CAR is calculated using the Net of Market approach with Tel-Aviv 100 Index as the market Index. The methodology assumes that $\tilde{R}_{it}$, the return of stock i on day t, is given by $\widetilde{R}_{it} = \widetilde{R}_{mt} + \widetilde{\varepsilon}_{it}$, where $\tilde{R}_{mt}$ is the return of the market

index on day t, and $\tilde{\varepsilon}_{it}$ is an idiosyncratic stochastic error term (reflecting the effect of firm-specific news on stock i return). Accordingly, $CAR_i(-T_b, T_e)$, the excess return in the window (-Tb,Te) straddling the block transaction announcement, can be computed as $CAR_i(-T_b, T_e) = \prod_{t=-T_b}^{T_e} (1 + \tilde{\varepsilon}_{it})$.[4]

We compute CAR for two windows: CAR(-1,1), a short window, assuming the stock price response is concentrated in the period from one day before to one day after the announcement; and CAR(-5,5), which assumes that the response is concentrated in the two weeks period straddling the announcement. CAR(-1,1) is more appropriate when there are no information leaks about the block trade beforehand and full understanding of the trade repercussions within one day afterwards. CAR(-5,5) is more comprehensive but also more noisy because most likely other events besides the block trade also contribute to it. We do not know in advance which CAR is preferred, and hope results are robust to the CAR window choice.

In order to test empirically the impact of some non-ownership-structure variables on private benefits, we collect data on some firm characteristics such as firm size (balance sheet total assets), leverage (debt equity ratio), and profitability (ROA = Earnings Before Interest and Taxes divided by total assets). All these accounting data are retrieved from Super Analyst (a commercial data base). We also compute the standard deviation of the firm's daily stock return in the three years preceding the block trade, and use it as a measure of firm's risk.

[4] We did not use the Market Model methodology because the block transaction is commonly a significant ownership structure change. Thus, the period before and/or after the block transaction, which serves in the Market Model methodology for parameter estimation, may be non-representative –

Last, a methodological point. In order to estimate the buyer and seller private benefits (see equations (6), (7.2), (12) and (13.2)) we need measures for π^P and π^S, the buyer and seller share (respectively) in total private benefits. Two alternatives are examined. First, we can assume that private benefits are divided among the control group members in proportion to each member percentage holdings within the control group. This approach suggests that since private benefits are "illegal" their extraction requires cooperation within the control group, and such cooperation is best achieved and maintained by a "fair", i.e., proportional, division of private benefits across control group members. The alternative approach is to assume that private benefits are divided according to the power of each member within the control group - see Zwiebel (1995). The power within the control group can be approximated by the Internal Shapley Value, that is by computing how pivotal the member is for coalitions' formation within the control group. It is interesting to see the differences in private benefits' estimates between our two alternative division models, and to seek evidence that supports one model over the other.

5. Empirical Results

5.1. Descriptive statistics

Table 1 presents some descriptive statistics for our 54 firms' sample. The mean total assets is over 2 billion New Israeli Shekels (NIS), about 500 million U.S. Dollars, but the median is only 88 million NIS. On average, the firms are poor performers with a Return on Assets of less than 1%. The average Debt to Equity ratio is close to 2,

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may involve some extraordinary successes, difficulties or structural changes that triggered or followed the block trade. Dyck and Zingales (2004) also use the Net of Market approach.

which is higher than the typical ratio for Israeli firms. However, diversity exists, as some of our firms have a ROA as high as 23% and a debt equity ratio as low as 0.03.

(Insert Table 1 about here)

By construction, our sample comprises closely held firms. The mean (median) vote held by the firm's control group is about 68% (70%). About half of the firms are family controlled, while the rest are controlled by a few (usually two) business partners. External directors occupy about 30% of the Board of Directors' seats. Interestingly, the block trade tends to cut the discrepancy between control group's percentage in vote and percentage in equity. The ratio of percentage vote to percentage equity ownership decreases from 1.5 (for the seller) to 1.1 (for the buyer). This is probably due to the fact that in many of our sample firms a pyramid is dismantled and sold to a non-pyramid owner.

The block trades in our sample are relatively large. The mean and median block traded is over 50% of firm's equity and it is sold at a premium of close to 50%. The stock price response to the block trade is on average positive, with a CAR of about 2%, similar to the CAR of about 2.7% found by Barclay and Holderness (1989).

5.2. Private benefits of control

For each firm we compute eight private benefits (PB) estimates, four based on block buyer rationality (see equations (6) and (7.2)) and four based on block seller rationality (equations (12) and (13.2)). The four buyer PBs differ in the stock response we assume (CAR_1 vs. CAR_5) and in the PB sharing rule (sharing based on the proportion within the control group vs. sharing based on the strategic power within the control group). The four seller PBs differ in an analogous way. Table 2 reports the

mean and median of these estimates after truncating two observations (the highest and lowest PB estimates).[5]

(Insert Table 2 about here)

Panel A summarized the overall sample results. The mean ratio of private benefits to market value of equity is about 0.3. This mean is similar to the corresponding mean value of 0.27 estimated by Dyck and Zingales (2004) (see their Table II on page 551) based on a sample of 9 Israeli block trades. Also encouraging is the fact that the assumptions of buyer rationality and seller rationality generate almost identical average private benefits estimates, which reinforce our confidence in our estimate of average private benefits. It appears that our disregard of the bargaining power of seller and buyer is innocuous. Dyck and Zingales (2004) also report, in footnote 6, that bargaining power considerations can affect their private benefits average estimates by 2.2% at most.

Another test of the robustness of our estimates is to exclude the cases where we resort to the assumption that private benefits remain the same before and after the block trade.[6] After the exclusion, the remaining cases' mean PB is about 0.32 for both the buyer- and seller-rationality subsamples – see Panel B. These estimates are similar and statistically indistinguishable from the overall sample results reported in Panel A.

A closer look at Panel A reveals that the private benefits estimates generated by the "proportional sharing" approach are somewhat higher than those generated by the "strategic-power sharing" approach. The source of this phenomenon is shown in

[5] Truncating outliers is customary in private benefits research.

[6] These are cases where private benefits are estimated using equations (7.2) and (13.2).

Panels C and D. Panel C documents that the "proportional" and "strategic" approaches both yield private benefits estimates of about 0.3 for "full control transfers", which are cases where the seller sold over 50% of firm's vote to the buyer. In contrast, Panel D reports different private benefits estimates for the "proportional" and "strategic" approaches in block trades with partial control transfers (blocks of less than 50%) - the "proportional" approach private benefits estimate remains close to 0.3, while the "strategic" approach estimate decreases to about 0.2.

We have further examined the low "strategic" approach PB estimate in partial control transfer block trades. First, we test the differences between the full and partial control transfer PB estimates generated by the "strategic" approach. The t-statistics of the differences are 1.98 (using CAR_1) and 2.41 (using CAR_5), with p-values of 0.05 and 0.01 respectively, assuming seller rationality, and 1.43 and 1.86 (p-values of 0.15 and 0.06) assuming buyer rationality. We also run non-parametric tests, and find that the corresponding p-values of the Kruskal-Wallis tests are 0.03 and 0.04 assuming seller rationality and 0.01 and 0.06 assuming buyer rationality. Clearly, the "strategic" approach leads to different PB estimates for full and partial control transfers.[7]

Second, we examine the differences between the mean PB estimates of the "strategic" and "proportional" approaches. In the full control transfer subsample, the "strategic" and "proportional" approaches generate identical PB estimates. In contrast, in the subsample of partial control transfers, the parametric and non-parametric tests detect statistically significant differences between the "strategic" and "proportional"

[7] Repeating the same tests on the PB estimates generated with the "proportional" approach, we find insignificant differences between the full and partial control transfer estimates.

PB estimates. In sum, all our tests indicate that the "strategic" approach generates lower PB estimates in cases of partial control transfer.

There are two possible interpretations of the lower PB estimates. First, it can be argued that the "strategic" approach is flawed - average PBs should not depend on whether there is a partial or full control transfer. Proponents of this view also point out a logical weakness in the strategic approach. The strategic approach suggests that if individual A owns 35% of vote and individual B owns 30% of vote, all firm's private benefits accrue to individual A (whose Shapley value within the control group is 1). Such a division of private benefits is unlikely in practice, as individual B most probably also receives some private benefits. In fact, the "proportional" approach suggests that individual B receives almost half (30/65) of firm's private benefits, which is a more palatable proposition.

Second, it can be argued that partial control transfers should lead to lower PB estimates, i.e., that the "strategic" approach estimates are the "correct" ones. Most of the partial control transfers occur in firms where a coalition of partners controls the firm – "partnership" control firms in our terminology. In such firms, due to mutual monitoring of the partners, private benefits may be lower – see Maury and Pajuste (2005).

To test this second proposition, we divide the partial control transfer sample into two subsamples: 9 cases where the partial control transfer block trade led to buyer to full control over the firm, and 13 cases where the partial control transfer block led the buyer to a partnership in control. We expect that the 9 cases with a transfer to full control would yield higher PB estimates, at least on the buyer side, because: a) after a transfer to full control there are no partners and no mutual

monitoring anymore, and b) according to our previous findings (see Panel C of Table 2), in full control transfers, the PB estimates of the "strategic" approach are higher and about equal to 0.3.

Surprisingly, the mean (median) PB estimates for our 9 partial control transfer transactions that led the buyer to full control are 0.122 (0.09) using CAR_1 and 0.138 (0.152) using CAR_5. These mean CARs are statistically significantly lower than their counterparts in full control transfer block trades (0.314 and 0.323 respectively – see Panel C), and are even low relative to the mean and median of the overall partial control transfer sample. It appears that the distinction between "partnership" and "full" control firms cannot explain the lower PB estimates generated by the strategic approach, as the lower PB estimates emerge also in firms that became non-partnership firms, i.e., firms that became individually or family controlled. The strategic approach does not appear to explain well our evidence.

5.3. What explains the cross-sectional variation in the private benefits of control?

To examine factors which may affect the level of the private benefits of control, we regress the private benefits estimates generated by the "proportional approach" on the following explanatory variables: 1) Ln (Total Assets) of the firm; 2) Firm's Return on Assets (ROA), defined as Earnings Before Interest and Taxes (EBIT) divided by total assets; 3) Ln (the ratio of debt to equity); 4) FAM – a dummy variable that equals 1 when the firm is controlled by a single individual or family; 5) Ln (% vote / % equity) of the control group; 6) Firm risk, approximated by the standard deviation of the stock's daily returns; 7) The control group aggregate vote percentage; 8) Ln (institutional investor vote percentage); and 9) Ln (the proportion of external directors on the Board).

Three comments on the above list are appropriate. First, for some variables we choose the natural logarithm (Ln) transformation, in order to narrow the gap between the Normal distribution and the actual distribution of these explanatory variables. After the transformations, all explanatory variables but SIZE and VPO conform to the Normal distribution (Kolmogorov-Smirnov test). Second, we check and find several significant correlations among our explanatory variables. Most severe are the correlations of standard deviation, institutional holdings, financial leverage and the % of external directors with firm size. To avoid multicolinearity problems, we "cleaned" these variables from firm size effects by regressing the standard deviation, institutional holdings, leverage and the % of external directors on Ln (total assets), and using the residuals of these regressions as explanatory variables in the private benefits regressions. Third, while most of our explanatory variables are measured before the block trade, usually based on firm reports for the year-end preceding the block trade, two variables, FAM and Ln (% vote / % equity), are measured both before and after the block trade. The before statistics represent the seller situation and serve in the regressions of PB estimates that are based on seller-rationality, while the after statistics are relevant and serve in the regressions of PB estimates that are based on buyer rationality.

Table 3 summarizes the results of our PB regressions. For each PB estimate we present two regressions – a regression on all explanatory variables, and a parsimonious regression with statistically significant variables only. In Table 3, the columns entitled PB_b1 report regression results where the dependent variable is the private benefits estimate obtained based on buyer rationality and CAR(-1,1). Likewise, the regressions reported in the columns entitled PB_b5 employ as the dependent variable a private benefits estimate based on buyer rationality and CAR(-5,5). The rest

of the regressions use as their dependent variables PB_s1 and PB_s5, which are private benefits estimates based on seller rationality and CAR(-1,1) and CAR(-5,5), respectively.

(Insert Table 3 about here)

Inspecting the buyer-rationality regression results, we see that the private benefits of control, as a proportion of the market value of equity, decrease significantly with firm's size, leverage, and profitability, and increase significantly when a single individual or a family control the firm. In addition, there is some weak indication (at the 10% significance level) that the greater the disparity between control group's percentage in vote and percentage in equity, the larger are the extracted private benefits.

The negative correlation between private benefits and size is expected. Larger firms are exposed more often to regulatory oversight and media coverage, which deters private benefits consumption. It is noteworthy though that our reported results refer to private benefits as a proportion of the market value of equity. That is, when measured in absolute terms, the monetary (NIS or $) value of private benefits consumption in large firms is still much higher than in small firms. For example, according to the PB_b1 parsimonious regression coefficients in Table 3, increasing firm size by a factor of ten, say from total assets of 50 to 500 million NIS, cuts private benefits consumption as a proportion of equity market value by about 7.4%, from 33.8% in the small firm to 26.4% in the large firm.[8] Suppose the market value of equity of these firms is 40 and 400 million NIS, respectively. Then, private benefits

[8] When calculating these proportions, we plug average values for the rest of the explanatory variables in the fitted PB_b1 parsimonious regression.

consumption in the large firm amounts to 105.6 million NIS, compared to 13.5 million NIS only in the small firm.

Table 3 also documents an inverse relation between private benefits and firm profitability (ROA). The negative coefficient of ROA suggests that controlholders view profitability as a substitute for private benefits consumption. This interpretation appears logical. For if we assume that controlholders demand a certain extra compensation for their non-diversified position in the firm, then, in highly profitable firms, the firm's earnings may provide most of this compensation, and less private benefits are required.

An alternative explanation of the negative relation between private benefits and profitability suggests a reverse causality – from private benefits to profitability. According to this alternative view, the negative correlation stems from the fact that firms with relatively high private benefits consumption are necessarily less profitable (because private benefits exhaust profits).

To examine these alternative explanations we attempt the following simultaneous equations system:

(14) $PB_i = \alpha_0 + \alpha_1 * SIZE_i + \alpha_2 * ROA_i + \alpha_3 * LEV_i + \alpha_4 * FAM_i + \alpha_5 * VPO_i + e1_i$ and

(15) $ROA_i = \beta_0 + \beta_1 * PB_i + \beta_2 * LAG\_ROA_i + \beta_3 * LEV_i + e2_i$,

where all symbols are as before – see Table 3 for exact definitions, and LAG_ROA is ROA in year -2 relative to the block trade. The PB regression above, Equation (14), is essentially the parsimonious PB regression assuming buyer rationality – see Table 3. The ROA regression, Equation (15), is new. It postulates: a) some serial correlation in firm's ROA (note that ROA is computed based on year -1 relative to the block trade

and LAG_ROA is based on year -2), and b) that more profitable firms dare to be more leveraged.

We fit the system of equations (14) and (15) using PB estimates based on buyer rationality and the Three-Stage-Least-Squares methodology. The coefficients α_2 and β_1 are found to be negative and significantly lower than zero (at the 1% level), both in the system that employs PB_b1 as its PB estimate and in the system that utilizes PB_b5. It appears that both alternative explanations of the negative correlation between private benefits and firm's profitability deserve some credence. Notably, the alternative explanations are not mutually exclusive - private benefits might reduce profitability, while at the same time high profitability may reduce the appetite for private benefits consumption.

The negative effect of leverage on private benefits consumption confirms the view that debtholders monitor firm controlholders and restrain private benefits consumption. On the other hand, we do not find any evidence that the presence of external directors on firm's Board or institutional investors affect private benefits. This does not imply that external directors and institutional investors do not exert any monitoring. Previous findings on Israel, e.g. Hauser and Lauterbach (2004), suggest that institutional investors protect public interests in the special case of dual class share unifications. Thus, perhaps a more cautious conclusion would be that the monitoring activity of external directors and institutional investors does not significantly constrain private benefits extraction.

The positive coefficient of FAM in Table 3 suggests that private benefits are larger in firm's controlled by a single individual or family. The other type of firms in our sample – firms controlled by a partnership of two or more individuals, manifest

lower private benefits perhaps because partners, in general, are not as cohesive and cooperative in extracting private benefits as a single individual or a family. The finding that family control is associated with larger private benefits is not surprising, and confirms previous evidence on increased value discounts in family firms (see Volpin, 2002, and Bennedsen and Nielsen, 2006, for example).

Last, the weak positive effect of Ln (% vote / % equity) of the control group grants some credence to the contention that a disparity between vote and equity holdings of controlholders, i.e., a vote surplus, encourages controlholders to consume private benefits. With smaller holdings in equity, controlholders do not lose as much from the decline in firm profits emanating from private benefits consumption. Hence, optimal private benefits consumption level increases. Several previous studies, e.g., Cronqvist and Nilsson (2003) and Bebchuk, Kraakman and Triantis (2000) warn us against Controlling Minority Shareholders, controlholders with relatively low holdings of equity. Our evidence suggests that these concerns are worse attention.

Two other explanatory variables examined in Table 3 – firm risk, and % vote of the control group – do not achieve any statistical significance. It could be that: a) they do not have any fundamental impact on private benefits, or b) their positive and negative effects offset each other in our sample, or c) we measured these variables inaccurately. Future studies should reconsider these potentially important variables.

The regressions of private benefits estimates based on the assumption of seller-rationality, yield a lower explanatory power (lower adjusted R-squares), and only two significant variables - size and profitability. Consistent with the buyer rationality regressions, private benefits, as a proportion of the market value of equity, decrease with firm size and profitability.

An interesting question is why the seller-rationality regressions are less significant than the buyer rationality ones. A possible answer is that the estimates of private benefits based on buyer rationality are more accurate than the estimates based on seller-rationality. The buyer rationality estimates are more precise if, typically, block seller has more or all bargaining power, in which case our assumption that equations (6) and (7.2) can be treated as equalities is relatively plausible. In short, when seller has more bargaining power, private benefits estimates based on buyer rationality are more precise, and buyer rationality regressions are more revealing. This is what we suggest happens in our sample, and it has some logical plausibility because, typically, controlholders have to be convinced to sell their block in the firm, i.e., typically block seller has more bargaining power.

6. Summary and Conclusions

The study makes several contributions. First, we formalize and elaborate existing methodologies for estimating private benefits from large block trades. We derive private benefits estimates based on block buyer-rationality, estimates based on seller-rationality, estimates for full-control transfers, estimates for partial-control transfers, and even consider the issue of how private benefits are divided within the control group (in case the control group comprises a few partners).

Second, the empirical analysis of 54 large block transactions in Israel, yields a few important results. We find that private benefits, as a proportion of firm's market value, decrease with firm's size, leverage and profitability, and increase when an individual or family control the firm. There is also some evidence that private benefits are larger when the wedge between the control group's proportion in vote and proportion in equity increases. Interestingly, average private benefits are almost

identical when we switch from estimation based on buyer rationality to estimation based on seller-rationality, which implies that previous research that employs predominantly the assumption of buyer rationality is not seriously biased. Last, our findings suggest that when the control group comprises a few partners, private benefits are divided according to each partner proportion in the control group (rather than according to each partner power within the control group).

Future research should investigate the validity of our results in other economies. Using large block trades to infer private benefits appears like the most promising venue for estimating and researching private benefits.

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Table 1

Descriptive statistics of our sample of 54 block trades in Israel: 1993-2005

The table presents information on the sample firms' characteristics, their ownership structure and the block trades. All variables (except the block trade description) are collected from the firms' annual reports for the year-end preceding the block trade. SIZE is total assets in millions of NIS (adjusted for June 2003 prices) ; STD is the standard deviation of the stock's daily returns in the three years preceding the block trade announcement day; ROA is the ratio of Earnings Before Interest and Taxes (EBIT) to total assets; LEV is firm's debt to equity ratio; MTB is the ratio of market to book value of equity; FAM_b (FAM_a) is a dummy variable equal to 1 if a single person or a family is in control of the firm before (after) the block trade; (FAM_a and FAM_b equal zero otherwise); VPO_b (VPO_a) is the ratio between control group's percentage in vote and percentage in equity before (after) the block trade; CVOTE is control group's voting power; EXT_DIR is the percentage of external directors (directors that are not from the control group) on the board ; and INST is institutional investors' vote percentage. CAR_1 (CAR_5) is the Cumulative Abnormal Return from one (five) trading day(s) before to one (five) trading day(s) after the block trade announcement, calculated using the Net of Market methodology; Block_size is percentage of equity ownership purchased in the trade; and prem_1 (prem_5) is the premium of block price per share over the market price per one (five) days after the block trade announcement date.

Variable	Obs.	Mean	Median	Standard deviation	Maximum	Minimum
Firm characteristics						
SIZE (million NIS)	54	2247	88	7792	49727	6
STD (in %)	52[a]	3.47	3.28	1.75	13.86	1.9
ROA (in %)	54	0.58	1	8.61	23	-23
LEV	54	1.97	0.7	3.67	19.9	0.03
MTB	54	1.03	0.78	0.79	3.3	0.12
Ownership structure[b]						
FAM_b	54	0.48	0	0.5	1	0
FAM_a	54	0.48	0	0.5	1	0
VPO_b	54	1.49	1	1.23	7.41	1
VPO_a	54	1.1	1	0.25	2.03	1

Table 1 (continued)

Variable	Obs.	Mean	Median	Standard deviation	Maximum	Minimum
CVOTE (in %)	54	67.71	69.62	11.13	87	49
EXT_DIR (in %)	54	29.52	28.57	10.7	75	15.3
INST (in %)	54	2.35	0	5.19	24	0
Block description						
Block size (in %)	54	51.78	53.47	19.3	87.4	20.33
prem_1	54	46.27	35.93	36.27	180.4	1.6
prem_5	54	46.96	33.13	38.13	175.09	2.32
CAR_1 (in %)	54	1.7	1.83	7.7	26.5	-14.94
CAR_5 (in %)	54	2.4	1.72	13.45	40.49	-24.9

[a] Two observations are missing because two firms had less than three years of return data prior to the block trade announcement day.

[b] All control-group ownership-structure variables are computed using ultimate ownership.

Table 2

Private benefits as a proportion of market value of equity

	Seller rationality		*Buyer rationality*	
	Mean PB[a]	*Median PB*	*Mean PB*[a]	*Median PB*
Panel A: overall sample (52 block trades)				
Assuming proportional division of PB				
Using CAR_1	0.324	0.235	0.315	0.235
Using CAR_5	0.344	0.244	0.318	0.247
Assuming strategic power division of PB				
Using CAR_1	0.276	0.221	0.275	0.227
Using CAR_5	0.299	0.227	0.275	0.209
Panel B: "most dependable" observations (43 block trades in the seller rationality subsample, and 40 block trades in the buyer rationality subsample)[b]				
Assuming proportional division of PB				
Using CAR_1	0.339	0.232	0.336	0.244
Using CAR_5	0.362	0.237	0.337	0.247
Assuming strategic power division of PB				
Using CAR_1	0.290	0.229	0.313	0.237
Using CAR_5	0.314	0.216	0.314	0.244
Panel C: full control transfers (30 block trades)				
Assuming proportional division of PB				
Using CAR_1	0.327	0.239	0.314	0.244
Using CAR_5	0.368	0.277	0.323	0.247
Assuming strategic power division of PB				
Using CAR_1	0.327	0.239	0.314	0.244
Using CAR_5	0.368	0.277	0.323	0.247
Panel D: partial control transfers (22 block trades)				
Assuming proportional division of PB				
Using CAR_1	0.323	0.214	0.315	0.197
Using CAR_5	0.318	0.223	0.312	0.234
Assuming strategic power division of PB				
Using CAR_1	0.206	0.156	0.223	0.175
Using CAR_5	0.204	0.147	0.212	0.164

[a] All mean values are significantly different from zero at the 1% level.

[b] In this subsample we do not require the assumption that PB before the block trade equals PB after.

Table 3

Factors affecting the private benefits of control

We present results of the following regression

$$PB_i = \beta_0 + \beta_1 * SIZE_i + \beta_2 * ROA_i + \beta_3 * LEV_i + \beta_4 * FAM_i + \beta_5 * VPO_i + \beta_6 * STD_i + \beta_7 * CVOTE_i + \beta_8 * INST_i + \beta_9 * EXT\_DIR_i + e_i$$

PB is our estimate of the private benefits of control as a proportion of the market value of firm's equity; SIZE is the natural logarithm (Ln) of total assets; ROA is the ratio of EBIT to total assets (in %); LEV is Ln (debt to equity ratio); FAM is a dummy variable equal to 1 when a single person or a family is in control of the firm (otherwise FAM=0); VPO is Ln (the ratio of control group's percentage in vote and percentage in equity); STD is Ln (the standard deviation of firm's daily stock returns in the three years preceding the block trade); CVOTE is control group's aggregate voting power (in %); INST is Ln (% vote of institutional investors); and EXT_DIR is Ln (percentage of external directors on the board). To avoid multicollinearity problems, STD, INST, LEV and EXT_DIR are "cleaned" from SIZE effects, i.e., in the regressions of this table we use the residuals of regressions of STD, INST, LEV and EXT_DIR on SIZE, instead of the raw variables themselves. Also noteworthy, all explanatory variables, except VPO and FAM, are measured at the year-end preceding the block trade. VPO and FAM are measured both before and after the block trade – see below. The columns entitled PB_b1 present regression results when the dependent variable is the private benefits estimate obtained based on buyer rationality and CAR(-1,1). Likewise, PB_b5 is based on buyer rationality and CAR(-5,5), and PB_s1 and PB_s5 are based on seller rationality and CAR(-1,1) and CAR(-5,5) respectively. T-statistics, corrected for heteroscedasticity using the White method, are presented in parentheses below the coefficients. *, **, and *** indicate that the coefficient is significantly different from zero at the 10%, 5%, and 1% significance level respectively.

	PB_b1	PB_b1	PB_b5	PB_b5	PB_s1	PB_s1	PB_s5	PB_s5
SIZE	-0.027**	-0.032***	-0.021**	-0.022***	-0.024**	-0.022**	-0.023**	-0.023**
	(-2.46)	(-3.69)	(-2.33)	(-2.99)	(-2.22)	(-2.21)	(-2.02)	(-2.00)
ROA	-0.010***	-0.010***	-0.011***	-0.011***	-0.010**	-0.009**	-0.009**	-0.008**
	(-2.86)	(-2.86)	(-3.07)	(-3.02)	(-2.36)	(-2.26)	(-2.37)	(-2.31)
LEV	-0.045*	-0.055**	-0.035*	-0.046**	-0.036		-0.041	
	(-1.87)	(-2.32)	(-1.65)	(-2.13)	(-1.18)		(-1.59)	
FAM[a]	0.140**	0.149**	0.128**	0.146**	0.085		0.080	
	(2.11)	(2.40)	(2.05)	(2.44)	(1.21)		(0.90)	
VPO[a]	0.173		0.312*	0.278*	-0.006		-0.041	
	(0.83)		(1.70)	(1.68)	(-0.10)		(-0.80)	
STD	0.006		-0.017		-0.010		-0.012	
	(0.03)		(-0.17)		(-0.10)		(-0.10)	
CVOTE	0.001		-0.0009		-0.0003		-0.001	
	(0.70)		(-0.41)		(-0.17)		(-0.64)	
INST	0.0004		0.002		-0.0005		0.003	
	(0.10)		(0.57)		(-0.10)		(0.44)	

Table 3 (continued)

	PB_b1	PB_b1	PB_b5	PB_b5	PB_s1	PB_s1	PB_s5	PB_s5
EXT_DIR	-0.051 (-0.44)		-0.087 (-0.90)		-0.036 (-0.68)		0.125 (0.87)	
Number of obs.	50	52	50	52	50	52	50	52
Adjusted R^2	0.244	0.323	0.279	0.319	0.067	0.109	0.046	0.078

[a] In the buyer-rationality regressions we use the levels of these variables in the period after the block trade, and in the seller-rationality regressions we use information from the period before the block trade.