FIRM-SPECIFIC FACTORS AFFECTING THE PRIVATE BENEFITS OF CONTROL IN CONCENTRATED OWNERSHIP ECONOMIES

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ABSTRACT

Purpose – *To seek firm-specific determinants of private benefits (PBs) in a concentrated ownership economy and compare the evidence with Barclay and Holderness (1989) findings on disperse ownership firms.*

Design/methodology/approach – *We estimate the PBs of control implicit in 54 large block transactions in Israel, via an elaborated Barclay and Holderness (1989) methodology, and then examine possible determinants of PBs using multivariate regressions.*

Findings – *Cross-sectional regressions indicate that PBs, as a proportion of firm's market value, decrease with firm's size, leverage, and profitability and increase when an individual or family controls the firm.*

Research limitations/implications – *Our results reinforce and are even stronger and more significant than Barclay and Holderness (1989) U.S. evidence, possibly because the magnitude of PBs in concentrated*

Advances in Financial Economics, Volume 15, 59–77

ISSN: 1569-3732/doi:10.1108/S1569-3732(2012)0000015005

ownership economies is much higher than in disperse ownership economies. The main limitation is our reliance on one country (Israel) data only.

Originality/value – *We extend Barclay and Holderness (1989) study to a concentrated ownership economy, and document clearer and more significant results on the determinants of the PBs of control.*

Keywords: Private benefits; block trades; concentrated ownership

INTRODUCTION

Private benefits (PBs hereafter) of control are the common term for all pecuniary and non-pecuniary benefits that accrue to the controlling shareholders of the firm only; these are benefits above and beyond the payments and benefits of regular (small) shareholders from the public.

Controlling shareholders, the group of large shareholders that controls firm's vote (and consequently firm's decisions), extract PBs in many forms. The range of PBs is wide and varies from explicit "tunneling" (transactions between controlling shareholders and the firm that divert funds from the firm into the controlling shareholders' pockets) to indirect subtle actions (such as generous contributions by the firm to the community) that essentially serve to promote controlling shareholders' social prestige.

In this study, we explore firm-specific characteristics that impact PB consumption level in concentrated ownership economies that are characterized by closely held firms, pyramids, and cross holdings. In this sense, we complement Barclay and Holderness (1989) seminal study on PBs of control in disperse ownership firms. Extending Barclay and Holderness (1989) study to concentrated ownership economies is important because the scale of PBs is different. Disperse ownership economies (such as the United States and Great Britain) are characterized by relatively low PBs (1–5% of equity market value), whereas in the rest of the world, PBs are considerably higher and can amount up to 65% of equity market value – see Dyck and Zingales (2004). Existing literature on PBs in concentrated ownership economies focuses on macro and law-related variables (Dyck & Zingales, 2004) or is indirect in the sense that it is based on firm's relative valuation (Tobin's q) – see, for example, Bennedsen and Nielsen (2010). Direct evidence on firm-specific PBs and firm-specific characteristics that impact their level in concentrated ownership economies is lacking, and we aspire to fill the gap.

Our sample comprises 54 block trades in Israel – a relatively concentrated ownership economy with below median corporate governance quality and above median PB consumption – see LaPorta, Lopez-de-Silanes, Shleifer, and Vishny (2002) and Dyck and Zingales (2004). Employing an elaborated Barclay and Holderness (1989) block trade PB estimation methodology, we find that the ratio of PBs to firm's market value is negatively correlated with firm's size, leverage, and profitability and is larger when a single individual or family controls the firm. We also find some evidence that PBs increase when the wedge between control group's proportion in vote and proportion in equity increases.

The paper is organized as follows. The next section provides some background on PBs and their potential determinants. Then, we describe the sample, data, and methodology. Last, we present our empirical results and offer a brief summary and conclusions.

PRIVATE BENEFITS OF CONTROL AND THEIR VARIATION ACROSS FIRMS

Private Benefits of Control

PBs of control have many facets and can be grossly divided into pecuniary (direct) and non-pecuniary benefits. Pecuniary benefits include, first of all, "tunneling" or "self-dealing" proceeds, which is proceeds attained by diverting cash flows from the firm into controlling shareholder pockets. Controlling shareholders or businesses they fully own may transact with the firm on a routine basis at unfair prices 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 controlling shareholders and their relatives for any management position they occupy. Djankov, La Porta, Lopez-De-Silanes, and Shleifer (2008) propose 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 controlling shareholders extract from noncontrol shareholders. Controlling shareholders 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 PBs. These include (1) the amenities that controlling shareholders receive, from nice offices through generous expense accounts to private jets (Yermack, 2006) and (2) the prestige and social status that the controlling shareholders receive. Controlling shareholders may use firm funds for gaining public prestige (through large contributions to the community) and social status (by helping friends and relatives).

Firm-Level Factors Affecting Private Benefits' Consumption

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

Ownership Structure

Firms that are closely held provide controlling shareholders with an opportunity to extract significant PBs. The key factors in this context are the ability and motivation of controlling shareholders to expropriate the firm. As the proportion of firm vote held by controlling shareholders 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 PBs 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 premium over market price for larger blocks.[1] Block buyers rationally pay higher premium only if they foresee higher PBs. This suggests that PBs 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 PBs, relative to firms that are controlled by several business partners. Thus, all other things equal, family firms should exhibit higher PBs. BH find higher block premiums when block buyer is an individual, which supports the proposition of higher PBs in family firms. Other researchers, such as Volpin (2002) and Bennedsen and Nielsen (2010), show that family ownership discounts firm's relative valuation (Tobin's q), presumably because of relatively large PBs consumption.

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 controlling shareholders, a wedge is created between controlling shareholders percentage in firm A's equity and their percentage in firm A's vote. Mother firm controlling shareholders control firm A's vote, owning only a relatively low percentage of firm A's equity. These low equity holdings reduce controlling shareholders loss when expropriating the subsidiary firm, which should lead to higher PBs 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, that is, the issuance of inferior or even nonvoting shares. Thus, controlling shareholders in dual class share firms may optimally extract more PBs. Maury and Pajuste (2005) and Bennedsen and Nielsen (2010) show that a disproportion between controlling shareholders' percentage in vote and percentage in equity reduce firm valuation (Tobin's q), presumably because of their increased PBs consumption.

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

External Monitoring

Close monitoring by financial institutions and/or investors that do not belong to the control group is likely to cut controlling shareholders' PBs. This is because close monitoring makes it more difficult to extract PBs, that is, increases controlling shareholders' perceived and actual "cost" of legal expropriation (see, e.g., the model of LaPorta et al. 2002).

In a cross-country study, differences in the legal system, law enforcement, and even media power affect the level of PBs (Dyck & 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 PBs extraction that may destabilize the firm or endanger the bank's debt. BH find an insignificant impact of leverage on PBs 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 PBs. 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 controlling shareholders in closely held firms.

Third, monitoring by outside directors on firm's board (directors who do not belong to the control group) could restrain PBs. 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 (2007) 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 less spectacular than in the United States.

Firm Characteristics

The extent of PBs 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 PBs in these firms. On the other hand, there is more intensive regulatory, analyst, and media coverage of larger firms, which should deter controlling shareholders from PBs extortion and reduce the proportion of PBs extraction in large firms. BH find that their estimate of the ratio of PBs to firm equity is negatively yet insignificantly related to firm size.

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

Last, firm profitability (e.g., its return on assets, ROA) may be a factor. Here, again, the correlation and even causality between profitability and PBs is arguable. On one hand, high profitability tempts controlling shareholders to increase their PBs consumption. On the other hand, high profitability may reflect low PBs consumption.

DATA AND METHODOLOGY

Sample

Our study on PB determinants in concentrated ownership economies is based on Israeli data. This is because of the relatively accurate data we found in Israel and because PBs in Israel are sizable (slightly above median

relative to other developed economies in the world – see Dyck & Zingales, 2004).

Every block transaction in Israel has to be reported to the Tel-Aviv Stock Exchange (TASE) and the Israeli Securities Authority that immediately publish this news to the public. The sample block trades are extracted from two databases. We use IFAT (a private vendor) for block trades in 1993–1999 and Maya (the TASE free of charge database that starts on year 2000) for 2000–2005.

We employ 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. Noncash 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 five block transactions with negative block premiums, that is, with block prices below market prices. These transactions imply negative PBs 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.

Variable Construction

For the 54 block trades in our sample, we collect 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 percentage in vote and percentage in equity of the ultimate owners. Our calculations apply the standard methodology (see, e.g., Volpin, 2002) that takes into account pyramids and cross holdings. It is noteworthy that relative to previous studies, our percentage vote and percentage 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 controlling shareholders, which serves to classify our firms as either family- or nonfamily-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. During the sample period, it is rare to find a firm that has an outside director in addition to the two law-mandated external directors. Hence, external directors in our sample are different from outside directors in the United States.

Stock price and return data are from PREDICTA (a commercial database). We use these data for two purposes: (1) to calculate the block price premiums and (2) to calculate the cumulative abnormal return (CAR) around the block trade announcement.

We also 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 database). 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.

Estimating the Private Benefits of Control

Relevant literature offers two primary methods for estimating PB. The first approach requires the existence (and active trading) of dual class shares and relies on the price premium of the superior voting shares. This price premium should reflect the expected higher value of the superior vote share in case of future control contest – see Zingales (1995). From our perspective, the major disadvantage of this approach is that it can generate at best an estimate of the average PB across sample firms; see Chung and Kim (1999) regression method, for example.

The second methodology for estimating PBs is based on the price premium paid for a control-transferring block of shares. When control over the firm is transferred via a block trade, the buyer typically pays for the block a premium above (the post block trade) the market price of the shares. This extra-amount paid by the buyer for a control-transfer block of shares is rational only if it emanates from and reflects the PBs that the block buyer contemplates. The block-premium methodology is directly applicable for estimating firm by firm PB estimates. Thus, we use it.

Barclay and Holderness (1989) were the first to use block trade premiums as an estimator for the magnitude of the PBs in firms. BH propose that

$$b = w \cdot prem \tag{1}$$

where b is the PBs consumption as a proportion of the market value of firm's equity (where equity market value is measured in the period after the block transaction); w is the block purchased as a proportion of firm's equity; and *prem* is the premium that the buyer pays relative to the *post-trade* market price, that is, $1 +$ *prem* equals the ratio of block price per share to market post-trade price per share.

Dyck and Zingales (2004) point out that Eq. (1) is accurate only when the block trade assures full control transfer to the buyer and when block sellers possess full bargaining power (i.e., the block premium paid by the buyer exhausts all of the buyer's expected future PBs). Dyck and Zingales (2004) also find that typically block buyers have low bargaining power. Hence, Eq. (1) that is basically the original BH formula is an adequate approximation for full control transfers.

Barak and Lauterbach (2011) have recently proposed an extension of BH that can deal with block trades that impair partial control transfers. (We have several such cases in our sample.) According to Barak and Lauterbach (2011):

$$b \geq \frac{w \cdot (1 + r_i) \cdot prem - w_0 \cdot r_i}{\pi_1^P \cdot (1 + r_i) - \pi_0^P} \quad (2)$$

where symbols are as in Eq. (1), w_0 is the block buyer's initial (pre-block trade) holdings in the firm as a proportion of firm equity, π_0^P is an estimate of block buyer's initial share in firm's PBs, π_1^P is an estimate of block buyer's final (post-block trade) share in firm's PBs, and r_i is firm's stock return reaction to the transaction announcement. It is important to note that if we restrict ourselves to cases where the buyer has no previous holdings ($w_0 = 0$, $\pi_0^P = 0$) and full control afterward ($\pi_1^P = 1$), Eq. (2) reduces to Eq. (1). Finally, if we assume that block sellers have full bargaining power, as is assumed originally by BH when deriving Eq. (1), Eq. (2) turns into

$$b = \frac{w \cdot (1 + r_i) \cdot prem - w_0 \cdot r_i}{\pi_1^P \cdot (1 + r_i) - \pi_0^P} \quad (3)$$

Two methodological issues remain. First, we need for Eq. (3) empirical implementation a measure of π^P, the buyer share in total PBs. We assume that PBs are divided among the control group members in proportion to each member percentage holdings. This approach suggests that since PBs are "illegal" their extraction requires cooperation within the control group, and such cooperation is best achieved and maintained by a "fair," that is, proportional, division of PBs across control group members. An alternative (less intuitive) approach is that PBs are divided according to the strategic power (Shapley value) of each member within the control group. However, this approach might yield an unacceptable/unintuitive PB distribution. For example, the strategic approach suggests that if individual A owns 35% of vote and individual B owns 30% of vote, all firm's PBs accrue to individual A (whose Shapley value within the control group is 1). Such a division of PBs is unlikely in practice, as individual B most probably also receives some PBs. In fact, the "proportional" approach that we adopt suggests that individual B receives almost half (30/65) of firm's PBs, which is a more palatable proposition.

Second, Eq. (3) requires also an estimate of r_i – firm's stock return in response to the transaction announcement. This return can be approximated by the stock CAR around the block trade announcement. 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 $\tilde{R}_{it} = \tilde{R}_{mt} + \tilde{\varepsilon}_{it}$, 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 $CAR_i(-T_b, T_e) = \prod_{t=-T_b}^{T_e}(1 + \tilde{\varepsilon}_{it})$.[2]

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 afterward. CAR(−5, 5) is more comprehensive but also more noisy because most likely other events besides the block trade also contribute to it.

EMPIRICAL RESULTS

Descriptive Statistics

Table 1 presents some descriptive statistics for our 54 firms' sample. The mean total asset 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 ROA of less than 1%. The average debt to equity ratio is close to 2, 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.

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 block transactions, 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).

Table 1. Descriptive Statistics of Our Sample of 54 Block Trades in Israel: 1993–2005.

Variable	Obs.	Mean	Median	Standard Deviation	Maximum	Minimum
Firm characteristics						
SIZE (million NIS)	54	2,247	88	7,792	49,727	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
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

Notes: 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 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.

[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.

What Explains the Cross-Sectional Variation in the Private Benefits of Control?

For each firm, we compute two PB estimates that differ in the stock response we assume (CAR_1 vs. CAR_5). After truncating two observations (the highest and lowest PB estimates), the mean ratio of PBs to market value of equity is almost 0.32 (0.315 using CAR_1 and 0.318 using CAR_5). This mean PBs proportion 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 nine Israeli block trades. The median PBs proportions are more modest, 0.235 using CAR_1 and 0.247 using CAR_5. Nevertheless, evidently, in Israel the magnitude of PBs as a proportion of firm market value is considerable and definitely nonnegligible. In Israel (and probably in many other economies in the world), PBs consumption is much higher than in the United States. Thus, it is interesting to study which firm characteristics affect PB consumption in concentrated ownership economies. Basically, Barclay and Holderness (1989) study of the United States is complemented below by a parallel study in a concentrated ownership economy.

To examine factors which may affect the level of the PBs of control, we regress the PBs estimates on the following explanatory variables: (1) Ln (total assets) of the firm; (2) firm's ROA, defined as earnings before interest and taxes 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 percentage of external directors with firm size. To avoid multicollinearity problems, we "cleaned" these variables from firm size effects by regressing the standard deviation, institutional holdings, leverage,

and the percentage of external directors on Ln (total assets), and using the residuals of these regressions as explanatory variables in the PBs 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 after the block trade (because they need to represent the block buyer's characteristics).

Table 2 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 2, the columns entitled PB_1 report regression results where the dependent variable is the PBs estimate obtained based on CAR(−1, 1). Likewise, the regressions reported in the columns entitled PB_5 employ as the dependent variable, a PBs estimate based on CAR(−5, 5).

Inspecting the regression results, we see that the PBs 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 controls the firm. In addition, there is some weak indication (at the 10% significance level) that the greater is the disparity between control group's percentage in vote and percentage in equity, the larger are the extracted PBs.

The negative correlation between PBs and size is expected and was also identified by Barclay and Holderness (1989) – without statistical significance, and by Albuquerque and Schroth (2010) – with statistical significance. Larger firms are exposed more often to regulatory oversight and media coverage, which deters PBs consumption. It is noteworthy though that our reported results refer to PBs as a proportion of the market value of equity. That is, when measured in absolute terms, the monetary (NIS or $) value of PBs consumption in large firms is still much higher than in small firms. For example, according to the PB_1 parsimonious regression coefficients in Table 2, increasing firm size by a factor of 10, say from total assets of 50–500 million NIS, cuts PBs 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.[3] Suppose the market value of equity of these firms is 40 and 400 million NIS, respectively. Then, PBs consumption in the large firm amounts to 105.6 million NIS, compared to 13.5 million NIS only in the small firm.

Table 2 also documents an inverse relation between PBs and firm profitability (ROA). The negative coefficient of ROA suggests that controlling shareholders view profitability as a substitute for PBs

Table 2. Factors Affecting the Private Benefits of Control.

	PB_1	PB_1	PB_5	PB_5
SIZE	−0.027**	−0.032***	−0.021**	−0.022***
	(−2.46)	(−3.69)	(−2.33)	(−2.99)
ROA	−0.010***	−0.010***	−0.011***	−0.011***
	(−2.86)	(−2.86)	(−3.07)	(−3.02)
LEV	−0.045*	−0.055**	−0.035*	−0.046**
	(−1.87)	(−2.32)	(−1.65)	(−2.13)
FAM[a]	0.140**	0.149**	0.128**	0.146**
	(2.11)	(2.40)	(2.05)	(2.44)
VPO[a]	0.173		0.312*	0.278*
	(0.83)		(1.70)	(1.68)
STD	0.006		−0.017	
	(0.03)		(−0.17)	
CVOTE	0.001		−0.0009	
	(0.70)		(−0.41)	
INST	0.0004		0.002	
	(0.10)		(0.57)	
EXT_DIR	−0.051		−0.087	
	(−0.44)		(−0.90)	
Observations	50	52	50	52
Adjusted R^2	0.244	0.323	0.279	0.319

Notes: 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, that is, 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 after the block trade. The columns entitled PB_1 present results when the dependent variable is the private benefits estimate obtained based on CAR(−1, 1). Likewise, PB_5 is based on CAR(−5, 5). *T*-statistics, corrected for heteroscedasticity using the White method, are presented in parentheses below the coefficients. *, **, and *** indicate coefficients different from zero at the 10%, 5%, and 1% significance level, respectively.

consumption. This interpretation appears logical. For if we assume that controlling shareholders demand a certain 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 PBs are required.

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

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

$$PB_i = \alpha_0 + \alpha_1 * SIZE_i + \alpha_2 * ROA_i + \alpha_3 * LEV_i + \alpha_4 * FAM_i + \alpha_5 * VPO_i + e1_i \quad (4)$$

and

$$ROA_i = \beta_0 + \beta_1 * PB_i + \beta_2 * LAG\_ROA_i + \beta_3 * LEV_i + e2_i \quad (5)$$

where all symbols are as before – see Table 2 for exact definitions, and LAG_ROA is ROA in year −2 relative to the block trade. The PB regression above, Eq. (4), is essentially the parsimonious PB regression – see Table 2. The ROA regression, Eq. (5), 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 Eqs. (4) and (5) using 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_1 as its PB estimate and in the system that utilizes PB_5. It appears that both alternative explanations for the negative correlation between PBs and firm's profitability achieve some credence. Notably, the alternative explanations are not mutually exclusive – PBs might reduce profitability, while at the same time high profitability may reduce the appetite for PBs consumption.

The negative effect of leverage on PBs consumption confirms the view that debtholders monitor firm controlling shareholders and restrain PBs consumption.

The positive coefficient of FAM in Table 2 suggests that PBs are larger in firms 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 PBs perhaps because partners, in general, are not as cohesive and cooperative in extracting PBs as a single individual or a family. The finding that family control is associated with larger PBs is not surprising, and confirms previous evidence on increased value discounts in family firms (see, e.g., Bennedsen & Nielsen, 2010, and Volpin, 2002).

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 controlling shareholders, that is, a vote surplus, encourages controlling shareholders to consume PBs. With smaller holdings in equity, controlling shareholders do not lose as much from the decline in firm profits emanating from PBs consumption. Hence, optimal PBs consumption level increases. Previous studies (e.g., Bebchuk, Kraakman, & Triantis, 2000) warn us against controlling minority shareholders, controlling shareholders with relatively low holdings of equity. Our evidence suggests that these concerns are worth attention.

Turning now to the insignificant results in Table 2, we do not find any evidence that the presence of external directors or institutional investors affect PBs. This does not imply that external directors and institutional investors do not exert any monitoring. Previous findings on Israel, for example, 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 PBs extraction.

Two other explanatory variables examined in Table 2 – firm risk, and percentage vote of the control group – do not achieve any statistical significance. It could be that (a) they do not have any fundamental impact on PBs, 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.

SUMMARY AND CONCLUSIONS

We study the determinants of the PBs of control in concentrated ownership economies with many closely held firms and pyramidal business groups. The magnitude of PBs of control in such economies is much higher in the United States. Hence, it is interesting to examine whether Barclay and Holderness (1989) results on PBs determinants in U.S. firms extend to the rest of the world that hosts mainly concentrated ownership economies.

The empirical analysis of 54 large block transactions in Israel yields a few important results. We find that PBs, as a proportion of firm's market value, decrease significantly with firm's size, leverage, and profitability and increase significantly when an individual or family controls the firm. There is also some evidence that PBs are larger when the wedge between the control group's proportion in vote and proportion in equity increases. (This happens within pyramidal business groups.)

Compared to Barclay and Holderness (1989) findings, our results appear stronger and more significant. Barclay and Holderness (1989) are not able to show significant relations between PBs as a proportion of equity value and firm size and leverage. They only find (like us) that PBs are higher when an individual is the controlling shareholder. The stronger and more significant results in this study may be attributed to the higher magnitude of PBs in our concentrated ownership economy (with higher PBs it is easier to detect their determinants). Or, our more significant results may be specific to concentrated ownership economies and differ fundamentally from determinants of PBs in disperse ownership economies.

Future research should investigate the validity of our results in other concentrated-ownership economies, and the validity of Barclay and Holderness (1989) results in disperse-ownership firms.

NOTES

1. In fact, BH restrict their conclusion only to blocks in the range 25–50%. Below 25% the block premium is insignificantly related to block size, and above 50% BH have too few observations.
2. 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 that serves in the market model methodology for parameter estimation – may be nonrepresentative – may involve some extraordinary successes, difficulties, or structural changes that triggered or followed the block trade. Dyck and Zingales (2004) also employ the net of market approach.
3. When calculating these proportions, we plug average values for the rest of the explanatory variables in the fitted PB_1 parsimonious regression.

ACKNOWLEDGMENTS

We are grateful for the constructive comments of Yakov Amihud and Ingolf Dittmann. All remaining errors are our own. Financial support from the Raymond Ackerman Family Chair in Israeli Corporate Governance is gratefully acknowledged.

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