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Market Value Maximizing Ownership Structure when Investor Protection is Weak

Beni Lauterbach[1] and Efrat Tolkowsky[2]

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[1] Corresponding author: School of Business Administration, Bar-Ilan University, Ramat Gan 52900, Israel. E-mail: lauteb@mail.biu.ac.il; Fax: 972-35353182.

[2] Faculty of Industrial Engineering and Management, Technion – Israel Institute of Technology, Haifa 32000, Israel. E-mail: efratt@ie.technion.ac.il; Fax: 972-48295688

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Abstract

We hypothesize that in a country with lax corporate governance rules Tobin's Q is maximized when controlholders amass between 50% and 75% of the vote. In this holding range controlholders do not possess extreme power (cannot pass supermajority decisions), nor do they feel a strong temptation to loot the firm (which largely belongs to them). Using a sample of 144 Israeli firms, we find that Tobin's Q is maximized when control group vote reaches 67%. This evidence is strong when ownership structure is treated as exogenous and weak when it is considered endogenous. Other ownership structure variables do not appear to have a significant valuation effect.

JEL classification: G32; G34

Keywords: Ownership structure; Firm valuation; Tobin's Q.

1. Introduction

In most of the world economies ownership structure is concentrated; that is every firm has its own control group that governs it – see Laporta, Lopez-de-Silanes, and Shleifer (1999).[1] Typically, the control group comprises a single individual, a family, or a few business partners with large holdings (frequently over 50% of the vote) that enables the controlholder(s) to dominate firm decisions.

The concentrated ownership structure is natural. Each business enterprise has a small nucleus of founders who often bequeath their shares so that control remains in the family. Large shareholding may also be rational and beneficial. Shleifer and Vishny (1986) argue that in dispersed ownership firms there is little monitoring of firm's operations and CEO actions by shareholders. When large shareholders exist they monitor the firm more closely and are keen on creating value for the firm because of their large equity stake in it.

The problem with large shareholders is that once they gain control they also have incentives and power to exploit the firm. Controlholders tend to extract private benefits for themselves at the expense of other shareholders (minority shareholders, hereafter) who are typically small investors from the public.

Evidence on private benefits is abundant. Barclay and Holderness (1989) find that in the U.S. large blocks of shares trade at a significant premium over the post-block-trade market price of the shares. Large block trades typically transfer control. Thus, apparently, controlholders receive some extra private benefits (enjoyed by them only) that justify the higher price they pay. Dyck and Zingales (2001) study 412

[1] Even in the U.S. and U.K., where exchange-traded firms tend to have dispersed ownership, most other firms have concentrated control structures.

control transactions (large block sales) in 39 countries in 1990-2000. They estimate that in these countries the ratio of private benefits to firm value is between 4% and 65% with a mean of 14%.

Many researchers argue that the existence of private benefits destroys value. It reduces public belief in stocks, and decreases the price obtained in IPOs (Initial Public Offerings) and SEOs (Seasoned Equity Offerings). Laporta, Lopez-de-Silanes, Shleifer, and Vishny (2002), LLSV (2002) hereafter, document that in countries with better law protection of minority shareholders, firms' market valuation, as estimated by Tobin's Q, is higher. Claessens, Djankov, Fan and Lang (1999) study of East Asian companies, and Black, Jang and Kim (2003) cross-sectional study of Korean companies reach identical conclusions. Better minority shareholder protection increases firms' market value.

Given the nontrivial cost of private benefits extraction by controlling shareholders, many countries have moved towards further protection of minority shareholders and reformed their Corporate Governance Codes. However, law systems tend to be rigid and slow to change. Thus, despite the reforms, private benefits extraction is tolerated. Johnson, Laporta, Lopez-de-Silanes and Shleifer (2000) show that courts in Europe protect "tunneling" (transfer of resources from the firm to its controlling shareholders) when it (tunneling) can be presented as a business decision.

The "Invisible Hand", i.e., the natural forces operating in free economic markets, does not solve the private benefits problem as well. Bebchuck (2002) shows that with lax minority defense laws it is optimal for control groups to get organized and extract private benefits.

Given that investor protection in many economies is lacking, the question is which ownership structure is most attractive for small investors from the public. We examine this issue in Israel, a country with median investor protection (see LLSV (2002) Table III), and above median private benefits (see Dyck and Zingales (2001) Table 2).

Our main finding is that Tobin's Q is maximized when control group vote is about 67%. This result is reasonable and appears to represent controlholders incentive and ability to loot the firm. In countries with lax investor protection the ability to extract private benefits is high at almost every level of controlholders' ownership. In such economic environments, private benefits extraction decreases with controlholders' ownership percentage because as controlholders' ownership increases their incentive to steal diminishes - when controlholders own most of the firm the stolen private benefits come mainly from their own pocket. The decrease in private benefits with controlholder ownership percentage generates an increase in market valuation (Tobin's Q). However, this increase in Q has its limits. When controlholders ownership and effective voting power exceeds 75% (the majority needed for certain key firm decisions that require supermajority-vote), controlholders power to exploit the firm becomes extreme, and they apparently step up their private benefits extraction, which depresses market valuation and Q. The market-value-maximizing ownership structure in lax investor protection countries is attained, thus, when control group vote is somewhat below the supermajority level – at 67% vote in our sample.

Section 2 reviews the literature and develops our hypothesis. Section 3 describes the sample and empirical variables' construction. Section 4 presents the results of tests of our hypothesis when ownership structure is treated as exogenous and when it is considered endogenous. Section 5 concludes.

2. The relation of firm market value to ownership structure

2.1. Previous empirical evidence

The effect of ownership structure on firm's market value has been extensively studied. Morck, Shleifer and Vishny (1988) fit a piecewise linear regression of Tobin's Q on controlholders ownership. Firm valuation increases for management holdings of 0% to 5%, decreases in the range of 5% to 25%, and increases for management holdings greater than 25%. McConnell and Servaes (1990) fit a quadratic relation between Q and insider ownership. Q increases with insider ownership, peaks at ownership levels of 40% to 50%, and then slightly decreases with insider ownership.

More recent studies consider the possibility that ownership structure is endogenous. According to Demsetz and Lehn (1985) there is no fundamental causal relation between ownership structure and valuation. Each firm chooses the governance structure that suits it most. As Himmelberg, Hubbard and Palia (1999) suggest, in such circumstances (of no relation between ownership and valuation), spurious correlation between value and ownership might still emerge because of the "omitted variables" problem - some economic variables explain both Q and ownership but do not appear in the regressions that we (empiricists) used.

Empirical estimation taking into account the possible endogeneity of ownership structure, e.g. Cho (1998) and Demsetz and Villalonga (2002), does not find any significant effect of ownership on market valuation (Tobin's Q). Thus, the effect of ownership structure on firm valuation is still unresolved and quite elusive.

We extend existing evidence to economies other than the U.S. This is important not only for replication purposes. Our Israeli data also facilitates estimation

of the Q – ownership relation in the range of high controlholders' ownership. The median controlholders' voting power in our sample firms is about 65%, and in about a quarter of the sample firms controlholders' vote exceeds 78%. U.S. data has very few observations (if at all) in this ownership range.[2]

More importantly, relative to other countries, Israel is an economy with median small investor protection – see LLSV (2002), and above-median private benefits – see Dyck and Zingales (2001). In such an environment of lax corporate governance law, common in many other countries as well, it is interesting to inquire: What is the ownership structure that is favored by small public investors, i.e., what ownership structure maximizes the market value of the firm? We discuss this issue in the next subsection.

2.2. Theoretical discussion and hypothesis

Since Jensen and Meckling (1976) it is clear that the higher the percentage ownership of the entrepreneurs (or control group in our context) the less they consume at the expense of the firm. This is commonly known as the incentive effect. When the control group owns a majority of firm's equity, controlholders incentive to loot the firm is muted because in such cases they steal mainly from their own pockets. Given the cost of stealing, LLSV (2002) suggest (see their equation (10)) that as controlholders' ownership increases, their private benefits extraction decreases and firm's Tobin Q increases.

LLSV (2002) also note that Tobin's Q measures the valuation of the firm from the perspective of a minority outside shareholder. Such an investor receives only the

[2] Previous evidence on Israel includes only Ber, Yafeh and Yosha (2001) who show that the accounting profitability of Israeli firms increases with the % ownership of large shareholders.

market price of the stock, thus considers only the market valuation of the firm. (In contrast, controlholders "enjoy" both firm's market value and the private benefits they extract.[3]) The realization that Tobin's Q measures minority shareholder valuation leads LLSV (2002) to the prediction that improvements in investor protection increases Q – see their equation (9). When small investors are better protected, private benefits diminish, and firm's market value increases.[4]

We note a simple form of minority shareholder protection common to many economies. Most firm decisions require a 50% majority in shareholders' meeting, but some more crucial decisions require a supermajority vote (75% in Israel). Thus, small investor protection is especially weak when controlholders' vote exceeds 75%. The 50% vote level also appears as a barrier for the control group. However, in countries with lax corporate governance codes we hypothesize that controlholders do not have serious difficulties in passing routine resolutions even when they control 25% of the vote only. Thus, we propose that in a country with lax corporate governance the power to expropriate is strong and increases rather slowly with controlholders' vote over a wide range of control group ownership. Only when controlholders' ownership approaches 75% which assures domination over supermajority decisions, controlholders' power to expropriate the firm significantly increases.

Combining the incentive and power effects leads to the tradeoff theory of private benefits (McConnell and Servaes (1990)) - the power of controlling shareholders to expropriate outside investors is moderated by their financial incentive

[3] The considerable value of private benefits is revealed in control transfer transactions, as we mentioned before.

[4] LLSV (2002) test their investor protection proposition across countries, and document that Tobin Qs are higher in countries with better investor protection.

not to do so. As controlholders vote increases, their power to expropriate increases, but their incentive to do so decreases.

Superimposing the tradeoff theory to a country with weak investor protection, our hypothesis is that up to 75% vote the incentive effect dominates, i.e., private benefits extraction by controlholders decreases. Beyond 75% vote (or maybe slightly less than it, given that some small investors do not vote), private benefits extraction increases because of the upgraded ability of controlholders to expropriate the firm.

The testable implication of our hypothesis is that (private benefits) Tobin Qs (decrease) increase with controlholders' vote up to somewhere below 75%. Above 75%, (private benefits) Tobin Qs start to (increase) decrease as controlholders power becomes almost absolute. Graphically, we predict an inverted-U shape relation between Q and control group vote with a peak slightly below 75%. This prediction can be tested by fitting a quadratic function to the Q – vote relation, as in McConnell and Servaes (1990).

The relation between Q and ownership structure might depend on other ownership characteristics as well. For example, institutional investors sometimes protect public interests against the controlholders (Hauser and Lauterbach (2004)). Thus, institutional ownership may trim private benefits and improve market valuation (Tobin Qs). Second, the control group composition may affect private benefits extraction. When the control group is cohesive (comprises a single individual or a family) cheating can be more easily coordinated and Tobin's Q should decrease (Cronqvist and Nilsson (2003)). We do not expect these additional factors to impact much the fundamental relation of Q to controlholders' vote. However, we will use institutional investor holdings and control group structure as control variables in some of our analysis.

Last, we note that private benefits extraction might also depend on future plans of equity offerings. When controlholders contemplate future equity offerings they may restrain their agency behavior (private benefits extraction) because looting the firm sometimes attracts press attention and can create bad public image to the firm. Dyck and Zingales (2001) highlight the corporate governance role of the press. The prospects and size of future equity offerings increase with controlholders' vote because when controlholders own a large majority they can dilute their holdings while still maintaining control. Thus, the larger the control group ownership, the more cardinal become the future offerings consideration, and the stronger is the press deterrent power. In short, besides the incentive effect that decreases private benefits extraction as control group vote increase, there are the public image and future equity offering plans that restrain controlholders' agency behavior, especially at high levels of controlholders' ownership.

3. Data and variable construction

The sample comprises firms whose stocks traded on the Tel-Aviv Stock Exchange (TASE) at the end of 2002 and belonged either to the TA100 or Yeter 150 indices. These are essentially the largest and most actively traded stocks on the TASE. We exclude: 1) firms operating in the financial sector such as banks and insurance companies because of the heavy regulation in this sector, and 2) firms that belong to small industries (industries with less than four firms traded on the TASE) because our inference is also based on industry-adjusted statistics. These exclusions leave us with 149 firms in 9 industries: Electronics, Textile, Chemistry, Metal products, Computers, Food, Trade, Real Estate, and Services.

For each firm we collect ownership structure information from Article 24 of the company's annual report. This Article reports the names and holdings of large shareholders, specifies any family relations between them, and identifies the owners of companies that are large shareholders. With these data we are able to disclose the ultimate shareholding (see Laporta, Lopez-de-Silanes and Shleifer (1999)) for most sample firms. For fifteen firms with complex pyramidal ownership structure we needed supplementary data, and collected it from the Company Registrar – a government agency where each company registers its Bylaws and reports its shareholders.

Based on Article 24 we construct the following variables: % vote of the control group, % vote of institutional investors, % vote held by the firm itself (treasury stocks), % vote of firm subsidiaries, and ownership type. Ownership type dichotomizes the controlholder(s) as either 1 (= a family or individual person) or 0 (= other). It is noteworthy that only 3 out of our 149 firms have dual class shares, that is a difference between % in vote and % in equity.

To characterize more precisely the control group voting power we compute the Adjusted Controlholder Vote (ACV) as follows:

ACV= [conrolholders' vote / (100 – Treasury stocks vote – subsidiaries vote)] (1)

The adjusted vote subtracts from total vote the nonvoting shares - shares bought back by the firm and shares held by firm subsidiaries.

As a final adjustment we adopt Himmelberg, Hubbard and Palia (1999) and Demsetz and Villalonga (2001) log transformation of controlholders vote, and define:

$$TCV = Ln [ACV / (100 - ACV)] \quad (2)$$

This log transformation reduces the skewness of the adjusted controlholders vote distribution, and serves in our regressions.

Reviewing the data we find 146 firms with controlholder vote above 25% and 3 firms with "controlholder" vote below 10%. We decided to drop these three dispersed ownership firms and focus on firms that have a solid control group. Our hypothesis pertains to firms with a control group. Thus, like LLSV (2002), dispersed ownership firms are excluded.

Accounting data on the sample firms are compiled from the Grafit data base of Tochna La'Inyan, a local data base vendor, and stock return data are from Predicta, another data base vendor.

Tobin's Q is estimated as the approximate market value of the firm divided by its book value[5]:

$$Q = Ln [(\text{market value of equity} - \text{book value of equity} + \text{book value of total assets} - \text{tax reserves}) / \text{book value of total assets}] \quad (3)$$

We also examine the industry-adjusted Q defined as:

$$\text{Industry-adjusted Q} = Ln (\text{Firm Q} / \text{Median Q in firm's industry}) \quad (4)$$

This adjustment should neutralize the industry specific effect on Q.

[5] This is the formula used by LLSV(2002).

4. Empirical results

4.1. Sample description

Table 1 describes the 146 sample firms. The mean (median) total book value of assets at the end of 2002 is 1.3 (0.45) billion NIS (New Israeli Shekels) – about 400 (100) million U.S. Dollars. The mean (median) 2002 sales is about 900 (100) million NIS. Most of the firms are profitable with a mean ROA of about 0.08 and a mean ROE of about 0.03.[6] Book leverage (= book value of debt divided by book value of assets) is about 0.3, and the mean and median standard deviation of a sample firm daily stock returns in years 2000-2002 are about 3.3%.

(Insert Table 1 about here)

Firm ownership is quite concentrated. In our sample, the mean and median controlholder vote is about 64.5%. Adjusting for treasury stocks and shares held by firm subsidiaries increases the control group voting power to 68.5%. In 15% of the firms adjusted controlholders' vote is below 50%, in about 47% of the firms it is between 50% and 75%, and in about 38% of the firms controlholders vote is above 75%. Institutional investors (pension, mutual and provident funds) invest in about 42% of the sample firms. In the sample of firms with institutional investor ownership the mean (median) institutional vote is 8.7% (8.0%).

The mean (median) Q ratio at the end of 2002 is 1.01 (0.95). In calculating these statistics we have omitted two outliers: the firm with the highest Q and the firm with the lowest Q. The reported Q values are low relative to historic Q levels in Israel,

[6] We define ROA as sales minus cost of goods sold minus selling general and administrative expenses divided by the book value of assets. ROE is computed as net income divided by the book value of equity.

and reflect the recession in the Israeli economy and TASE after the 2000 worldwide stock market crash.

4.2. Preliminary observations on the effect of ownership structure

Table 2 presents results of ANOVA and non-parametric Kruskal-Wallis tests of the effect of various ownership structure parameters on Tobin's Q. The mean Q is lowest (0.9) when adjusted controlholder vote is less than 50%, medium (0.98) when adjusted controlholder vote is above 75%, and highest (1.07) when controlholders' vote is between 50% and 75%. This finding is consistent with our hypothesis that firm market valuation (Tobin's Q) is maximized when controlholders hold 50%-75% of the vote. Nevertheless, the difference in Q across our three controlholders vote levels is only marginally statistically significant at the 10% level, and when industry-adjusted Qs are examined the results weaken considerably. Thus, the evidence in Table 2 offers only weak support to our hypothesis. Figure 1 graphs the firms' Q and industry-adjusted Q against adjusted controlholders' vote.

(Insert Table 2 and Figure 1 about here)

Table 2 also reports that Tobin Qs are insignificantly higher when a family or a single individual control the firm and insignificantly lower in firms with institutional investor ownership. Institutional investor ownership and control group type appear to be of secondary importance (if at all).

4.3. The effect of controlholders' vote on market valuation

Table 3 examines the effect of controlholders' vote on firm Q when controlholders' vote is considered exogenous. LLSV (2002) argue that ownership structure is exogenous and largely shaped by the histories of the companies and their

founding families. In support of their argument LLSV point at the fact that ownership patterns are extremely stable.

We fit a quadratic relation between Q and controlholders' vote, similar to McConnell and Servaes (1990). The alternative is to fit a piecewise regression as in Morck, Shleifer and Vishny (1988). The quadratic formulation is preferred because it suits better our purpose of finding the controlholder vote percentage that maximizes firm market value. If we fit the quadratic relation: $Q = a \cdot TCV^2 + b \cdot TCV + c$, then maximum Q is achieved when $Q = -b / 2a$.

The first regression in Table 3 uses raw Q as the dependent variable, and adjusts for industry effects by allowing a random industry effect (random effect estimation). We estimate that a = -0.123 and b = 0.185, which implies a maximum Q at a TCV of $0.185/(2 \cdot 0.123) = 0.75$. Using the definition of TCV in equation (2), a TCV of 0.75 implies an ACV of 0.68. Thus, our random effect Q regression indicates that market valuation (Q) is maximized when adjusted controlholders' vote reaches 68%.

(Insert Table 3 about here)

The second regression in Table 3 uses the industry-adjusted Q as the dependent variable and a simple OLS regression technique. Using this method we estimate that a = -0.084 and b = 0.109. Thus, Q is maximized at a TCV of 0.68, which translates into an adjusted controlholders' vote of 66%.

The evidence in Table 3 supports our hypothesis that market valuation (Q) is maximized somewhere in the 50%-75% controlholders' vote range. In this vote range controlholders do not have excessive power (cannot dominate supermajority decisions) nor do they have a strong incentive to expropriate the firm. From our

hypothesis' perspective, the maximum Q at a controlholders' vote of about 67% suggests that even with less than 75% of the vote controlholders can dominate even the most cardinal firm decisions, namely the supermajority decisions. This may be a result of small investors' indifference or nonvoting behavior. If the controlholders (small shareholders) hold 67% (33%, respectively) of the vote, and 1/3 of small shareholders do not vote even on the most crucial firm decisions, then the control group has an effective supermajority of 67% / 89% = 0.753 even when it (the control group) retains only 67% of total vote.

4.4. Does controlholders' vote affect Q when vote is considered endogenous?

Demsetz and Lehn (1985) suggest that ownership structure is endogenous. When both firm valuation (Q) and ownership structure (controlholders' vote) are considered endogenous, studies such as Cho (1998) and Demsetz and Villalonga (2001) find no relation between ownership structure and market valuation. Demsetz and Villalonga (2001) conclude that there is no fundamental economic relation between valuation and ownership structure – each of these variables is independently determined by firm characteristics and business environment.

To test this proposition we follow Demsetz and Villalonga (2001) (DV, hereafter), and construct the following simultaneous equation system:

$$Q = a_0 + a_1 \cdot TCV + a_2 \cdot TCV^2 + a_3 \cdot rnd\_to\_sale + a_4 \cdot fix\_to\_sale + a_5 \cdot leverage + \varepsilon_1 \quad (5)$$

$$TCV = b_0 + b_1 \cdot Q + b_2 \cdot std\_ret + b_3 \cdot ln\_sale + b_4 \cdot leverage + b_5 \cdot dual\_listing + \varepsilon_2 \quad (6)$$

where, in addition to the previously defined Q and TCV (see equations (2) and (3)), rnd_to_sale is the ratio of R&D expenses to sales; fix_to_sale is the ratio of fixed assets to sale; leverage is the book value of debt divided by the book value of assets; std_ret is the standard deviation of daily stock return during 2000 through 2002;

ln_sale is the natural logarithm of sales in thousands NIS; and dual_listing equals 1 when firm's stock is also listed on the Nasdaq of NYSE and zero otherwise.

Our explanatory variables are somewhat different than those of DV. We use vote and vote squared as explanatory variables whereas DV use only vote. This modification is required in order to test our hypothesis that the Q – Vote relation is nonlinear. Second, we do not have a measure of industry concentration (DV use such a measure in their Q equation). Third, we use the stock return standard deviation as an instrument in the Vote regression, while DV use beta and non-systematic risk - the standard deviation of the residuals. Fourth, we use Ln(sales) as the firm size variable (similarly to Himmelberg, Hubbard and Palia (1999)) instead of Ln(assets) that DV use.[7] Last, we add dual_listing as an instrument in the vote regression because Israeli firms that also list abroad tend to have lower ownership concentration. (Eighteen of our 144 sample firms trade also on the Nasdaq or NYSE.)

The above system is estimated using three stage least squares (3SLS). DV use two stage least squares (2SLS). However, we find some significant correlation between equations (5) and (6) residuals which suggests 3SLS estimation. Anyway, as in Cho (1998), the 2SLS and 3SLS estimates are similar and lead to identical conclusions.

Table 4 presents the results of the 3SLS estimation for raw and industry-adjusted Qs. Similarly to previous studies we find that controlholders' vote does not affect Q significantly. Thus, we cannot resolve the existing puzzle in empirical literature. When vote is considered exogenous controlholders' vote affects market

[7] We attempted also Ln(assets). The main results and conclusions are not sensitive to this choice.

valuation. But, when controlholders' vote is allowed to be endogenous, it does not appear to have any significant relation to market valuation.

(Insert Table 4 about here)

Interestingly, the signs of the vote coefficients in Table 4 remain as in Table 3. In the fitted Q equation, the point estimate of the vote coefficient is positive (0.587) and the point estimate of the vote-squared coefficient is negative (-0.439). These point estimates imply that Q is maximized at a controlholders' vote of 66%. When industry-adjusted Q is the dependent variable – see Panel B, the fitted vote coefficient is 0.21 and the fitted vote-squared coefficient is -0.15, which imply a maximum Q at a controlholders' vote of 67%. Thus, even when both Q and vote are considered endogenous, our data (weakly) suggest 67% controlholders' vote as the maximum Q ownership structure.

We also attempted to augment the equation system by adding two other ownership structure variables to it. AIV is institutional investor vote adjusted for nonvoting shares. AIV is constructed in an analogous way to ACV - see equation (1). The second new variable, ct_dum, is a dummy variable that equals 1 when the control group consists of a single individual or a family (and equals 0 otherwise).

We expect institutional investor ownership to improve market valuation (Q) because institutional investors may monitor the control group. This prediction is not supported by the data. In Table 4 institutional ownership has an insignificant effect on Q. Perhaps there are reasons for institutional investors to prefer lower Q stocks, a tendency that is not neutralized by our set of control variables. Such an explanation basically argues that institutional investor holdings are also endogenous.

Similarly, ct_dum is insignificant in our fitted equation systems – see Table 4. We expect lower Qs in firms where the control group is in the hands of a single individual or a family because in these cases the control group appears relatively cohesive and can more easily "agree" on extracting private benefits – see Cronqvist and Nilsson (2003). Again, as is the case of institutional ownership, a possible reason for the insignificant effect of ct_dum is that family ownership is itself endogenous. In short, a well developed analysis of the effect of ownership structure on market valuation should possibly include several simultaneous equations. We leave this issue for future research.[8]

4.5. The effect of controlholders' vote on firm profitability

It is also interesting to examine the effect of controlholders' vote on firm profitability. Inference on firm profitability is subject to the same problems as our valuation (Q) analysis. For example, if we find a positive correlation between controlholders' vote and firm profitability, it could be that higher controlholders vote promotes excellent leadership which improves firm profitability. Or, causation may be reversed, i.e., it could be that in firms with better profitability controlholders sell (issue) to the public a smaller proportion of equity.

We replicate the analysis of Tables 3 and 4 using firm Return on Assets (ROA) and Return on Equity (ROE) in place of Q. ROA is defined as sales minus cost of goods sold minus selling general and administrative expenses divided by the book value of assets, and ROE is net income divided by book value of equity. Further, we

[8] We have also attempted adding accounting profitability measures, Return on Assets – ROA and Return on Equity – ROE, to the Q and TCV equations. Superior ROA and ROE affect positively the firm's valuation (Q). However, the relation between Q and controlholders' vote (TCV) remains statistically insignificant.

industry-adjust ROA and ROE by subtracting the industry median from the firm ROA and ROE.

The fitted regressions are:

$$\text{Industry-adjusted } ROA_i = \underset{(0.9)}{0.011} + \underset{(0.4)}{0.008}\, TCV_i + \underset{(0.1)}{0.001}\, TCV_i^2 + e_i \text{ , and}$$

$$\text{Industry-adjusted } ROE_i = \underset{(1.3)}{0.016} + \underset{(0.2)}{0.005}\, TCV_i + \underset{(0.2)}{0.003}\, TCV_i^2 + \varepsilon_i \text{ ,}$$

where TCV_i is a measure of controlholders' vote – see equation (2), and t-statistics are shown in parentheses. Statistically insignificant relations are also found when fitting a simultaneous equation system of profitability and controlholders vote, an analysis that parallels Table 4. Thus, we conclude that firm profitability is unrelated to its control structure.

It is possible that firm control structure is related to market valuation (Q), while firm profitability is not. This can happen when cash flows to shareholders are not well represented by accounting profitability, and/or when the cost of equity (required stock return by public investors) is higher for firms with corporate governance problems. Future research should examine these alternatives.

5. Summary and conclusions

Does ownership structure affect firm market valuation? We suggest that in an economy with lax corporate governance laws, the controlholders ability to expropriate small shareholders is high at all levels of control group vote. Thus, private benefits extraction is affected mainly by the incentive effect. As controlholders' vote increases they exploit the firm less because they are increasingly stealing from their own pockets. However, we also propose that as controlholders' vote approaches 75%, their power is significantly upgraded because with 75% of the vote controlholders can

dominate even the most crucial firm decisions (that require a supermajority vote). Thus, with a vote that assures control over supermajority decisions, control group power becomes almost absolute, and their private benefits extraction might step up considerably.

The testable implication of our hypothesis is that firm's market valuation, approximated by Tobin's Q, increases with controlholders' vote up to a point where controlholders amass close to 75% of the vote; then Q starts to decrease with vote. This inverted-U pattern of Q evolves as a mirror image of private benefits extraction – private benefits decrease with controlholders' vote until vote reaches a level of close to 75%; then private benefits increase.

We test the hypothesis on a sample of 144 Israeli firms traded on the Tel-Aviv Stock Exchange at the end of 2002. Israel scores about median in Laporta, Lopez-de-Silanes, Shleifer and Vishny investor protection index. Hence, our empirical results might be of relevance to many economies.

Using a variety of estimation techniques (random effect regressions, industry adjustments, and three-stage least squares) we fit a quadratic relation of market valuation (Q) to control group vote and find that Q is maximized at a control group vote of about 67%. This finding appears consistent with our hypothesis. Some of the small investors do not vote even on the most crucial firm decisions. Thus, effective control of supermajority decisions can be obtained even with less than 75% of the vote. We note though that our evidence is strong only when controlholders' vote is treated as exogenous. When both Q and controlholders' vote are considered endogenous, the quadratic relation of Q to vote becomes statistically insignificant (yet maximum Q is still obtained at a controlholders' vote of about 67%).

The practical implication of our study is that firms with more than 75% controlholders' vote should be encouraged (by regulation?) to dilute controlholders' holdings. We also call regulatory attention to firms with "no majority", where controlholders' vote is 20%-50%. In such firms controlholders might be tempted to expropriate the firm. Last, because of insufficient sample size, we could not study firms with controlholders' vote below 20%. Thus, we cannot conclude about the optimality or deficiencies of disperse ownership firms.

Future research should replicate our study in other economies, and attempt to investigate more thoroughly what exact corporate governance features affect private benefits extraction and firm valuation.

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Table 1
Descriptive statistics

The sample comprises firms whose stocks trade on the TA100 or Yeter150 indices of the Tel Aviv Stock Exchange at the end of 2002. Book value leverage is the book value of debt divided by the book value of assets. Return on assets is sales minus cost of goods sold minus selling general and administrative expenses divided by the book value of assets. Return on equity is net income divided by book value of equity. The standard deviation of daily stock return is computed during 2000 through 2002.

	Number of firms	Mean	Median	Standard deviation	First quartile	Third quartile
Firm characteristics						
Book value of assets (Million NIS)	146	1308	450	2491	199	1409
Sales (Million NIS)	146	869	303	1,954	120	578
Book value leverage	146	0.31	0.27	0.25	0.09	0.48
Return on assets	146	0.08	0.07	0.11	0.03	0.12
Return on equity	146	0.03	0.06	0.31	-0.02	0.14
Std. of daily stock returns	146	3.4%	3.2%	1.6%	2.5%	3.7%
Ownership structure						
Controlholders' vote	146	64.4%	64.5%	15.6%	52.9%	77.9%
Adjusted controlholders' vote	146	66.8%	68.6%	15.5%	54.9%	79.7%
Institutional vote	146	3.47%	0.00%	5.35%	0.00%	6.17%
Vote held by firm's subsidiaries	146	1.84%	0.00%	4.05%	0.00%	1.90%
Vote of treasury stocks	146	1.64%	0.00%	5.60%	0.00%	0.06%
Valuation ratios						
Q ratio[a]	144	1.01	0.95	0.36	0.81	1.07
Industry adjusted Q ratio[b]	144	0.03	0.00	0.29	-0.11	0.13

[a] Two firms with the highest and lowest Q ratio are excluded.

[b] Industry adjusted Q ratio = Ln [firm Q ratio / median Q ratio in firm's industry]

Table 2
Ownership structure and firm market valuation – preliminary analysis

	Number of Firms	Mean Q	Mean industry-adjusted Q
Controlholders' vote			
Less than 50%	21	0.89	-0.01
50% to 75%	68	1.07	0.07
More than 75%	55	0.98	0.00
p-value of ANOVA test		0.13	0.37
p-value of Kruskal-Wallis test		0.08	0.39
Controlholders' type			
Family or individual control	71	1.04	0.03
Others	73	0.98	0.02
p-value of ANOVA test		0.34	0.80
p-value of Kruskal-Wallis test		0.80	0.60
Institutional investors' ownership			
Firms without institutional ownership		1.02	0.03
Firms with institutional ownership	61	0.99	0.02
p-value of ANOVA test	83	0.61	0.84
p-value of Kruskal-Wallis test		0.78	0.75

Table 3
The effect of controlholders' vote on firm valuation (Tobin's Q)

The sample comprises 144 firms whose stocks trade on the TA100 or Yeter150 indices of the Tel Aviv Stock Exchange at the end of 2002. The Q ratio is defined as market value of equity minus book value of equity plus total book value of assets minus tax reserves divided by book value of assets. Industry adjusted Q is the log of the ratio of firm's Q to industry median Q.

	Q regression with industry random effect		Industry-adjusted Q OLS regression	
	Coefficient	t-statistic	Coefficient	t-statistic
Constant	1.007	23.3	0.045	1.31
TCV	0.185	2.4	0.109	1.78
TCV^2	-0.123	-2.7	-0.084	-2.34

[a] $TCV = \mathrm{Ln}\left[\frac{ACV}{(100 - ACV)}\right]$

where $ACV = \frac{\text{Controlholders' vote}}{\text{100 - Subsidiaries' vote - Treasury stock vote}}$

ACV is controlholders' vote adjusted for the nonvoting treasury stocks and shares held by subsidiary firms. TCV (Transformed Control Vote) is a log transformation of ACV suggested by Himmelberg, Hubbard and Palia (1999) in order to reduce skewness.

Table 4
Controlholders' vote and firm valuation – 3SLS estimation

This table examines the effect of controlholders' vote on firm market valuation (Tobin's Q) when controlholders' vote is considered endogenous. Q is defined as market value of equity minus book value of equity plus total book value of assets minus tax reserves divided by book value of assets. Industry adjusted Q is the log of the ratio of firm's Q to industry median Q. TCV is a measure of controlholders' vote (see Table 3). Rnd_to_sale is the ratio of R&D expenses to sales. fix_to_sale is the ratio of fixed assets to sale; leverage is the book value of debt divided by the book value of assets; std_ret is the standard deviation of daily stock return during 2000 through 2002; ln_sale is the log of sales in thousands NIS; dual_listing equals 1 when firm's stock is also listed on the Nasdaq or NYSE and zero otherwise; ct_dum equals 1 when the control group comprises a single individual or a family, zero otherwise; AIV is a measure of institutional investor's vote (institutional vote adjusted for nonvoting shares). Coefficients significant at the 5% level are shown in **bold** characters.

Panel A: systems with raw Q

Basic system is:

$$Q = a_0 + a_1 \cdot TCV + a_2 \cdot TCV^2 + a_3 \cdot rnd\_to\_sale + a_4 \cdot fix\_to\_sale + a_5 \cdot leverage + \varepsilon_1$$
$$TCV = b_0 + b_1 \cdot Q + b_2 \cdot std\_ret + b_3 \cdot \ln\_sale + b_4 \cdot leverage + b_5 \cdot dual\_listing + \varepsilon_2$$

Augmented system (with additional ownership structure variables) is:

$$Q = a_0 + a_1 \cdot TCV + a_2 \cdot TCV^2 + a_3 \cdot rnd\_to\_sale + a_4 \cdot fix\_to\_sale + a_5 \cdot leverage + a_6 \cdot ct\_dum + a_7 \cdot AIV + \varepsilon_3$$
$$TCV = b_0 + b_1 \cdot Q + b_2 \cdot std\_ret + b_3 \cdot \ln\_sale + b_4 \cdot leverage + b_5 \cdot dual\_listing + b_6 \cdot AIV + \varepsilon_4$$

	Basic system		Augmented system	
	Q equation	*TCV* equation	Q equation	*TCV* equation
Constant	**1.16**	-0.9	**1.15**	-0.43
TCV	0.587		0.547	
TCV^2	-0.439		0.4137	
rnd_to_sale	-0.35		-0.35	
fix_to_sale	-0.002		-0.002	
leverage	-0.22	-0.16	-0.21	-0.18
Q		1.66		1.42
std_ret		7.58		7.49
ln_sale		-0.007		-0.013
dual_listing		**-0.78**		**-0.8**
ct_dum			0.04	
AIV			-0.004	**-0.036**

Table 4 (continued)
Panel B: systems with industry adjusted Q

The same systems as in panel A with industry-adjusted Q replacing raw Q.

	Basic system		Augmented system	
	Industry-adjusted Q equation	*TCV* equation	Industry-adjusted Q equation	*TCV* equation
Constant	0.062	0.735	0.082	0.98
TCV	0.1339		0.237	
TCV^2	-0.15		-0.167	
rnd_to_sale	-0.29		-0.29	
fix_to_sale	-0.001		-0.002	
leverage	-0.03	-0.34	-0.04	-0.33
Industry-adjusted Q		1.58		1.40
std_ret		5.27		5.6
ln_sale		0.003		0.006
dual_listing		**-0.89**		**-0.89**
ct_dum			-0.01	
AIV			-0.0008	**-0.036**

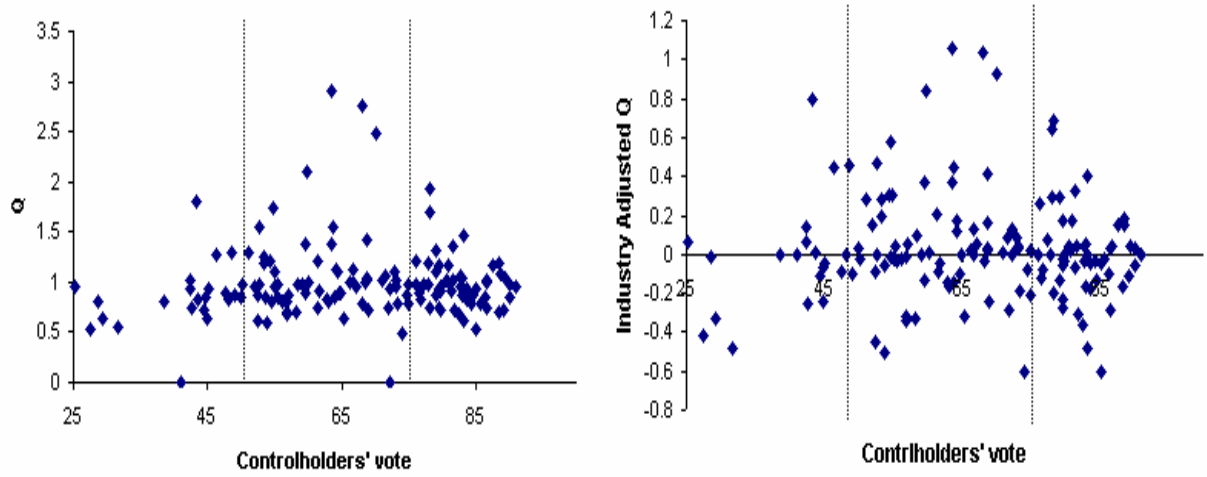

Fig. 1 Market valuation (Tobin's Q) as a function of controlholders' vote