

Empirical Evidence on Ownership Structure, Management Control and Agency Costs

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Abstract

We present new empirical evidence on the agency costs which emerge from the vertical (ownership versus control) and horizontal (majority versus minority) agency problems. Using a cross-section of 55,970 public and private firms, we document that agency costs increase as firms move from a single owner/single manager ownership structure to more complicated ownership structures. Within each ownership structure, agency costs are significantly higher when firms are not managed by owners. We find that bank monitoring has a significant positive impact on the performance of private firms. We also show that agency costs are lower in firms with shared control of ownership. Further, we find that horizontal agency costs are lower in firms where control is contestable.

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I. Introduction

The ‘agency problem’ is now an ingrained part of the vocabulary used when discussing the ownership, management and operation of an organization (Shleifer and Vishny, 1997; Dennis and McConnell, 2003; Gillan, 2006; Tirole, 2006).¹ Yet little direct evidence exists on the magnitude and extent of the actual costs associated with the problem. The literature generally argues that firms face two types of agency problems: vertical agency problems that exist between owners and managers, and horizontal agency problems that exist between majority and minority owners (Shleifer and Vishny, 1997, Gilson and Gordon, 2003).² This study presents empirical tests of the central hypotheses regarding the relation between agency costs and the structure of ownership and control in an organization. We make use of a unique data set on ownership and control which includes over 55,000 private as well as publicly traded companies. Aside from detailed information on ownership and control the data have the additional feature that all companies in the sample, including private as well as publicly traded companies, are required by law to file audited information following the same guidelines.

¹ Of course this stream of thought stems ultimately from the seminal work of Berle and Means (1932) and reflects the significant influence of Jensen and Meckling (1976) and Ross (1973).

² The vertical agency problem emerges from the view of the firm as a nexus of contracts, where contracts are costly to enforce (Coase, 1937; Alchian and Demsetz, 1972; Ross, 1973; Jensen and Meckling, 1976; Fama and Jensen, 1983a,b). The literature on vertical agency problems deals with the causes and consequences of separation of ownership and control. In contrast, the literature on horizontal agency problems has focused on the exploitation of minority shareholders by a controlling shareholder (Grossman and Hart, 1980; Stulz, 1988; Burkart, Gromb and Panunzi, 1997, 1998; Gilson and Gordon, 2003; Dyck and Zingales, 2004; Laeven and Levine, 2008).

Several studies have examined the relation between valuation measures and ownership proxies for publicly traded companies.³ While providing important insights, these studies, due to the publicly-traded nature of the sample companies studied are not able to address how agency costs behave over the complete ownership spectrum.

The contributions of this study are twofold. First, we present an empirical analysis of the relationship between vertical agency costs and ownership structure. We find that private firms in which the owner is the manager exhibit evidence of lower agency related costs when compared to public firms as well as compared to private firms with other ownership and management structures, consistent with the theoretical predictions of Jensen and Meckling (1976). These results are robust to various controls for company performance. Further, we find that bank monitoring has a positive and significant impact on the performance of private companies.

We also find that among private firms, agency costs increase as firms move from simple ownership structures such as being owned by a single individual or a family to complicated ownership structures such as being owned by multiple families and holding companies. This result is consistent with the free-rider hypothesis (Holderness, 2007) which states that as the number and types of shareholders increase the incentive for any shareholder to incur all of the monitoring costs decreases because the benefits associated with monitoring are proportional to the shareholder's ownership stake. That is, as ownership becomes more diffuse any individual shareholder has decreasing incentives to contribute to monitoring but is happy to free ride on the efforts of others.

³ The literature is extensive. See the survey articles of Shleifer and Vishny (1997), Dennis and McConnell, (2003), Gillan (2006) as well as Morck, Shleifer and Vishny (1988), McConnell and Servaes (1990), Himmelberg, Hubbard and Palia (1999), Demsetz and Villalonga (2001), Coles, et. al (2008). In related work Yermack (2006) and Rajan and Wulf (2006) investigate the relation between perquisite consumption and the presence of agency problems.

The second contribution of this paper is an investigation of the costs associated with the horizontal agency problem. While both vertical and horizontal agency problems exist in private firms, legal scholars and practitioners argue that the latter problem, which manifests in the form of exploitation of minority shareholders by a controlling shareholder, is a major concern in close corporations (Gilson and Gordon, 2003; Burkart, Gromb and Panunzi, 1997, 1998; Laeven and Levine, 2008). Exploitation of minority shareholders can take several forms including higher compensation to majority shareholders, appropriation of corporate assets, and dilution of minority shareholders' interests through issuance of stock or dividends. In order to attract minority investors, the majority shareholder has an incentive to credibly convey that minority shareholders will not be exploited. Theory suggests that the controlling shareholder should transfer some control to minority shareholders as a means of providing a credible promise that she will not seek to exploit minority owners (Pagano and Roell, 1998; Bennedsen and Wolfenzon, 2000; Gomes and Novaes, 2005; Shleifer and Wolfenzon, 2002).

We find that firms with shared control (i.e., those where the largest shareholder owns less than 50% of the equity) outperform firms where the largest shareholder has enough power to extract private benefits from minority shareholders (i.e., where the largest shareholder owns between 50% and 75% of the equity). Furthermore, we find that the presence of multiple large shareholders has a positive impact on firm performance. We document an inverse relationship between the ownership stake of the second largest shareholder and agency costs, providing support for the view that minority expropriation will be lower in companies where control is more contestable.⁴

⁴ These results are consistent with the findings of Lehmann and Weigand (2000) who show that the existence of a second large owner is positively associated with profitability of German firms. In the context of publicly traded companies, Faccio, Lang and Young (2001) find that the existence of multiple large shareholders increases dividend

The absence of audited and verified information on close corporations is the primary reason for the lack of empirical evidence on agency costs measured across the entire ownership spectrum. According to agency theory, a firm owned and managed by a single individual faces zero agency costs. Agency costs arise when the owner-manager sells some or all of her equity stake to outsiders. The magnitude of these costs depends on the degree of separation of ownership from control and the effectiveness of measures designed to reduce such costs (Ross, 1973; Jensen and Meckling, 1976). The zero agency cost firm serves as the baseline case when measuring the agency costs incurred by firms with different organizational structures. However, no publicly traded firm can be classified as a zero agency cost firm because, by definition, public firms are characterized by a separation of ownership and control. While it is relatively easy to obtain audited and verified financial information about public companies, such information is unavailable for domestic U.S companies which could be classified as zero agency cost firms.⁵

We circumvent the data quality problem by examining a unique data set on U.K. private and public companies. Three principal features of the financial reporting regulations for U.K. companies are substantially equivalent for private and public firms. First, the U.K. Companies Act requires all private and public companies to file annual financial statements that comply with the same accounting standards. Second, financial statements filed by both U.K. private as well as public companies must be audited.⁶ Third, private and public companies are subject to the same tax laws. These standards therefore provide us with a set of comparably measured data for both

payouts in Europe, but lowers them in Asia. Maury and Pajuste (2005) show that among Finnish firms, the holdings of large shareholders have a positive effect on corporate valuations.

⁵ Ang, Cole and Lin (2000) utilize unaudited survey data on small businesses in a related study. We return to a review of their work later.

⁶ There is an exemption for very small companies which we return to in section IV.

public and private companies. Our dataset includes firms with a wide array of ownership structures ranging from firms with a single owner-manager to firms with multiple owners and outside managers.

Our paper is close in spirit to the insightful and important work of Ang, Cole and Lin (2000). Ang, Cole and Lin examine data on small businesses collected via telephone survey methods as part of the National Survey of Small Business Finances (NSSBF) in their investigation of agency costs. Using a sample of 1,708 domestic U.S. companies, Ang, Cole and Lin (2000) find that agency costs are significantly higher when an outsider manages the firm and are inversely related to the manager's ownership share. Our study differs from theirs in several important ways. First, the data we employ are based upon the constituent firms following a common set of audited reporting guidelines. The companies represented in our sample are all domiciled in the U.K. and must comply with government mandated reporting requirements. Second, our sample includes over 50,000 private as well as public companies. The cross-section of companies we examine is diverse across both industries as well as company size. Third, while Ang, Cole and Lin (2000) focus exclusively on the vertical agency problem, we also present results on the horizontal agency problem. Lastly, unlike the NSSBF data used by Ang et. al that contains limited measures of ownership, our dataset contains detailed information on ownership.⁷ These details are discussed in more length in section IV.

The remainder of the paper is organized as follows. Section II presents a discussion of the nature of vertical agency costs and outlines testable hypotheses. Section III addresses similar issues relating to horizontal agency costs. Section IV provides a description of the data. Section

⁷ The NSSBF data provides four measures of ownerships structure: a) the ownership share of the primary owner; b) an indicator for firms where a single family controls more than 50 percent of the firm's shares; c) the number of non-manager shareholders and d) an indicator for firms managed by a shareholder rather than an outsider.

V provides a description of variables used to proxy for agency costs. Sections VI and VII discuss results related to vertical agency costs and horizontal agency costs respectively. Section VIII presents a summary of the paper and our conclusions.

II. Vertical Agency Costs

Jensen and Meckling (1976) argue that when an owner-manager reduces his equity stake below 100%, incentives increase for the manager to consume or waste corporate resources for personal benefit because he does not bear the full cost of such excesses. One prediction of Jensen and Meckling's model is that agency costs should vary inversely with the manager's fractional ownership. This leads to our first testable hypothesis.

H1: There is no significant difference in vertical agency costs between firms that are managed by owners and those that are not managed by owners.

The simplest ownership structure is one where a single individual owns and manages the firm. Such firms represent the zero-agency cost base case. If the owner hires an outsider as the manager, it may lead to costs in the form of lost revenues or reduced profits resulting from misalignment of interests and monitoring problems. It follows that agency costs are predicted to be larger when the manager is not the owner of the enterprise. Likewise the problem is expected to worsen when there are multiple owners and the manager holds little or no equity ownership. When sole owner bears 100 percent of any agency costs, she also receives 100 percent of the resulting benefits from monitoring and disciplining management. This has force because she holds the right to hire or fire managers. As we move from a single owner-manager setting to more complicated ownership structures where firms are owned by several shareholders we expect the magnitude of vertical agency costs to increase. As the number of shareholders

increases along with an increase in the types of shareholders, the incentive for each shareholder to incur all of the monitoring costs decreases because the benefits associated with monitoring are limited by the shareholder's proportional ownership stake which is less than 100%. The reduced incentive to monitor in turn will lead to higher agency costs.

A potential remedy to this problem is to have simpler and more concentrated ownership structures. Shareholders with a larger stake will have a greater incentive to try and contain agency costs. Empirical evidence on the monitoring role of large shareholders while extensive is limited to publicly traded companies.⁸ Further, McConaughy, Walker and Mishra (1998) and Anderson and Reeb (2003) have shown that among publicly traded firms, firms in which founding families hold large equity stakes and hold executive positions (family firms) tend to have higher valuations and profitability than other nonfamily owned firms.⁹

However, research on the impact of the number and type of shareholders in mitigating agency costs in closed corporations is so far limited to theoretical models (see, for example Zwiebel (1995) and Bensedon and Wolfenzon (2000)). The implications of these models and the existing evidence on publicly traded companies prompt us to examine these issues among close corporations as well. This leads us to the next set of testable hypotheses on vertical agency problems.

H2: The magnitude of agency costs does not change significantly as firms move from the single-owner ownership structure to more complex ownership structures.

⁸ Shleifer and Vishny (1988), Wruck (1989), Franks, Mayer and Renneboog (2001). Please see references cited in footnote 2.

⁹ In a later study, Villalonga and Amit (2005) note that the "family premium" in the U.S. is mainly due to founding family CEOs.

H3: The magnitude of vertical agency costs does not increase as the proportion of shareholders managing the firm decreases.

III. Horizontal Agency Costs

A fundamental feature of close corporation ownership structures is that shareholders are typically few in number, are knowledgeable about firm operations, and are involved in management. In particular, when a controlling shareholder is present, that person generally takes an active interest in running the company by choosing the management and directly holding an executive position. While concentrated ownership helps mitigate the vertical agency problem, it is possible that a controlling shareholder will extract private benefits of control by forcing decisions which expropriate minority shareholder wealth (Grossman and Hart, 1980; Dyck and Zingales, 2004; Gilson and Gordon, 2003).

The horizontal agency problem may be less severe when multiple large shareholders are present. Pagano and Roell (1998) suggest that by monitoring the controlling shareholder other large shareholders play an important role in reducing these agency costs. Gomes and Novaes (2005) speculate that the presence of a large number of blockholders improves firm governance in closed corporations because disagreement among shareholders prevents them from expropriating minority shareholders. In the model developed by Bennedsen and Wolfenzon (2000) no individual shareholder has sufficient votes to control the firm and consequently must form a coalition of shareholders to achieve control. Coalition formation minimizes the chance of expropriation since no individual shareholder is able to take any actions without the consent of the other coalition members. A result is that fewer expropriative choices are implemented and firm performance is better relative to the single controlling shareholder case. The main

shareholder surrenders some control to minority shareholders in order to improve overall firm performance.

Empirical evidence on the role of large shareholders is limited and the few studies that examine this issue focus on listed firms. Faccio, Lang and Young (2001) examine the effect of multiple large shareholders on dividends. They find that the presence of large shareholders dampens expropriation in Europe (due to monitoring), but exacerbates it in Asia (due to collusion). Lehmann and Weigand (2000) show that the existence of a second large owner is positively associated with profitability of listed German firms. Maury and Pajuste (2005) investigate a sample of listed Finnish firms and conclude that a more equal distribution of votes among large blockholders has a positive effect on firm value. Gutierrez and Tribo (2008) examine Spanish firms and find that firms whose characteristics make them more vulnerable to minority expropriation tend to have controlling groups with ownership stakes that are far removed from a 50% threshold. These considerations lead to our main hypothesis related to horizontal agency costs.

H4: Shared control of firms does not have any impact on the magnitude of horizontal agency costs.

Pagano and Roell (1998) specify conditions under which multiple large shareholders cross-monitor each other, reducing expropriation and improving firm performance. Their model predicts that in firms with a single controlling shareholder, expropriation of minority shareholders is likely to be less severe when the ownership stake of non-controlling shareholders is more concentrated. The intuition behind the conclusion is that large non-controlling shareholders are more effective in monitoring the controlling shareholder. In a related analysis, Bloch and Hege (2001) conclude that minority expropriation will be lower in firms where control

is more contestable, that is in firms where the difference in the stakes of the controlling shareholders and that of minority shareholders is smaller. Lehman and Weigand (2000), in a study of publicly traded German companies, report that the presence of a second large shareholder enhances profitability. In a related paper, Volpin (2002) analyzes listed Italian companies and finds that firms where control is contestable have higher valuations. These theoretical predictions lead to our final hypothesis.

H5: There is no significant reduction in the magnitude of horizontal agency costs as the ownership stake of the second largest shareholder increases.

IV. Data and Empirical Methods

The data we examine are obtained from the 2005 FAME database, produced by *Bureau Van Dijk*. The dataset contains information on ownership as well as management in addition to financial accounting data.¹⁰ We focus on a cross-sectional study of ownership structures for the year ended 2005.¹¹

We restrict the initial sample using the following filtering criteria.

1. We eliminate firms that do not meet the auditing requirements of the UK Companies Act.¹²

¹⁰ While each of the annual datasets contains 10 years of financial statement data, they do not include a time series of governance data. However, we did extract the governance data from the annual datasets separately. But as we move backwards in time, not only the governance data is thinner, the number of firms falls drastically. Furthermore, we did not find any ownership related variables before 2003.

¹¹ Since governance/ownership data in private firms doesn't change frequently (Ang, Cole and Lin (2000)) we conducted the analysis keeping ownership variables fixed and using the entire time series of financial data. Results are qualitatively similar and are available on request.

¹² These are the firms whose turnover is less than £350,000 in at least one of the years prior to 1999 or less than £1,000,000 in at least one of the years after 2000.

2. We include only 1) private companies, and 2) public companies¹³ traded on exchanges, to ensure that our sample contains only those firms to which the Companies Act applies.
3. We eliminate all financial firms (SIC codes between 6000 and 6999) and all utilities (US SIC codes between 4900 and 4999).
4. We include only those firms with non-missing revenues and where we can account for at least 98 percent of the equity ownership stake.
5. We exclude private firms that are wholly-owned subsidiaries of publicly traded firms because even though these are private firms, their ownership structure and management styles are expected to differ from typical private firms.
6. Further, we screen out observations that are likely to be erroneous by excluding firms for which book value of assets changed by over 30% from previous year (Ball and Shivkumar 2005).

These filtering criteria result in a sample of 55,970 firms consisting of 54,995 private firms and 975 public firms. Panel A of Table I presents the distribution of ownership structures for the sample. Column 1 lists the six different ownership structures into which firms are categorized; (1) firms that are owned by a single individual, (2) firms that are owned only by a single family,¹⁴ (3) firms that are owned by multiple families only, (4) firms that are owned by a combination of families and private holding companies including investment funds, (5) firms that are owned exclusively by private holding companies and (6) diffusely held firms that are

¹³ Public companies that are not quoted, i.e., those that have publicly traded debt but not equity are treated as private companies in this study. Public companies are those that are quoted on the London Stock Exchange, OFEX and AIM.

¹⁴ We consider all individual owners with the same last name as belonging to one family.

listed on stock exchanges. Our classification scheme enables us to examine how the magnitude of agency costs changes as we move from one end of the ownership spectrum to the other. Columns 3 and 4 split the sample into owner managed and non-owner managed firms. Of particular interest is the subset of firms that have one owner and are owner managed. There are 1,283 such firms. We define this group as the zero-agency cost base case group.

The second and third groups denoted by “One Family” and “Multiple Families” contain firms that are owned by a single family and multiple families respectively. We expect little difference between firms that are owned by a single individual and a single family but separate the two groups for completeness.¹⁵

The third and fourth groups denoted by “Families & Holding Companies” and “Holding Companies” contain firms that are partly and wholly owned by private industrial entities such as holding companies. These cases do not include situations in which the holding company is owned by the same individual or family. Such cases really just amount to the firm having one-owner or being owned by one-family, and were so classified.

Panel B of Table I presents summary statistics for the private and public firms. As expected, private firms are typically smaller than public firms. They are also more levered and hold higher cash and other liquid assets than public firms. For instance, the mean (median) short term debt to assets ratio of private firms is nearly 30% (15%) compared to 7.5% (3.4%) for public firms and these differences are significant at the 1 percent level. Long term debt to assets ratios and cash to assets ratios also exhibit a similar pattern supporting the view that private firms rely more on debt and internal funds to meet their financing requirements. While private firms

¹⁵ In fact, the median number of shareholders in firms owned by one family is 2. Inspection of the data confirmed that in most cases firms owned by a single family are shown to be owned by a husband and wife.

are smaller and more levered than public firms, they are associated with higher turnover and profitability ratios. Further, private firms are typically younger and a smaller proportion (nearly 32%) pay dividends when compared to public firms (nearly 62%).

Panel C of Table I presents summary statistics for the different groups of private firms. Firms that are owned by a single individual are typically smaller with median assets (sales) of £822,000 (£1.91 million). Median assets and sales increase monotonically as we move from firms that are owned by one owner to those owned by holding companies. A similar pattern is observed for the number of shareholders, with the exception of the result for firms owned by holding companies alone.

“**Concentration**” measures the proportion of managing directors who are also shareholders of the firm. Concentration is calculated as follows:

$$\text{Concentration} = \frac{\text{Number of shareholders amongst managing directors}}{\text{Number of managing directors}} \quad (1)$$

A **Concentration** measure equal to 1 indicates that a firm is entirely managed by its owners and a **Concentration measure** equal to 0 indicates that the firm is managed by outsiders.

“**Representation**” measures the proportion of shareholders who are involved in the day to day operations of the firm. This measure is calculated as follows:

$$\text{Representation} = \frac{\text{Number of shareholders amongst managing directors}}{\text{Number of shareholders}} \quad (2)$$

Panel D of Table I presents Pearson correlation coefficients for the firm-level characteristics and the associated p-values for tests that a correlation coefficient is equal to zero. The magnitudes of the correlations are generally less than 0.20 with the exception of the correlations between **Concentration** and **Representation** and **Concentration** and the number of

shareholders. Total assets, total revenues and operating expenses are also highly correlated as would generally be expected.

V. Measures of Agency Costs

Tirole (2006) suggests that two important manifestations of managerial agency problems are inefficient or insufficient effort being expended by managers, and, inefficient investment choices. The magnitude of agency costs should therefore depend on a variety of factors such as inefficient asset utilization (in the form of bad investments), insufficient effort exerted by management (resulting in lower revenues) and excessive and unwanted production costs and perks (resulting in lower margins). We document the magnitude of agency costs in firms with different ownership and management structures using two measures. The first measure is the *difference* in asset turnover ratios. Asset turnover ratio is measured as revenues scaled by assets and this ratio captures the efficiency with which a firm's management deploys its assets in terms of revenue generation. By comparing the asset turnover ratios of firms with different ownership and management structures with those of zero agency cost firms (firms that are owned and managed by a single individual), we estimate the economic significance of efficiency losses that can be attributed to agency problems. The agency problem may also manifest itself in unwanted production costs and excessive perks. Such excess expenses impact the company's earnings. We capture these losses by comparing the *differences* in return on assets (ROA) ratios. This ratio is calculated as the earnings before interest and taxes (EBIT) scaled by assets.¹⁶

¹⁶ We also examined the *differences* in the ratios of operating expenses to sales as well as net income after taxes scaled by total assets. All results using *differences* in these ratios yield conclusions consistent with those reported in the text and so for brevity are not reported.

It is possible that firms with different ownership structures might differ in their accounting practices such as recognition and timing of revenues and costs because of tax considerations. However, as mentioned earlier, all UK firms, both public and private, are subject to the same tax laws (Ball and Shivakumar, 2005; and Bell and Jenkinson, 2002) so our data should be immune to this problem. We do however introduce control variables such as industry membership, to account for other possible determinants of the measures we examine. Finally, to mitigate the effect of outliers, we winsorize the top 1 percent and bottom 1 percent of all financial variables.¹⁷

VI. Results – Vertical Agency Theory

A. Univariate Analyses

We begin with a comparison of private and public firms. Initial evidence on the existence of agency costs in public firms can be inferred from the statistics presented in Panel B of Table I. Private firms are associated with higher turnover and profitability ratios than public firms. For instance, the median asset turnover (return on assets) ratio for private firms is 1.99 (0.069) compared to 1.10 (0.060) for public firms. These values are significantly different at the 1 percent level based on the nonparametric equality of medians test (Mood, 1950). From an economic standpoint, these numbers indicate that by employing assets of £100, a median private firm generates revenues (earnings) of £199 (£6.9) whereas a median public firm generates only about £110 (£6.0). Tests of equality of means produce similar conclusions. Private firms generate a statistically significantly larger return on assets than public firms independent of whether the tests are based upon means or medians. In sum, Panel B of Table I establishes that private

¹⁷ More specifically, we replaced the top (bottom) 1% of all financial variables used in the analysis with the most extreme remaining values.

companies exhibit greater relative profitability and greater asset turnover than public companies, which we interpret as being consistent with private companies exhibiting lower agency costs. A further discussion of agency costs in public companies is presented in the multivariate analysis section.

We next turn to an examination of how agency costs differ across private company ownership and management structures (*Hypotheses 1 & 2*). Panel A of Table II presents results based upon the asset turnover ratio. Columns 1 through 5 present the number of observations, mean, median, lower and upper quartiles of asset turnover ratios for firms that are entirely managed by owners. Columns 6 through 10 show the same information for non-owner managed firms.

The first five rows in Panel A present results for each of the private company ownership classes. Owner-managed firms exhibit higher median and average asset turnover ratios than non-owner-managed firms. Of particular interest are those firms having a single owner who is also the firm's manager. This group should exhibit zero equity agency costs. The mean and median asset turnover ratios for the single owner/manager group are 4.20 and 2.84 respectively and are larger than all other owner/manager groupings. For firms that are owned by a single individual but managed by non-owners, the corresponding ratios are 4.14 and 2.51 respectively. From an economic perspective, this means that by using assets worth £100, a median firm owned and managed by a single individual generates revenues of £284 whereas a firm owned by a single individual but not entirely managed by him would generate only revenues of £251.

As expected, asset turnover ratios of owner-managed firms are higher than those of non-owner-managed firms with other ownership structures as well. Owner-managed firms have statistically significantly greater asset turnover ratios than non-owner-managed forms for all

ownership classes. This difference corresponds to the loss attributed to inefficient utilization of assets (in the form of bad investments) and insufficient effort exerted by management (resulting in lower revenues) that arises due to the separation of ownership and control. Given that the median annual sales of private firms increase as we move from single owner firms to firms owned by holding companies, the magnitude of agency costs increases as we move from firms with simple ownership structures to those with complex ownership structures.

Results based upon an analysis of differences in *ROA* are presented in panel B of Table II. While differences in asset turnover ratios depict the magnitude of agency costs associated with the inefficiency of management in using assets to generate sales, differences in *ROA* reveal the effectiveness of management in generating revenues and managing costs. As mentioned earlier, separation of ownership and control might lead to unwanted and excessive perk consumption by management resulting in lower operating returns. The results show that the median and average return on assets is significantly higher for owner managed firms compared to non-owner managed firms across the board, also rejecting hypothesis I. The median *ROA* for the zero agency cost base case firms is 10.13% while the median for single owner but not owner managed firms is 8.7%. This difference is significantly different from zero at the 1 percent level. A similar pattern can be observed across firms with other ownership structures.

We next examine how the magnitude of agency costs changes as we move from single owner firms to those owned by holding companies (*Hypothesis 3*), regardless of whether they are entirely managed by owners or not. Panel A of Table III presents the median and average ratios of sales over assets of these groups. Firms that are owned by one owner have the highest asset turnover ratios and with the exception of firms owned by a single family, these ratios decrease monotonically as we move from the one owner setting to less concentrated ownership. The

median asset turnover ratio of single owner firms those owned by a holding company are 2.63 and 1.71 respectively and this difference is significant at the 1% level. It is worth recalling that the corresponding value for the sample of public firms is 1.10 (Panel B, Table I). This means that by employing £100 of assets, a representative single-owner firm generates about £263 in revenues whereas a firm owned by holding companies or a publicly traded firm generate £171 and £110 respectively. Along the same lines, we conclude that a firm owned by families would generate approximately £244 in revenues by employing £100 of assets. Panel B of Table IV presents the mean and median ROA ratios for the same company groupings as in Panel A. The results indicate that firms with more concentrated ownership structures typically have higher returns on assets. On average firms that have a single owner generate the highest returns. Overall, the results allow us to reject hypothesis III which states that the magnitude of agency costs does not differ significantly across ownership structures.

B. Cross-sectional Regression Analyses

The univariate results presented so far are consistent with the predictions of the extant theory focusing on vertical agency problems. The univariate results may however be influenced by cross-sectional factors unrelated to agency issues. Next we test the aforementioned hypotheses controlling for a variety of firm level characteristics.

We first define three dummy variables: **Private** equals 1 if the firm is private and 0 otherwise. **Owner-managed** takes the value 1 when the owner is also the manager and 0 otherwise; **Non-owner-managed** equals 1 for a non-owner-managed firm and 0 otherwise. Older firms may be more efficient than younger firms and start-ups due to a technological as well as a knowledge edge that has allowed them to survive. On the other hand, younger firms may employ a newer, more efficient asset base and have a smaller, more efficient organizational bureaucracy.

Hence controlling for firm age (**Age**) would seem to be prudent. Industry membership may also influence efficiency ratios. To control for industry effects, we follow the methodology of Ang, Cole and Lin (2000) and include a set of dummy variables, one for each two-digit SIC classification that accounts for more than one percent of the sample of firms.¹⁸ Company size may also be associated with efficiency. Williamson (1967, 1985) for instance suggests economies of scale and other related factors influence the size of the firm but decreasing returns to managerial efficiency limit optimal firm size. We control for the size of the firm by including the log of annual revenue (**Log (Revenue)**) as an independent variable.

In the absence of access to public equity markets, private firms often rely on debt provided by owners and external institutions such as banks as their primary source of financing. Berger and Udell (2002) and Cole, Wolken and Woodburn (1996) find that financial institutions provide roughly 27% of the dollar amount of small business credit in the US with 16% additionally coming from trade credit. In addition to providing funds, debtors also play an important monitoring role. For example, the role of monitoring has long been recognized as an important ingredient of bank lending (Diamond, 1991; Tirole, 2006). We assume that a bank's monitoring incentives are directly proportional to the level of loans the lender has made to the firm. To account for these factors, we include the proportion of a firm's short-term debt which is bank debt (**PROP Bank Debt**) as an independent variable. To the extent that bank monitoring is effective, we expect to see a positive relation between this variable and firm performance. We also include the long-term component (**Lg Term Debt**) of a firm's debt and the firm's cash

¹⁸ The number of industry dummy variables used changes according to the sample used. For regressions involving private and public companies, we use a set of 21 dummy variables. For regressions analyzing vertical agency costs among private companies, we use a set of 24 dummy variables and for regressions analyzing horizontal agency costs, we use a set of 20 dummy variables.

holdings (**Cash**) as independent variables. Both of these amounts are scaled by total assets and are included as control variables.

Our analysis makes use of cross-sectional regressions to explore the relation between ownership structures and agency costs. While ownership structure may affect performance, it is possible that performance may also be one of the determinants of ownership structure. Demsetz and Lehn (1985) argue that a liquid market for shares for public firms makes it possible for investors to buy and sell shares as circumstances change. This results in ownership structure being a continually adjusting choice variable.¹⁹ However, a key distinguishing feature of close corporations is the absence of an active market for company equity interests. While it might be possible for an owner to increase her equity investment, she will be constrained by her own personal resources (Berger and Udell, 2002; Cole, Wolken and Woodbur, 1996). In most private company settings, especially those cases involving a single owner, most of the owner's wealth is likely to already be tied up in the company she owns. As a result of this illiquidity, investors in close corporations cannot easily adjust their ownership positions as conditions change. This makes ownership in private companies effectively an exogenous, predetermined variable which is a sufficient condition to motivate its use as an independent variable in a performance regression (Smith and Watts (1992)).

Vertical agency costs – comparison of public firms and private firms:

¹⁹Consequently, Demsetz and Lehn (1985) argue that ownership structure in public firms is likely to be at the optimum on an ongoing basis, and in a cross-sectional sample, should have no relation to performance. Along the same lines, Himmelberg, Hubbard and Palia (1999) and Demsetz and Villalonga (2001) claim that insiders with privileged information about future performance have an incentive to vary their stakes. The debate concerning the endogeneity of ownership and performance in publicly traded companies is articulated nicely in the recent working paper by Coles, et. al (2008).

We construct a matched sample by matching each public firm with a private firm with the same two-digit SIC code and total revenue within 25% of the revenue of the public firm. If there is more than one private firm meeting this criterion, we pick the one with revenue closest to that of the public firm. Since the matching is done with replacement, it is possible that a private firm is used as a match for more than one public firm. In fact, we use 829 private firms as matches for 900 public firms. We use this sample of 1,729 firms to compare the performance of these two groups.

Table IV presents results from regressions in which the dependent variable is the asset turnover ratio in Models I & II and return on assets in Models III and IV. We test for the incremental performance of private firms by including a dummy variable “**Private**” that equals 1 if the firm is private and 0 otherwise. A positive and significant coefficient on “**Private**” indicates that private firms are more efficient in utilizing their assets to generate revenues and/or earnings. Results from Model I indicate that after controlling for size and age, on average, private firms generate higher revenues than comparable public firms. Results from Model II indicate that the superior performance of private firms persist even after controlling for several measures that are found to have an impact on performance. The role of bank monitoring is examined by including the proportion of bank debt (**PROP Bank Debt**) as a control variable. We interact this variable with “**Private**” to test the impact of bank lending on private firms. As the results indicate, bank monitoring has a positive and significant effect on the performance of private firms while it is insignificant in explaining the performance of publicly traded firms. Results from Models III & IV broadly support these findings.

Vertical agency costs in private firms with different ownership and management structures:

Having established that private firms are associated with better performance than public firms, we focus exclusively on how agency costs differ in various private company ownership and management structures. Panel A of Table V presents results from regressions in which the asset turnover ratio is the dependent variable. Column 1 identifies the explanatory variables and columns 2 through 15 present the coefficient estimates and associated t-statistics for seven different specifications of the model. We control for industry effects using industry dummy variables based on 2-digit SIC codes. The first five models are estimated without an intercept term. In column 2 of Panel A, we find that a firm that is owned and operated by a single individual has an asset turnover that is 62.2 percentage points higher than a firm that is owned by a single individual but is not entirely owner-managed. Older firms are less efficient in using assets to generate revenues and this pattern is present in all specifications. The results also suggest that larger firms are more efficient in using assets to generate sales. Bank involvement, as proxied by bank lending is an important determinant of private firm performance.

Columns 4 through 11 present the results for the remaining ownership structures. Owner managed firms generally have higher asset turnover ratios than non-owner managed firms. Further, of the 28 industry dummy variables included in the regressions, at least 70% are significant at the 10 percent level or better in all specifications.²⁰ This finding underscores the importance of industry effects when examining the magnitude of agency costs. The adjusted R² for each of the five specifications indicates that the models explain between 40 and 60 percent of the variability of the asset turnover ratios.

We have so far relied on binary variables to indicate whether or not firms are managed by owners. In order to gain further insight into the effects of alignment of ownership and

²⁰ These statistics are not presented for brevity but are available on request.

management, we introduce the continuous variable, **Concentration**, calculated as the ratio of shareholders who are also directors to the total number of directors. A **Concentration** measure of 1 indicates that a firm is entirely managed by its owners and a **Concentration** measure equal to 0 indicates that the firm is managed by outsiders. Columns 12 and 13 of Panel A present estimation results after substituting the variable **Concentration** for the dummy variables used heretofore to identify ownership differences. The coefficient estimate on **Concentration** is positive and significantly different from zero. An increase in the variable **Concentration** of .10 would increase asset turnover by approximately by .073, consistent with our earlier results. We also examine the impact of shareholder participation on firm performance by including another continuous variable, **Representation** calculated as the ratio of shareholders who are also directors to the number of shareholders. Results are presented in the last two columns of Panel A and the coefficient estimate on **Representation** is positive and significantly different from zero. This result confirms a direct relation between shareholder activism and firm performance.

In Panel B of Table V, we present results from regressions in which *ROA* is the dependent variable. Coefficient estimates in column 2 indicate that a firm owned and operated by a single individual has an *ROA* that is 0.24 percentage points higher than a firm that is owned by a single individual but is not entirely owner-managed. Older firms are on average less efficient in using assets to generate revenues. Columns 4 through 11 present the results of the remaining ownership structures we examine. Overall, the results are qualitatively similar to those found using asset turnover as the dependent variable. In all these regression specification, the bank lending variable (**PROP Bank Lending**) remains positive and significant indicating the important role banks play in monitoring private companies.

As a robustness check, we repeated the regressions using the ratio of operating expenses to sales as the dependent variable (not reported). We expect the operating expenses to sales ratio to be higher for firms with larger agency costs and the results confirm our predictions. We find the operating expenses to sales ratio to be approximately 4 percentage points lower for firms that are owned and operated by a single individual than for firms not operated by a single owner. This corresponds to approximately £78,000 less in costs per year for firms with median sales of £1.91 million. Similar results (not reported) were obtained for other ownership structures as well.

We conclude our analysis of vertical agency costs in private firms by conducting a full sample multivariate analysis. The results are presented in Table VI. Asset turnover ratio is used as the dependent variable in Models I & II. We create dummy variables indicating ownership structures of private firms and include them as explanatory variables in Model I. More specifically, we create the dummy variables **One Family**, **Families**, **Families & Holding Cos** and **Holding Cos** which equal 1 if a firm is owned by a single family, multiple families, a combination of families and holding companies and holding companies respectively and zero otherwise. Estimates on these variables measure the performance of these firms relative to the intercept, which measures the performance of firms that are owned by a single individual. Results indicate that firms owned by a single individual are the most efficient in utilizing their assets to generate revenues, after controlling for a host of factors.

We extend this analysis by breaking up firms belonging to each ownership structure into owner managed and non owner managed groups and estimating a similar performance regression (Model II). The intercept in this model measures the performance of firms that are owned and managed by a single individual. As mentioned earlier, these are the zero agency cost firms proposed by Jensen and Meckling (1976). To validate the extant theories and to reconfirm our

results, we expect the intercept in this model to be the largest and significantly different from estimates on all other binary variables included in the model. Results indicate that this is in fact the case. Firms that are owned and managed by a single individual outperform firms with all other ownership and management structures, after controlling for firm-specific variables and industry affiliations. Results of this performance regression can be used to obtain estimates of the magnitude of agency costs as firms deviate from the zero agency cost base case. The economic significance of results presented in Model II can be interpreted as follows: By using £100 of assets, firms that are owned and managed by a single individual (zero agency cost firms) generate about £317 in revenues where as firms that are owned by a single individual but not managed by him generate £271 in revenues. By using the same level of assets, firms that are owned and managed (owned but not managed) by multiple families generate £65 (£84) lower revenues when compared to zero agency cost firms. Similar estimates can be drawn for firms with other ownership and management structures. All these differences are significant at the 1 percent level. Models III and IV in Table VI present the results using the return on assets as the dependent variable. Results are qualitatively similar.

VII. Results – Horizontal Agency Theory

We predict that horizontal agency costs are lower in firms with shared control. We test the proposition in the following manner. We classify firms into three categories based on the ownership stake of the largest shareholder: low concentration firms, medium concentration firms and high concentration firms if the ownership stake of the largest shareholder is less than 50%, between 50% and 75% and above 75% respectively. Unlike public firms where owners can exert

decision control with a relatively low ownership stake,²¹ private firms can be controlled only by owning at least 50% of the firm. Private firms are owned by few shareholders (the average number of shareholders in our sample is 2) and therefore, it would be relatively easy for shareholders to block the decisions of any owner who has a less than 50% ownership stake.²² We now limit our sample to firms that are owned by multiple shareholders.

Models I through III in Table VII presents results from regressions in which the dependent variable is the asset turnover ratio. We include two dummy variables, **Low concentration** equals 1 if the ownership stake of the largest shareholder is less than 50% and **High concentration** equals 1 if the ownership stake of the largest shareholder is greater than 75%. Coefficient estimates on these dummy variables measure the performance of the diffusely held and highly concentrated firms relative to medium concentration firms. The intercept therefore reflects the performance of medium concentration firms.

In order to reject *Hypothesis 4*, we should observe that low concentration firms (i.e., those where the largest stakeholder owns less than 50%) outperform high concentration firms (i.e., where the largest shareholder owns more than 75%). The logic is simple, shareholders in the high concentration category have more complete control and, thus, are most likely to engage in decisions that allow them to extract private benefits at the expense of minority shareholders. That is, to consume resources whose value exceeds the personal loss they incur as a result. Results of Model I in Table VII indicate that low concentration firms are associated with higher asset turnover ratios relative to medium concentration firms and this difference in performance is

²¹ For evidence consistent with this view see Morck, Shleifer and Vishny (1988) and La Porta, Lopez-di-Silanes and Shleifer (1999), but also see fn 15 and the references cited therein.

²² Dyck and Zingales (2004) also use a 50% cutoff threshold.

significant at the 1 percent level. On the other hand high concentration firms are associated with asset turnover ratios that are significantly less than medium concentration firms. The results presented in columns 4 and 5 indicate the superior performance of low concentration firms persists even after controlling for various factors that might impact firm performance. We examine why high concentration firms underperform relative to medium concentration firms in more detail next.

We differentiate between firms that are entirely managed by owners and those that are not. We use a dummy variable **Owner managed** that is set to 1 if firms are entirely managed by owners and 0 if not. We then compute an interaction variable by multiplying **Owner managed** times **high concentration**. Columns 6 and 7 of Table VII present coefficient estimates for a model which includes this interaction variable. Unsurprisingly, the underperformance of high concentration firms relative to medium concentration firms is driven by the subset of firms that are not entirely managed by owners.

Columns 8 through 13 in Table VII present results from multivariate regressions in which *ROA* is the dependent variable. Coefficient estimates presented in column 8 indicate that low concentration firms have an *ROA* that is 0.14 percentage points higher than medium concentration firms on average. High concentration firms perform worse. Overall, the results are qualitatively similar to those obtained when we use asset turnover as the dependent variable.

Hypothesis 5 states that agency costs do not decrease as the ownership stake of the second largest shareholder increases. We use two different measures to examine the impact of the second largest shareholder on firm performance: i.) ownership stake of the second largest shareholder (**Second**) and ii.) the difference between the stakes of the largest and the second largest shareholders (**Difference**). Panel A of Table VIII presents results from regressions in

which the asset turnover ratio is the dependent variable. Column 1 identifies the explanatory variables and columns 2 through 9 present the coefficient estimates and associated t-statistics of the four different model specifications estimated. In order to reject *Hypothesis 5*, we should find a positive (negative) relation between asset turnover ratios and **Second (Difference)**. In model I, we find that **Second** has a positive impact on asset turnover ratio. This result is consistent with non-controlling shareholders acting as monitors as well as acting to contest decisions which would be detrimental, thus, making private benefit extraction more costly for the controlling shareholder.

The extent to which the second largest shareholder can prevent private benefit extraction by the majority shareholder partially depends on the ownership stake of the latter. That is, if the majority shareholder has absolute control (i.e., owning more than 75% of the firm), it is easier for him to extract private benefits from minority shareholders if he chooses to do so. On the other hand, if the majority shareholder does not have a controlling interest (i.e., owning less than 50% of the firm), expropriation of minority shareholders is more difficult. To further investigate the impact of the second largest shareholder on firm performance, we interact the stake of the second largest shareholder with the dummy variables **Low concentration**, **Medium concentration** and **High concentration** defined earlier, and include these interaction terms in the model. The results are presented in columns 4 and 5 of Panel A. The presence of a second large shareholder has a positive impact on firm performance among low and medium concentration firms. The presence of a second large shareholder does not help mitigate agency costs in high concentration firms where the controlling shareholder owns more than 75% of the firm. This result is consistent with the decisions of majority shareholders with absolute power in deciding the matters of the firm not being contested by the second largest stakeholder.

The literature on horizontal agency problems predicts that private benefits will be divided among different shareholders depending on the relative size of their respective holdings. Therefore, if the share of the largest shareholder is much larger than all other owners, the ability of small block-holders to prevent expropriation is limited. Put differently, horizontal agency costs should be positively related to the difference in the ownership stakes of the largest and the second largest shareholders. We test this prediction by including **Difference** as an independent variable in models III and IV. The results are presented in columns 6 through 9 of panel A. A significant negative coefficient estimate on **Difference** would cause us to reject *Hypothesis 5*. We find that the estimated coefficient on **Difference** is negative and statistically significant. That is, the larger the difference in the stakes of the top two shareholders of the firm, the lower the asset turnover ratio. Further, the results from estimating model IV show that the impact of **Difference** decreases monotonically as we move from low concentration to high concentration firms. Overall the results are consistent with the model proposed by Bloch and Hege (2001). That is, minority shareholder expropriation is lower in companies where control is more contestable, companies where the difference between the stakes of the majority and minority shareholders is smaller.

In Panel B of Table VIII, we present results from regressions in which *ROA* is the dependent variable. Coefficient estimates in column 2 indicate that the ownership stake of the second largest shareholder has a positive impact on *ROA* as predicted. Further, coefficient estimates from model II indicate that the impact of the second largest shareholder is particularly crucial in low concentration firms. In the last two models, we present results using the difference in ownership stakes of the top two shareholders as the dependent variable. These results are consistent with the results reported in Panel A.

VIII. Conclusions

This study presents empirical tests of the central hypotheses regarding the relation between agency costs and the structure of ownership and control in an organization. We make use of a unique company data set which includes over 55,000 private as well as publicly traded companies. We use three different measures to capture the presence of agency costs. Our results are consistent across all three measures.

We find that private firms experience lower agency related costs when compared to public firms. More importantly, we document that a firm that is owned and managed by a single individual outperforms firms with other ownership and management structures, thus providing direct confirmation to Jensen and Mecklings' (1976) theoretical prediction. The economic significance of these findings can be interpreted as follows: By using £100 worth of assets, firms that are owned and managed by a single individual (zero agency cost firm) generate about £316 in revenues. On the other hand, depending on the complexity of ownership and management structures, other firms generate £46 - £190 lower revenues compared zero agency cost firms. These differences correspond to the loss attributed to inefficient utilization of assets (in the form of bad investments) and insufficient effort exerted by management (resulting in lower revenues) that arises due to the separation of ownership and control.

Furthermore, we find that among private firms, agency costs increase as firms move from simple ownership structures such as being owned by a single individual or a family to complicated ownership structures such as being owned by multiple families and holding companies. This result provides direct confirmation of the free-rider hypothesis which states that as the number and type of shareholders increase, the incentive for each shareholder to incur all of

the monitoring costs decreases because the benefits associated with monitoring are limited and are proportional to their ownership stake.

We also present new empirical evidence on horizontal agency problems, a major concern in close corporations. We find that firms with shared control (i.e., those where the largest stakeholder owns less than 50%) outperform firms where the largest shareholder has enough power to extract private benefits from minority shareholders (i.e., where the largest shareholder owns between 50% and 75%). Furthermore, we find that the presence of a large shareholder outside the controlling group has a positive impact on firm performance. We document an inverse relationship between the ownership stake of the second largest shareholder and agency costs, providing support to the view that minority expropriation will be lower in companies where control is more contestable.

The economic theory of agency differentiates between vertical agency problems and horizontal agency problems. The vertical agency problem is characterized by situations in which the managers of a firm may have incentives to use or consume resources in a fashion that is at odds with the objectives of the firm's owners. The horizontal agency problem on the other hand describes a setting in which the owners themselves vie for resources, and importantly situations in which a controlling owner has incentives to exploit minority owners. Empirical tests of these theories have usually taken a circuitous route. Using a unique data set of public and private companies we present evidence that the primary tenets of both dimensions of agency theory are consistent with the data.

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Table I

Distribution of the Sample and Summary Statistics

Panel A presents the distribution of the sample based upon six different ownership structures. Owner managed firms are those where all directors are shareholders. Summary statistics of public and private companies are presented in Panel B. Total Assets and Revenues are measured in thousands of pound sterling. *Concentration* equals the proportion of directors who are shareholders. *Representation* equals the proportion of shareholders who are also directors. The results of equality of means and medians tests are reported. A parametric t-test is employed for tests of equality of means and a non-parametric test for equality of medians. Panel C presents similar statistics of private companies categorized according to ownership structure. Panel D presents correlation statistics. Data are obtained from the 2005 FAME database, produced by *Bureau Van Dijk*.

Panel A: Distribution of the initial sample

| Ownership Structure | Frequency | Owner Managed | Non Owner Managed |
|--|------------------|----------------------|--------------------------|
| (1) | (2) | (3) | (4) |
| Private - One Owner | 3,258 | 1,283 | 1,975 |
| Private - One Family | 8,675 | 4,492 | 4,183 |
| Private - Multiple Families | 11,081 | 4,650 | 6,431 |
| Private – Families and Holding Companies | 2,471 | 594 | 1,877 |
| Private – Holding Companies | 29,510 | 327 | 29,183 |
| Public Companies | 975 | 0 | 975 |
| Total | 55,970 | | |

Panel B: Summary Statistics for Private and Public Companies

| Variable | Private Firms | | | Public Firms | | | Tests of Differences | | | |
|------------------------------------|-----------------|-------------|---------------|-----------------|-------------|---------------|----------------------|---------------------|-----------|---------------------|
| | <i>N</i> (1) | Mean (2) | Median (3) | <i>N</i> (4) | Mean (5) | Median (6) | (2) – (5) | <i>p</i> - value | (3) – (6) | <i>p</i> - value |
| Revenues | 54,995 | 29,704 | 4,022 | 975 | 901,489 | 65,910 | (871,785) | <.0001 | (61,888) | <.0001 |
| Assets | 54,832 | 30,350 | 2,377 | 975 | 970,329 | 59,738 | (939,979) | <.0001 | (57,362) | <.0001 |
| Asset Turnover Ratio | 54,729 | 2.852 | 1.998 | 975 | 1.340 | 1.107 | 1.513 | <.0001 | 0.891 | <.0001 |
| Return on Assets | 54,283 | 0.078 | 0.069 | 975 | (0.014) | 0.060 | 0.092 | <.0001 | 0.009 | <.0001 |
| Net Income / Assets | 54,239 | 0.043 | 0.044 | 975 | (0.042) | 0.031 | 0.085 | <.0001 | 0.013 | <.0001 |
| ShTerm Debt / Assets | 46,366 | 0.294 | 0.152 | 822 | 0.075 | 0.034 | 0.219 | <.0001 | 0.118 | <.0001 |
| Bank Debt / Assets | 40,325 | 0.017 | 0.001 | 682 | 0.001 | 0.000 | 0.016 | <.0001 | 0.001 | <.0001 |
| LgTerm Debt / Assets | 25,022 | 0.180 | 0.077 | 731 | 0.058 | 0.017 | 0.123 | <.0001 | 0.060 | <.0001 |
| LgTerm Liabilities / Assets | 35,580 | 0.154 | 0.055 | 903 | 0.067 | 0.023 | 0.087 | <.0001 | 0.032 | <.0001 |
| Cash / Assets | 49,098 | 0.151 | 0.067 | 938 | 0.087 | 0.023 | 0.064 | <.0001 | 0.044 | <.0001 |
| Dividend Dummy | 54,995 | 0.329 | 0.000 | 975 | 0.622 | 1.000 | (0.293) | <.0001 | (1.000) | <.0001 |
| Firm Age | 53,322 | 20.2 | 15.0 | 975 | 30.8 | 17.0 | (10.7) | <.0001 | (2.0) | <.0001 |
| No. of Shareholders | 54,995 | 1.9 | 1.0 | 975 | 5.6 | 5.0 | (3.6) | <.0001 | (4.0) | <.0001 |
| No. of Employees | 36,120 | 33.0 | 25.0 | 969 | 37.7 | 30.0 | (4.7) | <.0001 | (5.0) | <.0001 |
| Largest Stake | 51,839 | 89.7 | 100.0 | 975 | 42.4 | 16.3 | 47.3 | <.0001 | 83.7 | <.0001 |
| Directors Stake | 54,774 | 29.7 | 0.0 | 975 | 1.1 | 0.0 | 28.6 | <.0001 | 0.0 | <.0001 |
| Concentration | 54,732 | 0.290 | 0.000 | 975 | 0.022 | 0.000 | 0.268 | <.0001 | 0.000 | <.0001 |
| Representation | 54,732 | 0.314 | 0.000 | 975 | 0.047 | 0.000 | 0.267 | <.0001 | 0.000 | <.0001 |

Table I

**Distribution of the Sample and Summary Statistics
(continued)**

Panel C: Summary Statistics for different categories of Private Companies

| Variable | One-Owner | | | One-Family | | | Multiple Families | | | Families & Holding Cos | | | Holding Cos | | |
|------------------------------------|-----------|-------|--------|------------|-------|--------|-------------------|-------|--------|------------------------|--------|--------|-------------|--------|--------|
| | <i>N</i> | Mean | Median | <i>N</i> | Mean | Median | <i>N</i> | Mean | Median | <i>N</i> | Mean | Median | <i>N</i> | Mean | Median |
| Revenues | 3,258 | 9,968 | 1,912 | 8,675 | 7,619 | 2,019 | 11,081 | 8,391 | 2,582 | 2,471 | 16,610 | 4,849 | 29,510 | 47,475 | 6,481 |
| Assets | 3,255 | 7,215 | 822 | 8,668 | 4,157 | 1,052 | 11,069 | 4,312 | 1,264 | 2,470 | 10,086 | 3,150 | 29,370 | 52,162 | 4,460 |
| Asset Turnover Ratio | 3,253 | 4.167 | 2.635 | 8,659 | 3.121 | 2.309 | 11,064 | 3.223 | 2.442 | 2,469 | 2.368 | 1.852 | 29,284 | 2.528 | 1.715 |
| Return on Assets | 3,238 | 0.124 | 0.093 | 8,650 | 0.126 | 0.092 | 11,025 | 0.111 | 0.080 | 2,465 | 0.073 | 0.064 | 28,905 | 0.045 | 0.056 |
| Net Income / Assets | 3,237 | 0.084 | 0.061 | 8,648 | 0.087 | 0.062 | 11,021 | 0.075 | 0.054 | 2,463 | 0.041 | 0.038 | 28,870 | 0.014 | 0.033 |
| ShTerm Debt / Assets | 2,550 | 0.191 | 0.113 | 7,365 | 0.190 | 0.120 | 9,107 | 0.184 | 0.109 | 2,001 | 0.161 | 0.091 | 25,343 | 0.384 | 0.209 |
| Bank Debt / Assets | 2,284 | 0.035 | 0.008 | 6,437 | 0.031 | 0.008 | 7,891 | 0.028 | 0.007 | 1,758 | 0.016 | 0.004 | 21,955 | 0.008 | 0.000 |
| LgTerm Debt / Assets | 1,492 | 0.173 | 0.089 | 4,558 | 0.156 | 0.090 | 5,863 | 0.142 | 0.072 | 1,448 | 0.146 | 0.076 | 11,661 | 0.214 | 0.072 |
| LgTerm Liabilities / Assets | 1,994 | 0.158 | 0.069 | 6,033 | 0.139 | 0.066 | 7,681 | 0.133 | 0.059 | 1,868 | 0.140 | 0.066 | 18,004 | 0.169 | 0.050 |
| Cash / Assets | 2,998 | 0.191 | 0.094 | 7,976 | 0.166 | 0.079 | 10,255 | 0.160 | 0.080 | 2,318 | 0.148 | 0.073 | 25,551 | 0.138 | 0.058 |
| Dividend Dummy | 3,258 | 0.408 | 0.000 | 8,675 | 0.509 | 1.000 | 11,081 | 0.430 | 0.000 | 2,471 | 0.350 | 0.000 | 29,510 | 0.227 | 0.000 |
| Firm Age | 3,130 | 13.2 | 9.0 | 8,452 | 20.5 | 17.0 | 10,643 | 19.3 | 14.0 | 2,335 | 22.2 | 17.0 | 28,762 | 21.0 | 15.0 |
| No. of Shareholders | 3,258 | 1.0 | 1.0 | 8,675 | 2.4 | 2.0 | 11,081 | 3.6 | 3.0 | 2,471 | 4.8 | 4.0 | 29,510 | 1.0 | 1.0 |
| No. of Employees | 1,258 | 30.6 | 23.0 | 3,881 | 32.7 | 25.0 | 5,704 | 33.7 | 25.0 | 1,698 | 34.2 | 26.0 | 23,579 | 32.9 | 25.0 |
| Largest Stake | 3,258 | 100.0 | 100.0 | 8,675 | 100.0 | 100.0 | 10,959 | 62.9 | 55.0 | 2,471 | 57.5 | 51.0 | 26,476 | 99.1 | 100.0 |
| Directors Stake | 3,258 | 71.5 | 100.0 | 8,675 | 75.3 | 100.0 | 11,078 | 57.6 | 75.5 | 2,471 | 40.4 | 47.5 | 29,292 | 0.1 | 0.0 |
| Concentration | 3,232 | 0.532 | 0.500 | 8,633 | 0.641 | 1.000 | 11,022 | 0.572 | 0.667 | 2,465 | 0.472 | 0.500 | 29,380 | 0.039 | 0.000 |
| Representation | 3,232 | 0.755 | 1.000 | 8,633 | 0.593 | 0.500 | 11,022 | 0.492 | 0.500 | 2,465 | 0.338 | 0.333 | 29,380 | 0.116 | 0.000 |

Table II

Magnitude of Agency Costs in Owner-Managed and Non Owner-Managed Firms: Univariate Analysis

The magnitudes of agency costs are compared between a sample of private firms divided into two groups: those that are entirely managed by owners and those that are not. Differences in the ratio of sales to total assets (and the ratio of earnings before interest and tax to total assets) between owner managed and non-owner managed firms are used as indicators for the presence of agency costs. The results of equality of means and medians tests are reported. A parametric t-test is employed for tests of equality of means and a non-parametric test for equality of medians. Statistical significance at 10, 5 and 1 percent levels are respectively denoted by *, ** and ***. Data are obtained from the FAME database, produced by *Bureau Van Dijk*.

Panel A: Asset Turnover (*Total Revenues/Total Assets*)

| | Owner-Managed | | | | | Non Owner-Managed | | | | | Test of Differences | |
|-----------------------------------|---------------|--------|--------|--------|--------|-------------------|--------|--------|--------|--------|---------------------|------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) = (2) - (7) | (12) = (3) - (8) |
| | N | Mean | Median | Q_25 | Q_75 | N | Mean | Median | Q_25 | Q_75 | Mean Test | Median Test |
| One Owner | 1,281 | 4.2037 | 2.8369 | 1.6898 | 4.7497 | 1,972 | 4.1426 | 2.5102 | 1.5026 | 4.1778 | 0.0611*** | 0.3267*** |
| One Family | 4,491 | 3.1750 | 2.4055 | 1.4878 | 3.7023 | 4,168 | 3.0630 | 2.2091 | 1.3828 | 3.4464 | 0.1120 | 0.1965*** |
| Multiple Families | 4,649 | 3.3433 | 2.5904 | 1.7057 | 3.8512 | 6,415 | 3.1361 | 2.3269 | 1.4871 | 3.4663 | 0.2072*** | 0.2635*** |
| Families & Holding Cos | 594 | 2.5374 | 2.0401 | 1.2478 | 3.3172 | 1,875 | 2.3139 | 1.7867 | 1.1528 | 2.7755 | 0.2235** | 0.2534*** |
| Holding Cos | 327 | 3.3640 | 2.1826 | 1.3014 | 3.8616 | 28,957 | 2.5182 | 1.7096 | 0.9452 | 2.7457 | 0.8459*** | 0.4730*** |

Panel B: Return on Assets (*EBIT/Total Assets*)

| | Owner-Managed | | | | | Non Owner-Managed | | | | | Test of Differences | |
|-----------------------------------|---------------|--------|--------|---------|--------|-------------------|--------|--------|---------|--------|---------------------|--------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11)=(2)-(7) | (12)=(3)-(8) |
| | N | Mean | Median | Q_25 | Q_75 | N | Mean | Median | Q_25 | Q_75 | Mean Test | Median Test |
| One Owner | 1,280 | 0.1341 | 0.1013 | 0.0329 | 0.2244 | 1,958 | 0.1169 | 0.0869 | 0.0213 | 0.1919 | 0.0172** | 0.0144** |
| One Family | 4,489 | 0.1405 | 0.1072 | 0.0419 | 0.2119 | 4,161 | 0.1105 | 0.0798 | 0.0296 | 0.1630 | 0.0300*** | 0.0274*** |
| Multiple Families | 4,638 | 0.1276 | 0.0936 | 0.0299 | 0.2023 | 6,387 | 0.0987 | 0.0711 | 0.0218 | 0.1519 | 0.0289*** | 0.0225*** |
| Families & Holding Cos | 594 | 0.0985 | 0.0715 | 0.0199 | 0.1546 | 1,871 | 0.0653 | 0.0617 | 0.0157 | 0.1262 | 0.0332*** | 0.0098*** |
| Holding Cos | 325 | 0.0668 | 0.0643 | -0.0186 | 0.1716 | 28,580 | 0.0452 | 0.0562 | -0.0058 | 0.1406 | 0.0215 | 0.0082 |

Table III**Magnitude of Agency Costs Among Firms with Different Ownership Structures: Univariate Analysis**

The magnitudes of agency costs are compared between a sample of private firms divided into five categories based on their ownership structure. Ratio of sales to total assets and the ratio of earnings before interest and tax to total assets of firms with different ownership structures are compared with those of firms that are owned by a single individual. These differences are used to infer the magnitude of agency costs in firms with complex ownership structures. The results of equality of means and medians tests are reported. A parametric t-test is employed for tests of equality of means and a non-parametric test for equality of medians. Statistical significance at 10, 5 and 1 percent levels are respectively denoted by *, ** and ***. Data are obtained from the FAME database, produced by *Bureau Van Dijk*.

Panel A: Asset Turnover (Total Revenues/Total Assets)

| | <i>N</i> | Mean | Median | Q_25 | Q_75 | Diff – Mean | Diff - Median |
|-----------------------------------|----------|--------|--------|--------|--------|-------------|---------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| One Owner | 3,253 | 4.1667 | 2.6350 | 1.5809 | 4.4021 | | |
| One Family | 8,659 | 3.1211 | 2.3094 | 1.4239 | 3.5863 | 1.0456*** | 0.3255*** |
| Multiple Families | 11,064 | 3.2231 | 2.4415 | 1.5707 | 3.6484 | 0.9435*** | 0.1934*** |
| Families & Holding Cos | 2,469 | 2.3676 | 1.8525 | 1.1729 | 2.8465 | 1.7990*** | 0.7825*** |
| Holding Cos | 29,284 | 2.5276 | 1.7147 | 0.9506 | 2.7557 | 1.6391*** | 0.9203*** |

Panel B: Return on Assets (EBIT/Total Assets)

| | <i>N</i> | Mean | Median | Q_25 | Q_75 | Diff – Mean | Diff - Median |
|-----------------------------------|----------|--------|--------|---------|--------|-------------|---------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| One Owner | 3,238 | 0.1237 | 0.0935 | 0.0251 | 0.2048 | | |
| One Family | 8,650 | 0.1261 | 0.0920 | 0.0352 | 0.1881 | -0.0024 | 0.0015 |
| Multiple Families | 11,025 | 0.1109 | 0.0799 | 0.0251 | 0.1724 | 0.0128*** | 0.0136*** |
| Families & Holding Cos | 2,465 | 0.0733 | 0.0637 | 0.0162 | 0.1319 | 0.0504*** | 0.0298*** |
| Holding Cos | 28,905 | 0.0455 | 0.0562 | -0.0059 | 0.1407 | 0.0782*** | 0.0372*** |

Table IV

Comparison of Agency Costs among Public and Private Companies

The magnitude of agency costs are estimated using a matched sample of private and public firms. The ratio of sales to total assets and the ratio of earnings before interest and tax to total assets are used as dependent variables in regression specifications I & II, and III & IV respectively. We match each public firm with a private firm with the same two-digit SIC code and whose turnover lies within 25% of the turnover of the public firm. The sample consists of 829 private firms and 900 public firms. “**Private**” is a binary variable that equals 1 if the firm is private and 0 otherwise. “**PROP Bank Debt**” is the proportion of short-term debt funded by banks. “**Cash**” represents cash and marketable securities scaled by total assets. “**LgTerm Debt**” is long-term debt scaled by total assets. “**Dividend Dummy**” is a binary variable that equals 1 if the firm pays dividends and 0 otherwise. “**Concentration**” equals the proportion of directors who are shareholders. The t-values are corrected for heteroskedasticity using White (1980) standard errors. Statistical significance at 10, 5 and 1 percent levels are respectively denoted by *, ** and ***. Data are obtained from the FAME database, produced by *Bureau Van Dijk*.

| Dependent Variable | Asset Turnover Ratio | | | | Return on Assets | | | |
|-----------------------------|----------------------|----------|----------|----------|------------------|----------|----------|----------|
| | Model I | | Model II | | Model III | | Model IV | |
| | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value |
| Intercept | 0.527 | 1.58 | -1.583 | -2.15*** | -0.492 | -7.45*** | -0.359 | -3.91** |
| Private | 1.374 | 9.31*** | 1.115 | 6.83*** | 0.107 | 7.21*** | 0.111 | 6.51*** |
| Log(Revenues) | 0.155 | 4.52*** | 0.296 | 5.61*** | 0.039 | 7.68*** | 0.023 | 3.81*** |
| Log(Firm Age) | -0.298 | -3.39*** | -0.266 | -3.37*** | 0.015 | 2.41** | 0.007 | 1.15 |
| PROP Bank Debt | | | 0.542 | 0.90 | | | 0.074 | 0.93 |
| Private * PROP Bank Debt | | | 2.214 | 1.93** | | | 0.027 | 0.28 |
| LgTerm Debt | | | 0.717 | 2.09 | | | -0.347 | -1.86*** |
| Dividend Dummy | | | 0.066 | 0.37 | | | 0.145 | 11.06*** |
| Cash | | | 4.083 | 2.85*** | | | -0.062 | -0.46 |
| Concentration | | | 0.337 | 0.56 | | | 0.098 | 2.11** |
| Director Stake | | | 2.098 | 0.92 | | | 0.191 | 1.27 |
| Director Stake ² | | | -2.077 | -0.87 | | | -0.180 | -1.33 |
| Industry Dummy Variables? | No | | Yes | | No | | Yes | |
| R-Squared | 6.54 | | 12.93 | | 8.96 | | 18.06 | |
| F-value | 30.35 | | 5.30 | | 41.22 | | 5.72 | |
| N | 1,729 | | 1,493 | | 1,724 | | 1,491 | |

Table V

Magnitude of Agency Costs in Owner-Managed and Non Owner-Managed Firms: Multivariate Analysis

Panel A presents results of regression analyses using the asset turnover ratio as an indicator for the presence of agency costs. **Owner managed** firms are those that are completely managed by shareholders. In each ownership structure, difference between the estimates on “Owner-managed” and “Non-Owner Managed” is used to infer the magnitude of agency costs. Panel B presents similar results using return on assets (*ROA*) as the indicator. “**PROP Bank Debt**” is the proportion of short-term debt funded by banks. “**Cash**” represents cash and marketable securities scaled by total assets. “**LgTerm Debt**” is long-term debt scaled by total assets. “**Concentration**” equals the proportion of directors who are shareholders. “**Representation**” equals the proportion of shareholders who are also directors. The t-values are corrected for heteroskedasticity using White (1980) standard errors. Statistical significance at 10, 5 and 1 percent levels are respectively denoted by *, ** and ***. Data are obtained from the FAME database, produced by *Bureau Van Dijk*.

Panel A: Asset Turnover (*Total Revenues/Total Assets*)

| | One Owner | | One Family | | Families | | Families & Holding Cos | | Holding Cos | | Full Sample | | Full Sample | |
|--------------------|-----------|----------|------------|-----------|----------|-----------|------------------------|----------|-------------|-----------|-------------|-----------|-------------|-----------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
| | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value |
| Intercept | | | | | | | | | | | 2.193 | 16.69*** | 2.324 | 17.9*** |
| Concentration | | | | | | | | | | | 0.73 | 10.54*** | | |
| Representation | | | | | | | | | | | | | 0.175 | 4.07*** |
| Owner-Managed | 3.045 | 3.76*** | 3.377 | 10.2*** | 3.159 | 10.04*** | 1.375 | 2.94*** | 2.299 | 8.68*** | | | | |
| Non-Owner Managed | 2.423 | 2.77*** | 3.087 | 8.82*** | 2.891 | 8.64*** | 1.009 | 2.02** | 1.506 | 9.21*** | | | | |
| Log(Turnover) | 0.379 | 4.01*** | 0.217 | 6.36*** | 0.19 | 5.5*** | 0.223 | 4.67*** | 0.135 | 9.09*** | 0.145 | 11.64*** | 0.132 | 10.79*** |
| Log(Firm Age) | -1.101 | -9.52*** | -0.793 | -14.87*** | -0.699 | -16.01*** | -0.393 | -7.03*** | -0.319 | -13.97*** | -0.525 | -27.99*** | -0.528 | -28.05*** |
| PROP_Bank Debt | 1.292 | 5.05*** | 1.055 | 9.11*** | 1.014 | 8.83*** | 1.039 | 4.51*** | 1.427 | 11.26*** | 1.304 | 20.15*** | 1.328 | 20.5*** |
| Lgterm Debt | -1.767 | -3.56*** | -1.965 | -7.39*** | -1.613 | -3.79*** | -1.303 | -3.79*** | 0.015 | 0.11 | -0.511 | -4.53*** | -0.519 | -4.61*** |
| Cash | 2.749 | 4.29*** | 1.076 | 3.64*** | 0.538 | 2.22** | 1.122 | 2.34** | 1.955 | 10.3*** | 1.659 | 12.55*** | 1.666 | 12.59*** |
| Director Stake | | | | | | | | | | | -0.817 | -3.35*** | 0.343 | 1.53 |
| Director Stake Sqr | | | | | | | | | | | 0.647 | 2.76*** | -0.084 | -0.37 |
| Industry Dummies | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| R-squared | 49.73 | | 56.79 | | 56.51 | | 59.07 | | 42.08 | | 8.29 | | 8.13 | |
| N | 2,452 | | 7,175 | | 8,755 | | 1,901 | | 24,803 | | 44,743 | | 44,743 | |

Table V

Magnitude of Agency Costs in Owner-Managed and Non Owner-Managed Firms: Multivariate Analysis
(continued)

Panel B: Return on Assets (EBIT/Total Assets)

| | One Owner | | One Family | | Families | | Families & Holding Cos | | Holding Cos | | Full Sample | | Full Sample | |
|--------------------|-----------|----------|------------|-----------|----------|-----------|------------------------|---------|-------------|-----------|-------------|-----------|-------------|-----------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) | (15) |
| | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value |
| Intercept | | | | | | | | | | | -0.035 | -3.40*** | -0.027 | -2.69*** |
| Concentration | | | | | | | | | | | 0.043 | 8.12*** | | |
| Representation | | | | | | | | | | | | | 0.011 | 3.43*** |
| Owner-Managed | 0.087 | 2.12** | 0.206 | 9.99*** | 0.175 | 8.81*** | -0.011 | -0.24 | -0.12 | -5.54*** | | | | |
| Non-Owner Managed | 0.063 | 1.46 | 0.186 | 8.48*** | 0.158 | 7.64*** | -0.037 | -0.77 | -0.151 | -10.46*** | | | | |
| Log(Turnover) | 0.005 | 1.33 | -0.001 | -0.49 | -0.002 | -0.94 | 0.01 | 2.62*** | 0.016 | 12.78*** | 0.01 | 10.6*** | 0.009 | 9.93*** |
| Log(Firm Age) | -0.025 | -4.28*** | -0.04 | -12.61*** | -0.031 | -11.73*** | -0.005 | -0.79 | 0.011 | 5.21*** | -0.008 | -5.94*** | -0.009 | -6.05*** |
| PROP_Bank Debt | 0.009 | 0.65 | 0.028 | 3.67*** | 0.028 | 3.62*** | 0.012 | 0.64 | 0.076 | 6.76*** | 0.053 | 11.41*** | 0.054 | 11.71*** |
| Lgterm Debt | -0.137 | -3.16*** | -0.118 | -5.11*** | -0.099 | -3.9*** | -0.089 | -1.91** | -0.174 | -12.31*** | -0.16 | -14.59*** | -0.161 | -14.64*** |
| Cash | 0.239 | 7.63*** | 0.263 | 15.34*** | 0.242 | 13.88*** | 0.224 | 6.02*** | 0.161 | 11.54*** | 0.194 | 21.44*** | 0.195 | 21.49*** |
| Director Stake | | | | | | | | | | | -0.025 | -1.27 | 0.043 | 2.46** |
| Director Stake Sqr | | | | | | | | | | | 0.052 | 2.84*** | 0.009 | 0.49 |
| Industry Dummies | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| R-squared | 23.95 | | 35.55 | | 25.71 | | 14.01 | | 5.81 | | 6 | | 5.92 | |
| N | 2,446 | | 7,172 | | 8,738 | | 1,900 | | 24,589 | | 44,505 | | 44,505 | |

Table VI
Magnitude of Agency Costs in Private Firms: Full Sample Multivariate Analysis

Asset turnover ratio (Return on assets) is used as dependent variable in Models I & II (Models III & IV). Owner managed firms are those that are completely managed by shareholders. They are indicated by a suffix of **OM** next to each ownership structure. Non owner managed firms are indicated by a suffix of **NOM**. Intercept in Models I and III reflects performance of firms owned by a single individual. Intercept in Models II & IV reflects performance of firms that are owned and managed by a single individual. In each model, coefficient estimates on different ownership structure are indicators of the magnitude of agency costs compared to the base case scenario. **“PROP Bank Debt”** is the proportion of short-term debt funded by banks. **“Cash”** represents cash and marketable securities scaled by total assets. **“LgTerm Debt”** is long-term debt scaled by total assets. The t-values are corrected for heteroskedasticity using White (1980) standard errors. Statistical significance at 10, 5 and 1 percent levels are respectively denoted by *, ** and ***. Data are obtained from the FAME database, produced by *Bureau Van Dijk*.

| Dependent Variable | Asset Turnover Ratio | | | | Return on Assets | | | |
|------------------------------|----------------------|-----------|----------|-----------|------------------|-----------|----------|-----------|
| | Model I | | Model II | | Model III | | Model IV | |
| | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value |
| Intercept | 2.961 | 20.71*** | 3.168 | 18.21*** | 0.003 | 0.28 | 0.011 | 0.98 |
| One Family | -0.471 | -5.39*** | | | 0.014 | 2.69*** | | |
| Families | -0.416 | -4.84*** | | | -0.002 | -0.34 | | |
| Families & Holding Cos | -1.032 | -10.95*** | | | -0.039 | -6.05*** | | |
| Holding Cos | -1.003 | -11.78*** | | | -0.066 | -12.96*** | | |
| One Owner - NOM | | | -0.459 | -2.73*** | | | -0.024 | -2.68*** |
| One Family - OM | | | -0.651 | -4.59*** | | | 0.014 | 1.75* |
| One Family - NOM | | | -0.841 | -5.91*** | | | -0.016 | -2.08** |
| Families - OM | | | -0.56 | -3.94*** | | | -0.002 | -0.25 |
| Families - NOM | | | -0.787 | -5.62*** | | | -0.027 | -3.51*** |
| Families & Holding Cos - OM | | | -1.062 | -6.14*** | | | -0.035 | -3.06*** |
| Families & Holding Cos - NOM | | | -1.396 | -9.62*** | | | -0.06 | -6.8*** |
| Holding Cos - OM | | | -0.467 | -1.85* | | | -0.053 | -2.79*** |
| Holding Cos - NOM | | | -1.302 | -9.45*** | | | -0.083 | -10.86*** |
| Log(Turnover) | 0.153 | 12.5*** | 0.163 | 13.09*** | 0.011 | 12.03*** | 0.012 | 12.88*** |
| Log(Firm Age) | -0.496 | -26.87*** | -0.499 | -27.06*** | -0.006 | -4.22*** | -0.006 | -4.4*** |
| PROP_Bank Debt | 1.212 | 19.05*** | 1.186 | 18.58*** | 0.047 | 10.21*** | 0.044 | 9.59*** |
| Lgterm Debt | -0.517 | -4.62*** | -0.51 | -4.55*** | -0.159 | -14.66*** | -0.159 | -14.6*** |
| Cash | 1.671 | 12.69*** | 1.662 | 12.63*** | 0.198 | 21.99*** | 0.197 | 21.81*** |
| Industry Dummies | Yes | | Yes | | Yes | | Yes | |
| R-squared | 8.75 | | 8.88 | | 6.55 | | 6.67 | |
| N | 45,086 | | 45,086 | | 44,845 | | 44,845 | |

Table VII
Minority Expropriation and Shared Control: Multivariate Analysis

Asset turnover ratio (Return on assets) is used as dependent variable in Models I-III (Models IV-VI). “**Low concentration**” and “**high concentration**” are dummy variables that are set to 1 if the largest shareholder owns less than 50% and above 75% of the firm respectively. Estimates on these variables indicate the incremental performance of firms with a.) shared control and b.) absolute control over firms where the largest shareholder between 50% and 75% of the firm. Other variables are defined earlier. All the t-values are corrected for heteroskedasticity using White (1980) standard errors. Statistical significance at 10, 5 and 1 percent levels are respectively denoted by *, ** and ***. Data are obtained from the FAME database, produced by *Bureau Van Dijk*.

| Dependent Variable | Asset Turnover Ratio | | | | | | Return on Assets | | | | | |
|------------------------------------|----------------------|-----------|----------|-----------|-----------|-----------|------------------|-----------|----------|----------|----------|----------|
| | Model I | | Model II | | Model III | | Model IV | | Model V | | Model VI | |
| | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value |
| Intercept | 4.216 | 19.65*** | 2.98 | 10.97*** | 2.926 | 10.74*** | 0.241 | 15.69*** | 0.139 | 7.49*** | 0.136 | 7.27*** |
| Low concentration | 0.21 | 3.07*** | 0.112 | 1.75* | 0.112 | 1.76* | 0.014 | 2.81*** | 0.007 | 1.38 | 0.007 | 1.39 |
| High concentration | -0.11 | -1.66* | -0.057 | -0.91 | -0.149 | -2.16** | -0.014 | -2.79*** | -0.019 | -3.91*** | -0.023 | -4.34*** |
| High concentration * Owner-managed | | | | | 0.253 | 2.71*** | | | | | 0.012 | 1.68* |
| Log(Firm Age) | -0.735 | -18.39*** | -0.588 | -16.02*** | -0.590 | -16.07*** | -0.029 | -11.57*** | -0.023 | -9.03*** | -0.023 | -9.08*** |
| Log(Revenues) | 0.08 | 3.39*** | 0.117 | 4.39*** | 0.124 | 4.62*** | -0.008 | -5.25*** | -0.001 | -0.82 | -0.001 | -0.59 |
| PROP Bank Debt | | | 1.127 | 10.64*** | 1.121 | 10.6*** | | | 0.033 | 4.49*** | 0.033 | 4.46*** |
| LgTerm Debt | | | -1.305 | -3.27*** | -1.306 | -3.28*** | | | -0.105 | -4.56*** | -0.105 | -4.57*** |
| Cash | | | 0.815 | 3.52*** | 0.810 | 3.5*** | | | 0.246 | 14.84*** | 0.246 | 14.81*** |
| Industry Dummies | No | | Yes | | Yes | | No | | Yes | | Yes | |
| R-squared | 4.39 | | 9.05 | | 9.1 | | 2.11 | | 7.47 | | 7.45 | |
| N | 12,398 | | 10,148 | | 10,148 | | 12,349 | | 10,127 | | 10,127 | |

Table VIII

Minority Expropriation and Contestability: Multivariate Analysis

Panel A presents results of regression analyses using the asset turnover ratio as an indicator for the presence of agency costs. Panel B presents similar results using return on assets (*ROA*) as the indicator. “**Second**” refers to the ownership stake of the second largest shareholder. Low concentration, medium concentration and high concentration are dummy variables that are set to 1 if the largest shareholder owns less than 50%, between 50% and 75% and above 75% of the firm respectively. “**Difference**” refers to the difference in ownership stakes of the largest and the second largest shareholders. All other variables are defined earlier. All the t-values are corrected for heteroskedasticity using White (1980) standard errors. Statistical significance at 10, 5 and 1 percent levels are respectively denoted by *, ** and ***. Data are obtained from the FAME database, produced by *Bureau Van Dijk*.

Panel A: Asset Turnover (Total Revenues/Total Assets)

| | Model I | | Model II | | Model III | | Model IV | |
|-----------------------------------|----------|-----------|----------|-----------|-----------|-----------|----------|-----------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | estimate | t-value | estimate | t-value | estimate | t-value | estimate | t-value |
| Intercept | 2.635 | 9.45*** | 2.328 | 7.98*** | 3.085 | 11.61*** | 2.757 | 9.97*** |
| Second | 0.923 | 5.54*** | | | | | | |
| Low concentration * Second | | | 0.888 | 5.05*** | | | | |
| Medium concentration * Second | | | 0.75 | 3.25*** | | | | |
| High concentration * Second | | | 0.718 | 1.59 | | | | |
| Difference | | | | | -0.252 | -3.29*** | | |
| Low concentration * Difference | | | | | | | -2.204 | -5.03*** |
| Medium concentration * Difference | | | | | | | -0.516 | -3.24*** |
| High concentration * Difference | | | | | | | -0.265 | -3.42*** |
| Log(Firm Age) | -0.576 | -15.92*** | -0.593 | -16.11*** | -0.587 | -16.08*** | -0.605 | -16.49*** |
| Log(Revenues) | 0.127 | 4.78*** | 0.154 | 5.57*** | 0.118 | 4.45*** | 0.152 | 5.5*** |
| PROP Bank Debt | 1.122 | 10.63*** | 1.109 | 10.45*** | 1.126 | 10.63*** | 1.112 | 10.46*** |
| LgTerm Debt | -1.294 | -3.25*** | -1.275 | -3.17*** | -1.303 | -3.27*** | -1.281 | -3.18*** |
| Cash | 0.792 | 3.44*** | 0.777 | 3.35*** | 0.812 | 3.52*** | 0.772 | 3.34*** |
| Concentration | | | 0.321 | 4.5*** | | | 0.324 | 4.55*** |
| Industry Dummies | Yes | | Yes | | Yes | | Yes | |
| R-squared | 9.29 | | 9.58 | | 9.08 | | 9.53 | |
| N | 10,148 | | 10,109 | | 10,148 | | 10,109 | |

Table VIII

**Minority Expropriation and Contestability: Multivariate Analysis
(continued)**

Panel B: Return on Assets (EBIT/Total Assets)

| | Model I | | Model II | | Model III | | Model IV | |
|-----------------------------------|----------|----------------|----------|----------------|-----------|----------------|----------|----------------|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | estimate | <i>t-value</i> | estimate | <i>t-value</i> | estimate | <i>t-value</i> | estimate | <i>t-value</i> |
| Intercept | 0.105 | 5.38*** | 0.092 | 4.49*** | 0.146 | 7.96*** | 0.129 | 6.69*** |
| Second | 0.084 | 6.77*** | | | | | | |
| Low concentration * Second | | | 0.078 | 6.06*** | | | | |
| Medium concentration * Second | | | 0.072 | 4.19*** | | | | |
| High concentration * Second | | | 0.02 | 0.54 | | | | |
| Difference | | | | | -0.031 | -5.38*** | | |
| Low concentration * Difference | | | | | | | -0.114 | -2.86*** |
| Medium concentration * Difference | | | | | | | -0.022 | -1.86* |
| High concentration * Difference | | | | | | | -0.034 | -5.75*** |
| Log(Firm Age) | -0.023 | -8.93*** | -0.024 | -9.3*** | -0.023 | -9.08*** | -0.025 | -9.74*** |
| Log(Revenues) | 0 | -0.28 | 0.001 | 0.45 | -0.001 | -0.73 | 0.0001 | 0.21 |
| PROP Bank Debt | 0.033 | 4.5*** | 0.031 | 4.2*** | 0.033 | 4.51*** | 0.031 | 4.23*** |
| LgTerm Debt | -0.105 | -4.53*** | -0.107 | -4.59*** | -0.105 | -4.56*** | -0.107 | -4.6*** |
| Cash | 0.245 | 14.77*** | 0.241 | 14.48*** | 0.246 | 14.82*** | 0.241 | 14.49*** |
| Concentration | | | 0.02 | 4.03*** | | | 0.021 | 4.12*** |
| Industry Dummies | Yes | | Yes | | Yes | | Yes | |
| R-squared | 7.64 | | 7.87 | | 7.47 | | 7.73 | |
| <i>N</i> | 10,127 | | 10,088 | | 10,127 | | 10,088 | |