Empirical Evidence on Ownership Structure, Management Control and Agency Costs

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Abstract

We present new empirical evidence on the agency costs due to inefficiencies which emerge from the vertical (ownership versus control) and horizontal (majority versus minority) agency problems. Using a sample of more than 250,000 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 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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Agency problems arise when managers or controlling shareholders have the ability to redirect or consume corporate resources in ways that benefit themselves but which are not in the best interests of the other owners, including minority owners (Jensen and Meckling, 1976; Shleifer and Vishny, 1997; Holmstrom and Kaplan, 2001, 2003; Becht, Bolton and Roell, 2003; Dennis and McConnell, 2003; Hermalin, 2005; Gillan, 2006; Tirole, 2006; Djankov, La Porta, Lopez-de-Silanes and Shleifer, 2008).[1] Firms face two types of agency problems: vertical agency problems that exist between owners and managers (Jensen and Meckling, 1976), and horizontal agency problems that exist between controlling (majority) shareholders and minority owners (Shliefer and Vishny, 1997, Gilson and Gordon, 2003).[2] Tirole (2006) suggests that two important manifestations of agency problems are 1) inefficient investment choices, which could include the redirection of resources for personal consumption, and, 2) inefficient or insufficient effort being expended by managers. The costs that arise as a result of these inefficiencies are generally referred to as agency costs.[3] The magnitude of any agency costs should therefore depend on factors such as inefficient asset utilization (in the form of poor investments or for

[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). See also the review by Roe (2005).

[3] Jensen and Meckling (1976) include in the definition of agency costs the costs expending by agents on bonding and by principals on bonding. What we refer to as agency costs essentially are what Jensen and Meckling call the 'residual loss' due to the less than optimal efficient use of resources that arises because of the agency problem.

instance the appropriation of resources) by those who control the decision making process, excessive and unwanted production costs and perks (resulting in higher expenses), and insufficient effort exerted by management (resulting in lower revenues and earnings).

We make use of an extensive data set on ownership and management which includes details on over 250,000 private as well as publicly traded companies to study the relation between agency costs and the structure of ownership and control in an organization. Our measures of agency costs account directly for the fact that such costs are absent in the single-owner single-manager firm and are predicated on measuring the efficient use of resources. We empirically examine the relations between our agency cost measures and the full spectrum of ownership and management arrangements ranging from the single-owner single-manager firm to the diffusely held corporation with many managers, as well as the relation to the structure of ownership *amongst* owners.

Our study makes several contributions to the literature. First, we focus on the entire ownership and management spectrum, from single owner, single manager firms through diffusely held publicly traded corporations.[4] While providing important insights, most studies focusing on the valuation effects of agency problems concentrate on publicly-traded companies and so are not able to address how agency costs associated with the vertical or horizontal agency problems behave over the complete ownership spectrum. We present such evidence.

We find that private firms in which the owner is also the sole 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

[4] 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) , Andrews, Linn and Yi (2010) and Grinstein, Weinbaum and Yehuda (2010) conclude perquisite consumption is at least in part due to vertical agency problems.

Jensen and Meckling (1976). These results are robust to various control variables as well as statistical methods.

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 more complicated ownership structures such as being owned by multiple families or holding companies. This result is consistent with the hypothesis that as the number and types of shareholders increase the incentive for any individual shareholder to incur the costs of monitoring managers decreases because the benefits associated with monitoring are proportional to the shareholder's ownership stake (Shleifer and Vishny, 1986; Holderness, 2009). This in turn results in less monitoring than would arise in the case of a single owner.

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 many argue that the horizontal agency problem, which manifests itself in the 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; Roe, 2005; Laeven and Levine, 2008). The exploitation of minority shareholder wealth can take several forms including higher compensation for majority shareholders either directly or indirectly through transfer pricing arrangements between related companies that favors the controlling shareholder, and the direct appropriation of corporate assets by the controlling shareholder for instance through excess dividend payments. Corporate inefficiencies are a manifestation of such actions. 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 minority owners will not be exploited (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) have lower agency costs than firms in which 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 also results in lower agency costs. We document an inverse relation between the ownership stake of the second largest shareholder and agency costs, providing support for the view that minority expropriation is lower in companies where control is more contestable.[5]

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. A firm owned and managed by a single individual has zero agency costs. The zero agency cost firm serves as the baseline case when measuring the agency costs incurred by firms with different organizational and ownership structures. However, no publicly traded firm can be classified as a zero agency cost firm because, by definition, such 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 typically unavailable for private companies which could be classified as zero agency cost firms, in particular private U.S. companies.

[5] These results are consistent with the findings of Lehmann and Weigand (2000). Those authors 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 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. In a related study, Berkman, Cole and Fu (2010) examine the links between political connections and minority shareholder protection in Chinese listed firms.

Three principal features of the financial reporting regulations for U.K. companies which are substantially equivalent for private and public firms provide a measure of assurance regarding the quality of our data. 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 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 work of Ang, Cole and Lin (2000). Ang, Cole and Lin examine self-reported data on small businesses collected via telephone survey methods as part of the National Survey of Small Business Finances (NSSBF). Using a sample of 1,708 domestic U.S. companies for 1992, Ang, Cole and Lin (2000) find that their proxy for agency costs is significantly higher when an outsider manages the firm and is inversely related to the manager's ownership share. Using data from the same survey, Nagar, Petroni and Wolfenzon (2010) find that firms with shared ownership are associated with a larger return on assets. Our study differs from these two papers 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 250,000 private as well as public companies and the data examined cover the multiyear period 2006-2009. The cross-section of companies we examine is diverse across both industries as well as company size. Third, the NSSBF data used by the abovementioned papers contains limited measures of

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

ownership. In contrast, our dataset contains detailed information on ownership and because we have multiyear observations we are able to utilize lagged data on ownership and management as a precaution against joint determination of these variables and agency costs.[7] As part of our analysis we construct and examine an agency cost index (ACI) for our sample firms and for the private companies, the relation between this index and their ownership and management structure. To provide support for the index we show that for the publicly traded companies in our sample the index is related to two commonly referenced indices designed to characterize weak versus strong corporate governance in publicly traded companies (Gompers et al., 2003; Bebchuk et al., 2009) and which have been shown to be correlated with various measures of market value.

In Section I we discuss the nature of the agency costs associated with the vertical as well as horizontal agency problems and outline testable hypotheses. Section II provides a description of the sample. Section III contains a description of how we measure agency costs. Section IV describes the statistical methods and control variables used in the study. Sections V and VI discuss empirical results onvertical agency costs and horizontal agency costs respectively. Section VII presents a discussion of various robustness checks. Section VIII presents a summary of the paper and our conclusions.

I. Theoretical Issues

A. 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 she does not bear the full cost of such excesses. Thus, if agency costs

[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.

are material, these costs should vary inversely with the manager's fractional ownership. Agency costs are therefore predicted to be higher among firms that are not managed by owners compared to those 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 the 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 structures where firms are owned by multiple shareholders we expect the magnitude of vertical agency costs to increase. As the number of shareholders increases the incentive for any shareholder to incur all of the cost of monitoring the managers 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 may 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 monitor managers and see that agency costs are kept low. Agency costs are therefore predicted to increase as firms move from the single-owner structure to more complex ownership structures. Likewise, the magnitude of

vertical agency costs are predicted to increase as the proportion of shareholders managing the firm decreases.[8]

B. 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; Roe, 2005).

Pagano and Roell (1998) suggest that by monitoring the controlling shareholder other large shareholders play an important role in reducing horizontal 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 a 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 choices expropriating minority shareholders are implemented and firm performance is better relative to the single controlling shareholder

[8] Empirical evidence on the monitoring role of large shareholders while extensive is limited to publicly traded companies. Shleifer and Vishny (1988), Wruck (1989), Franks, Mayer and Renneboog (2001) and references cited in footnote 2. 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 (for example Zwiebel (1995) and Bennedson and Wolfenzon (2000).

case. The main shareholder surrenders some control to minority shareholders in order to improve overall firm performance. The prediction is that shared control of firms helps decrease the magnitude of horizontal agency costs. [9]

Pagano and Roell (1998) specify conditions under which multiple large shareholders will cross-monitor each other, reducing expropriation and improving firm performance. In their model expropriation of minority shareholders by a controlling shareholder 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. An empirical implication of these theories is that the magnitude of horizontal agency costs decreases as contestability increases.[10]

II. Data and Empirical Methods

We obtain company data from the FAME database produced by *Bureau Van Dijk*. Each yearly installment contains the latest available ownership and management structure data and 10 years of financial statement data for all public and private companies registered in the U.K. and

[9] 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 the 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.

[10] 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.

Ireland. The data we examine are from the period 2005-2009. We use current year's financial data and lagged ownership and management data in our analysis.

The U.K. Companies Act of 1967 (and subsequent revisions to the act) requires all private and public companies to file annual financial statements that comply with the same accounting standards. All accounts submitted to the Companies House must be audited and certified by an independent accountant. Some small and medium sized companies can claim exemptions from either or both of these requirements and are also allowed to file abridged financial statements.[11] We restrict our analysis to firms that are classified as private limited, public quoted, public quoted AIM, public quoted OFEX, and public not quoted.[12]

For each of the years 2006 to 2009, we identify all firms with total assets of at least £5,000 and revenues of at least £1,000 during each year. These criteria enable us to identify a broad cross-section of ownership and management structures and industry affiliations. Likewise, the criteria mitigate concerns of possible sample selection bias from imposing the size threshold implied by the auditing requirements of the Companies House. Such a restriction might result in a sample that includes only large, successful, single owner-managed firms. The tradeoff is that

[11] The definition of a "small" or "medium" company has changed over time. For accounting periods ending after 30 January 2004, a company is considered small (medium) if one of the following requirements are met: i.) annual revenues are less than 5.6 (22.8) million, ii) balance sheet total is 2.8 (11.4) million or less and iii.) number of employees is less than 50 (250). Small companies are exempt from both auditing and accountant's report requirement whereas medium companies are exempt from auditing requirements but should contain an accountants report. For more details please refer to http://www.companieshouse.gov.uk/about/gbhtml/gba3.shtml#three. Since it is possible that different types of exemptions might affect accounting quality, we control for accounting types in our multivariate analysis. In addition, we repeat our analysis using a sub-sample of firms that are not exempt from auditing requirements. Results are qualitatively similar and are available on request.

[12] Firms belonging to the public quoted category are those that are listed on the London Stock Exchange (LSE). Firms belonging to the public quoted AIM group are those that are listed on the Alternative Investment Market (AIM). OFEX is an independent public market specializing in smaller companies who do not wish to incur the expense of listing with AIM. Finally, public not quoted firms are those which have public debt outstanding but not equity. Firms with different ownership structures might differ in their accounting practices such as recognition and timing of revenues and costs because of tax considerations. All U.K. firms, both public and private, are subject to the same tax laws (Ball and Shivakumar, 2005; and Bell and Jenkinson, 2002) so tax code driven ownership structures should not be present in our sample.

our sample contains some very small firms. We show that our findings are not influenced by these size criteria.

Appendix A presents a detailed description of the sample construction. The final sample consists of 612,449 firm-year observations. More specifically, the sample consists of 161,177, 161,571, 154,739 and 134,962 firms for the years 2006, 2007, 2008 and 2009 respectively. This dataset is an unbalanced panel with 259,893 unique firms.[13] There are 89,729 firms with one observation, 56,607 firms with two observations, 44,722 firms with three observations and 68,835 firms with four observations. Table I presents the distribution of ownership structures for the sample. Column 1 of Table I lists the seven different ownership structures into which firms are categorized; (1) private firms that are owned by a single individual, (2) private firms that are owned only by a single family, (3) private firms that are owned by multiple families only, (4) private firms that are owned jointly by a combination of families and private companies including investment funds, (5) private firms that are owned exclusively by private holding companies, (6) firms that are registered as public companies but not listed on a stock exchange, and (7) public firms that have equity securities listed on a stock exchange.[14] The even-numbered columns of Table I present the number of firms that are owner-managed. 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. Of particular interest are the firms that are owned

[13] Among these, 90,855 firms are subject to mandatory auditing requirements of the Companies House. These firms represent 192,839 firm-year observations.

[14] Firms can be registered either as private companies or public companies. The most important distinction between these companies relates to their ability to raise funds in capital markets. Public companies have unrestricted right to offer shares but some public firms choose not to do so. These companies are classified as Public, Not Quoted. Such firms, though technically private firms, are larger, more transparent and have to adhere to additional legal regulations compared to firms registered as private companies. There are no private companies owned outright by public companies or public holding companies.

and managed by a single individual. There are approximately 30,000 such firms covering a wide-array of industries in each of the sample years. We define this group as the zero-agency cost group.

The classifications shown in Table I denoted “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 those owned by a single family but separate the two groups for completeness.

The classifications denoted “Families & 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 single individual or family. Such cases really just amount to the firm having one-owner or being owned by one-family, and were so classified.

Table II presents information on the industries to which the sample firms belong. There are significant variations in how private and public firms are distributed among industry sectors. While only 6% of one owner firms belong to the manufacturing sector, nearly 32% of public quoted firms belong to this sector. On the other hand, we observe that the proportion of firms belonging to the construction and real estate sectors decrease monotonically as we move from one owner firms to public firms. Note also that a larger proportion of private firms belong to the retail trade sector and the ‘other services’ sector compared to public firms. In sum, these differences highlight the importance of controlling for industry effects in the analyses to follow.

Table III presents company-level summary statistics for firms belonging to the ownership structure groups. Private firms are typically smaller than public firms. One owner firms have average assets of £0.29 million. Median assets increase monotonically as the number of owners

increases. Private firms on average are more levered consistent with the findings reported by Brav (2009) for private and public firms in the U.K. While private firms are smaller and more levered than public firms, they are associated with higher turnover and profitability ratios as measured by asset turnover (AT) and earnings before interest taxes and depreciation scaled by assets (EBITD) respectively. Profitability decreases as ownership becomes more diffuse (moving left to right across the table). CRIF Decision Solutions Ltd. constructs a measure of the probability of company failure labeled Quiscore computed using a proprietary model and variables similar to those employed in the computation of the Altman Z-score.[15] A Quiscore can take any value within the range 0 to 100 where the following interpretations apply: 0-20 (high risk band), 21-40 (caution band), 41-60 (normal band), 61-80 (stable band) and 81-100 (secure band). The distribution of Quiscores across ownership classifications indicates the index values for the sample firms tend to fall in the normal or better regions. Firms owned by a single individual or a single family are on average younger. Finally, to mitigate the effect of outliers, we winsorize the top 1 percent and bottom 1 percent of all financial variables.

III. Measures of Agency Costs

Tirole (2006) suggests that two important manifestations of agency problems are 1) inefficient investment choices, and, 2) inefficient or insufficient effort being expended by managers. The magnitude of any agency costs should therefore depend on factors such as inefficient asset utilization (in the form of poor investments), excessive and unwanted production costs and perks (resulting in higher expenses), and insufficient effort exerted by management

[15] Quiscore is produced by CRIF Decision Solutions Ltd. Quiscore is a measure of the likelihood of company failure in the year following the date of calculation. In determining a Quiscore value for a company, a number of separate calculations are performed using various combinations of financial characteristics including turnover (revenue), pre-tax profit, working capital, intangibles, cash and bank deposits, creditors, bank loans and overdrafts, current assets, current liabilities, net assets, fixed assets, share capital, reserves, shareholders funds. The Altman Z-score requires the ratio of the market value of equity to the book value of equity for its computation and so cannot be computed for private companies.

(resulting in lower revenues and earnings). As already noted, we take the position that the single-owner single-manager firm has zero agency costs. We therefore estimate a proxy for agency costs by computing the *difference* between a specific characteristic for a firm that is predicted to be influenced by the presence of an agency problem and the average of the same characteristic for the zero agency cost firms in the sample.

We measure the efficiency of asset utilization using the asset turnover ratio (sales to assets, AT) which reflects how management uses the assets under control for revenue generation (Ang, Cole and Lin, 2000; Singh and Davidson, 2003). We measure production cost efficiency using operating expenses divided by sales (OPEXP) (Ang, Cole and Lin, 2000; Nagar, Petroni and Wolfenzon, 2010).[16] The ratio earnings before interest taxes and depreciation/total assets (EBITD) is used to capture aggregate efficiency.[17]

We compute a proxy for the agency costs of a firm by subtracting an efficiency variable's value for the firm from the average value of the efficiency variable for the zero agency cost firms operating in the same industry. We scale this difference by the average value of the variable for the zero agency cost firms. For a firm j belonging to industry group i, the agency cost proxy is calculated as follows.

$$\text{Agency Cost Proxy}_{j,i} = \frac{\text{Average Value of Efficiency Variable}_{\text{zero agency,i}} - \text{Efficiency Variable Value}_{j,i}}{\text{Average Value of Efficiency Variable}_{\text{zero agency,i}}} \quad (1)$$

We recognize that each of the three agency cost proxies has some unique limitation. Therefore, we also calculate an index of agency costs based upon a multivariate factor analysis

[16] Singh and Davidson (2003) examine SG&A expenses.

[17] Studies examining publicly traded companies use market-based measures such as a pseudo- Tobins'Q measure or Return on Equity to infer agency costs. We chose to use accounting performance measures as a majority of our sample includes privately held firms for which market performance measures are unavailable.

of the three proxy variables. We find a single dominant factor explains most of the non-unique variance for each agency cost proxy variable.[18] We then compute the factor score for this dominant factor for each firm in the sample for each year. These measures serve as our index of agency costs (hereafter labeled ACI).[19] More positive values of ACI represent larger agency costs.

In order to establish the credibility of the ACI index we next examine the relation between the index and measures of corporate governance that have been found to differentiate publicly traded companies. Because the corporate governance data is available only for publicly traded companies we must restrict ourselves to that subset of the sample. Extant theory tells us that firms with weaker corporate governance should be associated with higher agency costs, ceteris paribus. Gompers, Ishi and Metric (2003, GIM) find that a broad corporate governance index , for which a higher value of the index indicates weaker governance (shareholder rights), is negatively correlated with firm value as well as stockholder returns for public companies. Cremers and Nair (2005) and Bebchuk, Cohen and Ferrell (2009) argue that not all the provisions reflected in the GIM Index have explanatory power and suggest an alternative governance index made up of a subset of the factors used in the construction of the GIM index. Bebchuk et al. label the revised index the entrenchment (E) index. The findings of these studies suggest that weak governance, as reflected by weak shareholder rights, is associated with lower firm value or performance, implicitly because it reflects a situation in which greater agency costs are present.

[18] See Seber (1984, Ch. 5) for a discussion of methods for identifying the number of common factors present in a covariance matrix.

[19] Factor scores are the estimated values of the unobservable common factor. For details on the computation of factor scores see Seber (1984).

We examine the relationship between the ACI index and the GIM and E indices for the publicly traded firms in our sample. We use the RiskMetrics governance data for firms listed on the London Stock Exchange to construct the GIM Index and the E Index for the U.K. publicly listed companies in our sample.[20] Our indices are not perfect matches for those computed for U.S. companies because some of the measures used to construct the U.S. indices are not available for U.K. companies, but they are nevertheless close substitutes. The results are presented in Table IV. In all specifications, some of which include control variables, coefficient estimates on the governance indices are positive and statistically significant indicating that the agency cost index ACI is increasing in the two computed governance indices. Recalling that greater values of the governance indices represent weaker governance and that larger values of the ACI index indicate greater agency costs, we conclude that the ACI index is capturing agency costs for the publicly traded firms in our sample. While a corresponding analysis for private companies is not possible we feel comfortable concluding the ACI index is a legitimate proxy for agency costs.

IV. Statistical Methods and Controls

A. Statistical Methods

Our data constitute an unbalanced panel spanning 2006-2009. The agency cost index ACI is our dependent variable for the results presented in Panels A and B of Tables V through X. Panel C of Tables V through X presents results using alternate proxies for agency costs as the dependent variable. We control for company-level characteristics, industry affiliation and time, all of which are discussed more fully in the next section. All of the models are estimated using ordinary least squares. We present standard errors for tests of the hypothesis that estimated

[20] We are grateful to Carol Bowie of the Riskmetrics Group for making the detailed UK data available to us.

coefficients equal zero that account for heteroscedasticity and, following the recommendations in Petersen (2009), also compute coefficient standard errors based upon a clustering method to account for residual dependencies. Robustness checks including tests based upon matched samples constructing using non-parametric matching methods are discussed in Section VIII.

B. Company Ownership

An important issue in studies focusing on ownership structure is whether company ownership structure and firm performance are endogenous relative to one another. Put simply, while ownership structure may affect performance, it is possible that performance may also be one of the determinants of ownership structure. We address this issue by first examining whether ownership for our sample is sticky, that is, we examine whether ownership tends to vary over time for our sample companies.[21] Constant ownership levels would be a sufficient condition to motivate its use as an independent variable in a performance-type regression (Smith and Watts (1992)). We first examine the private companies in our sample for changes in ownership structures and find that only 4.7% of the private firms in the sample (i.e., 12,036 out of 255,541) were associated with an ownership change between 2006 and 2009.[22] Even though we find that ownership does not tend to vary over time, we use lagged ownership and management classification data in our analysis to minimize any possibility of contemporaneous jointly determined effects.

[21] 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 Woodburn, 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 resource constraint and the fact that such ownership interests are not easily transferable investors in close corporations cannot easily adjust their ownership positions as conditions change.

[22] We also note that the proportion of firms that moved from simple to complex ownership structures (i.e., from one owner to multiple families) is approximately equal to the proportion of firms that move from complex to simple structures (i.e., public quoted to wholly owned subsidiary).

C. Controls

We control for company-level characteristics, industry membership and time. Appendix B describes how the control variables are measured.

The company-level controls include a measure of firm size, firm age, bank borrowing, general leverage, default risk and an indicator of accounting disclosure. Company size may be associated with the extent or lack of an agency problem. Williamson (1967, 1985) for instance suggests economies of scale and other related factors influence the size of the firm but that decreasing returns to managerial efficiency, span of control issues, may emerge in larger firms. Conversely, large firms may be those which have survived and grown due to operating efficiently. We control for the size of the firm using the log of annual sales and its square to account for any non-linear size-related effects. Older firms may be more efficient than younger firms and the fact that they have survived may suggest the agency costs for such firms are smaller. On the other hand older firms may reflect situations where investment opportunities have been largely exhausted and excess cash flow permits greater abuse of resources. We therefore also control for firm age. We calculate firm age as the number of years between the incorporation date and financial statement date.

In the absence of access to public equity markets, private firms rely on debt provided by owners and external institutions such as banks as their primary source of financing.[23] 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 they make to a firm. We include bank debt scaled by total assets as an independent variable. We also include total liabilities scaled by total assets as a control. We also

[23] 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.

control for the likelihood of company failure in the subsequent year by including dummy variables for four of the five bands (high risk, normal, stable and secure) into which the Quiscore of a company falls with the 'caution' band being the excluded group.[24]

Small and medium firms are eligible to submit abridged financial statements under UK law. We assign the firms in our sample to one of seven groups based on the type of financial statements they file: a) small company statements b) medium company statements, c) total exemption small, d) total exemption full, e) partial exemption f) full accounts and g) group accounts. We include dummy variables to control for the effects of the different levels of reporting requirements with small company statements being the excluded group. Finally we include the number of subsidiaries and number of holding companies associated with a firm as control variables.[25] We group the measures described in the preceding paragraphs together under the umbrella *Company Specific Controls*.

We include dummy variables to control for industry affiliation. The industry dummies are based upon the industry sectors presented in Table II with the Agriculture, Hunting and Forestry industry being the excluded industry and are grouped under the umbrella *Industry Affiliations*.[26] Lastly, we control for time using dummies for each year, with the first year indicator (2006) being the excluded dummy variable.

[24] Please refer to the discussion in Section IV and Appendix B.

[25] We redid our analysis excluding all subsidiaries. Results do not vary significantly and so are not reported.

[26] Separately we also 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. The results are qualitatively the same and so are not reported.

V. Results – Vertical Agency Costs

A. Owner-Managed and Non-owner-managed Firms

First, recall that more positive values of ACI represent greater agency costs. The results presented in Table V emphasize the difference in agency costs between owner-managed and non owner-managed firms. We define a dummy variable NOM which equals 1 for a non-owner-managed firm and 0 otherwise. Panel A presents three models which each include the dummy variable NOM along with various sets of control variables. Models (1) and (2) of Panel A account for heteroscedasticy in the computation of coefficient standard errors using the methods proposed by White (1980). All models which indicate 'Firm Level Clustering' use standard errors computing using the methods proposed by Petersen (2009) to account for residual dependencies.

The coefficient estimate on NOM measures the incremental agency cost associated with non-owner-managed firms relative to owner-managed firms. The coefficient estimate on NOM is positive and significant in all model specifications indicating that on average, non-owner-managed firms are associated with greater agency costs relative to owner-managed firms, accounting for the controls. The results are consistent with the hypothesis that agency costs increase as firms move from the single-owner structure to more complex ownership structures. These results, along with those presented by Ang, Cole and Lin (2000), indicate that the hypothesis is supported for firms domiciled in both the U.K. and the U.S. The results are robust to the controls we include as well as the methods we employ in the computation of coefficient standard errors.

We provide two additional sets of tests to further examine the robustness of our conclusions. Panel B presents estimated coefficients for two sub-samples. As discussed in

Section IV some companies are exempt from auditing requirements or accountant certification or both when they file financial statements with the Companies House. To address potential concerns about how these exemptions might influence the quality of the financial data reported we identify sample firms that are not exempt from the aforementioned requirements. These companies constitute the first sub-sample examined. The second sub-sample includes firms that have the highest probability of financial distress as indicated by a Quiscore less than 20. These firms are selected as an extreme case as they may behave differently because of their financial status. The estimation results based upon the sample defined by the accounting quality restriction are presented as model specification (1) of Panel B. The estimation results based upon the sample defined by a higher probability of distress are presented as model specification (2) of Panel B. The dependent variable in these specifications is the agency cost index (ACI). The results presented in Panel B are similar to those presented in Panel A. The coefficient estimate on NOM is positive and significant for both models (1) and (2) of Panel B, indicating that on average, non-owner managed firms are associated with greater agency costs relative to owner-managed firms.

Panel C presents estimation results using two alternate measures of agency costs. First, we replace ACI as the dependent variable with an agency cost measure computed using only the ratio of operating expenses to sales. The agency cost estimate is computed using equation (1) where the 'Efficiency Variable' is the ratio of operating expenses to sales. The operating expenses to sales ratio has been used as a proxy for agency costs elsewhere in the literature (Ang, Cole and Lin (2000), Nagar, Petroni and Wolfenzon (2010)). Second, we construct an alternate agency cost index (ACI-2) and use this new variable as the dependent variable.. The difference between ACI and ACI-2 is that the operating expenses measure used in calculating ACI-2

includes the cost of goods sold.. Model specifications (1) and (2) of Panel C present the new results. The coefficient estimate on NOM is positive and statistically significant for both models (1) and (2), providing further corroboration for the results presented in Panels A and B.

We conclude from the results presented in Table V that agency costs are significantly greater for non-owner managed firms and that this conclusion is robust.

C. Ownership Structure and Agency Costs

While the results presented in Table V lead to the general conclusion that agency costs are larger in non-owner managed firms, the hypothesis also suggests that as we move away from the single-owner firm structure to more diffuse ownership structures that we should observe increasingly larger agency costs. We now examine how agency costs change as firms move from simple to more complex ownership structures. We define six dummy variables. ONE FAM, MUL FAM, INDI_FAM, WO, PUBLICNQ and PUBLICQ which equal 1 if a firm is owned by a single family, owned by multiple families, owned by a combination of families and firms, owned by holding companies, firm is categorized as public, not quoted and public, quoted respectively and zero otherwise respectively, and zero otherwise. Table VI presents estimation results for models replacing the non-owner managed dummy (NOM) with the ownership dummies just mentioned. The structure of Table VI is otherwise the same as Table V, including the use of ACI as the dependent variable in Panels A and B, agency costs based upon the ratio of operating expenses to sales in model (1) of Panel C and ACI-2 in model (2) of Panel C. The controls are the same as those in Table V.

The coefficient estimates for these ownership dummy variables measure how agency costs vary across firms with complex ownership structures when compared to firms with the simplest ownership structure (i.e., firms that are owned by a single individual). In all

specifications, we observe that the coefficient estimates on all dummy variables are positive and significant and generally increase monotonically from ONE FAM to PUBLICQ. The results presented in Panel B reflect the same pattern in the estimated coefficients as those presented in Panel A. However, the sizes of the estimated coefficients for model (1) of Panel B indicate that private companies exhibiting high 'accounting quality' in general tend to have lower agency costs however this does not appear to be true for public quoted companies (compare with the results for model (3) of Panel A). Likewise, firms in the high probability of financial distress sub-sample tend to exhibit larger coefficient values than those presented for model of (3) of Panel A, except for the cases where there is a single owner or where multiple family ownership is present. The results presented in Panel C again corroborate the findings in Panel A. Overall, these results provide support for the hypothesis that the magnitude of agency costs increase as firms move from simple to complex (generally more diffuse) ownership structures.

D. Further Multivariate Evidence

We have documented that agency costs are higher among non-owner-managed firms and in firms with complex (more diffuse) ownership structures. We conclude our analysis of vertical agency costs in private firms by now controlling for whether a firm is owner-managed or non-owner-managed.. We define the following dummy variables: ONE OWNER - NOM, ONE FAM – OM, ONE FAM – NOM, MUL FAM - OM, and MUL FAM – NOM which respectively equal 1 if a firm is owned but not managed by a single individual, owned and managed by a single family, owned but not managed by a single family, owned and managed by multiple families and owned but not managed by multiple families, respectively, and zero otherwise. The coefficient estimates on these dummy variables reflect the agency costs associated with the respective firm

classifications relative to a firm that is owned and managed by a single individual (i.e., the zero agency cost firm).

The estimation results presented in Table VII include the full set of dummy variables just defined. The control variable specifications are as in the prior tables. The dependent variable for model specifications 1 through 3 in Panel A is ACI. Firms that are owned and managed by a single individual have lower agency costs than firms with any other ownership and management structure. The presence of a non-owner manager consistently results in larger agency costs as reflected in the positive and significant coefficients on the variables ONE OWNER – NOM, ONE FAM – NOM, MUL FAM – NOM. Interestingly the coefficient on the variable MUL FAM – NOM is less positive than the coefficient on the other two variables suggesting that the presence of multiple families may reflect more efficient monitoring of non-owner managers.

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 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. We estimate an alternative specification (model specification 4 of Table VII, Panel A) substituting the variable *Concentration* for the dummy variables used heretofore to identify ownership/management differences. The coefficient estimate on *Concentration* is negative and significantly different from zero. The result confirms that if *Concentration* is more positive, indicating that shareholders have a greater representation as directors, then agency costs are smaller. Results using the subsamples and alternate agency cost proxies defined earlier are presented in Panels B and C and are qualitatively similar.

E. Summary

The results presented in this section indicate: 1) companies managed by a non-owner exhibit larger agency costs, 2) companies which exhibit more diffuse ownership exhibit larger agency costs, 3) the marginal effect on vertical agency costs of the presence of a non-owner manager, conditional on the level of ownership, is positive. These results are broadly consistent with the basic propositions of the economic theory of agency articulated by Jensen and Meckling (1976) and others.

VI. Results – Horizontal Agency Costs

A. Ownership Concentration

Horizontal agency costs arising from the expropriation of minority shareholders by a majority shareholder are likely to be more severe in close corporations (Roe, 2005; Gillan, 2006). In this section, we focus exclusively on private firms with multiple shareholders in our examination of this issue. We first test the proposition that horizontal agency costs are lower in firms with shared control. 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. Owners of publicly traded corporations can exert decision control with a relatively low ownership stake (Gillan, 2006). Private firms can be controlled only by owning at least 50% of the firm.[27] Private firms are owned by few shareholders (the average number of shareholders in our sample of private firms is 2 and

[27] 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 4 and the references cited therein.

therefore, it would be relatively easy for shareholders to block the decisions of any owner who owns less than a 50%stake.[28]

We define two dummy variables, LOW CONC equals 1 if the ownership stake of the largest shareholder is less than 50% and HIGH CONC equals 1 if the ownership stake of the largest shareholder is greater than 75%. When included in a model with an intercept, the coefficient estimates on these dummy variables measure the agency costs of the diffusely held and highly concentrated firms relative to medium concentration firms. The intercept therefore reflects the agency costs of medium concentration firms.

We begin by testing whether greater shared control is associated with smaller horizontal agency costs. Firms in which the largest shareholder owns less than 50% of the shares in principle will be firms where control is shared to a greater extent than firms in which the largest shareholder owns more than a 75% stake. Dominant large shareholders in the high concentration category have more complete control and, thus, have a greater opportunity 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. Model specification 1 of Table VIII, Panel A, presents estimation results which include the dummy variables LOW CONC and HIGH CONC.[29] The results indicate that low concentration firms are associated with lower agency costs relative to medium concentration firms and this difference is significant at the 1 percent level. On the other hand high concentration firms are associated higher agency costs than medium concentration firms. The results are robust to the inclusion of control variables and accounting for residual dependencies through clustering (not reported).

[28] Dyck and Zingales (2004) also use a 50% cutoff threshold.

[29] The model was also estimated including all control variables, with and without clustering. The results were qualitatively the same as those presented.

As the results for model 1 may be influenced by whether the manager is also an owner we next define a dummy variable OM that is set to 1 if firms are entirely managed by owners and 0 if not. We then compute an interaction variable by multiplying OM times HIGH CONC. We include this interaction variable in model specifications 2 and 3 of Table VIII, Panel A. The results indicate that the greater agency costs of high concentration firms relative to medium concentration firms is driven by the subset of firms that are not entirely managed by owners. Results using the subsamples and alternate agency cost proxies examined earlier are presented in Table VIII, Panels B and C and are qualitatively similar.

B. Shareholder Monitoring and Control Contestability

As discussed earlier, a complimentary hypothesis is that the magnitude of horizontal agency costs decreases as control becomes more contestable. The agency costs associated with the horizontal agency problem are predicted to be smaller when a large, non-controlling, shareholder is present to monitor and contest decisions of the controlling shareholder. We test this hypothesis using two different measures defined to capture the impact of the second largest shareholder on the level of agency costs. The first measure is the ownership stake of the second largest shareholder (SECOND) and the second is the difference between the stakes of the largest and the second largest shareholders (DIFF). Model specification 1 of Table IX, Panel A,presents results from a regression in which the ownership stake of the second largest shareholder (SECOND) is included as an additional explanatory variable. The dependent variable proxying for agency costs is ACI. The results reported indicate that the estimated coefficient on SECOND is negative and significantly different from zero. This result is consistent with non-controlling shareholders acting as monitors as well as acting to contest decisions which would be detrimental

to minority shareholders, 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 might depend on the size of 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 the level of agency costs, we interact the stake of the second largest shareholder with the dummy variables LOW CONC, MED CONC and HIGH CONC defined earlier, and include these interaction terms in the model. Model specifications 2 and 3 of Table IX, Panel A, present the results. The results indicate the estimated coefficients on the interaction variables are all negative and statistically significant at conventional levels. These results suggest that the presence of a large non-controlling shareholder acts to reduce horizontal agency costs independently of ownership concentration. Results using the subsamples and alternate agency cost proxies are presented in Table IX, Panels B and C and are qualitatively similar.

Contestability may also be a function of the difference in the sizes of the respective holdings of the largest and next largest shareholders. If the share of the largest shareholder is much larger than all other owners, the ability of smaller owners to prevent expropriation may be limited. Put differently, horizontal agency costs may be positively related to the difference in the ownership stakes of the largest and the second largest shareholders. We test this prediction by including DIFF as an explanatory variable and present the estimation results in model

specification 1 of Table X, Panel A. The variable DIFF equals the ownership stake of the largest shareholder minus the ownership stake of the next largest shareholder.[30] We find that the estimated coefficient on DIFF is positive and statistically significant. That is, the larger the difference between the stakes of the top two shareholders of the firm, the higher the agency cost.

We next define three interaction variables defined by multiplying the ownership concentration variables with DIFF. The interaction variables are included in model specification 2 of Table X, Panel A. Results indicate that the impact of DIFF decreases monotonically as we move form 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. Results using the subsamples and alternate agency cost proxies are presented in Table X, Panels B and C, and are qualitatively similar.

VII. Robustness Tests

We have tested the robustness of our results in several additional ways. We first reexamine the results using a comparison of agency costs between non-owner managed firms and a matched sample of owner-managed firms. We first construct a matched sample of non-owner managed firms and owner-managed firms following the non-parametric matching methods developed by Rosenbaum and Rubin (1983) and Heckman et al. (1997, 1998a, 1998b, 1998c).. We start with a "treatment group" of firms that are not owner-managed and identify a "control" group of firms that are owner-managed with identical or very similar observable

[30] Model estimation results (not reported) for models including all control variables and accounting for residual dependencies using clustering do not lead to qualitatively different results.

characteristics for each firm in the treatment group. The final step is to compute the difference in the dependent variable between the treatment and control firms.

Propensity-score matching of the '5-nearest neighbors' (Leuven and Sianesi, 2003) is the basis for identifying the control firms. The independent variables used for matching are firm age, sets of dummy variables indicating industry affiliation, sets of dummy variables indicating firm riskiness and sets of dummy variables indicating the type of accounts submitted by firms. For all practical purposes we match exactly on these independent variables. One of the requirements for the successful implementation of the matching method is a sufficiently large overlap between the distribution of the observable characteristics of the treated and control firms – the "common support" condition. The unique cross-sectional richness and detailed ownership coverage of our data ensures that this condition is met for most of the sub-sample tests we perform. Results, not reported for the sake of brevity, are consistent with the results presented in Tables V through X.

In addition to examining the agency cost proxy based (equation (1)) based upon the operating expenses to sales ratio, we also examined t two additional agency costs proxies (again see equation (1)) based upon the asset turnover ratio and separately operating profit scaled by total assets individually and found results consistent with those reported in the tables.

Further, we constructed a more conservative sample by by excluding firms for which book value of assets changed by over 30% from the previous year (following Ball and Shivkumar, 2005). Results based upon this restricted sample were again qualitatively the same as those presented in the tables. We also repeated the analysis by eliminating firms that experienced an ownership change during the four sample years. The results based on this restricted sample are again similar to those reported in the tables.

VIII. Summary and Conclusions

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 arises when the owners themselves vie for resources, and importantly situations in which a controlling owner has incentives to exploit minority owners. 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 present tests of predictions regarding vertical agency costs as well as horizontal agency costs and find support for the basic tenets of both theses. Our results are based upon a unique data set containing information on the ownership and management of private as well as publicly traded companies.

We find that private firms experience lower agency costs when compared to public firms. More importantly, we document that a firm that is owned and managed by a single individual has lower agency costs than firms with other ownership and management structures, thus providing direct confirmation of the prediction first laid out by Jensen and Meckling (1976). 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 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 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%) have lower agency costs than 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 leads to lower agency costs. We also 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.

Appendix A: Identification of the sample

Data are obtained from updates of the FAME data base produced by *Bureau Van Dijk* dated October 2005, October 2006, November 2007, October 2008 and October 2009. We use current year's financial data and lagged ownership and management data. For example, financial data for year 2006 come from the October 2006 update and ownership and management data are extracted from the update dated October 2005.

Section 1 Ownership Structures

Table A.1 Initial screening criteria for company selection

Criteria Employed	2006	2007	2008	2009
Include firms with Min. Assets of $5,000 and Min. Sales of $1,000	280,728	279,270	269,060	246,039
Exclude firms with the following SIC codes: 10-14 (mining), 40 (electricity), 64-70 (finance), 75 (social services), 80 (education) SIC = 7415 or 7487 (management of holding companies category. These firms solely exist for the purpose of being a holding company and hence, financial information is often unavailable)	200,019	192,651	182,996	168,233
Exclude firms where account type is not available	199,500	191,259	181,716	167,133
Restrict sample to private limited, public not quoted, public quoted firms on LSE, AIM and OFEX	187,394	180,522	173,019	158,377
Net after exclusions	187,394	180,522	173,019	158,377
Of which				
Private firms where all owners are individuals	128,527	123,053	116,109	103,168
Private firms with at least one non-individual owner, such as a holding company	54,847	53,715	53,382	51,949
Public, Not Quoted and Public, Quoted Firms	4,020	3,754	3,528	3,260

Table A.2 Stand-alone firms

Firms in this category are classified as stand-alone firms as these firms do not have any subsidiaries and are not affiliated with any holding companies. The following table documents the steps taken to further categorize firms owned by individuals.

Criteria Employed	2006	2007	2008	2009
Private firms where all owners are individuals *(From Table A.1)*	128,527	123,053	116,109	103,168
Exclude private firms with unclear owner names[31]	124,241	118,612	111,866	99,025
Exclude private firms where the stake of the identified owners is less than 98%	119,141	118,282	111,605	94,650
Of which				
Net after exclusions	119,141	118,282	111,605	94,650
Private firms in which a single individual owns 100% of the firm	46,674	46,598	45,254	40,247
Private firms in which multiple individuals own 100% of the firm	72,467	71,684	66,351	54,403

Table A.3 Private firms with at least one non-individual owner

The following table documents the steps taken to categorize firms where a non-individual such as a mutual fund, bank, or industrial company is present as a shareholder.

Criteria Employed	2006	2007	2008	2009
Private firms with at least one non-individual owner *(From Table A.1)*	54,847	53,715	53,382	51,949
Exclude private firms with unclear owner names				
Exclude private firms where the stake of the identified owners is less than 98%				
Net after exclusions	42,412	43,719	43,711	40,726
Of which				
Private firms owned by a combination of individuals and other firms	4,577	5,354	5,173	3,580
Private firms wholly-owned by other firms	37,835	38,365	38,538	37,146

[31] We search for characters such as 'executors of', 'family', 'trustee', 'committee', 'foundation' etc., and for firms where multiple shareholders are listed on the same line. A complete list of search terms employed is available upon request. For such firms, it is impossible to accurately identify ownership stakes.

Table A.4 Summary of ownership structures for firms in the sample

Ownership Structure	2006	2007	2008	2009
Private firms in which a single individual owns 100% of the firm	46,674	46,598	45,254	40,247
Private firms owned by One Family	39,612	38,279	35,429	29,718
Private firms owned by Multiple Families	32,855	33,405	30,922	24,685
Private firms owned by a combination of individuals and other firms	4,577	5,354	5,173	3,580
Private firms wholly-owned by other firms	37,835	38,365	38,538	37,146
Public, Not Quoted and Public, Quoted Firms	4,020	3,754	3,528	3,260
Total	165,573	165,755	158,844	138,636

Section 2 Management Structures

In order to categorize firms into owner-managed and non owner-managed groups, we match firms from the ownership file with those in the directors file using the company's registered number issued by Companies House. We examine the directors file carefully and remove all name duplications. We retain current directors and calculate their age and tenure as of the current year's financial statement date. We determine the presence of shareholders among directors through two methods. First, we identify cases where the directors file explicitly states that a particular director is a shareholder. Since it is possible that some directors who are shareholders are not stated as such, we complement the information provided by *Bureau Van Dijk* by a combination of programmable and manual searches to make sure we identify all shareholders among directors. The following table provides the distribution of firms based on owner-managed and non owner-managed categories. Owner-managed firms (OM) are those where the ratio of shareholders among directors to total number of directors is equal to 1, that is where the following ratio is equal to 1 The remaining companies in the sample are identified as non-owner-managed (NOM).

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

$$\textbf{Concentration} = \frac{\textbf{Number of shareholders amongst managing directors}}{\textbf{Number of managing directors}}$$

	2006		2007		2008		2009	
	OM	NOM	OM	NOM	OM	NOM	OM	NOM
One Owner	33,759	12,568	33,721	12,673	32,645	12,385	29,638	10,496
One Family	35,190	4,174	34,190	4,037	31,619	3,752	26,683	2,993
Multiple Families	24,957	7,609	25,148	8,040	23,103	7,665	18,715	5,919
Families & Firms	1,239	3,244	1,404	3,846	1,311	3,765	896	2,620
Holding Companies		37,326		37,781		37,937		36,637
Public, Not Quoted		2,813		2,558		2,381		2,185
Public, Quoted		1,207		1,196		1,147		1,075
Total	**164,086**		**164,594**		**157,710**		**137,857**	

Final Sample

As a final selection criteria, we require that all firms in the sample have non-missing values for AT (Total sales / Total assets), OPEXP (Operating expenses / Total sales), and EBITD (Earnings before interest, tax, depreciation and amortization / Total assets) values, as defined in Appendix B. Application of these criteria results in the following sample:

	2006		2007		2008		2009		Row Total
	OM	**NOM**	**OM**	**NOM**	**OM**	**NOM**	**OM**	**NOM**	
One Owner	33,542	12,416	33,519	12,534	32,444	12,235	29,440	10,353	**176,483**
One Family	34,942	4,140	33,947	4,012	31,381	3,735	26,483	2,974	**141,614**
Multiple Families	24,728	7,494	24,894	7,918	22,900	7,544	18,513	5,814	**119,805**
Families & Holding Cos.	1,226	3,103	1,391	3,701	1,293	3,612	884	2,519	**17,729**
Holding Companies only		35,609		35,938		36,095		34,747	**142,389**
Public, Not Quoted		2,788		2,532		2,361		2,164	**9,845**
Public, Quoted		1,189		1,185		1,139		1,071	**4,584**
Year-wise Totals	**161,177**		**161,571**		**154,739**		**134,962**		**612,449**

Appendix B
Variable Definitions

Variable	Definition
Accounting Quality	Set of 7 dummy variables representing the different types of accounts filed by firms.
AGE	Firm age measured in years from date of incorporation to statement date
ASSETS	Total assets, measured in thousands
AT	Asset turnover ratio, defined as Total sales / Total assets
BANKLOAN	Bank loans outstanding / Total assets
Concentration	No. of shareholders among directors / No. of directors
DIFF	Difference between the ownership stakes of the largest and second largest shareholders
EBITD	Earnings before interest, tax, depreciation and amortization / Total assets
E-Index	Index of corporate governances constructed according to Bebchuk, Cohen and Ferrell (2009)
G-Index	Index of corporate governances constructed according to Gompers, Ishi and Metrick (2003)
Financial Characteristics	SIZE, $SIZE^2$, AGE, BANKLOAN, T.LIABILITIES, NBRSUBS, NBRHOLD
HIGH CONC	Dummy variable that equals 1 if the largest shareholder owns more than 75% of the firm and zero otherwise
ACI	Agency cost index equal to the factor score calculated from a factor analysis of deviations of AT, OPEXP and EBITD from the respective averages for the zero agency cost firms, first principal factor
ACI-2	Agency cost index equal to the factor score calculated from a factor analysis of deviations of AT, OPEXP including cost of goods sold and EBITD from the respective averages for the zero agency cost firms, first principal factor
INDI_FAM	Dummy variable that equals 1 if the firm is owned by a combination of families and holding companies and zero otherwise
Industry Controls	Set of 19 dummy variables representing the 19 industry sectors presented in Panel B, Table 1
Largest Stake	Ownership stake of the largest shareholder
LOW CONC	Dummy variable that equals 1 if the largest shareholder owns less than 50% of the firm and zero otherwise
MED CONC	Dummy variable that equals 1 if the largest shareholder owns between 50% - 75% of the firm and zero otherwise
MUL FAM	Dummy variable that equals 1 if the firm is owned by a multiple families and zero otherwise
MUL FAM - NOM	Dummy variable that equals 1 if the firm is owned by multiple families and not managed by them and zero otherwise
MUL FAM - OM	Dummy variable that equals 1 if the firm is owned and managed by multiple families and zero otherwise
NBRHOLD	No. of holding companies (direct and indirect holding companies)
NBRSUBS	No. of subsidiaries (at least 50% owned)
NS	Dummy variable that equals 1 if the firm is classified either as INDI_FAM or

Variable	Definition
	WO and zero otherwise
ONE FAM	Dummy variable that equals 1 if the firm is owned by a single family and zero otherwise
ONE FAM - NOM	Dummy variable that equals 1 if the firm is owned by a single family and not managed by that family and zero otherwise
ONE FAM - OM	Dummy variable that equals 1 if the firm is owned and managed by a single family and zero otherwise
ONE OWNER - NOM	Dummy variable that equals 1 if the firm is owned by a single individual and not managed by him and zero otherwise
OPEXP	Operating expenses / Total sales
PUBLICNQ	Dummy variable that equals 1 if the firm is classified as public, not quoted and zero otherwise
PUBLICQ	Dummy variable that equals 1 if the firm is classified as public quoted and zero otherwise
QUISCORE	Credit score produced by CRIF Decision Solutions Ltd. This score is a measure of the likelihood of company failure in the year following the date of calculation
Riskiness	Set of 5 dummy variables representing the five bands of Quiscore.
SECOND	Ownership stake of the second largest shareholder
SIZE	Log(Total Sales)
T. LIABILITIES	(Total Assets – Shareholders Equity)/ Total Assets
WO	Dummy variable that equals 1 if the firm is owned by a holding company

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Table I

Distribution of the sample across owner/manager classifications

This table presents the distribution of the sample based upon six different ownership structures. Owner managed firms are those where all directors are shareholders. Panel B presents industry patterns of various sub-samples. Data are obtained from updates of the FAME data base produced by *Bureau Van Dijk* dated October 2005, October 2006, November 2007, October 2008 and October 2009. We use current year's financial data and lagged ownership and management data. Refer to Appendix A for details about the classification of firms.

	2006		**2007**		**2008**		**2009**		**Row**
	OM	**NOM**	**OM**	**NOM**	**OM**	**NOM**	**OM**	**NOM**	**Total**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
One Owner	33,542	12,416	33,519	12,534	32,444	12,235	29,440	10,353	**176,483**
One Family	34,942	4,140	33,947	4,012	31,381	3,735	26,483	2,974	**141,614**
Multiple Families	24,728	7,494	24,894	7,918	22,900	7,544	18,513	5,814	**119,805**
Families & Holding Cos	1,226	3,103	1,391	3,701	1,293	3,612	884	2,519	**17,729**
Holding Cos		35,609		35,938		36,095		34,747	**142,389**
Public, Not Quoted		2,788		2,532		2,361		2,164	**9,845**
Public, Quoted		1,189		1,185		1,139		1,071	**4,584**
Year-wise Total	**161,177**		**161,571**		**154,739**		**134,962**		**612,449**

Table II
Industry classification and ownership classification (fractions of sample)

This table presents industry patterns of various sub-samples. Data are obtained from updates of the FAME data base produced by *Bureau Van Dijk* dated October 2005, October 2006, November 2007, October 2008 and October 2009.

	One Owner	**One Family**	**Multiple Families**	**Families & Holding Cos**	**Holding Cos**	**Public, Not Quoted**	**Public, Quoted**
Agriculture, Hunting and Forestry	1.10%	1.71%	0.98%	1.77%	1.08%	1.09%	1.07%
Fishing	0.05%	0.07%	0.12%	0.11%	0.14%	0.05%	0.04%
Manufacture of Food Products, Beverages and Tobacco	0.29%	0.48%	0.52%	1.33%	1.68%	1.14%	3.18%
Manufacture of Textiles and Textile Products	0.38%	0.39%	0.48%	0.55%	0.78%	1.03%	1.61%
Manufacture of Leather and Leather Products	0.03%	0.06%	0.05%	0.08%	0.08%	0.06%	0.24%
Manufacture of Wood and Wood Products	0.27%	0.40%	0.45%	0.34%	0.41%	0.18%	0.11%
Manufacture of Pulp, Paper and Paper Products Publishing	1.46%	1.53%	2.54%	2.61%	3.29%	2.94%	3.47%
Manufacture of Chemicals, Rubber and Plastic products	0.28%	0.40%	0.61%	1.13%	3.11%	2.09%	5.63%
Manufacture of Metallic and Non-metallic Mineral Products	1.59%	2.41%	2.67%	2.79%	5.75%	3.92%	5.91%
Manufacture of Electrical and Optical Equipment	0.56%	0.77%	1.17%	1.30%	3.37%	3.63%	9.01%
Manufacture of Transport Equipment	0.27%	0.30%	0.29%	0.49%	1.01%	0.75%	0.89%
Manufacturing Not Elsewhere Classified	0.87%	1.13%	1.40%	1.25%	2.08%	2.20%	1.94%
Total Manufacturing	*6.00%*	*7.87%*	*10.17%*	*11.86%*	*21.56%*	*17.94%*	*32.00%*
Construction	15.05%	17.37%	14.25%	8.31%	7.09%	8.54%	3.88%
Wholesale Trade	4.72%	5.87%	6.58%	9.52%	11.21%	13.77%	5.50%
Retail Trade	7.65%	8.91%	7.99%	5.65%	3.89%	3.53%	5.17%
Hotels and Restaurants	4.64%	4.37%	6.00%	4.17%	3.68%	2.34%	2.68%
Transport, Storage and Communication	4.88%	4.46%	4.67%	5.31%	7.16%	7.67%	6.68%
Real Estate, Renting and Business Activities	45.13%	40.98%	38.04%	41.86%	34.28%	36.67%	35.49%
Other Services	10.79%	8.38%	11.19%	11.44%	9.91%	8.40%	7.48%
Total	**176,483**	**141,614**	**119,805**	**17,729**	**142,389**	**9,845**	**4,584**

Table III

Summary Statistics

The table show basic statistics about the firms in the sample. The number of observations in the sample, N, corresponds to observations with non-missing values of total assets. Data are obtained from updates of the FAME data base produced by *Bureau Van Dijk* dated October 2005, October 2006, November 2007, October 2008 and October 2009. Please refer to Appendix B for a description of the variables reported in the table.

	One Owner		**One Family**		**Multiple Families**		**Families & Holding Cos**		**Holding Cos**		**Public, Not Quoted**		**Public, Quoted**	
Variable	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ASSETS (M £)	288	35	444	60	848	95	5,670	329	23,762	3,474	65,642	4,597	563,216	39,394
AT	2.98	2.25	2.74	2.11	2.80	2.13	2.08	1.41	1.94	1.36	1.70	1.35	1.10	0.91
OPEXP	0.52	0.40	0.50	0.38	0.53	0.39	0.67	0.38	0.57	0.30	0.73	0.33	2.18	0.44
EBITD	0.66	0.34	0.56	0.27	0.32	0.16	0.13	0.08	0.09	0.08	0.05	0.08	0.00	0.09
T. LIABILITIES	0.81	0.71	0.77	0.69	0.88	0.75	1.00	0.75	1.00	0.73	0.75	0.65	0.56	0.52
BANKLOAN	0.08	0.00	0.08	0.00	0.09	0.00	0.08	0.00	0.06	0.00	0.08	0.01	0.07	0.03
AGE (Years)	7.05	4.09	10.69	6.48	10.54	6.04	13.34	7.98	20.4	14.28	21.41	15.92	25.97	11.97
QUISCORE	47	45	52	48	51	49	58	58	71	77	75	85	77	85
ACI	-0.12	0.00	-0.08	0.03	0.00	0.07	0.17	0.19	0.16	0.19	0.24	0.19	0.56	0.25
Concentration	0.81	1.00	0.94	1.00	0.86	1.00	0.46	0.50	.	.	.	.	.	.
N	*176,483*		*141,614*		*119,805*		*17,729*		*142,389*		*9,845*		*4,584*	

Table IV

Relationship between ACI and Governance Indices

This table presents results of a regression analysis relating the agency cost index ACI to the corporate governance index proposed by Gompers et al. (2003), labeled here the GIM-Index, and the Entrenchment index proposed by Bebchuk et al. (2009), labeled here the E-Index. Governance data used in the construction of the indices are from the Riskmetrics Group. 'Company Specific Controls' include: company size (log of annual sales and its square), company age, bank debt scaled by total assets, total liabilities scaled by total assets, likelihood of company failure (dummy variables for high risk, normal, stable and secure into which the Quiscore of a company falls with the 'caution' band being the excluded group), dummy variables based on the type of financial statements filed (small company statements , medium company statements, total exemption small, total exemption full, partial exemption , full accounts and group accounts with small company statements being the excluded group), the number of subsidiaries and number of holding companies. 'Industry Affiliations' are dummy variables based upon the industry sectors presented in Table II with the Agriculture, Hunting and Forestry industry being the excluded industry. 'Year Fixed Effects' are dummies for each year, with the first year indicator (2006) being the excluded dummy variable. Standard errors are adjusted for firm-level clustering as described by Petersen (2009). Statistical significance at 5 and 1 percent levels are respectively denoted by * and **.

	(1)	(2)	(3)	(4)
Intercept	1.9664	0.8137	0.1343	0.8505
	(0.000)***	(0.039)**	(0.004)***	(0.038)**
GIM-Index	0.0216	0.0264		
	(0.055)*	(0.063)*		
E-Index			0.0415	0.0493
			(0.059)*	(0.072)*
Company Specific Controls	No	Yes	No	Yes
Industry Affiliations	No	Yes	No	Yes
Year Fixed Effects	No	Yes	No	Yes
Firm Level Clustering	Yes	Yes	Yes	Yes
Number of Clusters	424	386	424	386
Adjusted R-squared	0.171	0.321	0.004	0.317
N	1,261	1,078	1,261	1,059

Table V

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

The dependent variable in Panels A and B is the agency cost index ACI. Panel A presents results using the full sample. Panel B presents results using two sub-samples. Model specification 1 presents results using a sample of firms that are not exempt from auditing requirements or accountants' certification while filing their financials with the Companies House. Model specification 2 presents results using a sample of firms with a high probability of default as indicated by the QuiScore (i.e., QuiScore less than 20). Panel C presents results using alternate proxies for agency costs. The dependent variables proxying for agency costs in Model specifications 1 and 2 of Panel C are the operating expenses to sales ratio and ACI-2 respectively.

NOM is a dummy variable that equals 1 if the firm is not managed by the owners and 0 otherwise. Governance data used in the construction of the indices are from the Riskmetrics Group. 'Company Specific Controls' include: company size (log of annual sales and its square), company age, bank debt scaled by total assets, total liabilities scaled by total assets, likelihood of company failure (dummy variables for high risk, normal, stable and secure into which the Quiscore of a company falls with the 'caution' band being the excluded group), dummy variables based on the type of financial statements filed (small company statements , medium company statements, total exemption small, total exemption full, partial exemption , full accounts and group accounts with small company statements being the excluded group), the number of subsidiaries and number of holding companies. 'Industry Affiliations' are dummy variables based upon the industry sectors presented in Table II with the Agriculture, Hunting and Forestry industry being the excluded industry. 'Year Fixed Effects' are dummies for each year, with the first year indicator (2006) being the excluded dummy variable. Please refer to Appendix B for a description of all variables. Data are obtained from updates of the FAME data base produced by *Bureau Van Dijk* dated October 2005, October 2006, November 2007, October 2008 and October 2009. We use current year's financial data and lagged ownership and management data. Standard errors in model specifications 1 and 2 of Panel are adjusted for heteroskedasticity using White's (1980) methods. Standard errors in all remaining models are adjusted for firm-level clustering as described by Petersen (2009). Statistical significance at 5 and 1 percent levels are respectively denoted by * and **.

(Table continued on following page)

Table V
(Continued)

	Panel A			Panel B		Panel C	
	(1)	(2)	(3)	(1)	(2)	(1)	(2)
Intercept	0.7081	0.7149	0.692	0.5128	1.3573	1.3735	0.4884
	(0.0061)**	(0.0094)**	(0.0151)**	(0.0235)**	(0.1492)**	(0.0208)**	(0.0153)**
NOM	0.1154	0.1169	0.1159	0.0906	0.1167	0.0713	0.1187
	(0.0022)**	(0.0022)**	(0.0034)**	(0.0069)**	(0.0215)**	(0.0038)**	(0.0035)**
Company Specific Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Affiliations	No	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	No	Yes	Yes	Yes	Yes	Yes	Yes
Firm Level Clustering	No	No	Yes	Yes	Yes	Yes	Yes
Number of Clusters	-	-	112,061	35,762	5,133	112,061	112,061
Adjusted R-squared	0.182	0.184	0.178	0.196	0.295	0.213	0.17
N	403,425	403,425	334,088	113,061	11,332	334,088	334,088

Table VI

Agency Costs Across Firms with Different Ownership Structures

The dependent variable in Panels A and B is the agency cost index ACI. Panel A presents results using the full sample. Panel B presents results using two sub-samples. Model specification 1 presents results using a sample of firms that are not exempt from auditing requirements or accountants' certification while filing their financials with the Companies House. Model specification 2 presents results using a sample of firms with a high probability of default as indicated by the QuiScore (i.e., QuiScore less than 20). Panel C presents results using alternate proxies for agency costs. The dependent variables proxying for agency costs in Model specifications 1 and 2 of Panel C are the operating expenses to sales ratio and ACI-2 respectively.

Firms with different ownership structures are indicated by dummy variables ONE FAM, MUL FAM, INDI_FAM, WO, PUBLICNQ and PUBLICQ. Refer to Appendix B for a description of all variables. Governance data used in the construction of the indices are from the Riskmetrics Group. 'Company Specific Controls' include: company size (log of annual sales and its square), company age, bank debt scaled by total assets, total liabilities scaled by total assets, likelihood of company failure (dummy variables for high risk, normal, stable and secure into which the Quiscore of a company falls with the 'caution' band being the excluded group), dummy variables based on the type of financial statements filed (small company statements , medium company statements, total exemption small, total exemption full, partial exemption , full accounts and group accounts with small company statements being the excluded group), the number of subsidiaries and number of holding companies. 'Industry Affiliations' are dummy variables based upon the industry sectors presented in Table II with the Agriculture, Hunting and Forestry industry being the excluded industry. 'Year Fixed Effects' are dummies for each year, with the first year indicator (2006) being the excluded dummy variable. Please refer to Appendix B for a description of all variables. Data are obtained from updates of the FAME data base produced by *Bureau Van Dijk* dated October 2005, October 2006, November 2007, October 2008 and October 2009. We use current year's financial data and lagged ownership and management data. Standard errors in model specifications 1 and 2 of Panel are adjusted for heteroskedasticity using White's (1980) methods. Standard errors in all remaining models are adjusted for firm-level clustering as described by Petersen (2009). Statistical significance at 5 and 1 percent levels are respectively denoted by * and **.

(Table continued on following page)

Table VI
(Continued)

	Panel A			Panel B		Panel C	
	(1)	(2)	(3)	(1)	(2)	(1)	(2)
Intercept	0.6796	0.6889	0.6703	0.5328	1.3087	1.3532	0.4703
	(0.0060)**	(0.0095)**	(0.0152)**	(0.0248)**	(0.1485)**	(0.0208)**	(0.0154)**
ONE FAM	0.0309	0.0297	0.0243	0.0107	0.0176	0.0158	0.0264
	(0.0024)**	(0.0024)**	(0.0040)**	(0.0124)	(0.0232)	(0.0035)**	(0.0041)**
MUL FAM	0.102	0.1018	0.0939	0.0099	0.1036	0.0578	0.1075
	(0.0026)**	(0.0026)**	(0.0041)**	(0.0115)	(0.0225)**	(0.0041)**	(0.0042)**
INDI_FAM	0.1938	0.1959	0.1778	0.0622	0.2739	0.0946	0.1814
	(0.0053)**	(0.0053)**	(0.0076)**	(0.0154)**	(0.0538)**	(0.0102)**	(0.0077)**
WO	0.1766	0.1784	0.1698	0.0707	0.294	0.1148	0.1649
	(0.0036)**	(0.0036)**	(0.0055)**	(0.0104)**	(0.0808)**	(0.0071)**	(0.0054)**
Public NQ	0.2059	0.2093	0.1961	0.1178	0.4691	0.1728	0.2031
	(0.0055)**	(0.0055)**	(0.0084)**	(0.0140)**	(0.1750)**	(0.0124)**	(0.0079)**
Public Q	0.3586	0.365	0.3477	0.3483	0.4176	0.3939	0.3089
	(0.0096)**	(0.0096)**	(0.0155)**	(0.0715)**	(0.1082)**	(0.0267)**	(0.0159)**
Company Specific Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Affiliations	No	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	No	Yes	Yes	Yes	Yes	Yes	Yes
Firm Level Clustering	No	No	Yes	Yes	Yes	Yes	Yes
Number of Clusters	-	-	112,061	35,762	5,133	112,061	112,061
Adjusted R-squared	0.185	0.187	0.18	0.196	0.298	0.215	0.172
N	403,425	403,425	334,088	113,061	11,332	334,088	334,088

Table VII

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

The dependent variable in Panels A and B is the agency cost index ACI. Panel A presents results using the full sample. Panel B presents results using two sub-samples. Model specification 1 presents results using a sample of firms that are not exempt from auditing requirements or accountants' certification while filing their financials with the Companies House. Model specification 2 presents results using a sample of firms with a high probability of default as indicated by the QuiScore (i.e., QuiScore less than 20). Panel C presents results using alternate proxies for agency costs. The dependent variables proxying for agency costs in Model specifications 1 and 2 of Panel C are the operating expenses to sales ratio and ACI-2 respectively.

Firms with different ownership structures are indicated by dummy variables ONE FAM, MUL FAM, INDI_FAM, WO, NS, PUBLICNQ and PUBLICQ. Owner managed firms are those that are completely managed by shareholders. They are indicated by OM next to each ownership structure. Non owner managed firms are indicated by NOM. Governance data used in the construction of the indices are from the Riskmetrics Group. 'Company Specific Controls' include: company size (log of annual sales and its square), company age, bank debt scaled by total assets, total liabilities scaled by total assets, likelihood of company failure (dummy variables for high risk, normal, stable and secure into which the Quiscore of a company falls with the 'caution' band being the excluded group), dummy variables based on the type of financial statements filed (small company statements , medium company statements, total exemption small, total exemption full, partial exemption , full accounts and group accounts with small company statements being the excluded group), the number of subsidiaries and number of holding companies. 'Industry Affiliations' are dummy variables based upon the industry sectors presented in Table II with the Agriculture, Hunting and Forestry industry being the excluded industry. 'Year Fixed Effects' are dummies for each year, with the first year indicator (2006) being the excluded dummy variable. Please refer to Appendix B for a description of all variables. Data are obtained from updates of the FAME data base produced by *Bureau Van Dijk* dated October 2005, October 2006, November 2007, October 2008 and October 2009. We use current year's financial data and lagged ownership and management data. Standard errors in model specifications 1 and 2 of Panel are adjusted for heteroskedasticity using White's (1980) methods. Standard errors in all remaining models are adjusted for firm-level clustering as described by Petersen (2009). Statistical significance at 5 and 1 percent levels are respectively denoted by * and **.

(Table continued on following page)

Table VII
(continued)

	Panel A				Panel B		Panel C	
	(1)	(2)	(3)	(4)	(1)	(2)	(1)	(2)
Intercept	0.6368	0.6434	0.6252	0.8058	0.4654	1.2848	1.3311	0.4207
	(0.0061)**	(0.0095)**	(0.0152)**	(0.0155)**	(0.0284)**	(0.1480)**	(0.0207)**	(0.0154)**
Concentration				-0.1253				
				(0.0042)**				
One Owner NOM	0.1229	0.1235	0.1219		0.1103	0.1219	0.057	0.1354
	(0.0038)**	(0.0038)**	(0.0059)**		(0.0202)**	(0.0305)**	(0.0059)**	(0.0061)**
ONEFAM	0.053	0.0518	0.0459		0.0563	0.0415	0.0252	0.0505
	(0.0027)**	(0.0027)**	(0.0044)**		(0.0202)**	(0.0249)	(0.0038)**	(0.0046)**
ONEFAM NOM	0.1174	0.1182	0.1174		0.0627	0.0653	0.0614	0.1297
	(0.0053)**	(0.0053)**	(0.0080)**		(0.0144)**	(0.0597)	(0.0089)**	(0.0082)**
MULFAM	0.1253	0.125	0.1168		0.0567	0.1236	0.0649	0.1348
	(0.0030)**	(0.0030)**	(0.0048)**		(0.0192)**	(0.0252)**	(0.0045)**	(0.0049)**
MULFAM NOM	0.0553	0.0572	0.0576		0.0493	0.0518	0.0424	0.0558
	(0.0042)**	(0.0042)**	(0.0062)**		(0.0112)**	(0.0403)	(0.0069)**	(0.0062)**
INDI_FAM	0.2366	0.2393	0.2209		0.1318	0.3056	0.1154	0.229
	(0.0055)**	(0.0055)**	(0.0079)**		(0.0210)**	(0.0547)**	(0.0104)**	(0.0080)**
WO	0.2272	0.2298	0.2212		0.1405	0.3276	0.1402	0.2214
	(0.0038)**	(0.0038)**	(0.0059)**		(0.0176)**	(0.0812)**	(0.0074)**	(0.0059)**
Public NQ	0.2591	0.2633	0.2499		0.1876	0.5058	0.1996	0.2622
	(0.0057)**	(0.0057)**	(0.0087)**		(0.0199)**	(0.1749)**	(0.0126)**	(0.0083)**
Public Q	0.4145	0.4219	0.4046		0.4183	0.4558	0.4223	0.3712
	(0.0097)**	(0.0097)**	(0.0157)**		(0.0728)**	(0.1081)**	(0.0268)**	(0.0161)**
Company Specific Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Affiliations	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Level Clustering	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Table VII
(continued)

	Panel A				Panel B		Panel C	
	(1)	(2)	(3)	(4)	(1)	(2)	(1)	(2)
Number of Clusters	-	-	112,061	109,073	35,762	5,133	112,061	112,061
Adjusted R-squared	0.189	0.191	0.184	0.174	0.197	0.3	0.216	0.176
N	403,425	403,425	334,088	323,352	113,061	11,332	334,088	334,088

Table VIII

Minority Expropriation and Shared Control: Multivariate Analysis

The dependent variable in Panels A and B is the agency cost index ACI. Panel A presents results of three model specifications using the full sample. Panel B presents results using two sub-samples. Model specification 1 presents results using a sample of firms that are not exempt from auditing requirements or accountants' certification while filing their financials with the Companies House. Model specification 2 presents results using a sample of firms with a high probability of default as indicated by the QuiScore (i.e., QuiScore less than 20). Panel C presents results using alternate proxies for agency costs. The dependent variables proxying for agency costs in Model specification 1 and 2 of Panel C are the operating expenses to sales ratio and ACI-2 respectively.

The variables LOW CONC and HIGH CONC are dummy variables that are set to 1 if the largest shareholder owns less than 50% or above 75% of the firm respectively and zero otherwise. Governance data used in the construction of the indices are from the Riskmetrics Group. 'Company Specific Controls' include: company size (log of annual sales and its square), company age, bank debt scaled by total assets, total liabilities scaled by total assets, likelihood of company failure (dummy variables for high risk, normal, stable and secure into which the Quiscore of a company falls with the 'caution' band being the excluded group), dummy variables based on the type of financial statements filed (small company statements , medium company statements, total exemption small, total exemption full, partial exemption , full accounts and group accounts with small company statements being the excluded group), the number of subsidiaries and number of holding companies. 'Industry Affiliations' are dummy variables based upon the industry sectors presented in Table II with the Agriculture, Hunting and Forestry industry being the excluded industry. 'Year Fixed Effects' are dummies for each year, with the first year indicator (2006) being the excluded dummy variable. Please refer to Appendix B for a description of all variables. Data are obtained from updates of the FAME data base produced by *Bureau Van Dijk* dated October 2005, October 2006, November 2007, October 2008 and October 2009. We use current year's financial data and lagged ownership and management data. Standard errors in model specifications 1 and 2 of Panel are adjusted for heteroskedasticity using White's (1980) methods. Standard errors in all remaining models are adjusted for firm-level clustering as described by Petersen (2009). Statistical significance at 5 and 1 percent levels are respectively denoted by * and **.

(Table continued on following page)

Table VIII
(continued)

	Panel A			Panel B		Panel C	
	(1)	(2)	(3)	(1)	(2)	(1)	(2)
Intercept	0.9455	0.9422	0.9328	0.9146	1.6071	1.5975	0.6888
	(0.0208)**	(0.0207)**	(0.0330)**	(0.0686)**	(0.2189)**	(0.0516)**	(0.0335)**
LOW CONC	-0.0292	-0.0297	-0.0271	-0.0311	-0.0842	-0.0367	-0.0256
	(0.0047)**	(0.0047)**	(0.0076)**	(0.0138)*	(0.0470)	(0.0079)**	(0.0077)**
HIGH CONC	0.0219	0.0784	0.0586	0.0406	0.1657	0.0443	0.0554
	(0.0068)**	(0.0098)**	(0.0142)**	(0.0224)	(0.0984)	(0.0178)*	(0.0142)**
HIGH CONC * OM		-0.0934	-0.0774	-0.0668	-0.1996	-0.0635	-0.071
		(0.0112)**	(0.0162)**	(0.0262)*	(0.1111)	(0.0203)**	(0.0163)**
Company Specific Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Affiliations	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Level Clustering	No	No	Yes	Yes	Yes	Yes	Yes
Number of Clusters	-	-	23,348	3,233	1,325	23,348	23,348
Adjusted R-squared	0.212	0.213	0.205	0.305	0.312	0.245	0.169
N	85,730	85,730	64,640	8,848	2,937	64,640	64,640

Table IX

Minority Expropriation and Contestability: Multivariate Analyses Using Ownership Stake of the Second Largest Shareholder

The dependent variable in Panels A and B is the agency cost index ACI. Panel A presents results using the full sample. Panel B presents results using two sub-samples. Model specification 1 presents results using a sample of firms that are not exempt from auditing requirements or accountants' certification while filing their financials with the Companies House. Model specification 2 presents results using a sample of firms with a high probability of default as indicated by the QuiScore (i.e., QuiScore less than 20). Panel C presents results using alternate proxies for agency costs. The dependent variables proxying for agency costs in Model specifications 1 and 2 of Panel C are the operating expenses to sales ratio and ACI-2 respectively.

SECOND refers to the ownership stake of second largest shareholder. Please refer to Appendix B for a description of all variables. Governance data used in the construction of the indices are from the Riskmetrics Group. 'Company Specific Controls' include: company size (log of annual sales and its square), company age, bank debt scaled by total assets, total liabilities scaled by total assets, likelihood of company failure (dummy variables for high risk, normal, stable and secure into which the Quiscore of a company falls with the 'caution' band being the excluded group), dummy variables based on the type of financial statements filed (small company statements , medium company statements, total exemption small, total exemption full, partial exemption , full accounts and group accounts with small company statements being the excluded group), the number of subsidiaries and number of holding companies. 'Industry Affiliations' are dummy variables based upon the industry sectors presented in Table II with the Agriculture, Hunting and Forestry industry being the excluded industry. 'Year Fixed Effects' are dummies for each year, with the first year indicator (2006) being the excluded dummy variable. Please refer to Appendix B for a description of all variables. Data are obtained from updates of the FAME data base produced by *Bureau Van Dijk* dated October 2005, October 2006, November 2007, October 2008 and October 2009. We use current year's financial data and lagged ownership and management data. Standard errors in model specifications 1 and 2 of Panel are adjusted for heteroskedasticity using White's (1980) methods. Standard errors in all remaining models are adjusted for firm-level clustering as described by Petersen (2009). Statistical significance at 5 and 1 percent levels are respectively denoted by * and **.

(Table continued on following page)

Table IX
(continued)

	Panel A			Panel B		Panel C	
	(1)	(2)	(3)	(1)	(2)	(1)	(2)
Intercept	1.049	1.0735	1.0582	1.0039	1.8191	1.6489	0.807
	(0.0211)**	(0.0213)**	(0.0337)**	(0.0704)**	(0.2259)**	(0.0527)**	(0.0237)**
SECOND	-0.0035						
	(0.0001)**						
LOW CONC * SECOND		-0.0039	-0.0038	-0.0028	-0.0071	-0.0023	-0.0036
		(0.0001)**	(0.0002)**	(0.0005)**	(0.0014)**	(0.0003)**	(0.0002)**
MED CONC * SECOND		-0.0042	-0.0041	-0.0027	-0.0066	-0.0019	-0.0039
		(0.0002)**	(0.0003)**	(0.0008)**	(0.0020)**	(0.0004)**	(0.0002)**
HIGH CONC * SECOND		-0.0039	-0.0046	-0.0016	-0.0104	-0.0024	-0.0045
		(0.0005)**	(0.0008)**	(0.0013)	(0.0054)	(0.0009)**	(0.0006)**
Company Specific Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Affiliations	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Level Clustering	Yes	No	Yes	Yes	Yes	Yes	Yes
Number of Clusters			23,315	3,217	1,324	23,315	23,315
Adjusted R-squared	0.218	0.219	0.211	0.309	0.32	0.246	0.174
Observations	85,570	85,570	64,547	8,803	2,934	64,547	64,547

Table X

Minority Expropriation and Contestability: Multivariate Analyses Using the Difference in Ownership Stakes of the Two Largest Shareholders

The dependent variable in Panels A and B is the agency cost index ACI. Panel A presents results using the full sample. Panel B presents results using two sub-samples. Model specification 1 presents results using a sample of firms that are not exempt from auditing requirements or accountants' certification while filing their financials with the Companies House. Model specification 2 presents results using a sample of firms with a high probability of default as indicated by the QuiScore (i.e., QuiScore less than 20). Panel C presents results using alternate proxies for agency costs. The dependent variables proxying for agency costs in Model specifications 1 and 2 of Panel C are the operating expenses to sales ratio and ACI-2 respectively.

DIFF refers to the difference between the ownership stakes of the two largest shareholders. Please refer to Appendix B for a description of all variables. Governance data used in the construction of the indices are from the Riskmetrics Group. 'Company Specific Controls' include: company size (log of annual sales and its square), company age, bank debt scaled by total assets, total liabilities scaled by total assets, likelihood of company failure (dummy variables for high risk, normal, stable and secure into which the Quiscore of a company falls with the 'caution' band being the excluded group), dummy variables based on the type of financial statements filed (small company statements , medium company statements, total exemption small, total exemption full, partial exemption , full accounts and group accounts with small company statements being the excluded group), the number of subsidiaries and number of holding companies. 'Industry Affiliations' are dummy variables based upon the industry sectors presented in Table II with the Agriculture, Hunting and Forestry industry being the excluded industry. 'Year Fixed Effects' are dummies for each year, with the first year indicator (2006) being the excluded dummy variable. Please refer to Appendix B for a description of all variables. Data are obtained from updates of the FAME data base produced by *Bureau Van Dijk* dated October 2005, October 2006, November 2007, October 2008 and October 2009. We use current year's financial data and lagged ownership and management data. Standard errors in model specifications 1 and 2 of Panel are adjusted for heteroskedasticity using White's (1980) methods. Standard errors in all remaining models are adjusted for firm-level clustering as described by Petersen (2009). Statistical significance at 5 and 1 percent levels are respectively denoted by * and **.

(Table continued on following page)

Table X
(continued)

	Panel A			Panel B		Panel C	
	(1)	(2)	(3)	(1)	(2)	(1)	(2)
Intercept	0.9054	0.9014	0.8942	0.8839	1.5299	1.5485	0.6511
	(0.0203)**	(0.0202)**	(0.0320)**	(0.0675)**	(0.2152)**	(0.0503)**	(0.0323)**
DIFF	0.001						
	(0.0001)**						
LOW CONC * DIFF		0.0043	0.004	0.0017	0.0071	0.0021	0.0039
		(0.0003)**	(0.0004)**	(0.0008)*	(0.0031)*	(0.0005)**	(0.0004)**
MED CONC * DIFF		0.0016	0.0015	0.0012	0.0029	0.0013	0.0015
		(0.0001)**	(0.0002)**	(0.0004)**	(0.0014)*	(0.0002)**	(0.0002)**
HIGHT CONC * DIFF		-0.0008	-0.0009	-0.0005	-0.0014	-0.0007	-0.0008
		(0.0001)**	(0.0002)**	(0.0004)	(0.0014)	(0.0002)**	(0.0002)**
Company Specific Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Affiliations	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Level Clustering	Yes	No	Yes	Yes	Yes	Yes	Yes
Number of Clusters	-	-	23,315	3,217	1,324	23,315	23,315
Adjusted R-squared	0.213	0.214	0.206	0.304	0.313	0.245	0.17
N	85,570	85,570	64,547	8,803	2,934	64,547	64,547