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Estimating the Effects of Large Shareholders Using a Geographic Instrument

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Abstract

Large shareholders may play an important role for firm policies and performance, but identifying an effect empirically presents a challenge due to the endogeneity of ownership structures. However, unlike other blockholders, individuals tend to hold blocks in corporations that are located close to where they live. Using this fact, we create an instrument – the density of wealthy individuals near a firm's headquarters – for the presence of a large, non-managerial individual shareholder in a public firm. We show that these shareholders have a large impact on firms. Consistent with theories of large shareholders as monitors, we find that they increase firm profitability, increase dividends, reduce corporate cash holdings, and reduce executive compensation. Consistent with the view that there exist conflicts between large and small owners in public firms, we uncover evidence of substitution toward less tax-efficient forms of distribution (dividends over repurchases). In addition, our analysis shows that large shareholders reduce the liquidity of the firm's stock.

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1. Introduction

Does having a large shareholder affect a firm? A corporation's shareholders legally control the firm, but they often delegate this control to managers. In large public companies, which have small, dispersed shareholders, owners may find it costly to coordinate and exercise control, leaving managers considerable discretion. The resulting agency problems between owners and managers may be severe. Large shareholders may play a beneficial role in remedying these managerial agency problems.[1] Concentrating a block of votes and cash flow rights in the hands of a single decision maker reduces free-riding incentives and facilitates effective owner control. Having a large shareholder can, for example, restrain managers from extracting rents, reduce the free-riding problem in takeovers, and, if the large owners have long horizons, mitigate myopic investment behavior. In contrast, other theories predict that blocks may be detrimental to firms. Large shareholders can reduce managerial initiative and share liquidity.[2] Which of these theories, if any, are empirically valid?

This paper provides empirical evidence on the effects of blockholders in large, public firms. Our main contribution is to overcome the endogeneity of ownership structure: large shareholders are not allocated randomly to firms, but choose in which firms to invest. Correlations between firm performance and ownership structure may reflect either large shareholders' investment selection, or the effect of blockholders on firm performance. We develop an instrument for the presence of large shareholders and quantify the impact of these blockholders using a two stage regression framework. We can thus identify the impact of large owners, eliminating the selection bias in OLS. Our instrument is based on economic arguments regarding geographic variation in the supply of large non-managerial individual shareholders.

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[1] We use the terms "large shareholder" and "blockholder" interchangeably.

[2] An incomplete list of papers concerning the theory of large shareholders include Berle and Means (1932), Grossman and Hart (1980), Fama and Jensen (1983), Demsetz and Lehn (1985), Jensen (1986), Shleifer and Vishny (1986), Stein (1988), Roe (1990), Holmstrom and Tirole (1993), Bhide (1993), Burkart, Gromb and Panunzi (1997), Bolton and von Thadden (1998), and Friedman, Johnson and Mitton (2003). We review the existing literature on large shareholders in Section 2.

We begin by collecting data on the geographic location of large shareholders relative to the firms in which they are invested. We show that outside individuals, as opposed to institutions such as mutual funds and money managers, who own blocks often invest locally.[3] This finding may reflect informational advantages in selecting and monitoring local companies (see, e.g., Coval and Moskowitz (1999), Coval and Moskowitz (2001) and Lerner (1995)). Given that block investment by individuals tends to be local, any geographic variation in the number of potential individual blockholders is likely to impact the frequency of individually owned blocks. Large stakes in listed firms require vast resources, so only very wealthy individuals can become large shareholders. We hypothesize that the existence of large individual shareholders varies with the local density of high net worth individuals. We collect data on the density of high net worth individuals, i.e., the number of individuals with high net worth divided by the number of corporate headquarters of public firms located in a state. This density shows considerable variation across U.S. states, from 228 high net worth individuals per corporate headquarter in Colorado to 2,500 in Alaska. As predicted, we find that firms with headquarters located in states with more concentrated local wealth are more likely to have large blocks of shares held by individuals. The effect is large: moving from the 25th percentile state, Arizona, to the 75th percentile state, Idaho, while holding everything else constant, changes the predicted probability of a local firm having at least one block from 8.7 percent to 12.8 percent, i.e. increases the probability by almost fifty percent.

The second part of our study employs the density of high net worth individuals as an instrument for the presence of large blocks. The validity of this measure as an instrument requires that density not impact firm performance or corporate policy choices except through its effect on block formation. We consider it *a priori* unlikely that an unobservable economic factor explains both the geographic distribution of the density of high net-worth individuals in 1995, at the state-level, and simultaneously firm outcomes during our sample period (1996-2001). We also address several possible objections to our approach. First, while the density of high net worth individuals correlates with individual non-managerial

[3] Throughout the paper, when we use the terms "individual shareholders" or "individual blocks" we exclude those held by current or former managers of the firm.

blocks, it does not predict the presence of large shareholdings by either managers or institutions. Second, we show that measures of economic performance, such as per capita income in 1995, that vary at the state-level but economic theory suggests should not determine the supply of individual blockholders, have very little predictive power for the presence of individual blocks. These findings support the conclusion that our instrument picks up variation in the supply of a specific type of blockholder.

Using the density measure as an instrument, we examine the average effect of large shareholders on the firms in which they hold stakes. We find that blockholders have a positive impact on firm operating profitability, and reduce investment slightly. These results are consistent with theories of monitoring by large shareholders. Also, we find that large shareholders alter payout policy, in two ways. First, total payout increases in the presence of a block, consistent with monitoring theories and managerial reluctance to part with firm resources. Second, dividends replace repurchases, consistent with a blockholder preference for a form of payout that maintains blockholder voting power. The net effect on payout is an increase. In addition, large shareholders also seem to cause lower cash holdings. Examining CEO pay, we find that firms with large shareholders have a significantly lower average pay, especially in the form of options and stock. Board representation appears to be one channel through which large shareholders exert their influence because we find that firms with large shareholders have a larger number of outside directors. Finally, we find a strong negative effect of blockholders on share liquidity, consistent with standard theories of trading in the presence informed parties.

Our evidence is consistent with the view that managers behave differently when a firm has a "principal" in the form of a large shareholder. One interpretation of this evidence is that agency problems between owners and managers of public firms are important and that large shareholders increase monitoring and owner influence over firms. This idea was first suggested by Berle and Means (1932) and has been instrumental in many theories since. Why are these blockholders so important and why can their function not be provided by other governance mechanisms, such as product market competition (Nickell (1996)) or institutional owners (e.g., Hartzell and Starks (2003))? One possibility is that non-managerial individual owners are particularly suited to monitor firms. Individuals are free from many of the

constraints on active participation in corporate governance faced by many institutional investors (e.g., Black (1990)). Individuals also avoid the agency problems from which institutions inevitably suffer (Diamond (1984)).

The existing empirical literature on the effects of concentrated ownership is extensive.[4] Our approach differs from earlier studies of large shareholders in three important ways. First, we explicitly model the potential supply of blockholders to which a particular firm is exposed. Somewhat surprisingly, the economics of the supply side of blocks is relatively unexplored in the literature, perhaps because the focus has been on partial equilibrium results (see Gorton and Kahl (2008) for an exception). Second, compared to most previous work, our approach is more supportive of a causal interpretation of blockholder effects than studies relying on direct correlations. The use of instruments to tackle endogeneity problems in the study of ownership and firm performance was originally suggested by Demsetz and Lehn (1985), but few suitable instruments have been proposed.[5]

Finally, our study adds to a growing literature that attempts to address endogeneity in corporate governance. Other papers include Bertrand and Mullainathan (2003) (changes in antitakeover laws) and Pérez-González (2005) (the abolishment of foreign majority ownership regulations in Mexico). Several papers use the passage of the Sarbanes-Oxley Act as an exogenous change (e.g., Chhaochharia and Grinstein (2007) and Hochberg, Sapienza and Vissing-Jorgensen (2007)). In contrast to these papers which use changes in the law (i.e., a quasi-natural experiment) to overcome endogeneity problems, we develop an instrument for an important governance mechanism.

The paper is organized as follows. Section 2 reviews the role of large shareholders in the governance of large public corporations. Section 3 describes our data sources and the construction of the instrument, and defines the firm variables of interest. Section 4 introduces our empirical methodology.

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[4] See, e.g., Holderness (2003) for an overview of U.S. evidence, Shleifer and Vishny (1997) for on overview of international evidence, and McConnell and Servaes (1990) and Mehran (1995) for evidence on blockholders and firm performance.

[5] Because we use an instrument for the local supply of potential blockholders, our estimates are likely to be the sum of the effect of an actual block and that of a higher threat of block formation in certain locations. Our empirical approach does not distinguish between these two effects.

Section 5 evaluates the instrument and studies the impact of large shareholders on firm performance and corporate policies. Section 6 concludes.

2. Corporate governance and large shareholders

2.1. Why large shareholders may matter

The shareholders of a firm have extensive legal rights to oversee its management and make decisions, but as Berle and Means (1932) point out, public corporations tend to be owned by a large number of small shareholders and this ownership dispersion makes it difficult for owners to exert control (see also Jensen (1986)). Small, dispersed owners must overcome coordination problems in order to exercise effective control of the firm, and their incentives to take any action aiming to increase firm value are weakened by free-riding problems (Grossman and Hart (1980)). Under these circumstances, effective control in firms with dispersed ownership will tend to revert to managers – a state Berle and Means refer to as "separation of ownership and control."[6]

Large shareholders have long been considered a potential remedy to this problem. By concentrating votes and cash flow rights in the hand of a single decision maker, a block of shares may eliminate the coordination problem. A large block may provide sufficient financial incentive for an owner to incur monitoring costs and costs of intervention, thus partially overcoming the free-riding problem. The benefits from such large shareholders can be manifold. Demsetz and Lehn (1985) suggest that large owners restrain managers from consuming firm resources. In the model of Shleifer and Vishny (1986), large shareholders reduce free-riding problems in takeovers. Stein (1988) and Stein (1989) suggest that large owners with long investment horizons can mitigate myopic investment behavior. Managers may disagree with owners on payout policy, wanting to reduce dividends (Easterbrook (1984) and Jensen (1986)). This effect may be alleviated by the presence of a large shareholder.

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[6] There is a large literature on owner-manager agency conflicts. Demsetz (1983) argues that a manager may extract non-pecuniary benefits to the detriment of shareholders. Jensen (1986) and Jensen (1989) argue that managers expropriate small, dispersed shareholders by diverting corporate resources for empire building or perk consumption.

The benefits of large shareholders may come at a cost, however. The possibility of intervention by owners can reduce managerial initiative (Burkart, Gromb and Panunzi (1997)). Even when the presence of a block is *ex post* efficient, the possibility of future interference may reduce a manager's *ex ante* incentive to undertake value-increasing effort, such as searching for good investment opportunities. Moreover, by keeping some shares off the public market, blockholders reduce share liquidity, thereby potentially reducing information production in the stock market (Holmstrom and Tirole (1993)),[7] and possibly limiting the threat of takeovers (Bolton and von Thadden (1998)).

Another cost of large shareholders, from the perspective of small shareholders, is that they may have preferences that diverge from value maximization. Fama and Jensen (1983) show that large shareholders, because they are undiversified, may favor investment choices that differ from value-maximization. Similar arguments can be made regarding the choice of capital structure. More pernicious still is the possibility of transfers from other owners to blockholders (e.g., Johnson, La Porta, Lopez-de-Silanes and Shleifer (2000)). Berle and Means (1932) state that large shareholders "can serve their own pockets better by profiting at the expense of the company than by making profits for it" (p. 114), although Shleifer and Vishny (1997) argue that this problem is likely to be more severe outside the U.S.

The theories cited above tend to make little distinction between types of large shareholders. In practice, different shareholders are likely to differ substantially in the extent to which they participate actively in the governance of firms. For example, many mutual funds refrain from active participation, either because of regulatory constraints (e.g., Black (1990)) or because they are afraid of losing future money management business (e.g., Brickley, Lease and Smith (1988) and Davis and Kim (2007)). Individual shareholders are less constrained from being active. Also, individuals are likely to come with relatively few agency problems of their own, unlike other investor types (e.g., Diamond (1984)). For these reasons, it is useful to study *individual* blockholders when evaluating theories of large shareholders. Finally, we note that the above theories refer to the potential impact on firms of large *non-managerial*

[7] Maug (1998) points out that liquidity may affect the cost of forming blocks, so causality plausibly runs both ways.

shareholders. As a result, we exclude all blocks held by either current or former managers from our empirical analysis.

2.2. Predicted effects of large shareholders

We group the effects that theory has proposed for large shareholders into three categories: Effects that benefit all shareholders, effects that benefit only the large shareholder, and indirect effects of large shareholders. We will now discuss the empirical predictions for each category in more detail.

2.2.1. Monitoring

Several of the theories suggest that large shareholders can increase the operational performance of a firm by monitoring management, thereby improving project selection, investment levels, and reducing costs. For example, the existence of a block can mitigate the potential overinvestment problem by reducing corporate investment in declining industries where there is relative scarcity of investment opportunities and positive NPV projects. We examine the impact of large shareholders on several measures of profitability (e.g., ROA), investment levels and cost cutting policy.

Some theories suggest that large shareholders affect firms' financial policies, such as capital structure, cash, and payout policy. Consider for example payout policy. Managers may prefer less payout to shareholders because such payments reduce the resources under the managers' control and subject the managers to the scrutiny of capital markets if the firm needs to use external finance to fund new projects (e.g., Easterbrook (1984) and Jensen (1986)). The monitoring of a large shareholder may restrict managers from reducing payouts to shareholders or from holding too much cash. To examine these predictions, we test whether individual blocks affect corporate payout policy and cash holdings.

Whether CEOs in the U.S. are "overpaid" and in part able to set their own pay is a question that has been subject to a lot of recent discussion and academic research (see Bebchuk and Fried (2004) for a review). As a result, it is interesting to study the extent to which the existence of a block in a firm reduces CEO pay. Large shareholders are predicted to mitigate rent extraction by a firm's management.

2.2.2. Private benefits

Large shareholders may pursue activities that deviate from the interests of minority shareholders.[8] The most extreme of such activities, the transfer of assets and profits out of firms or 'tunneling', may not be relevant in our study because we focus on large, public U.S. firms and on large shareholders that are not managers of the firm. However, even large non-managerial shareholders may have interests that diverge from those of minority shareholders. Large shareholders may influence investment policy. For example, they may want to reduce the risk of the firm's operations because of their lack of diversification. Large shareholders may curtail new investment if it requires accessing external capital markets, as the issue of new equity dilutes their stake. For a similar reason, large shareholders may have a preference for dividends over more tax efficient repurchases (our sample period is 1996-2001) if they require payouts to finance their consumption.

2.2.3. Liquidity

Some of the above theories predict that large shareholders may reduce the liquidity of a firm's shares by keeping shares off the public market. Furthermore, Glosten and Milgrom (1985) argue that one cause of stock market illiquidity is the presence of privately informed traders. One such group of potentially privately informed traders is the group of blockholders. Bhide (1993) argues that large active shareholders, who may reduce agency costs by monitoring managers, may also reduce stock liquidity by increasing informational asymmetries. We test whether blocks impact the liquidity of a firm's shares using the percentage bid-ask spread and the measure of illiquidity of Amihud (2002).

3. Data

We exploit a number of existing data sources and also use several sources of original data. This section describes in detail the nature of our data.

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[8] See La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997) for the importance of conflicts between small and large owners.

3.1. Data on large shareholders

We use the database of large publicly traded corporations in the U.S. and all their 5% blockholders compiled by Dlugosz, Fahlenbrach, Gompers and Metrick (2006) (DFGM).[9] The database is an unbalanced panel of the S&P 1,500 universe, excluding dual-class firms, from 1996-2001. It contains 1,919 different firms and 18,818 blockholder-firm-year observations.[10]

We use this database to identify *non-managerial individual* blockholders. This category of blockholders only includes individuals who are neither current nor former officers of the firm. We therefore exclude from the non-managerial individual block category any block held by an individual who is, or at any point was an officer of the firm (e.g., a founder who retired but retained a 5% block). We identify former and current officers through firms' proxy statements and a Dow Jones Interactive news search. Our dataset contains 1,079 non-managerial and 2,022 managerial individual blockholder-firm-years.

3.2. The location of large shareholders

We obtain data on the geographic location (zip code) of each block in the DFGM database from firms' proxy statements. We exclude from our analysis blocks located abroad. For some individuals who are officers or directors, the proxy statements do not give an explicit address, but state "Same address as company". We may thus underestimate the true distance between the location of some individuals and firm headquarters. Also, some individuals may have multiple residences; we use the address reported in the proxy. We obtain zip codes of firm headquarters from the *Execucomp* database, the *Compact Disclosure* discs, or hand-collect them from proxy statements. Finally, we identify the latitude and

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[9] Available from Wharton Research Data Services, http://wrds.wharton.upenn.edu/. The use of annual data, as opposed to more frequent observations, may underestimate the true number of large shareholders because some blockholders can enter and exit our panel within a year, thus not showing up in firms' proxy statements. If some large shareholder chooses to own a stake below the 5% reporting threshold, they also do not show up in the proxy statements and in the DFGM database.

[10] The database has 20,975 blockholder entries. However, not all of these entries are 5% blockholders. For example, "Karen Smith" and "Peter Smith" are recorded in the raw data, but they jointly hold shares through the "Smith Family Trust." Conditioning on the final blockholder flag in the DFGM database will eliminate Karen Smith and Peter Smith, and retain only the Smith Family Trust.

longitude of each blockholder and firm by matching the zip codes to data from the *U.S. Census Bureau's Gazetteer Place and Zip Code Database.*

A plot of blockholder and firm locations reveals important patterns that are relevant for our analysis of large shareholders. Figure 1 shows locations of individual blockholders. These blockholders are distributed across the entire U.S. Figure 2, on the other hand, shows the location of headquarters of mutual fund and money manager blockholders, the two largest categories of institutional investors. Many of these blocks are located in cities with a significant financial industry.

We compute the distance (in miles) from a blockholder to each of its investment firms' headquarters using the methodology of Coval and Moskowitz (1999). Table 1 reports that the median distance is small for non-managerial individual blocks (42.5 miles) and managerial blocks (0 miles). More than half of the non-managerial individual shareholders are located in the same state as the firm, and, perhaps not surprisingly, more than 90% of all managerial large shareholders are located in the same state as the corporate headquarters. The results are significantly different for institutional investors. The median distance between mutual fund (money manager) headquarters and the headquarters of the firms in which they own large stakes is 1,017 miles (858 miles). Less than 10% of all mutual fund and money manager headquarters are located in the same state as the corporate headquarters of their block investments.[11]

3.3. The geographic distribution of high net worth individuals

Our data for the geographic distribution of wealth is from the *Statistics of Income* (SOI) program at the *Internal Revenue Service* (IRS). It reports the number of high net worth individuals in each state, estimated from estate tax return filings.[12] An alternative data source for the distribution of wealth in the U.S. is the *Survey of Consumer Finance*. Johnson and Moore (2002) compare the methodology and

[11] Gaspar and Massa (2007) analyze the local ownership of mutual funds and find a local bias. Their analysis is not inconsistent with ours. They aggregate the local ownership of many different mutual fund managers working for different firms to calculate a measure of total ownership in the geographic proximity of a firm's headquarters. We aggregate shares across different fund managers within the same mutual fund family and attribute the total ownership to the location of the headquarters of the mutual fund family.

[12] For details, see IRS, Statistics of Income Bulletin, Winter 2002-2003, Publication 1136 (Rev. 4-2003).

wealth distributions from the SOI and SCF data, and find that they are similar. Most importantly given our objective, SOI provides geographic information, whereas the SCF does not.[13]

The SOI reports estimates of the number of high net-worth individuals by state in 1995, 1998 and 2001 as well as their estimated average wealth. The definition of high net worth varies somewhat from year to year. In 1995, it is net wealth from $0.6 to $10 million (in terms of counting the total number of high net worth individuals, the upper cutoff likely makes a small difference). In 1998 and 2001, the lower limit is $1 million of net wealth and there is no upper limit. The three cross-sections are similar. We use the 1995 data since it predates all the ownership observations in our sample. Figure 3 shows the density of high net worth individuals, defined as the number of high net worth individuals in 1995 divided by the total number of firms headquartered in the state (in 1995), based on SOI and information on firm headquarters from the Compustat database.

We find significant geographic dispersion in the wealth density measure. Across states, the median density (number of high net worth individuals per firm) is 565 (Oklahoma). The mean is 664 (between Mississippi and West Virginia). The 25th and 75th percentiles are 419 (Arizona) and 733 (Idaho), respectively. The lowest two densities are 228 (Colorado) and 247 (Utah) and the highest two are 1,857 (North Dakota) and 2,500 (Alaska). Of the top five states in terms of number of headquarters, California has a density of 442, Texas 299, New York 473, Florida 603 and Massachusetts 270.[14] Throughout, we normalize the measure so that it is measured in units of thousands of individuals per firm headquarter (i.e., the median is 0.565).

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[13] There are other subtle differences. The SOI data are for individuals, whereas the SCF is household-based. One advantage of the SOI dataset is that the sample size is significantly larger since the number of estate tax filings is on the order of 15,000 per year, which all correspond to a high net worth individual. High net worth individuals are only about a tenth of those surveyed in the SCF (the 1994 SCF covers 4,522 families). Also, the precision of the SOI may be somewhat better since tax authorities require detailed documentation to support the filings, whereas SCF is survey-based. On the other hand, there may be financial incentives to misreport when filing with the IRS.

[14] These statistics are taken across the 50 states. Our sample, which is restricted to large firms, contains no firms headquartered in Alaska, for example. Across sample firms, the mean density is 460 individuals per firm and the standard deviation is 151.

3.4. Estimated wealth distributions

Are the high net-worth individuals on which we base our instrument wealthy enough to own large stakes in the largest U.S. firms? Substantial wealth is required to buy a 5% or larger stake in one of the firms in our sample. To assess whether the estimated number of high net worth individuals and their estimated wealth are large enough to be consistent with the blocks we observe in our database, we estimate the number of wealthy individuals by state. Levy and Solomon (1997), Klass, Biham, Levy, Malcai and Solomon (2006), and Chatterjee, Sinha and Chakrabarti (2007) suggest that wealth distributions follow a power law for the top 5-10% of individuals (by wealth). Such a power law implies a particular relationship between the number of people wealthy enough to be included in the SOI wealth data and those with any other particular wealth level (as long as that wealth level is still in the top 5-10% of individuals).

We use the power law parameter of 1.36, as reported by Levy and Solomon (1997), to infer the top of the wealth distribution.[15] For this section, we use the 1998 SOI data.[16] Table 2 shows our estimates of the wealth distributions for Oregon (with the median number of millionaires: 27,000), Georgia (75th percentile: 64,000), New York (2nd highest: 243,000), and California (highest: 412,000). In these four states, the estimated wealth of the hundred richest individuals was $17.4 billion, $32.8 billion, $87.4 billion, and $128.8 billion, respectively. The number of ultra-wealthy individuals – with more than $100 million in personal wealth – is 51 in Oregon and 122 in Georgia compared to 463 in New York and 785 in California. The table also reports the number of sample firms in each state, the total market value of equity of these firms, and the median, average, and largest firm market values in 1999. Five percent of the median firm's market value across the four states is $43 million, $70 million, $171 million, and $58

[15] Levy and Solomon (1997) use data from the 1996 Forbes 400 list of the richest people in the U.S. to back out the parameter of 1.36. Klass et al. (2006) calculate an average parameter of 1.49 using the Forbes 400 lists during 1988–2003. We use the 1996 parameter as it just predates our sample.

[16] To be consistent with the rest of the paper, we would have preferred to use 1995 data for these calculations. However, the 1998 SOI has a format which makes it easier to work with. Also, we have to use the SOI (1998) later on, as we match it to the Forbes 400 list. The 1998 Forbes list of the wealthiest Americans does, but the 1995 list does not, contain data on individuals' principal residence, which we require. Since the various SOI cross-sections are so similar, and since wealth distributions are stable over time, we expect we would get very similar results using 1995 or 2001 data.

million, respectively, and there are 162, 198, 223, and 1,659 individuals with enough estimated wealth to buy such a stake (if they invested all their wealth).[17] The conclusion that emerges from our estimates in Table 2 is that there seems to be enough wealth for wealthy individuals to play a significant role as (potential) owners of large blocks of shares.

The calculations in Table 2 depend on the accuracy of the power law distribution because they extrapolate the number of extremely wealthy individuals from the number of moderately wealthy individuals. We have carried out the following calculation that shows that the extrapolation using the power law distribution works remarkably well. *Forbes* publishes an annual list of the wealthiest Americans and their principal residences. We therefore know the actual wealth of the 400 richest individuals by state of residence. The minimum wealth required to make the 1998 list was $430 million. In a second step, we use the number of millionaires by state as reported by our data source, the SOI (1998) and the power law parameter of 1.36 estimated by Levy and Solomon (1997), to predict for each state the number of individuals with wealth greater than $430 million in 1998. In a final step, we compare our estimates to the actual numbers from the 1998 *Forbes* list. Figure 4 plots the actual against the predicted number of individuals with more than $430 million in each state. The correlation coefficient is 0.89 and is highly statistically significant. Thus, the power law distribution predicts remarkably well the geographic distribution of ultra wealthy individuals, using the distribution of only moderately wealthy individuals.

3.5. Firm variables

The theories of large shareholders discussed in Section 2 predict that large shareholders can impact a broad set of corporate decisions. We focus on five different sets of firm outcome variables:

[17] Five percent ownership is the smallest size block that triggers a filing with the SEC and thus appears in our data.

(i) Operating performance. We analyze return on assets (ROA) and return on sales (ROS). We also analyze investment levels (measured by capital expenditures) and cost cutting policy (measured by S, G & A expenditures).

(ii) Capital structure. We analyze measures of both book and market leverage.

(iii) Resources and payout policy. We analyze measures of payout policy and cash holdings.

(iv) Managerial compensation and board structure. We analyze the log of base CEO salary and the fraction of pay that is paid in equity. We also analyze the number of outside directors on the board.

(v) Liquidity. We analyze trading volume, the percentage bid-ask spread, and the illiquidity measure of Amihud (2002).

Our data source for annual accounting variables is *Compustat*. We exclude observations with independent variables in both the top and bottom 1%.[18] Our data sources for CEO compensation and board structure are the *Execucomp* database and the *IRRC director* database, respectively. The data used to calculate the liquidity measures come from the *Center for Research in Security Prices* (CRSP). All variables are defined in the Data Appendix.

Table 3 reports summary statistics. Panel A shows that there exists a non-managerial individual block in 11.8% of all firm-year observations. A manager (either current or former) holds a block in 21.9% of all firm-year observations. More than two-thirds of all sample observations have a large mutual fund shareholder. Panel B reports means, medians, and standard deviations for the dependent and independent variables we use in Section 5.

[18] We also used winsorizing at the 1% level with qualitatively and quantitatively similar results.

4. Empirical methodology

In this section, we introduce the econometric model that we employ to identify and quantify the impact of blocks. We also discuss the validity and economic plausibility of our instrument.

4.1. Two-stage selection model

Most of the existing empirical literature in corporate finance that has studied the economic effects of large shareholders has estimated an equation of the following form:

$$y_{it} = \gamma d_{it} + \delta_i + \lambda_t + \boldsymbol{\beta}\mathbf{X}_{it} + \varepsilon_{it} \qquad (1)$$

where *i* indexes firms and *t* indexes years. y_{it} is a firm performance or corporate policy variable that is expected to be affected by a blockholder, δ_i are industry fixed effects, λ_t are year fixed effects, and $\mathbf{X}_{it}$ is a vector of time-varying firm-level controls, e.g., the size or age of the firm. d_{it} is an indicator variable that is equal to 1 if a large shareholder is present in firm *i* in year *t*, and 0 otherwise. ε_{it} is an error term.

It is problematic to draw causal inferences about the impact of blockholders on firm behavior from estimates of γ in equation (1), because there are economic reasons to expect that blocks are not randomly distributed across firms. For example, growth options, managerial quality or firm size are potential determinants of corporate policy choices and firm performance. But the same variables may also be correlated with the existence of a large shareholder. Large shareholders may choose to invest in high growth firms with managers that have a good track record. It is easier for individuals to accumulate a block in a small firm with highly liquid stock. If the vector $\mathbf{X}_{it}$ does not include all relevant variables, the large shareholder indicator variable d_{it} will be correlated with the error term in equation (1), and OLS estimates of γ will be biased.

To address this endogeneity problem, we employ a two-stage selection model, following Heckman and Robb (1985). The model we estimate differs from standard two-stage least squares (TSLS) models because of the binary nature of the endogenous variable of interest (the presence of a non-

managerial individual block). As in standard TSLS, the estimation involves two equations. The first stage equation is:

$$d_{it}^{*} = g w_{it} + a_i + c_t + \mathbf{b}\mathbf{X}_{it} + e_{it}$$
$$d_{it} = \begin{cases} 1 & d_{it}^{*} > 0 \\ 0 & d_{it}^{*} \le 0 \end{cases} \qquad (2)$$

where d_{it}^{*} is a latent variable and w_{it} is our instrument, a measure of local wealth density, i.e., the number of high net worth individuals per firm headquarter in a state. We report estimates of the first stage using both linear probability models and probit models.

In the second stage, firm performance or corporate policies are modeled and it is assessed how they are affected by the predicted probability of block presence in a firm. The second stage equation is:

$$y_{it} = \gamma_{Block} d_{it} + \delta_i + \lambda_t + \boldsymbol{\beta}\mathbf{X}_{it} + \varepsilon_{it} \qquad (3)$$

Since the only endogenous variable in equation (3) is an indicator variable, this model is sometimes referred to as a "dummy endogenous variable model" (Heckman (1978)). We assume that e_{it} and ε_{it} follow a joint normal distribution with a correlation coefficient of ρ. The model is estimated by maximizing the joint likelihood function (see also Maddala (1983)). The estimated coefficient γ_{Block} captures the effect of a large shareholder on y_{it}.

If the error terms e_{it} and ε_{it} are uncorrelated ($\rho = 0$), then the effect of large shareholders on firm performance or corporate policies can be consistently estimated with ordinary least squares (OLS). If ρ is positive, then the coefficient γ estimated through OLS is overstated; if ρ is negative, then it will be understated. We test whether ρ is zero with a Chi-square test which is reported in all tables.

The effect we estimate for large individual shareholders is referred to as a local average treatment effect (LATE), i.e. it reflects the average impact of blocks on firms which actually have a block in our sample. Our estimates are not necessarily valid more generally. For example, assigning a block to a random firm may have a smaller effect. Also, if the effect of blocks varies across firms, our estimates

refer to the average effect. For example, if blockholders increase executive pay in some firms but reduce it in others, the net effect might be indistinguishable from zero.

4.2. Validity of instrument

One condition for the validity of our instrument is the exclusion restriction, i.e., that the instrument is not correlated with the error term of the second stage equation. Since we have only one instrument, it is not possible to implement a test based on overidentifying restrictions. As Wooldridge (2002) puts it, "this condition has to be maintained" (p. 86).

Another condition for the validity of our instrument is the requirement that the instrument and the endogenous variable be correlated once all other exogenous variables have been controlled for. This condition can be tested using a simple *t*-test. We report significant *t*-statistics (cluster- and heteroscedasticity-consistent) for our instrument in all first-stage regressions.

Recent econometrics research has dealt with the "weak instrument problem" (e.g., Bound, Jaeger and Baker (1995), Nelson and Startz (1990), and Staiger and Stock (1997)), a situation where instruments are only weakly correlated with the endogenous variable (or variables). In cases with a large number of instruments, each weakly correlated with the endogenous variable, standard estimators can be biased and confidence intervals understated. This critique does not apply to our tests, as we only have a single instrument. In a TSLS setting, Imbens and Wooldridge (2007) suggest that second stage confidence intervals will be large if an instrument is weak or irrelevant, i.e., standard methods of inference are reliable. With the caveat that we use a probit selection equation in the first stage, this suggests that our test statistics are accurate.[19] Moreover, with weak instruments, TSLS estimations are biased toward OLS estimates (see Bound, Jaeger and Baker (1995)). Because we find significant differences between IV and

[19] Staiger and Stock (1997) develop a rule of thumb for sufficient significance of the incremental power of instruments (in the case of one instrument, the squared t-test should be approximately 10). Several issues prevent us from using their rule of thumb. First, we estimate a probit first stage equation. Second, we cluster our standard errors by state such that we violate the iid assumption upon which their test is based.

OLS estimates (see Section 6), this again suggests that our results are unlikely to suffer from a weak instrument problem.

4.3. Economic plausibility of instrument

Our identification strategy employs the density of high net worth individuals as an instrument for the presence of a non-managerial individual block in local firms. We think this is economically plausible for the following reasons. First, personal wealth is likely a key determinant of an individual's ability to accumulate a large position of equity in a public firm. If there are limits to individuals' access to financing, vast personal wealth is required to become a blockholder in a firm. In practice, this is almost certainly true. Second, investors are prone to investing locally. For several reasons, individual blockholders are likely to exhibit a preference for investments in firms that are headquartered close by. For example, monitoring costs may be lower, making blocks in such firms more desirable (see Lerner (1995) for evidence in the context of venture capitalists), or individuals may have better information about local firms. Indeed, we found in section 3.2 that the non-managerial individual blockholders in our sample tend to be located close to their firms (and much closer than institutional investors). Finally, there is substantial variation in the density of wealthy individuals across space. Glaeser (1998) provides several theoretical reasons for why wealthy individuals may want to live close to each other, and thus why there could be variation in the density measure across states. Indeed, we found in section 3.3 that there is significant dispersion in the density of wealthy individuals across U.S. states.

4.4. Example: Bill Gates's block in Avista Corp.

The nature of our identification strategy can be most easily explained with an example. In our sample, the density of millionaires per corporate headquarter in the State of Washington is above average (recall that this is based on estate tax filings). One of our sample firms is Avista Corporation (formerly Washington Water & Power), located in Spokane, WA. On January 20, 2000, Cascade Investment, LLC, bought a 5% block in Avista. The SEC filing reveals that Microsoft-founder Bill Gates is the sole

member of Cascade Investment. Gates resides, and Cascade Investment is located, in the state of Washington. Therefore, Gates bought a non-managerial individual block that is geographically close.

If wealthy individuals invested randomly across the U.S., our instrument would have no explanatory power in the first stage regressions. Since wealthy individual investors – just like Bill Gates – invest locally, our instrument will be positively correlated with the existence of non-managerial individually owned blocks.

5. Results

5.1. Block presence and high net worth individuals

We begin our empirical analysis by reporting results from the first stage regression, in which we predict the presence of a non-managerial individual block in a firm. Table 4 shows that the density of wealthy individuals in a particular geographic region significantly predicts the presence of a large shareholder in a firm located in the same region. In column (1), we estimate a linear probability model by OLS. The coefficient (0.190) implies that a one standard deviation increase in the density of high net worth individuals (0.420) increases the block probability by nearly eight percentage points. The economic magnitude of the estimated effect is large when considering that the mean probability of having a non-managerial individual block is 11.8% in our sample.[20]

The linear probability model is possibly a poor fit, since probabilities are close to zero. In columns (2) through (4), we estimate probit regressions with and without year-fixed, industry-fixed, and firm controls.[21] Our conclusion that block presence in a firm is significantly predicted by the density of

[20] This standard deviation is across states (i.e. fifty observations). Taking a standard deviation across firms yields a lower number (because few firms are located in the states with extreme densities). A firm-based standard deviation is density is 0.151. An increase in the density of 0.151 increases the probability of a block by approximately 2% (starting from the sample mean probability of 11.8%).

[21] We use Fama-French industries in all regression specifications in the paper, but the results are very similar when we use 2-digit North American Industry Classification System (NAICS) industries.

local wealth is robust and does not change across specifications.[22] The coefficients on the control variables appear to be economically plausible. Non-managerial blockholders seem to be present in smaller firms with significant sales growth. Firm age is positively correlated with the existence of a non-managerial individual blockholder, which suggests that non-managerial individuals do not invest in the youngest sample firms.

In addition, we analyze the magnitude of the estimated effects. In column (4), we find that around the sample mean probability of having an individual block, the effect of increasing the density of high net worth individuals by one standard deviation is to increase the block probability by about 7.1 percentage points. For a firm that is one standard deviation smaller (log assets is 1.5 lower) and ten years younger, but that is otherwise at the average block probability, the effect of an increase in the density of high net worth individuals by one standard deviation is to increase the block probability from 26% to 37%.

In the remaining three columns of the table, we report several robustness checks. In column (5), we replace the wealthy individual density measure by wealth per listed firm in a state in 1995, thus incorporating information on the high net worth individuals' average wealth from the 1995 SOI. At the sample mean, a one standard deviation increase of wealth per listed firm increases the predicted probability of an individual block by 6.6 percentage points. Hence, the economic and statistical significance is very similar across columns (4) and (5). In column (6), we report a linear specification with the log of one plus the ownership by non-managerial individual blockholders as the dependent variable. Again, there is a significant positive coefficient for wealth density.[23]

As the results from several different regression specifications in Table 4 show, variations on our basic first stage methodology give similar results. In the rest of the paper, we report results using the

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[22] It can be argued that individual and institutional blocks are substitutes. In untabulated regressions, we have included an indicator variable for the existence of a large mutual fund, money manager, or other institutional owner in a firm. These control variables do not change any of the reported results.

[23] When entered separately, the two components of our density measure (the number of high net worth individuals and the number of firm headquarters) are each statistically significantly related to the presence of a large individual shareholder. This is true for all specifications in Table 4 involving individual shareholders.

density of high net worth individuals and a probit selection model with the large individual shareholder dummy. Finally, in column (7), we show that the predictive power of the density of wealthy individuals is restricted to non-managerial blocks. Our instrument does not significantly predict the existence of a managerial block.

The main conclusion that can be drawn from the results of the various first stage regressions is that blocks are not randomly distributed across firms. We find that small firms with high sales growth but low lagged returns have a significantly higher probability of having a large shareholder, all else being equal. Thus, we identify significant selection effects – blockholders are more likely to invest in certain types of firms. Furthermore, both observable and unobservable variables that determine the presence of a blockholder such as firm size or quality of management are likely to be important in the second stage regressions as well. This is important as it implies that causal inference regarding the impact of blocks on firms is not possible from standard econometric models such as equation (1) and OLS, because the treatment effects of blocks are confounded with selection effects. For all of the remaining regressions in the paper, we therefore use instrumental variable regressions.

5.2. Operating performance

Table 5 reports evidence on the effect of large shareholders on operating performance. We find that blockholders have a significant and positive effect on return on assets (ROA). In column (1), we find that the coefficient on the block indicator variable is 0.029 and statistically significant at the 5% level. This corresponds to 2.9 percentage points higher operating profitability, all else equal, in firms with a large individual shareholder. This is large in economic terms given the mean ROA in our sample is 4.7% (the standard deviation is 10.4%). For robustness purposes, we replace ROA with ROS (profits scaled by sales) in column (2). The impact of large shareholders remains positive and significant. The positive estimated effect of large shareholders on profitability supports theories of large shareholders as monitors.

The estimated correlation of the error terms in the first and second stage is negative and significant, meaning that large shareholders tend to invest in firms with relatively low profitability

(holding other firm level variables constant). Thus, endogeneity will tend to bias downward OLS estimates of the impact of blocks on operating performance.

There are several potential sources of the positive block impact on profitability, such as improving project selection, changing investment levels, and cutting costs. Our dataset allows us to analyze some of these sources. In column (3), we find that S, G & A expenditures do not seem to be significantly impacted by the presence of a large shareholder in a firm. If more efficient cost cutting is not responsible for the effect on operating profitability, another potential source of the efficiency increase is that large shareholders improve investment levels by, e.g., reducing overinvestment. In column (4), we find that investment levels of firms are about 5.5% lower in the presence of a block in the firm, although this effect is only significant at the 10% level. We also find that blockholders tend to select firms that invest more, all else equal (ρ is positive). This is consistent with blockholders mitigating overinvestment problems, but also with other theories suggesting that large shareholders restrain investment (e.g., Stulz (2005)). For example, large shareholders may be reluctant to provide more funds for new projects themselves, but also do not want other investors to increase their equity stakes for fear of losing voting power.

5.3. Capital structure

We next examine the impact of large shareholders on leverage and capital structure. The evidence on capital structure is reported in Table 6. We study three measures in columns (1)-(3): book leverage, long term book leverage, and market leverage. Across all measures, we find that the coefficient on the block indicator variable is negative, but the coefficient is only significant, at the 10% level, for one of the three specifications (long-term book leverage in column (2)). The coefficient in column (2) implies 3.9 percentage points lower long-term book leverage for firms with a large blockholder, which can be compared to the average ratio of 21% in our sample.

One interpretation of this evidence is that large shareholders have little impact on firms' capital structure decisions, but an important caveat that applies to this finding is that heterogeneity across blocks

can also explain the lack of significant blockholder impact on leverage. Cronqvist and Fahlenbrach (2008) show that different blockholders are associated with significant leverage effects, but that some have a positive and others have a negative association. If some non-managerial large shareholders have a positive effect on leverage ratios while others have a negative effect, then we could estimate a zero average effect.

5.4. Resources and payout policy

Table 7 reports evidence on payout policy and cash holdings. We analyze three measures of payout policy in columns (1)-(3): book dividend yield, market dividend yield, and dividend payout ratio. Controlling for selection effects in block presence, we find that blocks significantly increase dividends. The magnitudes of the effects implied by our estimates are large: a block in a firm is estimated to approximately double the book and market dividend yields compared to the means. Moreover, we find that blockholders tend to select firms with low dividends relative to otherwise similar firms. For the dividend payout ratio (dividends scaled by EBITDA instead of equity), we find that large shareholders increase the ratio. The estimated effect is 0.226, or approximately half a standard deviation. This effect is significant at the 10% level.

A caveat applies to this finding, related to recent evidence on dividend catering. Becker, Ivković and Weisbenner (2007) find that firms have higher dividend yields at locations where seniors constitute a large fraction of the population. It is possible that managers also cater to high net-worth individuals in the geographic area of a firm's headquarters. Yet, we consider catering of the payout policy to wealthy individuals an unlikely explanation for our result, because the U.S. tax code during the period we study did not favor dividends as a means of distributing resources to shareholders in the highest tax brackets.

We also document that large shareholders significantly reduce firms' cash holdings. In column (4), we find that the coefficient on the instrumented block indicator variable is -0.057 and statistically significant at the 5% level. This effect is economically large: cash holdings (as a fraction of total assets)

of firms with blocks are smaller by 5.7 percentage points, compared to a sample mean of about 18%. Thus, cash is reduced by about a third in firms with large shareholders.

A main area of conflicts of interest between owners and managers is managers' preference for retaining assets and resources within the firm (Easterbrook (1984) and Jensen (1986)). The evidence presented in Table 7 suggests that large shareholders increase dividends and reduce cash holdings. Our findings are supportive of theories about managerial resource grab and are consistent with the hypothesis that monitoring by large shareholders can restrain managers from retaining too many resources inside the firm. However, large shareholders may value dividends and repurchases differently than other owners. For example, their tax situation might be different. Furthermore, large blockholders may have a desire to obtain cash (e.g., to finance consumption) while maintaining voting power. If this motivates payouts, we would expect to see some substitution from repurchases to dividends. In order to examine this, we replace the dividend payout ratio with the repurchase payout ratio (calculated the same way as the dividend payout ratio). Results are reported in column (5). It turns out that large individual shareholders have a negative effect on repurchases, consistent with the substitution hypothesis. The coefficient is approximately half of the coefficient on dividend payout, suggesting that while substitution is an important part of the increased dividends, there is also a positive net impact on payout.[24] Overall, the payout results suggest that while large shareholders mitigate agency problems between owners and managers, they also create new agency conflicts between different owners.

5.5. Managerial compensation and board structure

If large blockholders influence firms as much as suggested by the results on performance, capital structure and payout, it is natural to ask how. In this section we examine two tools blockholders may employ to influence the firms in which they invest, the incentives for the firm's CEO and the board. Evidence on compensation and board structure is reported in Table 8. In columns (1) and (2), results are

[24] We have verified this using the aggregate payout ratio as well as the aggregate payout yield. Both of these are positively associated with large shareholders.

reported for two measures of CEO pay: the log of total CEO pay and the fraction of CEO pay that is paid in the form of firm stock or options. Our results point to significantly lower CEO pay and lower incentive pay for CEOs running firms in which blockholders have a stake. The coefficient estimate in column (1) implies a reduction in CEO pay of 0.8 of a standard deviation in the presence of a blockholder. Moreover, incentive pay is a smaller fraction of total compensation by about 0.4 (the mean is 0.5; a standard deviation is 0.3).[25] In both regressions, there is a positive and significant correlation between first and second stage error terms which implies that firms with unusually high CEO pay packages seem to attract blocks.

The evidence of lower CEO pay is consistent with several theories. First, this finding is consistent with the joint hypotheses that CEOs use pay to try to extract rents (Bebchuk and Fried (2004)) and that blockholders mitigate such managerial agency problems by monitoring CEO compensation. Second, the lower incentive pay is consistent with substitution of different governance mechanisms: firms with a non-managerial individual blockholder as a monitor do not need as much pay-for-performance sensitivity to align the interests of owners and management.[26]

It seems large shareholders often work through the corporate board. In Table 8, we find that there are 1.6 more outside directors in firms with a blockholder. The effect is economically large, because the average firm in our sample has a total of about seven outside directors. This suggests that large blockholders exert influence on corporate policies, and thus ultimately affect operating performance, through the board.

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[25] Our estimates correspond to an average reduction in CEO pay by about $1.5M, almost all in terms of incentive pay. Note also that many CEOs receive $1M in cash pay for tax reasons, which may explain why incentive are a lower part of total pay for CEOs with lower total compensation.

[26] Another possibility is that firms with blockholders hire different CEOs. For example, it may be less enjoyable to run a firm with strong owners and the possibility of intervention by large owners can reduce managerial initiative (Burkart, Gromb and Panunzi (1997)), or the need for a skilled CEO is lower for firms with large active blockholders, so those firms hire a less expensive CEO.

5.6. Liquidity

The theoretical prediction for stock market liquidity is particularly problematic to evaluate empirically using a standard OLS estimation procedure, because as argued by Maug (1998), blocks are more easily and inexpensively formed in firms with more liquid shares. This prediction has some support in the data because we document that blockholders tend to select firms with relatively high trading volume. Using our two-stage selection model, we can isolate the causal effect of blocks on liquidity without selection effects impacting the estimates.

Table 9 reports our evidence on liquidity and large shareholders. We analyze three measures of liquidity: trading volume, bid-ask spread, and Amihud's (2002) illiquidity measure. Our estimates show economically large negative effects of blocks on liquidity. In column (1), we find that trading volume is reduced by about half a standard deviation in the presence of a block. Because this may simply be the result of a smaller free float of shares among firms with blocks, we also analyze alternative measures. In column (2), the estimated coefficient on the large shareholder indicator variable implies that a block increases the bid-ask spread by about one standard deviation. In column (3), we find that Amihud's (2002) illiquidity measure increases by a quarter of a standard deviation when a block is present in a firm.

The evidence in the table that blocks significantly reduce the liquidity of a firm's shares supports the predictions by Holmström and Tirole (1993) and Bhide (1993), and implies that one side effect of large shareholders in public firms is lower stock liquidity and less information production about the firm.

5.7. Robustness of results

We conduct several tests to check the robustness of our results. First, because the variation in our instrument is driven by state-wide differences, a concern is that we are capturing differences across states that are correlated with blockholder presence but have little to do with the economic explanations we provide. Therefore, we re-estimate the first stage selection equation with "placebo instruments" that vary across states, but that we do not expect to predict the presence of a block in a firm. These measures are: population density, income inequality, per capita income (median and average), and the poverty rate.

Table 10 reports the results. When we include all the state-level variables mentioned above in addition to our instrument, with or without year and industry fixed effects, we find that none of these variables significantly predicts the existence of an individual block. The coefficient on our instrument remains positive and statistically significant.

Another concern is that the denominator of our density measure uses the number of firm headquarters in an area, which may be correlated with many factors unrelated to the supply of wealthy individuals who are potential blockholders. For example, information about a firm may be more easily obtained where there are only a few firms in the geographic region. We have included the two components of our instrument separately in a regression (i.e., the number of individuals with high net worth and one divided by the number of corporate headquarters of public firms located in a state). We find that both measures have independent and significant power in explaining the large shareholder dummy. The effect of wealth is larger and more significant. This cannot be explained by the informational advantage argument or other factors correlated with the number of local firm headquarters.[27]

When examining a local bias in institutional holdings, Coval and Moskowitz (1999) estimate regressions in which they exclude the New York metropolitan area, because so many mutual funds and firm headquarters are located in New York City. The inclusion of New York City could lead to an overestimate of the local bias. In our case, it may be that many rich individuals deem New York City an attractive city in which to live, and at the same time, they hold blocks in one of the many firms in New York. When we exclude the New York City area to see whether it drives our results, we find that the economic and statistical significance of the estimated first stage coefficient of the instrument increases.

Some non-managerial individual large shareholders that are also directors do not provide their address in the proxy statement, but state "same address as company". To make sure that these observations do not drive our results, we re-estimate all regressions excluding blocks with zero distance

[27] These and other untabulated regressions are available from the authors upon request.

between the location of the blockholder and the firm's headquarters. The results of these regressions are qualitatively and quantitatively similar to those reported in Tables 5 through 9.

Our instrument is based on the high net worth distribution for 1995, because it predates our full sample. We have also used 1995 SOI data for 1996-1998 and 1998 data for 1999-2001 (the last year in our sample), as well as 1998 data for all years, with very small differences in the results.

6. Discussion and conclusions

Are policy choices and corporate performance different when a large shareholder is present in a firm? While there exist many theoretical models of large shareholders which imply that blocks can influence firm behavior and outcomes, empirical examinations potentially suffer from endogeneity problems because there are economic reasons to expect that blocks are not randomly distributed across firms. Although this endogeneity concern has been long recognized and instrumental variable solutions have been suggested (at least since Demsetz and Lehn (1985)), the problem has proven difficult to overcome: It is hard to find an instrument that fulfills the exclusion restriction.

We employ an instrumental variable approach that consistently estimates coefficients for a subset of large shareholders (non-managerial individual blockholders). We show that firm characteristics systematically predict the existence of a large non-managerial blockholder and that therefore selection effects are important, as predicted by theory. Because of the systematic selection of firms into ownership structures, the second-stage coefficients of the instrumented large shareholder dummy are statistically and economically different from large shareholder coefficients obtained via the standard OLS model. Table 11 highlights this finding by comparing the two stage selection model estimates with OLS estimates. The differences in economic magnitude and significance are substantial.

We find that large shareholders have a significant impact on operating performance, corporate policies, and the liquidity of the firm's stock. Consistent with theories of large shareholders as monitors, we show that profitability and payout ratios are higher, and cash holdings and CEO pay are lower with a

large shareholder present in a firm. Large shareholders may also take actions that are not in the interest of other shareholders, for example substituting dividends for (tax efficient) repurchases. Consistent with other theoretical predictions, we find that another effect of having a large shareholder is reduced stock liquidity.

Finally, we note two important caveats. We have sidestepped the important issue of how other large shareholders impact corporate policies and performance, because our instrument does not help identify the presence of other owners. Also, we are not able to separate the effect of the threat of future block presence from the immediate impact of existing large shareholders in a firm. As suggested by Manne (1965), the mere threat of actions by blockholders or raiders may influence managerial behavior, and if firms in high wealth density states face a higher threat of block formation, this may explain part of our results. To the extent that we are interested in the aggregate impact of large shareholders on firms and on the economy, the indirect effect of a threat is important, but, ideally, it should be separately identified.

References

Amihud, Yakov, 2002, Illiquidity and stock returns: cross-section and time-series effects, *Journal of Financial Markets* 5, 31-56.

Bebchuk, Lucian, and Jesse Fried, 2004. *Pay without Performance: The Unfulfilled Promise of Executive Compensation* (Harvard University Press, Cambridge, MA).

Becker, Bo, Zoran Ivković, and Scott Weisbenner, 2007, Local Dividend Clienteles, *University of Illinois at Urbana Champaign Working Paper*.

Berle, Adolf A., and Gardiner C. Means, 1932. *The Modern Corporation and Private Property* (MacMillan, New York, NY).

Bertrand, Marianne, and Sendhil Mullainathan, 2003, Enjoying the Quiet Life? Corporate Governance and Managerial Preferences, *Journal of Political Economy* 111, 1043-1075.

Bhide, Amar, 1993, The hidden costs of stock market liquidity, *Journal of Financial Economics* 34, 31-51.

Black, Bernard S., 1990, Shareholder passivity reexamined, *Michigan Law Review* 89, 520-608.

Bolton, Patrick, and Ernst-Ludwig von Thadden, 1998, Blocks, liquidity, and corporate control, *Journal of Finance* 53, 1-26.

Bound, John, David A. Jaeger, and Regina M. Baker, 1995, Problems with instrumental variables estimation when the correlation between the instruments and the endogenous explanatory variable is weak, *Journal of the American Statistical Association* 90, 443-450.

Brickley, James A., Ronald C. Lease, and Clifford W. Smith, Jr., 1988, Ownership Structure and Voting on Antitakeover Amendments, *Journal of Financial Economics* 20, 267-91.

Burkart, Mike, Denis Gromb, and Fausto Panunzi, 1997, Large shareholders, monitoring, and the value of the firm, *Quarterly Journal of Economics* 112, 693-728.

Chatterjee, Arnab, Sitabhra Sinha, and Bikas K. Chakrabarti, 2007, Economic inequality: Is it natural?, *Current Science* 92, 1383-1389.

Chhaochharia, Vidhi, and Yaniv Grinstein, 2007, Corporate governance and firm value: the impact of the 2002 governance rules, *Journal of Finance* 62, 1789-1825.

Coval, Joshua D., and Tobias J. Moskowitz, 1999, Home bias at home: Local equity preference in domestic portfolios, *Journal of Finance* 54, 2045-2073.

Coval, Joshua D., and Tobias J. Moskowitz, 2001, The geography of investment: Informed trading and asset prices, *Journal of Political Economy* 109, 811-841.

Cronqvist, Henrik, and Rüdiger Fahlenbrach, 2008, Large Shareholders and Corporate Policies, *Review of Financial Studies* forthcoming.

Davis, Gerald F., and E. Han Kim, 2007, Business ties and proxy voting by mutual funds, *Journal of Financial Economics* 85, 552-570.

Demsetz, Harold, 1983, The structure of ownership and the theory of the firm, *Journal of Law and Economics* 26, 375-390.

Demsetz, Harold, and Kenneth Lehn, 1985, The structure of corporate ownership: Causes and consequences, *Journal of Political Economy* 93, 1155-1177.

Diamond, Douglas W., 1984, Financial intermediation and delegated monitoring, *Review of Economic Studies* 51, 393-414.

Dlugosz, Jennifer, Rüdiger Fahlenbrach, Paul Gompers, and Andrew Metrick, 2006, Large Blocks of Stock: Prevalence, Size, and Measurement, *Journal of Corporate Finance* 12, 594-618.

Easterbrook, Frank H., 1984, Two agency-cost explanations of dividends, *American Economic Review* 74, 650-659.

Fama, Eugene F., and Michael C. Jensen, 1983, Separation of ownership and control, *Journal of Law and Economics* 26, 301-325.

Friedman, Eric, Simon Johnson, and Todd Mitton, 2003, Propping and tunneling, *Journal of Comparative Economics* 31, 732-750.
Gaspar, Jose-Miguel, and Massimo Massa, 2007, Local ownership as private information: Evidence on the monitoring-liquidity trade-off, *Journal of Financial Economics* 83, 751-792.
Glaeser, Edward L., 1998, Are cities dying?, *Journal of Economic Perspectives* 12, 139-160.
Glosten, Lawrence R., and Paul R. Milgrom, 1985, Bid, ask, and transaction prices in a specialist market with heterogeneously informed traders, *Journal of Financial Economics* 14, 71-100.
Gorton, Gary, and Matthias Kahl, 2008, Blockholder scarcity, takeovers, and ownership structures, *forthcoming Journal of Financial and Quantitative Analysis*.
Grossman, Sanford J., and Oliver D. Hart, 1980, Takeover bids, the free-rider problem and the theory of the corporation, *Bell Journal of Economics* 11, 42-64.
Hartzell, Jay C., and Laura T. Starks, 2003, Institutional Investors and Executive Compensation, *Journal of Finance* 58, 2351-2374.
Heckman, James J., 1978, Dummy endogenous variables in a simultaneous equations system, *Econometrica* 46, 931-960.
Heckman, James J., and Richard Robb, Jr., 1985, Alternative methods for evaluating the impact of interventions: An overview, *Journal of Econometrics* 30, 239-267.
Hochberg, Yael, Paola Sapienza, and Annette Vissing-Jorgensen, 2007, A lobbying approach to evaluating the Sarbanes-Oxley Act of 2002, *Northwestern University Working Paper*.
Holderness, Clifford G., 2003, A Survey of Blockholders and Corporate Control, *Federal Reserve Bank of New York Economic Policy Review* 9, 51-64.
Holmstrom, Bengt, and Jean Tirole, 1993, Market Liquidity and Performance Monitoring, *Journal of Political Economy* 101, 678-709.
Imbens, Guido, and Jeffrey M. Wooldridge, 2007, What's new in econometrics?, *NBER Summer Institute Lecture Notes*.
Jensen, Michael C., 1986, Agency costs of free cash flow, corporate finance and takeovers, *American Economic Review* 76, 323-329.
Jensen, Michael C., 1989, Eclipse of the public corporation, *Harvard Business Review* 67, 61-74.
Johnson, Barry, and Kevin Moore, 2002, Consider the source: Differences in estimates of income and wealth from survey and tax data, SCF working paper.
Johnson, Simon, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer, 2000, Tunneling, *American Economic Review* 90, 22-27.
Klass, Oren S., Ofer Biham, Moshe Levy, Ofer Malcai, and Sorin Solomon, 2006, The Forbes 400 and the Pareto wealth distribution, *Economics Letters* 90, 290-295.
La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, 1997, Legal Determinants of External Finance, *Journal of Finance* 52, 1131-1150.
Lerner, Joshua, 1995, Venture capitalists and the oversight of private firms, *Journal of Finance* 50, 301-318.
Levy, Moshe, and Sorin Solomon, 1997, New evidence for the power-law distribution of wealth, *Physica A* 242, 90-94.
Maddala, G. S., 1983. *Limited-Dependent and Qualitative Variables in Econometrics* (Cambridge University Press, Cambridge, United Kingdom).
Manne, Henry G., 1965, Mergers and the market for corporate control, *Journal of Political Economy* 73, 110-120.
Maug, Ernst, 1998, Large Shareholders as Monitors: Is There a Trade-off between Liquidity and Control?, *Journal of Finance* 53, 65-98.
McConnell, John J., and Henri Servaes, 1990, Additional evidence on equity ownership and corporate value, *Journal of Financial Economics* 27, 595-612.
Mehran, Hamid, 1995, Executive Compensation Structure, Ownership, and Firm Performance, *Journal of Financial Economics* 38, 163-84.

Nelson, Charles R., and Richard Startz, 1990, The distribution of the instrumental variables estimator and its t-ratio when the instrument is a poor one, *Journal of Business* 63, 125-140.
Nickell, Stephen J., 1996, Competition and Corporate Performance, *Journal of Political Economy* 1996, 724-746.
Pérez-González, Francisco, 2005, The impact of acquiring control on productivity, *University of Texas working paper*.
Roe, Mark, 1990, Political and legal restraints on ownership and control of public companies, *Journal of Financial Economics* 27, 7-41.
Shleifer, Andrei, and Robert W. Vishny, 1986, Large shareholders and corporate control, *Journal of Political Economy* 94, 461-488.
Shleifer, Andrei, and Robert W. Vishny, 1997, A Survey of Corporate Governance, *Journal of Finance* 52, 737-783.
Staiger, Douglas, and James H. Stock, 1997, Instrumental Variables Regression with Weak Instruments, *Econometrica* 65, 557-586.
Stein, Jeremy C., 1988, Takeover Threats and Managerial Myopia, *Journal of Political Economy* 96, 61-80.
Stein, Jeremy C., 1989, Efficient Capital Markets, Inefficient Firms: A Model of Myopic Corporate Behavior, *Quarterly Journal of Economics* 104, 655-669.
Stulz, René M., 2005, Presidential Address: The limits of financial globalization, *Journal of Finance* 60, 1595-1638.
Wooldridge, Jeffrey M., 2002. *Econometric Analysis of Cross Section and Panel Data* (MIT Press, Cambridge, MA).

Data Appendix

Variable	Definition
Assets (log)	Log of total assets (Compustat item 6)
Average share price	Mean daily closing share price previous year
Bid-ask spread	Yearly average of the end-of-day relative bid-ask spread, derived from the closing bid and ask from CRSP
Cash holdings	Cash and short-term investments (item 1) divided by lagged net property, plant, and equipment (item 8).
CEO incentive pay	Fraction of toal CEO pay (Execucomp item TDC1) that is paid in either stock or options
CEO pay (log)	Log of the sum of cash salary, cash bonus, and the Black-Scholes value of options granted during a fiscal year to the CEO (Execucomp item TDC1)
Dividend yield	Ratio of the sum of common dividends (item 21) and preferred dividends (item 19) over book value of common equity (item 60) or over market value of common equity
Dividend payer	Indicator variable that is equal to 1 if the sum of common dividends (item 21) and preferred dividends (item 19) > 0, and 0 otherwise
Dividend payout ratio	Common dividends (item 21) divided by EBITDA (item 18)
Firm age	Log of months since first listing on stock exchange
Illiquidity	Yearly average of absolute daily return divided by daily dollar volume, as calculated by Amihud (2002). Data come from CRSP
Institutional block ownership	Aggregate ownership by institutions, counting only blocks of 5% or more of common equity
Investment	Capital expenditures (item 128) divided by lagged net property, plant, and equipment (item 8)
Lagged return	Stock market return over the previous fiscal year
Leverage	Long-term debt (item 9) plus current liabilities (item 34) divided by long-term debt plus current liabilities plus book value of common equity (item 60) (book leverage) or divided by long-term debt plus current liabilities plus market value of common equity (market leverage)
Market capitalization	Number of shares outstanding times calendar year closing price (item 25 x item 199)
Nasdaq membership	Dummy variable equal to one for firms listed on NASDAQ, and zero otherwise
Number of outsiders on board	Number of non-affiliated directors on firm's board, from the IRRC director database
Return on assets	Ratio of EBITDA (item 18) divided by lagged total assets (item 6)
Return on sales	Ratio of EBITDA (item 18) divided by lagged total sales (item 12)
Sales growth	Net sales (item 12) divided by lagged net sales, minus 1
S, G & A	Selling, general, and administrative expenses (item 189) divided by sales (item 12)
Trading volume	Yearly average of number of shares traded per months divided by total shares outstanding
Volatility	Standard deviation of monthly share price, calculated over previous 24 months

Figure 1: Geographic location of large individual shareholders and firms' headquarters

The figure plots the location of large U.S.-based (excluding Alaska and Hawaii) individual shareholders as well as the location of firms' headquarters. The sample is non-dual class S&P 1500 firms during the period 1996-2001. Blockholders are entities that own at least 5% of the outstanding shares. A large shareholder is classified as an "individual" if the block is owned in the individual's name or in a family trust. Location is measured in degrees latitude and longitude.

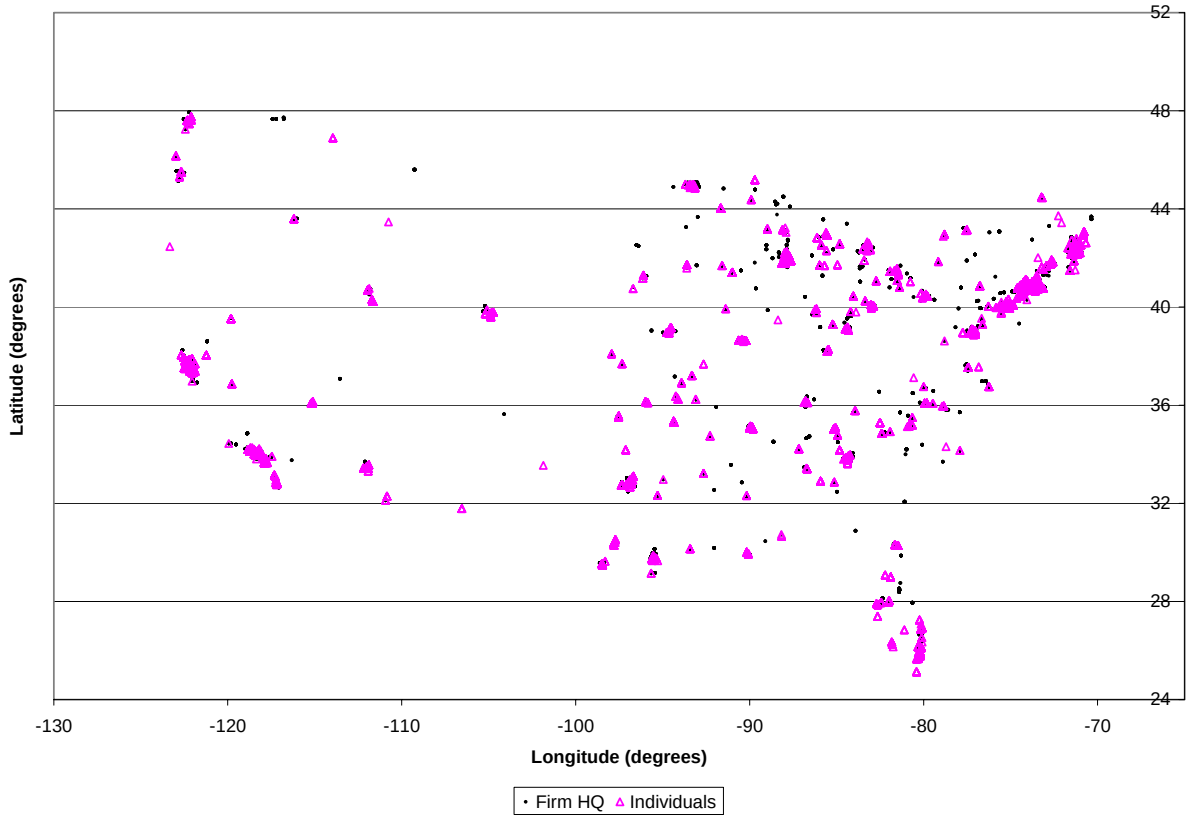

Figure 2: Geographic location of large mutual fund and money manager shareholders and firms' headquarters

The figure plots the location of large U.S.-based (excluding Alaska and Hawaii) mutual fund and money manager shareholders as well as the location of firms' headquarters. The sample is non-dual class S&P 1500 firms during the period 1996-2001. Blockholders are entities that own at least 5% of the outstanding shares. A large shareholder is classified as a "mutual fund" if it offers open-end mutual funds to the public. A large shareholder is classified as a "money manager" if investment services and advice are given to endowments, universities, or high net worth individuals, but no shares of the portfolio can be bought or sold in security markets. Location is measured in degrees latitude and longitude.

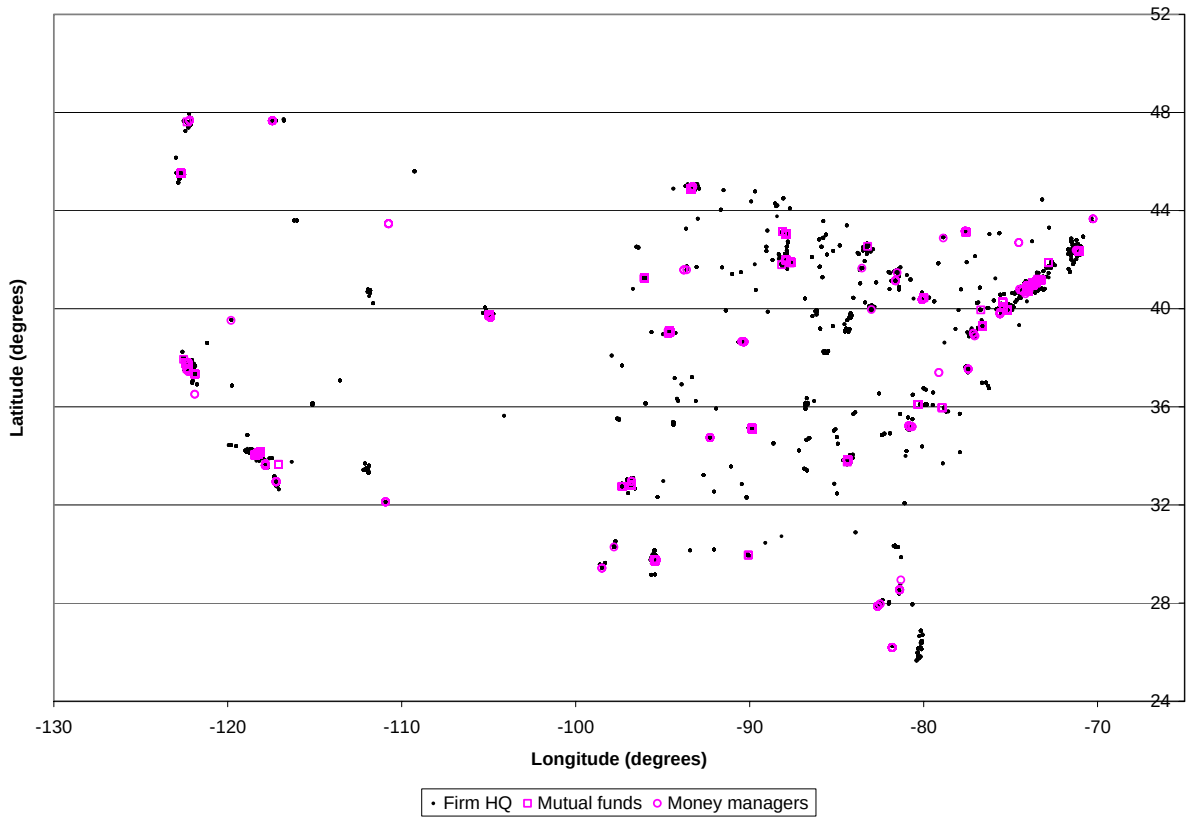

Figure 3: The geographic distribution of high net worth individuals

The figure shows estimates of the number of high net worth individuals per Compustat firm headquarter for each U.S. state. The wealth data are from the Internal Revenue Service's Statistics of Income (SOI) data which report the estimated number of individuals with a high net worth in 1995. The data for firms' headquarters are from Compustat in 1995.

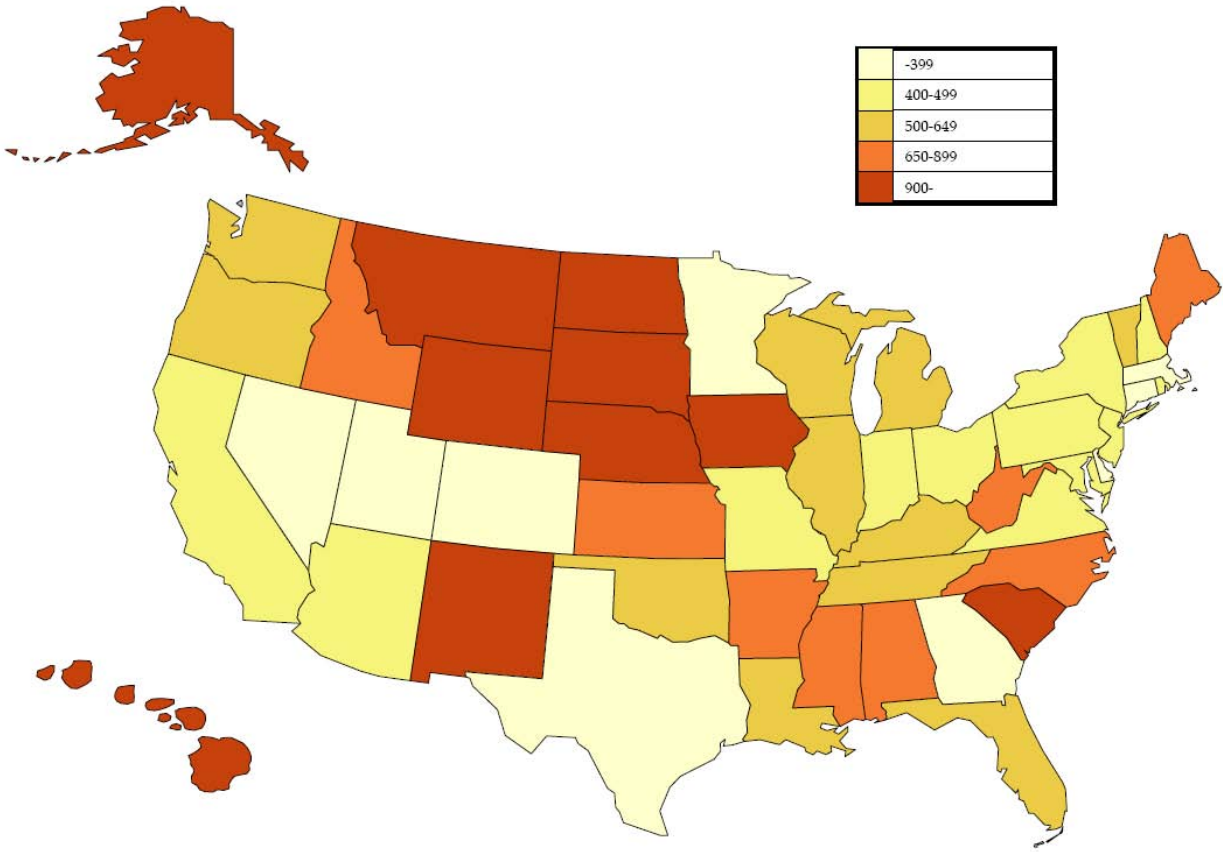

Figure 4: Actual versus predicted ultra-wealthy individuals

The figure plots state by state, the actual number of individuals on the *Forbes* list of the wealthiest Americans (in 1998) against the predicted number of individuals. We use the wealth data from the Internal Revenue Service's Statistics of Income (SOI) database (1998) and the power law distribution with a parameter of 1.36 estimated by Levy and Solomon (1997) to predict the number of individuals on the list (minimum wealth required to be on the Forbes 1998 list was $430 million). The correlation coefficient between actual and predicted number of ultra-wealthy individuals is 0.89.

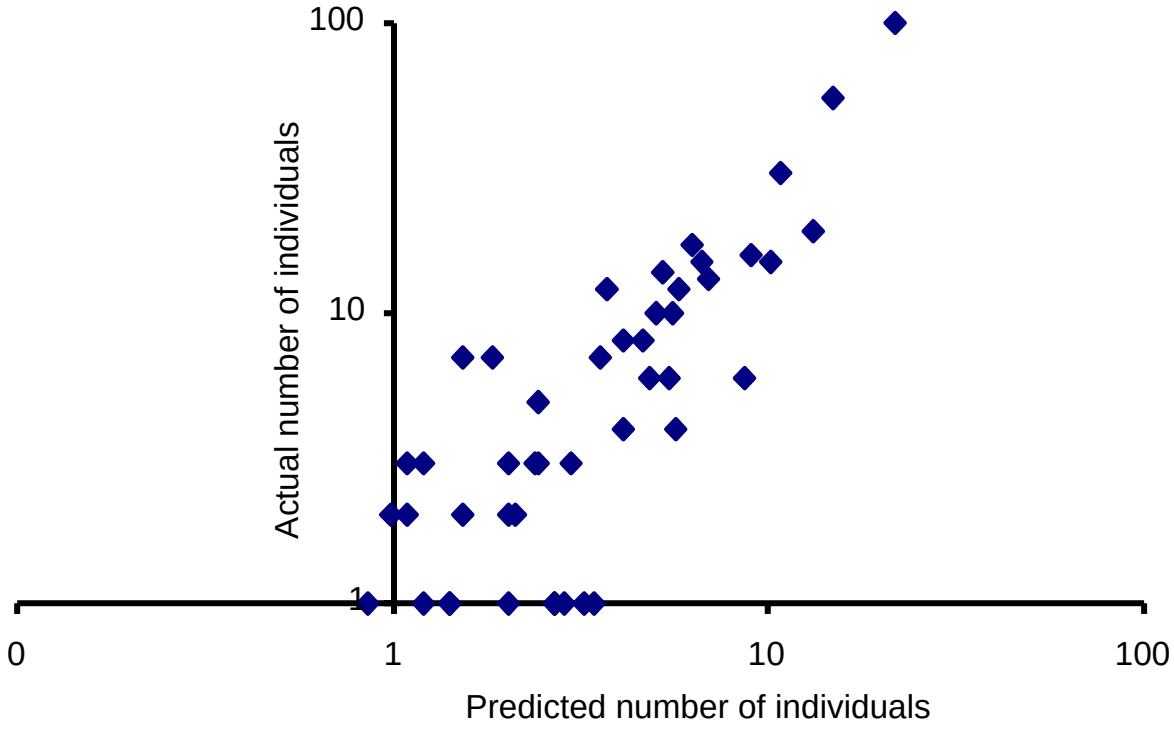

Table 1: Distance between large shareholders and firms' headquarters

The table shows summary statistics for the distance in miles between the location of a blockholder and the headquarters of the firm in which the block is held for four different types of large shareholders. The four types of blockholders are non-managerial individuals, managers (both current and former), mutual funds, and money managers. The summary statistics are based on blockholder-firm-year observations. The sample is non-dual class S&P 1500 firms during the period 1996-2001. Blockholders are entities that own at least 5% of the outstanding shares. The blockholder zip codes are hand-collected from proxy statements. The firms' zip codes come from the *Execucomp* database, the *Compact Disclosure* discs, or are hand-collected from proxy statements. The distances are calculated for U.S. based blockholders (excluding Alaska and Hawaii) only, using latitude and longitude data from the *U.S. Census Bureau's Gazetteer Place and Zip Code Database*. The indicator variable "Same State" is equal to one if the blockholder and firm headquarters are located in the same state, and zero otherwise.

		Distance in miles		
Type of blockholder	N	Mean	Median	Same State
Non-managerial individual	1,079	464.2	42.5	53.1%
Managers	2,022	57.3	0	91.3%
Mutual funds	7,929	1,173.5	1,017.2	9.7%
Money managers	2,652	1,081.1	857.5	8.7%

Table 2: Estimated wealth distributions

The table shows estimates of the number and wealth of high net worth individuals for four U.S. states (Oregon, Georgia, New York, California). The wealth estimates are based on data from the Internal Revenue Service's Statistics of Income (SOI) data which reports the estimated number of individuals with a high net worth ($1M and up) in 1998. The wealth of subsamples of these individuals (100 richest, number with $100 million or more in net wealth) is estimated assuming individual net wealth follows a power law distribution with $W_n = A \times n^{-1/1.36}$ for wealth W, and individual rank n. A is a constant. The parameter of 1.36 is estimated by Levy and Solomon (1997), or LS (1997) below. The 1999 end-of-year market value and number of listed firms are constructed from Compustat data. The sample is non-dual class S&P 1500 firms.

	Oregon	Georgia	New York	California	Data source
Number of individuals with a high net worth	27,000	64,000	243,000	412,000	SOI (1995)
Wealth of 100 richest individuals ($M)	17,367	32,759	87,373	128,817	Estimate using
their wealth as fraction of state market value 1999	140%	8%	5%	9%	LS (1997)
Number of individuals with $100M in wealth	51	122	463	785	Estimate using
their wealth as fraction of state market value 1999	110%	9%	8%	18%	LS (1997)
Number of sample firms in state (1999)	7	26	70	153	Compustat
Total market value of equity in 1999 ($M)	12,420	392,538	1,827,770	1,420,483	Compustat
Median market value in 1999 × 5% ($M)	43	70	171	58	Compustat
Average market value in 1999 × 5% ($M)	89	755	1,015	597	Compustat
Largest market value in 1999 × 5% ($M)	259	7,200	17,500	9,700	Compustat
No. of individuals with enough wealth to buy 5% of:					Estimates using LS (1997)
median firm in state	162	198	223	1,659	
average firm in state	61	8	20	69	
2nd largest firm in state	27	0.6	0.6	1.9	
largest firm in state	14.1	0.4	0.4	1.6	

Table 3: Summary statistics

The table shows sample summary statistics. Panel A shows the number of observations and frequency for four types of blockholders: Non-managerial individuals, managers (both current and former), mutual funds, and money managers. Panel B shows mean, median and standard deviation for all other variables. The sample size (N) varies across variables because of data availability and because outliers are excluded from regressions. All variables are defined in the Data Appendix. The sample is non-dual class S&P 1500 firms during the period 1996-2001.

Panel A: Blockholders

Type of blockholder	N	Frequency
Non-managerial individuals	5984	0.118
Management	5984	0.219
Mutual funds	5984	0.677
Money managers	5984	0.305

Panel B: Regression variables

Variables	N	Mean	Median	Standard deviation
Firm age	5979	24.0	20.1	19.13
ROA	5787	0.047	0.055	0.104
ROS	5784	0.035	0.047	0.166
S,G&A	5318	0.251	0.213	0.179
Investment	5632	0.282	0.221	0.221
Leverage, BV	5751	0.252	0.246	0.182
Leverage, long-term only, BV	5755	0.210	0.195	0.169
Leverage, MV	5744	0.278	0.220	0.277
Dividend yield, BV	5765	0.020	0.013	0.025
Dividend yield, MV	5760	0.013	0.006	0.017
Dividend payout	5765	0.182	0.014	0.491
Cash holdings	5771	0.146	0.043	0.270
Number of outsiders on board	5584	7.440	7.000	2.812
CEO pay (log)	5092	7.820	7.775	1.188
CEO incentive pay	5092	0.512	0.553	0.285
Trading volume	5966	0.006	0.004	0.007
Volatility	5893	0.450	0.392	0.248
Annualized stock return	5951	0.054	0.089	0.475
Bid-ask spread	5954	0.017	0.013	0.016
Illiquidity	5890	0.031	0.004	0.088

Table 4: First stage results

The table shows results from linear probability models and probit regressions of three large shareholder variables on measures of the density of high net worth individuals in a state in 1995 and controls. The large shareholder dummy variable is equal to one if an individual non-managerial large shareholder is present in the firm, and zero otherwise (columns 1 through 5). Log (block ownership) is the log of one plus the ownership by individual non-managerial blockholders (column 6). The managerial block dummy variable is equal to one if a large individual managerial shareholder is present in the firm, and zero otherwise (column 7). The sample is non-dual class S&P 1500 firms during the period 1996-2001. Blockholders are entities that own at least 5% of outstanding shares. All other variables are defined in the Data Appendix. Robust standard errors (shown in parentheses) are clustered by state. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

Table 4 – cont'd

Dependent variable	Large shareholder dummy					Log (block ownership)	Managerial block dummy
Regression type	OLS	Probit	Probit	Probit	Probit	OLS	Probit
Density of high net worth individuals, 1995	0.190***	0.892***	0.691***	0.724***		0.183**	0.266
	(0.060)	(0.250)	(0.265)	(0.276)		(0.084)	(0.224)
Wealth per listed firm, 1995					0.508***		
					(0.171)		
Lagged return				-0.112*	-0.110	-0.026	
				(0.063)	(0.063)	(0.016)	
Log (market value)				-0.035	-0.035	-0.005	
				(0.064)	(0.064)	(0.018)	
Log (assets, book value)				-0.127**	-0.125**	-0.025	
				(0.058)	(0.059)	(0.016)	
Age				0.018**	0.018**	0.0045*	
				(0.009)	(0.009)	(0.0024)	
Age squared				-0.00022	-0.00021	-0.00006**	
				(0.00016)	(0.00014)	(0.00003)	
Sales growth				0.163**	0.138*	0.031**	
				(0.067)	(0.070)	(0.015)	
Return on assets (ROA)				-0.050	-0.023	-0.028	
				(0.030)	(0.306)	(0.075)	
Year fixed effects			Yes	Yes	Yes	Yes	Yes
Industry fixed effects			Yes	Yes	Yes	Yes	Yes
R-squared	0.008	N/A	N/A	N/A	N/A	0.035	N/A
N	5,972	5,972	5,848	5,821	5,752	5,821	5,821

Table 5: Operating performance and large shareholders

The table shows results from the second stage regression of operating performance measures on a large shareholder dummy and control variables. The large shareholder dummy is equal to one if a large individual non-managerial shareholder is present in the firm, and zero otherwise. It is instrumented in the first stage regression with the density of high net worth individuals in 1995. The last two rows of the table show the coefficient and standard error for the density of high net worth individuals from the first stage probit regression of the large shareholder dummy on the density measure and controls. $\hat{\rho}$ is the estimated correlation between first and second stage error terms. The sample is non-dual class S&P 1500 firms during the period 1996-2001. All other variables are defined in the Data Appendix. Robust standard errors (shown in parentheses) are clustered by state. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

Dependent variable	ROA	ROS	S, G & A	Investment
Second stage results				
Large shareholder dummy	0.0287**	0.0556***	-0.0540	-0.055*
[instrumented]	(0.0125)	(0.0186)	(0.0349)	(0.029)
Controls	Age, age squared, log (market value), log (assets), sales growth, lagged return, dividend payer dummy, dividend yield		Age, age squared, log (market value), log (assets), sales growth, lagged return	
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Estimated $\hat{\rho}$	-0.193	-0.344	0.263	0.157
Chi-square test ($\hat{\rho} = 0$)	4.72**	9.26***	3.96**	5.05**
N	5,503	5,488	5,172	5,483
First stage results				
Density of high net worth individuals	0.742***	0.769***	0.983***	0.855***
	(0.289)	(0.272)	(0.358)	(0.315)

Table 6: Capital structure and large shareholders

The table shows results from the second stage regression of three measures of leverage on a large shareholder dummy and control variables. The large shareholder dummy is equal to one if a large individual non-managerial shareholder is present in the firm, and zero otherwise. It is instrumented in the first stage regression with the density of high net worth individuals in 1995. The last two rows of the table show the coefficient and standard error for the density of high net worth individuals from the first stage probit regression of the large shareholder dummy on the density measure and controls. $\hat{\rho}$ is the estimated correlation between first and second stage error terms. The sample is non-dual class S&P 1500 firms during the period 1996-2001. All other variables are defined in the Data Appendix. Robust standard errors (shown in parentheses) are clustered by state. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

Dependent variable	Leverage, BV	Long term leverage, BV	Leverage, MV
Second stage results			
Large shareholder dummy	-0.034	-0.0386*	-0.0523
[instrumented]	(0.028)	(0.0206)	(0.0428)
Controls	Age, age squared, log (market value), log (assets), sales growth, ROA, dummy for dividend payers, lagged return		
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Estimated $\hat{\rho}$	0.142	0.137	0.039
Chi-square test ($\hat{\rho} = 0$)	6.40**	6.20**	2.48
N	5,652	5,655	5,553
First stage results			
Density of high net worth individuals	0.695**	0.685**	0.745**
	(0.289)	(0.287)	(0.295)

Table 7: Payout policy, cash holdings, and large shareholders

The table shows results from the second stage regression of five measures of payout policy on a large shareholder dummy and control variables. The large shareholder dummy is equal to one if a large individual non-managerial shareholder is present in the firm, and zero otherwise. It is instrumented in the first stage regression with the density of high net worth individuals in 1995. The last two rows of the table show the coefficient and standard error for the density of high net worth individuals from the first stage probit regression of the large shareholder dummy on the density measure and controls. $\hat{\rho}$ is the estimated correlation between first and second stage error terms. The sample is non-dual class S&P 1500 firms during the period 1996-2001. All other variables are defined in the Data Appendix. Robust standard errors (shown in parentheses) are clustered by state. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

Dependent variable	Dividend yield (book value)	Dividend yield (market value)	Dividend payout ratio	Cash holdings	Repurchase payout
Second stage results					
Large shareholder dummy	0.0576***	0.0197***	0.226*	-0.0567**	-0.134**
[instrumented]	(0.00374)	(0.0022)	(0.121)	(0.0278)	(0.0633)
Controls	Age, age squared, log (market value), log (assets), sales growth, ROA, lagged return				
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Estimated $\hat{\rho}$	-0.832	-0.693	-0.251	0.077	0.079
Chi-square test ($\hat{\rho} = 0$)	172.0***	18.79***	2.00	1.85	7.08***
N	5,592	5,605	5,693	5,606	5,245
First stage results					
Density of high net worth individuals	0.490***	0.566***	0.747***	0.730***	0.737***
	(0.172)	(0.206)	(0.258)	(0.284)	(0.274)

Table 8: Managerial compensation, governance mechanisms, and large shareholders

The table shows results from the second stage regression of CEO pay and board structure on a large shareholder dummy and control variables. The large shareholder dummy is equal to one if a large individual non-managerial shareholder is present in the firm, and zero otherwise. It is instrumented in the first stage regression with the density of high net worth individuals in 1995. The last two rows of the table show the coefficient and standard error for the density of high net worth individuals from the first stage probit regression of the large shareholder dummy on the density measure and controls. $\hat{\rho}$ is the estimated correlation between first and second stage error terms. The sample is non-dual class S&P 1500 firms during the period 1996-2001. All other variables are defined in the Data Appendix. Robust standard errors (shown in parentheses) are clustered by state. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

Dependent variable	CEO pay (log)	CEO incentive pay	No. of outsiders on board
Second stage results			
Large shareholder dummy	-0.938***	-0.447***	1.598*
[instrumented]	(0.200)	(0.046)	(0.952)
Controls	Age, age squared, log (market value), log (assets), sales growth, ROA, dummy for dividend payers, lagged return)		
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Estimated $\hat{\rho}$	0.496	0.749	-0.368
Chi-square test ($\hat{\rho} = 0$)	14.38***	63.45***	1.83
N	4,279	5,004	5,368
First stage results			
Density of high net worth	0.907***	0.600***	0.716***
individuals	(0.310)	(0.269)	(0.278)

Table 9: Liquidity and large shareholders

The table shows results from the second stage regression of measures of liquidity on a large shareholder dummy and control variables. The large shareholder dummy is equal to one if a large individual non-managerial shareholder is present in the firm, and zero otherwise. It is instrumented in the first stage regression with the density of high net worth individuals in 1995. The last two rows of the table show the coefficient and standard error for the density of high net worth individuals from the first stage probit regression of the large shareholder dummy on the density measure and controls. $\hat{\rho}$ is the estimated correlation between first and second stage error terms. The sample is non-dual class S&P 1500 firms during the period 1996-2001. All other variables are defined in the Data Appendix. Robust standard errors (shown in parentheses) are clustered by state. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

Dependent variable	Trading volume	Bid-ask spread	Illiquidity
Second stage results			
Large shareholder dummy	-0.00381***	0.0153***	0.120**
[instrumented]	(0.00086)	(0.0009)	(0.182)
Controls	Age, age squared, log (market value), log (assets), sales growth, lagged return, ROA, dummy for dividend payers, institutional block ownership, dummy of Nasdaq membership, average share price, volatility		
Other controls		Trading volume	Trading volume
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Estimated $\hat{\rho}$	0.355	-0.771	-0.684
Chi-square test ($\hat{\rho} = 0$)	14.64***	128.56***	26.69***
N	5,704	3,909	5,702
First stage results			
Density of high net worth individuals	0.821***	0.376*	0.400*
	(0.273)	(0.222)	(0.208)

Table 10: First stage results with "placebo instruments"

The table shows probit regressions of a blockholder indicator variable on the density of high net worth individuals in 1995 (column (1)) and other variables that vary on a state level (columns (2) through (6)). Columns (7) and (8) include all variables as regressors, and column (8) also contains year and industry fixed effects. The sample is non-dual class S&P 1500 firms during the period 1996-2001. The large shareholder dummy variable is equal to one if a large individual non-managerial shareholder is present in the firm, and zero otherwise. Robust standard errors (shown in parentheses) are clustered by state. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

Dependent variable	Large shareholder (dummy)							
Regression type	Probit	Probit	Probit	Probit	Probit	Probit	Probit	Probit
Density of high net worth individuals	0.892***						0.772***	0.578**
	(0.220)						(0.242)	(0.273)
Population density		-0.011					-0.064	-0.067
		(0.010)					(0.057)	(0.061)
Income inequality (household)			-1.62				5.52	4.99
			(2.14)				(3.93)	(4.26)
Per capita income (median)				-0.020**			-0.0014	-0.0001
				(0.080)			(0.0016)	(0.0002)
Per capita income (average)					-0.033*		-0.0029	-0.0028
					(0.017)		(0.0049)	(0.0054)
Poverty rate						0.462	-6.44*	-4.36
						(1.82)	(3.84)	(4.30)
Year fixed effects								Yes
Industry fixed effects								Yes
N	5,972	5,972	5,972	5,972	5,972	5,972	5,972	5,972

Table 11: Comparison of instrumental variable and OLS estimates

The table compares instrumental variable (IV) and OLS estimates of non-managerial individual blockholder effects on firms. Each reported number corresponds to a separately estimated coefficient on the large shareholder dummy variable for the different dependent variables. We use the same control variables in each regression as those in Tables 5-9. The IV column shows the estimated second stage coefficients on the instrumented large non-managerial individual shareholder dummy variable. It is instrumented with the density of high net worth individuals in 1995. The OLS column shows the corresponding OLS estimate of the large non-managerial individual shareholder dummy variable. All variables are defined in the Data Appendix. Robust standard errors (shown in parentheses) are clustered by state. Statistical significance at the 1%, 5%, and 10% level is indicated by ***, **, and *, respectively.

Dependent variables	IV	OLS
ROA	0.0287**	-0.0019
ROS	0.0556***	-0.0009
S, G & A	-0.054	0.0127
Investment	-0.055*	-0.0028
Leverage, BV	-0.034	0.0057
Long term leverage, BV	-0.0386*	-0.0091
Leverage, MV	-0.0523	0.0090
Dividend yield, BV	0.0576***	0.0069**
Dividend yield, MV	0.0197***	0.0025**
Dividend payout ratio	0.226*	0.029
Cash holdings	-0.0567**	-0.0134
CEO pay (log)	-0.938***	-0.189***
CEO incentive pay (log)	-0.447***	-0.048***
Number of outside directors	1.598*	0.310**
Trading volume	-0.00381***	-0.00175***
Bid-ask spread	0.0153***	0.0010
Illiquidity	0.120**	0.002

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