LARGE SHAREHOLDER DIVERSIFICATION AND CORPORATE CASH HOLDING

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ABSTRACT

Using data for almost 400,000 European firms covered in *Orbis Historical,* I reconstruct the portfolios of shareholders who hold equity stakes in private and publicly traded firms between 2007 and 2020. I document a novel relation between the diversification of large shareholders and firms' cash holdings. Firms controlled by more diversified large shareholders tend to hold significantly less cash than those controlled by less diversified shareholders. The impact of large shareholder diversification on cash holdings is economically as well as statistically significant. All else being equal, firms controlled by a non-diversified shareholder hold more than double the level of cash holdings of firms controlled by a diversified shareholder, on average. Results are robust to several tests for endogeneity as well as for possible confounding effects.

JEL Classifications: G11, G15, G31

Keywords: Cash holding; Large shareholders; Portfolio diversification

1. Introduction

It is widely documented that more diversified firms tend to hold less cash. In a highly influential paper, Duchin (2010) shows that US listed companies that operate in multi-segments (diversified firms) hoard less cash than undiversified ones. Similarly, Subramaniam et al., (2011) also report that diversified firms hold significantly less cash than their focused counterparts whereas Tong (2011) shows that the value of cash is lower in diversified firms than in single-segment firms. More recently, using a dynamic investment model, Bakke and Gu (2017) confirm this general result.

A common thread of this literature is the focus on *segment* diversification at the *firm* level. In my study, I offer a different and *novel* perspective by focusing on diversification at the *shareholder* level rather than at the *firm* level. I argue that a dominant large shareholder with a less diversified portfolio will be more concerned with the firm's cash flow variability. Higher cash holdings at the firm level would reduce shareholder exposure to this risk. Consequently, ceteris paribus, companies controlled by less-diversified shareholders are expected to accumulate more cash than those controlled by more-diversified shareholders.

A further element in common to the previous literature, is that it focused on listed firms predominantly from the US. My research broadens the scope to include mostly private and European firms. In 2021, an estimated 333.34 million companies operated worldwide, with only about 58,000 being listed companies. Furthermore, despite the presence of corporate giants among the publicly listed firms, such as Walmart, back-of-the-envelope calculations using data from the Orbis database indicate that privately held companies account for approximately 82% of total global employment. This highlights the significant

role of private companies in the global economy. By including private firms, my study provides insights into a significantly larger and often underrepresented segment of the corporate population, thereby enhancing our understanding of corporate financial behavior.

My study covers almost 400,000 mostly private companies across 41 European countries using data from the Bureau Van Dijk's *Orbis Historical* database for the 14-year interval between 2007 and 2020. In my sample, the largest (ultimate) shareholder has an average of 61% of voting rights in their firms. Therefore, it is safe to assume that she has control over the firm's decisions, and therefore any financial and economic decisions at the firm level are likely to be driven by the controlling shareholder.

I adopt several techniques to test the association between portfolio diversification at the shareholder level and cash holding at the firm level. I follow Faccio et al. (2011) and Lyandres et al. (2019) and use two proxies to measure large shareholder diversification: (i) the (natural log of the) number of firms in which the controlling investor holds shares across all countries in the sample and (ii) the Herfindahl index of wealth concentration at the investor level. I find strong evidence that higher diversification at shareholder level is associated with lower levels of cash holding. The association is not only statistically significant but also *economically large.* Using the investor fixed effect specification as a baseline model, one standard deviation increase in the level of portfolio diversification (measured by the natural logarithm of the number of firms held) results in a 22% decrease in cash holding relative to its mean. Results are robust when I use the alternative proxy for portfolio diversification (measured by the Herfindahl index of wealth concentration). Moreover, results are robust to the inclusion of a proxy of firm level segment diversification. I find that, while still statistically significant, the economic effect of commonly used firm-

level segment diversification is smaller than that of portfolio diversification of the large shareholder.

A potential concern with my empirical design could be that results may be driven by endogeneity and in particular self-selection. In other words, it could be argued that shareholders *select* to invest in firms with a level of cash holding which best suits their preferences – like risk tolerance for instance – rather than influencing the cash decisions of these firms. In my sample, such a selection mechanism is, however, highly unlikely. Almost 100% of the sample is made of private and illiquid companies in which, as discussed earlier, the average cash flow and voting rights are about 60% (with medians of 51%). It is very hard to imagine that these large shareholders would frequently and proactively adjust their portfolios. Nonetheless, I take several steps to address the potential endogeneity concerns.

First, I show that the positive association between shareholder portfolio diversification and cash holding is robust in a panel regression framework, in which I include shareholder fixed effects, as well as the more conventional country, industry and year fixed effects. The inclusion of shareholder fixed effects has the benefit of controlling for investor-specific (time-invariant) omitted variables that may affect the investor's attitude to risk, which may drive the decision to invest in a more or less cash-rich company. I also perform a separate set of tests controlling for firm fixed effects, that is, *time-invariant* firm-specific characteristics that may be correlated with omitted explanatory variables.

Second, I employ an instrumental variable technique. In the first instance, I follow the papers of Faccio et al., (2011) and Laeven and Levine (2007) and Laeven and Levine (2009) and use the average portfolio diversification of large shareholders of all the other companies in the same country, year and industry as an instrumental variable for each

shareholder's degree of portfolio diversification. Given the nature of this IV, there should be no association between the cash holding of a company with the diversification of other companies' shareholders and therefore this should satisfy the exclusion restriction.

To further minimize possible concerns of endogeneity, I repeat the analysis by mechanically breaking the link between the instrument and the firm at a country level. I perform a matching exercise to find, for each company in the sample, a similar company in a different country in the same year. Then, to instrument portfolio diversification of a given shareholder, I use the average portfolio diversification of all other shareholders in the country and year of a matched firm. Thus, for each firm in the sample, the instrument comes from the matched firm in a different country. In this setup, any association between the dependent variable and the instrument is very unlikely.

As a further step, I also employ a variation of the Heckman two-step approach: the treatment effects model. My choice of an exogenous determinant of the propensity to diversify the portfolio is motivated by the findings in Lyandres et al., (2019), and I use the average number of companies that are located within a certain geographical distance from the large shareholder as an instrument for the diversification of the portfolio of the largest shareholder. This proxy should represent a set of potential "investable" firms for my sample of (mostly privately held illiquid) companies. Portfolio diversification of the largest shareholder should be positively related to the number of investable firms. At the same time, this measure based on geographical distance should not be related to the level of cash holding at the firm level and therefore it should also satisfy the exclusion restriction.

In the last step, I perform a very stringent matching exercise to isolate matched samples of statistically indistinguishable diversified and non-diversified firms, in the attempt to minimize further

possible concerns of endogeneity. Results clearly indicate that, everything else (controllable) being equal, diversified firms tend to hold less cash than non-diversified ones. While taken individually none of these steps perfectly addresses endogeneity, they all confirm my main conclusion.

My paper contributes to several strands of literature. First, I offer a different perspective to the existing evidence on the impact of diversification on cash holding. I shift the focus from *firm* diversification at the sector level, explored in several previous studies, to the diversification of the portfolio at the *shareholder* level. Moreover, as discussed above, I study a sample of mostly privately held European companies that tend to have large dominant and relatively undiversified owners, differently from previous studies that focused on publicly listed, mostly US, companies that are characterized by dispersed, widely held ownership structures.

My results show that the higher the degree of diversification of the portfolio of the largest owner, the lower the average level of cash holding at the firm level. All tests include a more conventional proxy for *firm* diversification at the sector level, and the results show that both mechanisms are present and relevant to firms' financial policy decisions.

Second, my paper contributes more broadly to the strand of literature that documents the links between shareholder diversification and firm decisions. John et al., (2008) find no significant relation between ownership concentration and corporate risk-taking. Bodnaruk et al., (2008) provide compelling evidence that firms held by less diversified controlling shareholders are more likely to go public, and they exhibit a higher level of underpricing. Faccio et al., (2011) show how firms controlled by diversified large shareholders undertake riskier investments than firms controlled by non-diversified large shareholders. Lyandres et al., (2019) provide evidence that owners' portfolio diversification is a strong predictor of the

level of investment. My study unveils a further link between shareholder diversification and firm decisions: the cash holding policy.

Third, my paper extends the growing literature that focuses on privately held companies. Several studies have documented how private and public firms differ in many ways, from their financing decisions to their ownership and governance structures. Mortal and Reisel (2013) document that listed firms are more capable to pursue positive NPV projects than private firms. Asker et al., (2015) on the other hand report that public firms invest generally less, and they are also less responsive to changes in investment opportunities possibly due their higher sensitivity to short-term pressures. More recently, Lyandres et al., (2019) report that European public firms invest more than private ones, similarly to Mortal and Reisel (2013).

With emphasis on cash holding, Gao et al., (2013) report that in the US, private companies tend to keep around half the cash compared to a *matching* sample of public companies. Similarly, Mortal et al., (2020) find that European private firms hold less cash than a *matching* sample of public firms and relate this difference to different borrowing costs. On the contrary, Hall et al., (2014) report that European private firms (mostly from emerging markets) tend to display higher cash balances than an *unmatched* sample of publicly listed companies. While the focus of my study is not on private vs public firms, my regression results suggest that, *all else being equal*, private firms hold less cash than public firms.

The rest of the paper is organized as follows. Section 2 presents the data and descriptive statistics. Section 3 presents regression results and addresses possible endogeneity concerns. Section 4 reports a battery of robustness tests, and Section 5 summarizes the findings and concludes.

2. Data and variables

2.1 Sample

I collect direct ownership and accounting data for all companies included in the *Orbis Historical* database from Bureau Van Dijk. This covers almost 300 million publicly listed and privately held firms across the globe. Accounting data are available from 1999, while ownership information is only available from 2007.

In line with previous studies in the field like Claessens, Djankov, and Lang (2000), Faccio and Lang (2002), and Faccio, Marchica, and Mura (2011), I determine each ultimate shareholder's voting rights based on the smallest share in the ownership chain. By tracking every direct and indirect ownership stake to its final shareholders, I identify the ultimate controlling owner of a firm as the shareholder with the largest proportion of voting rights. This first step is executed on the entire Orbis database, before applying any of the filters described below, to ensure the most complete representation of the ownership structure of every firm. After determining the largest ultimate owner for each firm and their portfolio diversification (more on this below), I apply four main filters to the data.

First, I keep only European countries that are present in Amadeus. The reason for applying this filter is that, as discussed above, data for these countries have been used in recent studies, and their quality has been thoroughly confirmed (see Faccio et al., 2011 and Lyandres et al., 2019).

Second, I discard companies where the State, Government or any kind of public authority is the dominant owner, as these organizations may pursue goals other than

shareholder maximizing ones. I also exclude companies where the largest owner is a Financial Institution (like Banks, Insurance Companies, Hedge Funds or Mutual Funds). Finally, I remove firms where the owner is a Foundation, or if it is reported as "unclassified".

Third, I apply a size filter: for all countries, the average total assets in the time series of the firm must be at least 5 million euros. This is done to reduce the dominance of companies with only one shareholder in very small firms.[1]

Fourth, following previous research, I exclude financial firms and regulated utilities. After applying these filters, the final sample consists of 393,691 companies and 2,889,134 observations for 41 countries, spanning between 2007 and 2020.[2]

2.2 Measures of portfolio diversification

As described above, direct ownership information is collected from the ownership section of the *Orbis Historical*. For each company with available ownership data, I identify all ultimate shareholders. That is, whenever the direct shareholder of a firm is another company, I identify its owners, the owners of its owners, and so on. Once the full chain of control is identified, I define the voting rights of the ultimate owner as the weakest link along the chain of control. The cash flow rights are defined as the product of all the links in the chain of control. This approach is consistent with earlier studies like Claessens et al., (2000),

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[1] Applying several different cuts to the size does not materially alter the results. Robustness tests in this sense are reported in the Appendix.
[2] Belarus, Liechtenstein and Monaco are the only countries in the original Amadeus list that disappear due to the filters imposed on the data.

Faccio and Lang (2002), Faccio et al., (2011) and Lyandres et al., (2019). An improvement over prior studies is that, since I have access to the full Orbis, there is no limit on firm size before the ultimate owner is calculated. Therefore, I am able to measure smaller ownership stakes than previous studies.[3] The filters described in the previous section are only applied at the end, after all variables of interest are constructed.

I also calculate the spread between voting rights and cash flow rights. I use the spread to address the possibility that some of my results may reflect tunneling since a high level of spread may give incentives to the controlling shareholders to expropriate minority shareholders.

After tracing all ultimate shareholders and their cash flow and voting rights, I identify the shareholder controlling the largest fraction of voting rights in each firm. The ownership, control, and diversification variables employed throughout the paper always refer to each firm's largest ultimate shareholder since these would be the most likely candidates to drive the decisions and policies at the firm level given their voting power.[4]

The first measure of portfolio diversification, *Ln No. Firms*, is the natural log of the number of companies in which a company's largest ultimate shareholder holds shares, directly or indirectly, each year. The second proxy is a measure of wealth concentration: the *Herfindahl* index. To compute the Herfindahl index, I first collect the book value of the equity corresponding to each equity position in the portfolio of the ultimate owner. These are

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[3] Faccio et al., (2011) and Lyandres et al., (2019) use Amadeus top 250,000 which did not allow access to data on smaller firms.

[4] Applying several different cuts to the cash flow rights of the largest owner to isolate the very dominant -likely engaged- owners does not materially alter the results. Robustness tests in this sense are offered in the Appendix where I split the sample in 3 groups of low, medium and high cash flow rights of the largest owner.

multiplied by the corresponding values of cash flow rights. I then compute the weight of each stock in the portfolio. The Herfindahl index is the sum of squared weights. The index ranges from 0 to 1, with 1 indicating that all wealth is invested in one firm (fully concentrated wealth), and 0 indicating a totally diversified portfolio. In the analysis, I use the transformation (1-Herfindahl) index, so that higher values represent higher diversification in line with the first proxy.

2.3 Economic variables

The dependent variable in my study is the classic proxy for cash holding defined as the ratio of cash and cash equivalent to total assets. I add several controls to the cash holding model to minimize the risk of omitted variable bias. I include the following determinants of cash holdings: (1) *Spread* measures the difference between voting rights and cash flow rights of the ultimate owner. A high divergence entails stronger expropriation incentives for the ultimate owner; (2) *Private Company*, a dummy variable taking the value of one when the firm is privately held and zero when the firm is listed on a stock exchange; (3) *Net Working Capital*, is difference between current assets and current liabilities excluding cash. This may be used by firms as a substitute for cash as discussed in Gao et al., (2013); (4) *Capex*, is defined as investment in fixed assets (approximated with the year-to-year change in gross fixed assets plus depreciation) divided by total assets. This is another typical determinant of cash holding. Moreover, Lyandres et. al (2019) find that this is positively (negatively) related to shareholder diversification for public (private firms) therefore I include it to avoid a possible confounding effect; (5) *R&D Expenditures* is the R&D expenditures to total assets;

(6) *ROA Volatility*, is the standard deviation of the country-industry adjusted ROA. Faccio et al., (2011) document that firms controlled by diversified large shareholders undertake riskier investments than firms controlled by non-diversified large shareholders. Therefore, this control is added to disentangle the effect of shareholder diversification on the firm's investment risk from its effect on cash holdings; (7) *Growth Opportunities*, defined as annual growth in total assets, where total assets is the sum of fixed assets (tangible and intangible fixed assets and other fixed assets) and current assets (inventory, receivables, and other current assets)[5]; (8) *Cash Flow*, defined as the ratio of income plus depreciation to total assets; (9) *Cash Flow Volatility*, defined as the standard deviation of the cash flows at the country-industry level over five years overlapping; and (10) *Ln(1+Age)*, defined as the natural log of (1+the number of years since incorporation). This variable controls for differences in the life cycle of firms, as one would expect that younger firms may face stronger financing frictions and, hence, hold more cash; (11) *Ln(TA)* is defined as the natural log of total assets; (12) *Leverage* is defined as the ratio of total debt to total assets, where total debt includes noncurrent liabilities (long-term debt and other noncurrent liabilities) and current liabilities (loans, accounts payable, and others); (13) *Ln*(*Sector Diversification)* is the natural log of the number of business segments reported by the firm.[6]

All data are winsorized at 1% level to minimize the impact of outliers. Finally, all observations where any of the controls are missing are also discarded.

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[5] Results are robust to using growth in sales instead of growth in total assets. Sales growth contains more missing values which is why I opted for growth in total assets. I replicate the main test using this alternative control in the Appendix and results are unaffected.

[6] Dividends are not reported in Orbis and therefore I am unable to include dividend payments as a further control in the cash holding model.

2.4 Descriptive statistics

Table I reports detailed descriptive statistics. Panel A reports the statistics of the ownership variables at the investor level (to avoid possible duplications) while Panel B reports the rest of the controls at the firm level. The mean number of firms in the portfolio of the largest owner is 9.171 while the median is 3. The variable exhibits considerable variation since the standard deviation is about 42. In the top 25% of the distribution, I find owners with seven or more equities in their portfolio; in the top 10%, I find owners with 15 or more equities; in the top 5%, they have 27 or more equities, and the top 1% have 102 or more equities.

The mean and median cash flow and voting rights are in the region of 60% (51%), while the spread (the difference between Voting Rights and Cash Flow Rights) is essentially zero. Only in the top 5% of the distribution do we find firms with a spread of approximately 10%. This indicates that these largest shareholders are dominant owners with no incentive to expropriate the firm(s) they control. These statistics are relatively close to those reported in earlier studies such as Lyandres et al. (2019) and Faccio et al. (2011), considering the availability of smaller firms in this study.

Panel B reports descriptive statistics for the controls at the firm level. The sample firms hold an average of 10% of their assets in the form of cash holdings. Given the nature of the sample, no market value is available, since about 99% of the sample comprises private firms. Therefore, Growth Opportunities are approximated via the growth in Total Assets,

which is approximately 16% for the average firm in the sample. Leverage is about 64% of the total assets, while the average firm in the sample is 23 years old.

The proxy for diversification at the industry level (Sector Diversification) also displays a meaningful level of variability. While the average is 1.8, and the median is 1, the top 25% of companies operate in two or more industries, the top 10 % in three or more, while the top 1% operate in four or more.

Figure 1 plots the time series of the average levels of cash holdings for firms in which the largest investor only has equity in one company (Non_Diversified) versus those companies in which the shareholder has equity positions in two or more companies (Diversified). The two series follow parallel increasing trends, although the difference between the two cohorts increases over time. In the early years, the difference was about 5%, while in the latest year it peaked at about 9%, with Non-Diversified firms having lower levels of cash.

3. Regression Analysis

To investigate the association between the largest shareholder's portfolio diversification and corporate cash holding, I present three main sets of tests that differ in the

types of fixed effects included in the model. All models are estimated using robust standard errors.[7] The general form of the regression equation is as follows:

$$Cash_{i,t} = \alpha + \beta\ Diversification_{i,t} + \gamma X_{i,t} + Set\ of\ F.E. + u_{i,t} \tag{1}$$

where *Diversification* is one of the two measures of ultimate shareholder's diversification and $X_{i,t}$ is a vector of the control variables discussed above.

I use three different sets of fixed effects:

$$Sets\ of\ F.E. = \begin{cases} Industry\ F.E. + Country\ F.E. + Year\ F.E \\ Industry\ F.E. + Country\ F.E. + Shareholder\ F.E. + Year\ F.E. \\ Firm\ F.E. + Year\ F.E. \end{cases}$$

The first specification includes year fixed effects (these are always included across all specifications) to control for the effect of possible macro-trends, Industry Fixed Effects (SIC4) and Country Fixed Effects.[8]

The second set of fixed effects, further exploits the panel dimension of the dataset at the shareholder-level. The panel regressions allow me to control for unobservable shareholder-specific characteristics that may potentially impact a firm's cash holdings by including shareholder fixed effects. For example, it is possible that different shareholders may have different levels of risk tolerance not fully captured by my diversification proxies. More generally, the inclusion of shareholder fixed effects allows me to control for any

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[7] All tests reported in the paper are robust to the inclusion of clustering of the standard errors. In the Appendix, I report results with clustering at either investor, firm or both investor and firm levels, and all results are essentially unchanged.

[8] In the Appendix a report a robustness test where these fixed effects are specified as year*industry*country fixed effects as opposed to three separate sets of dummies and results are virtually unaltered.

shareholder-specific characteristic that may be correlated with the omitted explanatory variables. Controlling for shareholder fixed effects then helps reduce possible concerns of omitted variable bias.

In the last specification, I follow standard practice and control for firm fixed effects (rather than shareholder fixed effects). The purpose is the same: to reduce concerns of omitted variable bias, which may taint the validity of the regression tests.

Table II reports separate results for both portfolio diversification measures. The negative coefficients on *Ln No.Firms* and (*1-Herfindahl*) confirm my mainline hypothesis and the univariate result reported in Figure 1. Companies that are controlled by better-diversified owners are more risk tolerant and therefore are less in need of storing cash – all else being equal. The association with cash holdings is not only statistically significant, but also economically large. One standard deviation increase in either proxy of portfolio diversification leads to a reduction in cash holdings by approximately 20% (Models 3 and 4) for the average firm. In my sample, the effect of shareholder diversification on firm cash holdings is similar in magnitude, if not larger, to the economic impact of sector diversification documented in previous studies. For instance, back-of-the-envelope calculations from Duchin (2010) suggest that according to his tables, a standard deviation increase in "Number of segments" decreases average cash by about 6.7% of the mean. My findings therefore complement the existing important studies, such as Duchin (2010), Subramaniam et al., (2011), Tong (2011), Fernandes and Gonenc (2016), Bakke and Gu (2017), and Gu (2017), by looking at an alternative and original mechanism behind - the incentives of the largest owner, on a sample of mostly private firms that is complementary to previous studies that focused on listed firms.

Other variables behave relatively in line with mainstream hypotheses (e.g., Bates et al., 2009). I find that larger firms appear to hold less cash than smaller firms. Possibly, economies of scale allow larger firms to face lower transaction costs, leading them to store lower amounts of liquid funds in relative terms. Leverage is negative and significant, suggesting that, to some degree, these sources of funds act as substitutes. As discussed in Bates et al., (2009): "If debt is sufficiently constraining, firms will use cash to reduce leverage, resulting in a negative relation between cash holdings and leverage." This line of argument may be very pertinent in my case since the super-majority of companies are privately held and are expected to face tighter borrowing constraints than listed firms.

The coefficient on the control for Private Company changes sign when I include either investor or firm fixed effects. It appears that these results are in line with Gao et al., (2013) and Mortal et al., (2020) who, as I mentioned above, report that private firms hold less cash than *matching* samples of public firms. While I do not report matching tests in this sense, the estimated coefficients on the regression analysis lend themselves to a "ceteris paribus" interpretation. That being said, for completeness, descriptive univariate tests on levels of cash holding by private/listed status confirm the results by Hall et al., (2014) where European private firms have higher cash (about 10%) than an *unmatched* sample of publicly listed companies (about 8.4%).

3.1 Endogeneity concerns

In the previous section, I tried to address endogeneity concerns arising from omitted variables by controlling for time-varying observables that may affect both cash holdings and portfolio diversification. I added investor fixed effects to the regression specifications to control for time invariant unobservables that differ across large shareholders. I also added firm fixed effects to control for time invariant firm specific unobservables that may lead to biased and inconsistent estimates.

Another possible endogeneity concern is related to the direction of causality in the results. A potential feedback effect from the level of firm cash holdings on the portfolio diversification of the largest shareholder would imply reverse causality. For example, investors planning to invest in a more (less) cash-rich firm would therefore adjust the structure of their holdings to increase (decrease) portfolio diversification.

This interpretation of my results implies frequent changes to portfolios held by large shareholders that are not observed in the data. Almost 99% of the firms in the sample are illiquid privately held companies, and the mean/median ownership position in these companies is 60% (51%). It is very hard to imagine that these large shareholders would adjust their large illiquid equity positions rather than simply adjusting the cash holding of the firms they (fully) control. That being said, I report two formal tests addressing the reverse causality issue, both based on an instrumental variable technique.

3.1.1 Instrumental Variables

In the first instance, I follow Faccio et al., (2011) and Laeven and Levine (2007) and Laeven and Levine (2009) and calculate the average portfolio diversification of large shareholders of all the *other* companies in the same country, year, and industry. This variable is meant to capture the "natural" tendency to diversify across all large shareholders involved in similar types of activities. At the same time, this variable should not play any direct role in shaping a company's cash position, as it is calculated for all other shareholders (in the same country year and industry), excluding the firm itself.

The results of this test are reported in Table III. For brevity from now on, I report only the results with either investor- or firm-fixed effects. Odd-numbered models represent second-stage regressions, whereas even-numbered models report the first stage. In the first-stage regressions, I include all exogenous variables, along with the instrumental variable, to explain a large shareholder's actual diversification choice. I report the F-statistic and partial R^2 for the instruments in the first-stage regression. As shown in Model (2) of Table III, the "natural" degree of portfolio diversification is positively and strongly related to the endogenous variable, with an F-stat of 1329 and a partial R^2 of 0.363. As a rule of thumb, an F-statistic below 10 would suggest a weak instrument, as discussed by Staiger and Stock (1997). All models in Table III display similar values, and therefore alleviate possible concerns that my coefficient estimators suffer from biases due to having weak instruments (Bound et al., 1995). More importantly, across all models, the proxies for portfolio diversification of the largest shareholder retain a negative and significant coefficient, confirming the main results reported in Table II.

3.1.2 "Scrambled" Instrumental Variables

To further minimize possible endogeneity concerns, I repeat the analysis by explicitly disrupting any potential correlation between the instrument and the firm by swapping the instruments between pairs of matched companies.

First, I sort countries by their number of observations and pair them according to this criterion so that each pair has a similar number of observations.

Second, I perform a matching exercise in which, for every firm in the dataset, a similar company from the paired country is identified. Matching is performed on diversification only for simplicity and it is executed within the same year so that each firm in country 1 is matched to a firm in country 2 (which has similar number of observations to country 1) in the same year. Also, to ensure that the firms in the "treated" country are very similar to the firms in the "control" country, I impose a maximum difference between the propensity scores of the treated and control of 0.01.

Then, the instrument computed as described in Section 3.1.1, let's call it IV1, is assigned to the matched firm in the other country (same year) and vice versa. Given the scrambling between firms and IVs, the data entry for this modified instrument comes from a matched firm in a different country. Mechanically, there can be no association between the dependent variable and the instrument with this setup. While this may potentially weaken the instrument, it should strengthen its validity.

Table IV presents the results of this alternative test. As in the previous table, odd-numbered models represent the second-stage regressions, while even-numbered models report the first stage. Inevitably, sample size drops compared to Tables II and III owing to

the extra step of matching between pairs of countries with uneven numbers of observations and within each year. That being said, this last table confirms previous results. While the instrument is still positive and significant in the first stage, (predicted) *Ln No.Firms* and (*1-Herfindal*) both still display negative and statistically significant coefficients, confirming that firms with large shareholders that are more diversified tend to hold less cash, everything else being equal.

3.2 Heckman Two Step

In this section, I endogenize the diversification status of the largest shareholder by estimating the variation in the two-stage Heckman (1979) selection model. In the first stage, I run a probit regression, where I model the diversification status of the shareholder with a binary variable indicating whether the number of equity positions is one or more. In the second stage, I re-estimate the baseline model augmented by the Inverse Mills Ratio from the first-stage regression to correct for potential self-selection. This is similar to, for instance, Campa and Kedia, (2002).

A crucial problem in this type of setting is the inclusion (or not) of valid instrumental variables in the first-stage regressions, which are linked to the selection probability but not to the outcome variable. Li and Prabhala (2007) argue that the inclusion of exogenous instruments is not strictly necessary in a treatment effects model as identification is achieved by non-linearity. Accordingly, I first employ a selection model with no exclusion restrictions. Second, I follow Lyandres et al., (2019) and use the average number of companies that are located within a certain *geographical distance* from the large shareholder as an instrument for the diversification of the portfolio of the large shareholder.

Geographical proximity to portfolio firms matters even for professional investors, such as mutual funds, as trading local securities is associated with informational advantage (Coval and Moskowitz, 2001). The effect might be expected to be even more relevant for privately held firms. Hence, the number of investible firms in geographic proximity to an investor captures the "limit" to diversification. The lower the number of companies within a certain geographical distance, the harder it is for a given shareholder to invest in numerous (mostly private) companies. At the same time, this measure based on geographical distance should not be directly related to the level of cash holdings at the firm level; therefore, it should satisfy the exclusion restriction.

This variable is calculated as follows: for each controlling owner with available address or postal code information, I derive information on latitude and longitude. I repeat the same procedure for each firm included in the sample. Using the available latitude and longitude information, I compute the spherical distance between each investor in each country in each year for all firms in the same country and year. The spherical distance is calculated as follows:

$$d_{j,i} = arccos(cos(\text{lat}_j) \times cos(\text{lon}_j) \times cos(\text{lat}_i) \times cos(\text{lon}_i)$$

$$+ cos(\text{lat}_j) \times sin(\text{lon}_j \times cos(\text{lat}_i) \times sin(\text{lon}_i) + sin(\text{lat}_j) \times sin(\text{lat}_i)) \times r,$$

where lat and lon refer to the latitude and longitude in radians, respectively, and r is the radius of Earth in miles. Results from this set of tests are reported in Table V. As mentioned above, for brevity, I only report models that include either investor or firm fixed effects in the second stage, as these are deemed more robust. In Models (1), (2), (5), and (6), I report the results produced via a first-stage probit where no exclusion restriction is included. In models (3),

(4), (7), and (8), the results are produced via a first-stage probit, where the average number of companies located within a 50 miles radius of each large shareholder in each country in each year is used as an exclusion restriction in the first stage.[9]

As discussed earlier, information on geographical location is not as populated as standard accounting information; therefore, the sample size decreases.[10] That said, after correcting for the endogenous decision to diversify the portfolio, both variables of diversification still display the same negative and highly significant coefficients reported in previous tables.[11]

3.3 Propensity Score Matching

As a final step to try and reduce possible concerns that endogeneity is driving my results, I employ a very stringent matching exercise based on the methodology proposed by Rosenbaum and Rubin (1983). This approach allows me to identify a matched sample of firms that have an undiversified shareholder which exhibits no *observable* differences in characteristics compared to firms that have a diversified shareholder (more than one equity position in the portfolio).

In the initial step, I estimate the propensity score using a logit model to calculate the probability that a firm, given its characteristics, has a diversified or undiversified large

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[9] Results are robust to various thresholds of distance. I report two examples in the Appendix using 5 and 25 miles.

[10] Results on a first stage with no exclusion restriction, which preserves full sample size, are virtually identical with those presented in Table V. This is reported in the Appendix.

[11] The inclusion of the exclusion restriction in the first stage produces almost identical results to the tests which do not include it in the first stage. The minor differences in coefficients are not visible with max three decimals as in the table. Allowing for more decimals renders these differences visible.

shareholder. To enhance precision, I perform the matching *within* each discrete measure, and within groups: country, industry, year, public/private status, age, and segment diversification. Therefore, each company is matched to another company in the same country, same year, same industry, same public/private status, with the same exact number of years (age) and with operating in the exact same number of segments (segment diversification). In the logit model, I add all non-discrete controls: *Spread, Net Working Capital, Capex, R&D Expenditures, ROA Volatility, Growth Opportunities*, *Cash Flow*, *Cash Flow Volatility*, *Ln(TA)* and *Leverage*. To ensure the quality of the matching, I impose a maximum difference in the propensity score (caliper) between the treated and control firms to not exceed 0.01 in absolute value. This ensures the similarity between the two groups.

The results, presented in Table VI, indicate that this rigorous matching procedure significantly reduces sample size but enhances the quality of the matches. This is evidenced by the p-value of 0.54 for the difference in propensity scores, indicating minimal differences between the treated and control groups. Moreover, the p-values of the differences in means across all other controls range from a minimum of 0.27 for *ROA Volatility* to 0.99 for Ln(TA) and Cash Flow. Discrete variables clearly display a p-value of 1 because of the exact matching performed within each group. Importantly, the p-value of the test for the difference in means for cash holdings is zero. This strongly indicates that the average cash for companies with a dominant diversified shareholder (6.46%) is statistically different (lower) from that of companies with a dominant undiversified shareholder (17.69%). This result further corroborates our previous findings.

In observational studies where randomized experiments are not feasible, establishing causality is always difficult. Therefore, none of the steps above *perfectly* addresses endogeneity. Nonetheless, all tests appear to confirm my main conclusion that companies controlled by a less diversified shareholder tend to hoard more cash than companies controlled by better diversified ones (all else being equal).

4.   Robustness Tests

In this section, I perform a series of robustness tests to reduce possible concerns that some confounding effects may be at play and partly explain my results.

4.1.   The Role of Dual-Class Shares

One possible limitation of my study is that I am not able to control for the presence of dual class shares in the sample. These are potentially important, since they could significantly impact the calculation of voting rights and cash flow rights, and therefore, the correct identification of the largest ultimate owner. However, several studies have shown that the use of dual-class shares has been decreasing. For instance, according to Lauterbach and Pajuste (2015): "The European Union has debated extensively a potential mandatory one share one vote law". Even though a law was never imposed, Maury and Pajuste (2011) document that in seven European countries with more prevalent use of dual-class shares (Denmark, Finland, Germany, Italy, Norway, Sweden, and Switzerland), the fraction of dual-

class (listed) firms decreased from 43% to 29% between 1996 and 2002. Lauterbach and Pajuste (2015) report that, by 2012, the fraction of dual-class shares declined further to 16%.

To reduce concerns that dual-class shares may affect my tests, Table VII reports results where I exclude the seven countries listed above, and the results are essentially unaltered.

4.2.   The Role of Tunnelling

As discussed above, when voting rights are meaningfully larger than cash flow rights, the ultimate owner may have incentives to expropriate firms. However, the descriptive statistics clearly indicate that in the vast majority of cases, the spread between voting rights and cash flow rights in the sample is minimal. Inspecting the data in more detail reveals that, in 90% of the distribution, the average spread is approximately 1%. At 95% it gets to 10.35%. Therefore, to reduce possible concerns that the results could be affected by these cases, I repeat the analysis by eliminating observations when the spread is 10% or above. In Table VIII, I report results that are essentially identical to those reported in Table II.

4.3.   The Role of Political Corruption

Recent evidence suggests that political corruption could influence cash holdings at the firm level. For instance, on a sample of US companies, Jayakody et al. (2023) report that companies operating in environments with higher corruption levels find it beneficial to

accumulate more cash. Accordingly, I collect the indicator of "Control of Corruption Estimate" from the World Bank.[12] This indicator "captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as capture of the state by elites and private interests." The index gives each country/year a score in units of a standard normal distribution, ranging from approximately -2.5 to 2.5 where higher values indicate lower levels of corruption The variable is available for the entire time series of my studies and for all countries. In broad strokes, this metric reflects the degree to which public authority is misused for personal benefit. According to Hamilton and Hammer (2018), this is one of the most reliable indicators of political corruption at the national level. I then include this variable as a control in the analysis. The results of this test are presented in Table IX. The variable for political corruption is never significant, but more importantly, my tests on the role of large shareholder diversification on cash holdings are essentially unaltered. For extra robustness, I also repeat the test by dropping countries with worse corruption levels, as indicated by the values of the index below zero. This excludes approximately 15% of the sample. The results in Table X largely mirror those of all the previous tests.

4.4. The Role of Disclosure Requirements

In this final series of robustness tests, I try to reduce concerns that heterogeneity in the disclosure requirements in my sample may introduce a significant amount of noise in my

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[12] https://databank.worldbank.org/source/worldwide-governance-indicators?l=en#

tests. First, I exclude countries where the disclosure of financial statements is voluntary (Bosnia and Herzegovina, Romania, Russia, and Switzerland). The voluntary nature of the disclosure in these countries may raise self-selection concerns that may affect the main results, so this test shows that my results are not affected by this issue. Second, I further exclude countries where compliance with the disclosure requirements is either low (Portugal, Germany) or undefined (Malta and the Slovak Republic).[13]

The results from these tests are reported in Tables XI and XII, respectively, and clearly indicate that the results are robust to heterogeneity in disclosures in different countries.

4.5. Other Robustness Tests

I perform a large number of other robustness tests, tabulated in the Internet Appendix, which all confirm the results presented so far. Many have been mentioned already in the main body of the paper, hence, here I briefly describe them for completeness of exposition.

In Table A2, I replicate my main tests but use growth in sales as a proxy for growth opportunities instead of growth in total assets. Growth in sales is more commonly used in the literature as a proxy for growth opportunities for private firms for which market values are not available. The downside, at least in my sample, is that there are more missing values for sales than for total assets.

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[13] See Marchica and Mura (2013) for a detailed description of disclosure requirements.

In Table A3, I split the sample into three cohorts of firm size to ensure that results are robust to different size cutoffs.

In Table A4, I split the sample into three cohorts according to the level of cash flow rights of the largest investor. Since it is crucial in my setting to capture the effect of the largest shareholder, with this split I can isolate samples of firms with more and less dominant owners.

In Table A5, I control for year x industry x country fixed effects as opposed to three separate sets of year, industry and country fixed effects as this specification can better control for the effect of more nuanced unobserved heterogeneity within year/industry/country groups.

In Tables A6, A7 and A8 I allow for different types of clustering of the standard errors, to control for the fact that the error term may be correlated within different clusters. In Table A6 I cluster at the investor level; in Table A7 I allow for clustering at the firm level while in Table A8 I allow for double clustering at the investor and firm level.

In Tables A9, A10, and A11, I report three variations of the Heckman correction model. Table A9 shows the results obtained without imposing any exclusion restriction in the first stage, which entails that the sample includes all observations regardless of the availability of geographical distance data (as in Table V). In Tables A10 and A11, the measure of investable firms based on geographical distance is defined on the basis of five miles in Table A10 and 25 miles in Table A11.

5. Conclusions

Several recent studies document that more diversified firms hold less cash (Duchin, 2010; Subramaniam et al., 2011; Tong, 2011; Bakke and Gu, 2017). A common thread of this literature is the focus on *segment* diversification at the *firm* level. In this study, I offer a different and original perspective by focusing on diversification at the *shareholder* level rather than at the *firm* level. I argue that large shareholders with less-diversified portfolios are more concerned with firms' cash flow variability. Consequently, a higher level of cash holding at the firm level would reduce her exposure to this risk. Ceteris paribus, companies controlled by well-diversified shareholders are expected to accumulate less cash than those controlled by less-diversified shareholders.

I report a battery of tests, all of which corroborate my hypothesis. Shareholder-level portfolio diversification is not only statistically significant across all tests but also economically meaningful. In robust multivariate regression testing, measuring the economic impact in a conventional way, my tests indicate that one standard deviation increase in portfolio diversification (as measured by *Ln No. Firms*) results in an average 22% decrease in cash holdings relative to the mean. Results are robust when using the alternative proxies for portfolio diversification. Moreover, results remain consistent when including a more conventional proxy for firm-level segment diversification.

Overall, my results highlight a robust and previously undocumented relation between the diversification of the largest shareholder and a firm's decision to accumulate cash. This negative relation does not seem to be driven by endogeneity or other potentially confounding effects such as the presence of dual-class shares, tunnelling, political corruption, or

heterogeneity in disclosure requirements across courtiers. Economically, diversification of the largest firm owner is at least as important for determining the level of cash holdings as diversification of the firm's business across sectors is, and these effects complement each other.

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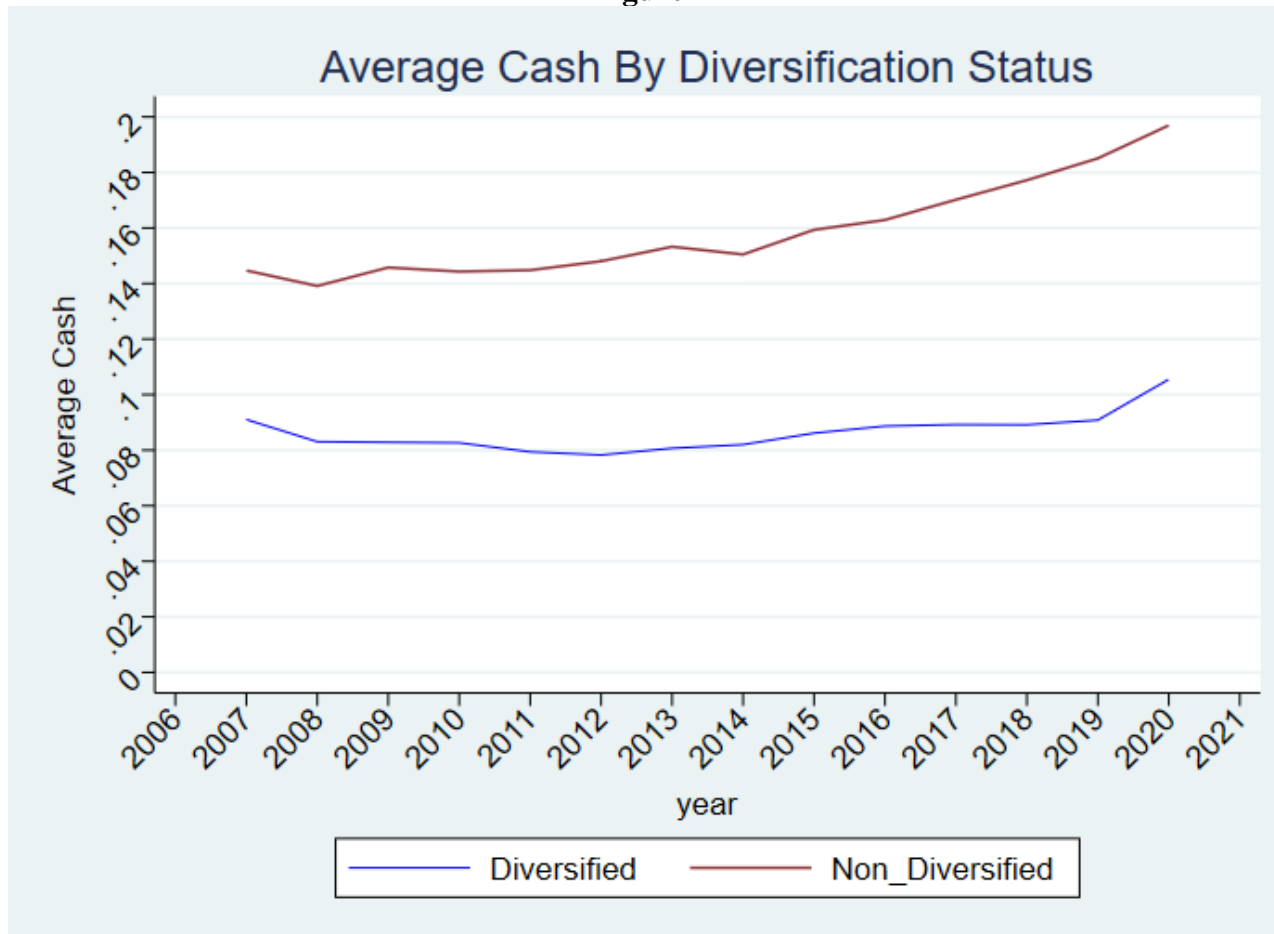
Figure 1

This figure plots the average cash holdings of firms whose large shareholders are either diversified or non-diversified during the period 2007-2020. Cash holding is the ratio of cash and cash equivalent to total assets. A shareholder is defined as non-diversified if she has only one equity position, while a diversified shareholder has two or more equity positions in her portfolio.

Table I Descriptive statistics

	Obs	Mean	Median	Min	Max	Std. Dev.
			Panel A: Investor Level			
Diversification	1,842,468	9.171	3	1.000	1267	42.346
Ln No.Firms	1,842,468	1.225	1.099	0.000	7.144	1.122
1-Herfindahl	1,821,158	0.530	0.667	0.000	0.998	0.348
Cash Flow Rights	1,842,468	60.032	51	0.000	100	32.246
Voting Rights	1,842,468	61.208	51	0.000	100	31.231
Spread	1,842,468	1.176	0.000	0.000	71.901	4.368
			Panel B: Firm Level			
Cash Holding	2,889,134	0.099	0.030	0.000	0.980	0.163
Private Company	2,889,134	0.989	1.000	0.000	1.000	0.104
Net Working Capital	2,889,134	0.103	0.089	-1.123	1.000	0.341
Capex	2,889,134	0.035	0.014	-0.491	0.551	0.122
R&D Expenditures	2,889,134	0.000	0.000	0.000	0.824	0.011
ROA Volatility	2,889,134	0.079	0.044	0.000	0.947	0.123
Growth Opportunities	2,889,134	0.160	0.023	-18.152	7.106	0.813
Cash Flow	2,889,134	0.051	0.046	-4.111	1.500	0.224
Cash Flow Volatility	2,889,134	0.197	0.163	0.000	2.594	0.121
Age	2,889,134	23.009	19.000	1.000	98.000	18.098
Ln(1+Age)	2,889,134	2.812	2.944	0.000	4.585	0.881
Ln(TA)	2,889,134	16.506	16.268	0.046	26.076	1.221
Leverage	2,889,134	0.647	0.663	0.000	2.200	0.349
Sector Diversification	2,889,134	1.768	1.000	1.000	35.000	1.097
Ln(Sector Diversification)	2,889,134	0.429	0.000	0.000	3.555	0.506

Panel A of this table reports the descriptive statistics of the variables at the controlling-owner level. Diversification is the total number of firms in which a company's largest (ultimate) shareholder holds shares, directly or indirectly. Ln No. Firms is the natural log of the level variable described above. The Herfindahl Index is the sum of the squared values of the weight of each investment in the largest shareholder's portfolio. The transformation 1-Herfindal ensures that the interpretation is consistent with that of the Ln No. Firms. Cash Flow Rights measure the cash flow rights of the largest ultimate shareholder. Voting Rights measure the voting rights of the largest ultimate shareholder. Spread measures the difference between the voting rights and cash flow rights of the ultimate owner. Panel B reports descriptive statistics at the firm level. Cash Holding is the ratio of cash and cash equivalent to total assets. Private Company is a dummy equal to one if the firm is privately held. Net working capital is the difference between current assets and current liabilities excluding cash. Capex is defined as capital expenditures divided by total assets. R&D Expenditures is the R&D expenditures to total assets. ROA Volatility is the standard deviation of the country-industry adjusted ROA. Growth Opportunities is the annual growth rate of total assets. Cash Flow is the ratio of income plus depreciation to total assets. Cash Flow Volatility is the standard deviation of the cash flows at the country-year-industry level. Age is the number of years since incorporation. Ln(1+Age) is the natural log of (1 + the number of years since incorporation). Ln(TA) is the natural log of total assets, expressed in 1999 prices. Leverage is defined as the ratio of total debt to total assets. Sector Diversification measures the number of business segments a firm reports. Ln(Sector Diversification) is the natural log of the number of business segments a firm reports.

Table II OLS Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
Ln No.Firms	-0.014***		-0.019***		-0.012***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.096***		-0.059***		-0.070***
		(0.000)		(0.000)		(0.000)
Spread	-0.000	-0.000***	0.000***	0.000***	0.000	-0.000***
	(0.448)	(0.000)	(0.000)	(0.000)	(0.543)	(0.000)
Private Company	0.009***	0.009***	-0.007***	-0.008***	-0.019***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net Working Capital	-0.108***	-0.111***	-0.094***	-0.096***	-0.141***	-0.146***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.114***	-0.114***	-0.079***	-0.081***	-0.085***	-0.087***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.117***	0.098***	0.058***	0.058***	0.000	-0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.994)	(0.685)
ROA Volatility	0.073***	0.068***	0.039***	0.040***	0.032***	0.034***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.007***	0.007***	0.005***	0.005***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.030***	0.032***	0.020***	0.021***	0.014***	0.014***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.010***	0.008***	0.002**	0.004***	0.010***	0.012***
	(0.000)	(0.000)	(0.041)	(0.001)	(0.000)	(0.000)
Ln(1+Age)	0.001***	0.002***	0.005***	0.005***	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.560)	(0.858)
Ln(TA)	-0.011***	-0.013***	-0.013***	-0.013***	-0.017***	-0.017***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.106***	-0.106***	-0.070***	-0.071***	-0.109***	-0.110***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	0.002***	0.002***	-0.000	-0.000		
	(0.000)	(0.000)	(0.908)	(0.830)		
Constant	0.374***	0.439***	0.395***	0.393***	0.498***	0.523***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2,889,134	2,858,737	2,889,134	2,858,737	2,889,134	2,858,737
R-squared	0.128	0.136	0.600	0.603	0.607	0.612
Year FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	NO	NO
SIC4 FE	YES	YES	YES	YES	NO	NO
Investor FE	NO	NO	YES	YES	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES
EI Ln No.Firms	-15.67		-21.82		-13.30	
EI (1-Herfindal)		-33.85		-20.58		-24.70
EI Ln(Sector Diversification)	0.948	1.100	-0.0380	-0.0703		

This table reports OLS regression results. The dependent variable is corporate cash holdings, defined as the ratio of cash and cash equivalent to total assets. Ln No. Firms is the natural log of the total number of firms in which a company's largest ultimate shareholder (e.g., the ultimate shareholder controlling the largest fraction of voting rights in the firm) holds shares directly or indirectly in a given year. The Herfindahl Index is the sum of the squared values of the weight of each investment in the largest shareholder's portfolio. Spread measures the difference between voting rights and cash flow rights of the ultimate owner. Private Company is a dummy variable that takes the value of one when the firm is privately held and zero when the firm is listed on a stock exchange. Net Working Capital is the difference between current assets and current liabilities excluding cash. Capex is defined as capital expenditures divided by total assets. R&D Expenditures is the R&D expenditures to total assets. ROA Volatility is the standard deviation of the country-industry adjusted ROA. Growth Opportunities is the annual growth rate of total assets. Cash Flow is the ratio of income plus depreciation to total assets. Cash Flow Volatility is the standard deviation of cash flows at the country-year-industry level. Ln(1+Age) is the natural log of (1 + number of years

since incorporation). Ln(TA) is the natural log of total assets expressed in 1999 prices. Leverage is the ratio of total debt to total assets. Ln(Sector Diversification) measures the natural log of the number of business segments reported by a firm. EI stands for Economic Impact, which is calculated by multiplying the estimated coefficient of the variable by one standard deviation of the same variable, and the product is then divided by the mean of the dependent variable. P-values adjusted for heteroscedasticity are reported in brackets below the coefficients. *** p<0.01, ** p<0.05, * p<0.1

Table III: IV Regression based on diversification

	(1)	(2) First Stage	(3)	(4) First Stage	(5)	(6) First Stage	(7)	(8) First Stage
Predicted Ln No.Firms	-0.062***				-0.013***			
	(0.000)				(0.000)			
Ln No.Firms		0.0197***				0.192***		
		(0.000)				(0.000)		
Predicted (1-Herfindhal)			-0.162***				-0.044***	
			(0.000)				(0.000)	
(1-Herfindahl)				0.0531***				0.162***
				(0.000)				(0.000)
Spread	0.001***	0.00654***	0.000***	0.00118***	0.000	0.0422***	-0.000***	0.00490***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.160)	(0.000)	(0.000)	(0.000)
Private Company	-0.007***	0.0117***	-0.008***	0.00370***	-0.020***	-0.0495	-0.020***	-0.0114***
	(0.000)	(0.003)	(0.000)	(0.000)	(0.000)	(0.201)	(0.000)	(0.009)
Net Working Capital	-0.093***	0.0212***	-0.095***	0.00476***	-0.141***	0.00926**	-0.147***	0.00163**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.038)	(0.000)	(0.022)
Capex	-0.079***	-0.00143	-0.080***	-0.000258	-0.085***	-0.0300***	-0.087***	-0.00580***
	(0.000)	(0.575)	(0.000)	(0.739)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.056***	-0.0283	0.055***	-0.0215***	-0.000	0.507***	-0.006	0.00223
	(0.000)	(0.310)	(0.000)	(0.000)	(0.990)	(0.000)	(0.631)	(0.881)
ROA Volatility	0.039***	-0.0137***	0.040***	-0.00582***	0.033***	-0.00349	0.035***	-0.00210
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.725)	(0.000)	(0.169)
Growth Opportunities	0.005***	-0.00404***	0.005***	-0.00116***	0.005***	-0.00493***	0.005***	-0.00207***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.020***	-0.00218	0.021***	0.00174***	0.014***	-0.0542***	0.014***	-0.00701***
	(0.000)	(0.149)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.001	-0.0556***	0.004***	-0.000599	0.010***	-0.0778***	0.012***	0.00585***
	(0.571)	(0.000)	(0.000)	(0.578)	(0.000)	(0.000)	(0.000)	(0.003)
Ln(1+Age)	0.004***	-0.00873***	0.005***	-0.00180***	-0.000	0.0892***	-0.000	0.0110***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.711)	(0.000)	(0.623)	(0.000)
Ln(TA)	-0.012***	0.0104***	-0.013***	0.00227***	-0.017***	0.0672***	-0.017***	0.0142***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.069***	0.0219***	-0.071***	-0.00193***	-0.109***	-0.0599***	-0.109***	-0.0223***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	0.000	0.00503**	0.000	0.000181				
	(0.609)	(0.033)	(0.885)	(0.691)				
Observations	2,854,864	2,854,864	2,824,381	2,824,381	2,854,864	2,854,864	2,824,381	2,824,381
Partial R-sq		0.363		0.128		1.012		0.177
F-Test		1336		1859		6195		4297
Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Country FE	YES	YES	YES	YES	NO	NO	NO	NO
SIC4 FE	YES	YES	YES	YES	NO	NO	NO	NO
Investor FE	YES	YES	YES	YES	NO	NO	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES	YES	YES

This table reports the results of the Instrumental Variable regression. Odd-numbered models represent the second stage, while even-numbered models report the first stage. The dependent variable is corporate cash holdings, defined as the ratio of cash and cash equivalent to total assets. Ln No. Firms is the natural log of the total number of firms in which a company's largest ultimate shareholder (e.g., the ultimate shareholder controlling the largest fraction of voting rights in the firm) holds shares directly or indirectly in a given year. The Herfindahl Index is the sum of the squared values of the weight of each investment in the largest shareholder's portfolio. The predicted values for these variables are calculated as the average portfolio diversification (either Ln No.Firms or 1-Herfindahl) of large shareholders of all the other companies in the same country year and industry. Spread measures the difference between voting rights and cash flow rights of the ultimate owner. Private Company is a dummy variable that takes the value of one when the firm is privately held and zero when the firm is listed on a stock exchange. Net Working Capital is the difference between current assets and current liabilities excluding cash. Capex is defined as capital expenditures divided by total assets. R&D Expenditures is the R&D expenditures to total assets. ROA Volatility is the standard deviation of the country-industry adjusted ROA. Growth Opportunities is the annual growth rate of total assets. Cash Flow is the ratio of income plus depreciation to total assets. Cash Flow Volatility is the standard deviation of cash flows at the country-year-industry level. Ln(1+Age) is the natural log of (1 + number of years since incorporation). Ln(TA) is the natural log of total assets expressed in 1999 prices. Leverage is the ratio of total debt to total assets. Ln(Sector Diversification) measures the natural log of the number of business segments reported by a firm. P-values adjusted for heteroscedasticity are reported in brackets below the coefficients. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table IV: IV Regressions based on scrambled diversification

	(1)	(2) First Stage	(3)	(4) First Stage	(5)	(6) First Stage	(7)	(8) First Stage
Predicted Ln No.Firms	-0.011**				-0.009***			
	(0.034)				(0.000)			
Ln No.Firms		0.0198***				0.142***		
		(0.000)				(0.000)		
Predicted (1-Herfindhal)			-0.116**				-0.109***	
			(0.015)				(0.000)	
(1-Herfindahl)				0.0175***				0.0662***
				(0.000)				(0.000)
Spread	0.000***	0.00585***	0.000***	0.000887***	-0.000**	0.0359***	0.000	0.00391***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.040)	(0.000)	(0.347)	(0.000)
Private Company	-0.008***	0.0118***	-0.008***	0.00208**	-0.019***	-0.133***	-0.020***	-0.0131***
	(0.000)	(0.007)	(0.000)	(0.015)	(0.000)	(0.000)	(0.000)	(0.004)
Net Working Capital	-0.098***	0.0183***	-0.099***	0.00308***	-0.150***	0.00903*	-0.155***	0.00115
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.086)	(0.000)	(0.139)
Capex	-0.083***	-0.00491	-0.085***	-0.000124	-0.090***	-0.0348***	-0.092***	-0.00557***
	(0.000)	(0.103)	(0.000)	(0.874)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.066***	-0.0414	0.066***	-0.0167**	0.004	0.640***	0.000	0.00398
	(0.000)	(0.226)	(0.000)	(0.024)	(0.769)	(0.000)	(0.972)	(0.824)
ROA Volatility	0.044***	-0.0146***	0.045***	-0.00498***	0.034***	-0.00529	0.035***	-0.00193
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.628)	(0.000)	(0.258)
Growth Opportunities	0.006***	-0.00438***	0.006***	-0.00151***	0.007***	-0.00824***	0.007***	-0.00288***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.021***	-0.00228	0.022***	0.00172***	0.014***	-0.0571***	0.014***	-0.00732***
	(0.000)	(0.199)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	-0.002	-0.0334***	-0.001	-0.00265**	0.004***	-0.0213	0.005***	0.00533**
	(0.198)	(0.000)	(0.390)	(0.018)	(0.007)	(0.120)	(0.000)	(0.012)
Ln(1+Age)	0.004***	-0.00152**	0.004***	-0.000983***	-0.001	0.0974***	0.001	0.0184***
	(0.000)	(0.013)	(0.000)	(0.000)	(0.123)	(0.000)	(0.130)	(0.000)
Ln(TA)	-0.013***	0.00883***	-0.013***	0.00164***	-0.017***	0.0638***	-0.017***	0.0127***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.074***	0.0258***	-0.075***	-0.00124***	-0.117***	-0.0392***	-0.119***	-0.0159***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	-0.001	0.00787***	-0.001	0.000739				
	(0.164)	(0.003)	(0.190)	(0.148)				
Observations	2,060,990	2,060,990	2,039,570	2,039,570	2,060,990	2,060,990	2,039,570	2,039,570
Partial R-sq		0.356		0.106		0.983		0.154

F-Test		3072		379		18258		2674
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	NO	NO	NO	NO
SIC4 FE	YES	YES	YES	YES	NO	NO	NO	NO
Investor FE	YES	YES	YES	YES	NO	NO	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES	YES	YES

This table reports the results of the Instrumental Variable regression. Odd-numbered models represent the second stage, while even-numbered models report the first stage. The dependent variable is corporate cash holdings, defined as the ratio of cash and cash equivalent to total assets. Ln No. Firms is the natural log of the total number of firms in which a company's largest ultimate shareholder (e.g., the ultimate shareholder controlling the largest fraction of voting rights in the firm) holds shares directly or indirectly in a given year. The Herfindahl Index is the sum of the squared values of the weight of each investment in the largest shareholder's portfolio. The predicted values for these variables are calculated as the average portfolio diversification of large shareholders of all other companies in the same country year and industry, calculated for a matching firm in a neighboring country. Spread measures the difference between voting rights and cash flow rights of the ultimate owner. Private Company is a dummy variable that takes the value of one when the firm is privately held and zero when the firm is listed on a stock exchange. Net Working Capital is the difference between current assets and current liabilities excluding cash. Capex is defined as capital expenditures divided by total assets. R&D Expenditures is the R&D expenditures to total assets. ROA Volatility is the standard deviation of the country-industry adjusted ROA. Growth Opportunities is the annual growth rate of total assets. Cash Flow is the ratio of income plus depreciation to total assets. Cash Flow Volatility is the standard deviation of cash flows at the country-year-industry level. Ln(1+Age) is the natural log of (1 + number of years since incorporation). Ln(TA) is the natural log of total assets expressed in 1999 prices. Leverage is the ratio of total debt to total assets. Ln(Sector Diversification) measures the natural log of the number of business segments reported by a firm. P-values adjusted for heteroscedasticity are reported in brackets below the coefficients. *** p<0.01, ** p<0.05, * p<0.1

Table V: Heckman Correction Models

	(1) No Excl. Restriction	(2) No Excl. Restriction	(3) Geo Distance	(4) Geo Distance	(5) No Excl. Restriction	(6) No Excl. Restriction	(7) Geo Distance	(8) Geo Distance
Ln No.Firms	-0.014***		-0.014***		-0.010***		-0.010***	
	(0.000)		(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.062***		-0.062***		-0.064***		-0.064***
		(0.000)		(0.000)		(0.000)		(0.000)
Lambda	-0.017***	-0.000	-0.017***	-0.001	-0.022***	-0.004***	-0.022***	-0.004***
	(0.000)	(0.797)	(0.000)	(0.714)	(0.000)	(0.004)	(0.000)	(0.002)
Spread	0.000**	0.000***	0.000**	0.000***	-0.000***	-0.000***	-0.000***	-0.000***
	(0.029)	(0.000)	(0.030)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)
Private Company	-0.003	-0.004	-0.003	-0.004	-0.011*	-0.013**	-0.011*	-0.013**
	(0.258)	(0.123)	(0.267)	(0.124)	(0.071)	(0.034)	(0.073)	(0.035)
Net Working Capital	-0.107***	-0.108***	-0.107***	-0.108***	-0.160***	-0.166***	-0.160***	-0.166***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.093***	-0.096***	-0.093***	-0.096***	-0.095***	-0.099***	-0.095***	-0.099***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.110***	0.112***	0.110***	0.112***	0.044	0.045	0.043	0.045
	(0.000)	(0.000)	(0.000)	(0.000)	(0.185)	(0.178)	(0.185)	(0.178)
ROA Volatility	0.039***	0.040***	0.039***	0.040***	0.024***	0.027***	0.024***	0.027***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.007***	0.007***	0.007***	0.007***	0.008***	0.008***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.018***	0.018***	0.018***	0.018***	0.012***	0.012***	0.012***	0.012***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.001	0.002	0.001	0.002	0.003	0.003	0.003	0.003
	(0.764)	(0.521)	(0.757)	(0.522)	(0.389)	(0.271)	(0.381)	(0.271)
Ln(1+Age)	0.005***	0.005***	0.005***	0.005***	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.874)	(0.981)	(0.880)	(0.979)
Ln(TA)	-0.016***	-0.016***	-0.016***	-0.016***	-0.021***	-0.020***	-0.021***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.082***	-0.083***	-0.082***	-0.083***	-0.123***	-0.125***	-0.123***	-0.125***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	-0.002*	-0.002	-0.002*	-0.002				
	(0.090)	(0.104)	(0.089)	(0.104)				
Constant	0.457***	0.461***	0.456***	0.460***	0.568***	0.589***	0.567***	0.589***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	583,801	578,192	583,801	578,192	583,801	578,192	583,801	578,192

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
R-squared	583,801	578,192	583,801	578,192	583,801	578,192	583,801	578,192
Year FE	0.608	0.610	0.608	0.610	0.705	0.708	0.705	0.708
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	NO	NO	NO	NO
Investor FE	YES	YES	YES	YES	NO	NO	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES	YES	YES

This table reports the results obtained using the Heckman treatment effects model. Models (1), (2), (5), and (6) are produced using a first-stage probit, where no exclusion restriction is included. Models (3), (4), (7), and (8) are produced via a first-stage probit, where the average number of companies located within a 50 miles radius of each large shareholder in each country in each year is used as an exclusion restriction in the first stage. Lambda is calculated from the predicted values of the first-stage probit regressions. The dependent variable is corporate cash holdings, defined as the ratio of cash and cash equivalent to total assets. Ln No. Firms is the natural log of the total number of firms in which a company's largest ultimate shareholder (e.g., the ultimate shareholder controlling the largest fraction of voting rights in the firm) holds shares directly or indirectly in a given year. The Herfindahl Index is the sum of the squared values of the weight of each investment in the largest shareholder's portfolio. Spread measures the difference between voting rights and cash flow rights of the ultimate owner. Private Company is a dummy variable that takes the value of one when the firm is privately held and zero when the firm is listed on a stock exchange. Net Working Capital is the difference between current assets and current liabilities excluding cash. Capex is defined as capital expenditures divided by total assets. R&D Expenditures is the R&D expenditures to total assets. ROA Volatility is the standard deviation of the country-industry adjusted ROA. Growth Opportunities is the annual growth rate of total assets. Cash Flow is the ratio of income plus depreciation to total assets. Cash Flow Volatility is the standard deviation of cash flows at the country-year-industry level. Ln(1+Age) is the natural log of (1 + number of years since incorporation). Ln(TA) is the natural log of total assets expressed in 1999 prices. Leverage is the ratio of total debt to total assets. Ln(Sector Diversification) measures the natural log of the number of business segments reported by a firm. P-values adjusted for heteroscedasticity are reported in brackets below the coefficients. *** p<0.01, ** p<0.05, * p<0.1

Table VI: Propensity Score Matching

	Observations	Diversified	Undiversified	p-value of diff.
Cash Holding	53,742	0.0646	0.1769	0.0000
P-Score	53,742	0.6716	0.6725	0.5408
Spread	53,742	0.0009	0.0010	0.8801
Private Company	53,742	0.9999	0.9999	1.0000
Net Working Capital	53,742	0.1288	0.1280	0.7583
Capex	53,742	0.0199	0.0195	0.5495
R&D Expenditures	53,742	0.0000	0.0000	0.4237
ROA Volatility	53,742	0.0442	0.0433	0.2737
Growth Opportunities	53,742	0.4092	0.4136	0.7211
Cash Flow	53,742	0.0304	0.0304	0.9893
Cash Flow Volatility	53,742	0.2052	0.2049	0.7828
Age	53,742	15.3456	15.3456	1.0000
Ln(TA)	53,742	16.1174	16.1175	0.9885
Leverage	53,742	0.7618	0.7615	0.9207
Sector Diversification	53,742	1.6762	1.6762	1.0000

This table reports the results obtained using a propensity score matching procedure. In the first step, I run a logit model on the probability of a firm having a dominant shareholder that is either undiversified (only one equity position) or diversified (more than one equity position in the portfolio). Matching is performed within each country, industry, year, public/private status, age, and segment diversification and terciles of firm size. In the logit model, I then add all the non-discrete controls. To ensure the quality of the matching, I impose a maximum difference in the propensity score (caliper) between the treated and control firms to not exceed 0.001 in absolute value. Cash holding is the ratio of cash and cash equivalent to total assets. The P-score is the propensity score, which represents the estimated probability of treatment assignment. Spread measures the difference between voting rights and cash flow rights of the ultimate owner. Private Company is a dummy variable that takes the value of one when the firm is privately held and zero when the firm is listed on a stock exchange. Net Working Capital is the difference between current assets and current liabilities excluding cash. Capex is defined as capital expenditures divided by total assets. R&D Expenditures is the R&D expenditures to total assets. ROA Volatility is the standard deviation of the country-industry adjusted ROA. Growth Opportunities is the annual growth rate of total assets. Cash Flow is the ratio of income plus depreciation to total assets. Cash Flow Volatility is the standard deviation of cash flows at the country-year-industry level. Ln(1+Age) is the natural log of (1 + number of years since incorporation). Ln(TA) is the natural log of total assets expressed in 1999 prices. Leverage is the ratio of total debt to total assets. Ln(Sector Diversification) measures the natural log of the number of business segments reported by a firm. Discrete variables are reported for completeness although they are matched within each discrete value. P-values of tests of differences in means between the treated and control groups are reported in the last column.

Table VII: Excluding Counties with a Higher Fraction of Dual-Share Classes

	(1)	(2)	(3)	(4)	(5)	(6)
Ln No.Firms	-0.014***		-0.021***		-0.012***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.102***		-0.062***		-0.075***
		(0.000)		(0.000)		(0.000)
Spread	-0.000***	-0.000***	0.000***	0.000***	-0.000	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.795)	(0.000)
Private Company	0.007***	0.006***	-0.006***	-0.006***	-0.013***	-0.015***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net Working Capital	-0.106***	-0.109***	-0.092***	-0.094***	-0.139***	-0.144***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.104***	-0.105***	-0.070***	-0.072***	-0.077***	-0.079***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.124***	0.113***	0.045***	0.045***	-0.009	-0.014
	(0.000)	(0.000)	(0.000)	(0.000)	(0.509)	(0.287)
ROA Volatility	0.055***	0.051***	0.030***	0.030***	0.024***	0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.006***	0.006***	0.004***	0.004***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.022***	0.024***	0.017***	0.017***	0.011***	0.011***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.007***	0.005***	0.000	0.001	0.007***	0.007***
	(0.000)	(0.000)	(0.810)	(0.306)	(0.000)	(0.000)
Ln(1+Age)	0.001***	0.002***	0.006***	0.006***	0.002***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(TA)	-0.012***	-0.014***	-0.013***	-0.013***	-0.017***	-0.017***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.098***	-0.099***	-0.067***	-0.068***	-0.106***	-0.107***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	0.001	0.001**	0.001	0.001		
	(0.142)	(0.040)	(0.340)	(0.343)		
Constant	0.390***	0.452***	0.400***	0.394***	0.494***	0.518***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	1,915,897	1,893,664	1,915,897	1,893,664	1,915,897	1,893,664
R-squared	0.125	0.135	0.606	0.610	0.609	0.614
Year FE	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	NO	NO
Country FE	YES	YES	YES	YES	NO	NO
Investor FE	NO	NO	YES	YES	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES
EI Ln No.Firms	-16.60		-24.44		-14.45	
EI (1-Herfindal)		-36.14		-22.03		-26.47
EI Ln(Sector Diversification)	0.452	0.636	0.357	0.355		

This table reports OLS regression results, where I exclude the seven European countries with more prevalent use of dual-class shares: Denmark, Finland, Germany, Italy, Norway, Sweden, and Switzerland. The dependent variable is corporate cash holdings, defined as the ratio of cash and cash equivalent to total assets. Ln No. Firms is the natural log of the total number of firms in which a company's largest ultimate shareholder (e.g., the ultimate shareholder controlling the largest fraction of voting rights in the firm) holds shares directly or indirectly in a given year. The Herfindahl Index is the sum of the squared values of the weight of each investment in the largest shareholder's portfolio. Spread measures the difference between voting rights and cash flow rights of the ultimate owner. Private Company is a dummy variable that takes the value of one when the firm is privately held and zero when the firm is listed on a stock exchange. Net Working Capital is the difference between current assets and current liabilities excluding cash. Capex is defined as capital expenditures divided by total assets. R&D Expenditures is the R&D expenditures to total assets. ROA Volatility is the standard deviation of the country-industry adjusted ROA. Growth Opportunities is the annual growth rate of total assets. Cash Flow is the ratio of income plus depreciation to

total assets. Cash Flow Volatility is the standard deviation of cash flows at the country-year-industry level. Ln(1+Age) is the natural log of (1 + number of years since incorporation). Ln(TA) is the natural log of total assets expressed in 1999 prices. Leverage is the ratio of total debt to total assets. Ln(Sector Diversification) measures the natural log of the number of business segments reported by a firm. EI stands for Economic Impact, which is calculated by multiplying the estimated coefficient of the variable by one standard deviation of the same variable, and the product is then divided by the mean of the dependent variable. P-values adjusted for heteroscedasticity are reported in brackets below the coefficients. *** p<0.01, ** p<0.05, * p<0.1

Table VIII: Excluding Firms with A Higher Risk of Tunnelling

	(1)	(2)	(3)	(4)	(5)	(6)
Ln No.Firms	-0.015***		-0.021***		-0.012***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.096***		-0.059***		-0.070***
		(0.000)		(0.000)		(0.000)
Spread	0.001***	-0.001***	0.001***	0.001***	0.000***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)	(0.000)
Private Company	0.009***	0.010***	-0.007***	-0.008***	-0.020***	-0.022***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net Working Capital	-0.110***	-0.114***	-0.097***	-0.100***	-0.144***	-0.150***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.117***	-0.118***	-0.080***	-0.082***	-0.086***	-0.089***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.110***	0.090***	0.054***	0.054***	0.001	-0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.923)	(0.694)
ROA Volatility	0.072***	0.067***	0.037***	0.038***	0.032***	0.034***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.007***	0.007***	0.005***	0.005***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.029***	0.032***	0.020***	0.020***	0.014***	0.015***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.011***	0.009***	0.003**	0.004***	0.010***	0.012***
	(0.000)	(0.000)	(0.020)	(0.000)	(0.000)	(0.000)
Ln(1+Age)	0.001***	0.002***	0.005***	0.005***	0.000	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.630)	(0.089)
Ln(TA)	-0.011***	-0.013***	-0.013***	-0.013***	-0.016***	-0.017***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.109***	-0.109***	-0.073***	-0.073***	-0.111***	-0.112***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	0.002***	0.002***	0.000	0.000		
	(0.000)	(0.000)	(0.730)	(0.802)		
Constant	0.378***	0.440***	0.399***	0.397***	0.498***	0.521***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2,623,589	2,594,280	2,623,589	2,594,280	2,623,589	2,594,280
R-squared	0.127	0.135	0.610	0.614	0.611	0.616
Year FE	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	NO	NO
Country FE	YES	YES	YES	YES	NO	NO
Investor FE	NO	NO	YES	YES	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES
EI Ln No.Firms	-15.85		-22.43		-13.40	
EI (1-Herfindal)		-33.29		-20.29		-24.20
EI Ln(Sector Diversification)	1	1.147	0.121	0.0881		

This table reports the OLS regression results, where I exclude cases in which voting rights exceed cash flow rights by 10% or more. This corresponds to about the top 5% of the total sample. The dependent variable is corporate cash holdings, defined as the ratio of cash and cash equivalent to total assets. Ln No. Firms is the natural log of the total number of firms in which a company's largest ultimate shareholder (e.g., the ultimate shareholder controlling the largest fraction of voting rights in the firm) holds shares directly or indirectly in a given year. The Herfindahl Index is the sum of the squared values of the weight of each investment in the largest shareholder's portfolio. Spread measures the difference between voting rights and cash flow rights of the ultimate owner. Private Company is a dummy variable that takes the value of one when the firm is privately held and zero when the firm is listed on a stock exchange. Net Working Capital is the difference between current assets and current liabilities excluding cash. Capex is defined as capital expenditures divided by total assets. R&D Expenditures is the R&D expenditures to total assets. ROA Volatility is the standard deviation of the country-industry adjusted ROA. Growth Opportunities is the annual growth rate of total assets. Cash Flow is the ratio of income plus depreciation to total assets. Cash

Flow Volatility is the standard deviation of cash flows at the country-year-industry level. Ln(1+Age) is the natural log of (1 + number of years since incorporation). Ln(TA) is the natural log of total assets expressed in 1999 prices. Leverage is the ratio of total debt to total assets. Ln(Sector Diversification) measures the natural log of the number of business segments reported by a firm. EI stands for Economic Impact, which is calculated by multiplying the estimated coefficient of the variable by one standard deviation of the same variable, and the product is then divided by the mean of the dependent variable. P-values adjusted for heteroscedasticity are reported in brackets below the coefficients. *** p<0.01, ** p<0.05, * p<0.1

Table IX: Controlling for the Level of Political Corruption

	(1)	(2)	(3)	(4)	(5)	(6)
Ln No.Firms	-0.014***		-0.019***		-0.012***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.096***		-0.059***		-0.070***
		(0.000)		(0.000)		(0.000)
Control Corruption Estimate	0.008	0.008	-0.008	-0.008	-0.002	-0.002
	(0.771)	(0.768)	(0.754)	(0.741)	(0.947)	(0.916)
Spread	-0.000	-0.000***	0.000***	0.000***	0.000	-0.000***
	(0.448)	(0.000)	(0.000)	(0.000)	(0.543)	(0.000)
Private Company	0.009***	0.009***	-0.007***	-0.008***	-0.019***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net Working Capital	-0.108***	-0.111***	-0.094***	-0.096***	-0.141***	-0.146***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.114***	-0.114***	-0.079***	-0.081***	-0.085***	-0.087***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.117***	0.098***	0.058***	0.058***	0.000	-0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.994)	(0.685)
ROA Volatility	0.073***	0.068***	0.039***	0.040***	0.032***	0.034***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.007***	0.007***	0.005***	0.005***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.030***	0.032***	0.020***	0.021***	0.014***	0.014***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.010***	0.008***	0.002**	0.004***	0.010***	0.012***
	(0.000)	(0.000)	(0.041)	(0.001)	(0.000)	(0.000)
Ln(1+Age)	0.001***	0.002***	0.005***	0.005***	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.560)	(0.859)
Ln(TA)	-0.011***	-0.013***	-0.013***	-0.013***	-0.017***	-0.017***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.106***	-0.106***	-0.070***	-0.071***	-0.109***	-0.110***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	0.002***	0.002***	-0.000	-0.000		
	(0.000)	(0.000)	(0.908)	(0.831)		
Constant	0.368***	0.432***	0.402***	0.400***	0.499***	0.526***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2,889,134	2,858,737	2,889,134	2,858,737	2,889,134	2,858,737
R-squared	0.128	0.136	0.600	0.603	0.607	0.612
Year FE	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	NO	NO
Country FE	YES	YES	YES	YES	NO	NO
Investor FE	NO	NO	YES	YES	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES
EI Ln No.Firms	-15.67		-21.82		-13.30	
EI (1-Herfindal)		-33.85		-20.58		-24.70
EI Ln(Sector Diversification)	0.948	1.100	-0.0378	-0.0702		

This table reports the OLS regression results, where I include a proxy to control for political-corruption. Control Corruption Estimate captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5 where higher values indicate lower levels of corruption (https://databank.worldbank.org/source/worldwide-governance-indicators?l=en#). The dependent variable is corporate cash holdings, defined as the ratio of cash and cash equivalent to total assets. Ln No. Firms is the natural log of the total number of firms in which a company's largest ultimate shareholder (e.g., the ultimate shareholder controlling the largest fraction of voting rights in the firm) holds shares directly or indirectly in a given year. The Herfindahl Index is the sum of the squared values of the weight of each investment in the largest shareholder's portfolio. Spread measures the difference between voting rights and cash flow rights of the ultimate owner. Private Company is a dummy variable that

takes the value of one when the firm is privately held and zero when the firm is listed on a stock exchange. Net Working Capital is the difference between current assets and current liabilities excluding cash. Capex is defined as capital expenditures divided by total assets. R&D Expenditures is the R&D expenditures to total assets. ROA Volatility is the standard deviation of the country-industry adjusted ROA. Growth Opportunities is the annual growth rate of total assets. Cash Flow is the ratio of income plus depreciation to total assets. Cash Flow Volatility is the standard deviation of cash flows at the country-year-industry level. Ln(1+Age) is the natural log of (1 + number of years since incorporation). Ln(TA) is the natural log of total assets expressed in 1999 prices. Leverage is the ratio of total debt to total assets. Ln(Sector Diversification) measures the natural log of the number of business segments reported by a firm. EI stands for Economic Impact, which is calculated by multiplying the estimated coefficient of the variable by one standard deviation of the same variable, and the product is then divided by the mean of the dependent variable. P-values adjusted for heteroscedasticity are reported in brackets below the coefficients. *** p<0.01, ** p<0.05, * p<0.1

Table X: Excluding Countries with High Levels of Political Corruption Levels

	(1)	(2)	(3)	(4)	(5)	(6)
Ln No.Firms	-0.014***		-0.017***		-0.012***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.088***		-0.051***		-0.062***
		(0.000)		(0.000)		(0.000)
Spread	0.000	-0.000***	0.000***	0.000***	0.000*	-0.000***
	(0.298)	(0.000)	(0.000)	(0.000)	(0.081)	(0.000)
Private Company	0.009***	0.009***	-0.014***	-0.014***	-0.026***	-0.025***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net Working Capital	-0.116***	-0.118***	-0.097***	-0.099***	-0.151***	-0.155***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.129***	-0.128***	-0.092***	-0.093***	-0.100***	-0.102***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.126***	0.107***	0.064***	0.064***	0.008	0.003
	(0.000)	(0.000)	(0.000)	(0.000)	(0.529)	(0.785)
ROA Volatility	0.082***	0.075***	0.037***	0.038***	0.034***	0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.008***	0.009***	0.007***	0.007***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.036***	0.038***	0.022***	0.023***	0.016***	0.016***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.003***	0.002	0.001	0.002	0.009***	0.011***
	(0.005)	(0.177)	(0.664)	(0.186)	(0.000)	(0.000)
Ln(1+Age)	0.003***	0.004***	0.005***	0.005***	-0.004***	-0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(TA)	-0.012***	-0.015***	-0.013***	-0.013***	-0.017***	-0.017***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.116***	-0.117***	-0.072***	-0.072***	-0.115***	-0.117***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	-0.002***	-0.002***	-0.001	-0.001		
	(0.002)	(0.003)	(0.160)	(0.125)		
Constant	0.390***	0.463***	0.408***	0.405***	0.521***	0.544***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2,465,856	2,445,450	2,465,856	2,445,450	2,465,856	2,445,450
R-squared	0.148	0.152	0.597	0.599	0.624	0.626
Year FE	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	NO	NO
Country FE	YES	YES	YES	YES	NO	NO
Investor FE	NO	NO	YES	YES	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES
EI Ln No.Firms	-15.23		-19.34		-13.06	
EI (1-Herfindal)		-29.87		-17.23		-21.08
EI Ln(Sector Diversification)	-0.863	-0.857	-0.494	-0.541		

This table reports the OLS regression results, where countries are dropped when the "Control Corruption Estimate" index is negative. As discussed above the index ranges from approximately -2.5 to 2.5 where higher values indicate lower levels of corruption (https://databank.worldbank.org/source/worldwide-governance-indicators?l=en#). This corresponds to a decrease of approximately 15% in the total sample. The dependent variable is corporate cash holdings, defined as the ratio of cash and cash equivalent to total assets. Ln No. Firms is the natural log of the total number of firms in which a company's largest ultimate shareholder (e.g., the ultimate shareholder controlling the largest fraction of voting rights in the firm) holds shares directly or indirectly in a given year. The Herfindahl Index is the sum of the squared values of the weight of each investment in the largest shareholder's portfolio. Spread measures the difference between voting rights and cash flow rights of the ultimate owner. Private Company is a dummy variable that takes the value of one when the firm is privately held and zero when the firm is listed on a stock exchange. Net Working Capital is the difference between current assets and current liabilities excluding cash. Capex is defined as capital expenditures divided by total assets. R&D Expenditures is the R&D expenditures

to total assets. ROA Volatility is the standard deviation of the country-industry adjusted ROA. Growth Opportunities is the annual growth rate of total assets. Cash Flow is the ratio of income plus depreciation to total assets. Cash Flow Volatility is the standard deviation of cash flows at the country-year-industry level. Ln(1+Age) is the natural log of (1 + number of years since incorporation). Ln(TA) is the natural log of total assets expressed in 1999 prices. Leverage is the ratio of total debt to total assets. Ln(Sector Diversification) measures the natural log of the number of business segments reported by a firm. EI stands for Economic Impact, which is calculated by multiplying the estimated coefficient of the variable by one standard deviation of the same variable, and the product is then divided by the mean of the dependent variable. P-values adjusted for heteroscedasticity are reported in brackets below the coefficients. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table XI: Excluding Countries with Voluntarily Disclosure

	(1)	(2)	(3)	(4)	(5)	(6)
Ln No.Firms	-0.013***		-0.018***		-0.012***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.088***		-0.051***		-0.063***
		(0.000)		(0.000)		(0.000)
Spread	-0.000	-0.000***	0.000***	0.000***	0.000	-0.000***
	(0.626)	(0.000)	(0.000)	(0.000)	(0.409)	(0.000)
Private Company	0.009***	0.009***	-0.010***	-0.011***	-0.021***	-0.021***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net Working Capital	-0.113***	-0.116***	-0.096***	-0.098***	-0.148***	-0.153***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.126***	-0.126***	-0.089***	-0.091***	-0.097***	-0.099***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.118***	0.100***	0.060***	0.060***	0.003	-0.001
	(0.000)	(0.000)	(0.000)	(0.000)	(0.795)	(0.908)
ROA Volatility	0.081***	0.075***	0.038***	0.038***	0.034***	0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.008***	0.008***	0.007***	0.007***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.035***	0.038***	0.022***	0.023***	0.016***	0.016***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.008***	0.006***	0.001	0.002*	0.009***	0.011***
	(0.000)	(0.000)	(0.300)	(0.053)	(0.000)	(0.000)
Ln(1+Age)	0.003***	0.004***	0.005***	0.005***	-0.004***	-0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(TA)	-0.011***	-0.014***	-0.013***	-0.013***	-0.016***	-0.016***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.113***	-0.114***	-0.071***	-0.072***	-0.114***	-0.115***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	-0.001*	-0.001	-0.001	-0.001		
	(0.058)	(0.158)	(0.383)	(0.330)		
Constant	0.380***	0.450***	0.400***	0.397***	0.503***	0.526***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2,621,330	2,597,575	2,621,330	2,597,575	2,621,330	2,597,575
R-squared	0.141	0.145	0.599	0.601	0.621	0.624
Year FE	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	NO	NO
Country FE	YES	YES	YES	YES	NO	NO
Investor FE	NO	NO	YES	YES	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES
EI Ln No.Firms	-15.21		-19.75		-13.04	
EI (1-Herfindal)		-30.48		-17.83		-21.77
EI Ln(Sector Diversification)	-0.521	-0.391	-0.296	-0.330		

This table reports the OLS regression results, where I exclude countries where the disclosure of financial statements is voluntary. These are Bosnia and Herzegovina, Romania, Russia, and Switzerland. The dependent variable is corporate cash holdings, defined as the ratio of cash and cash equivalent to total assets. Ln No. Firms is the natural log of the total number of firms in which a company's largest ultimate shareholder (e.g., the ultimate shareholder controlling the largest fraction of voting rights in the firm) holds shares directly or indirectly in a given year. The Herfindahl Index is the sum of the squared values of the weight of each investment in the largest shareholder's portfolio. Spread measures the difference between voting rights and cash flow rights of the ultimate owner. Private Company is a dummy variable that takes the value of one when the firm is privately held and zero when the firm is listed on a stock exchange. Net Working Capital is the difference between current assets and current liabilities excluding cash. Capex is defined as capital expenditures divided by total assets. R&D Expenditures is the R&D expenditures to total assets. ROA Volatility is the standard deviation of the country-industry adjusted ROA. Growth Opportunities is the annual growth rate of total assets. Cash Flow is the ratio of income plus depreciation to

total assets. Cash Flow Volatility is the standard deviation of cash flows at the country-year-industry level. Ln(1+Age) is the natural log of (1 + number of years since incorporation). Ln(TA) is the natural log of total assets expressed in 1999 prices. Leverage is the ratio of total debt to total assets. Ln(Sector Diversification) measures the natural log of the number of business segments reported by a firm. EI stands for Economic Impact, which is calculated by multiplying the estimated coefficient of the variable by one standard deviation of the same variable, and the product is then divided by the mean of the dependent variable. P-values adjusted for heteroscedasticity are reported in brackets below the coefficients. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table XII: Excluding Countries with Low Disclosure Compliance

	(1)	(2)	(3)	(4)	(5)	(6)
Ln No.Firms	-0.013***		-0.018***		-0.012***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.089***		-0.053***		-0.065***
		(0.000)		(0.000)		(0.000)
Spread	0.000	-0.000***	0.000***	0.000***	0.000	-0.000***
	(0.822)	(0.000)	(0.000)	(0.000)	(0.629)	(0.000)
Private Company	0.007***	0.005***	-0.012***	-0.012***	-0.020***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net Working Capital	-0.110***	-0.112***	-0.095***	-0.097***	-0.150***	-0.155***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.118***	-0.118***	-0.086***	-0.087***	-0.095***	-0.097***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.118***	0.101***	0.053***	0.053***	0.001	-0.004
	(0.000)	(0.000)	(0.000)	(0.000)	(0.924)	(0.758)
ROA Volatility	0.079***	0.073***	0.036***	0.037***	0.033***	0.035***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.008***	0.008***	0.006***	0.006***	0.007***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.034***	0.036***	0.021***	0.022***	0.015***	0.015***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.011***	0.009***	0.002	0.003**	0.007***	0.009***
	(0.000)	(0.000)	(0.124)	(0.019)	(0.000)	(0.000)
Ln(1+Age)	0.003***	0.003***	0.005***	0.005***	-0.004***	-0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(TA)	-0.012***	-0.014***	-0.013***	-0.013***	-0.016***	-0.016***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.107***	-0.108***	-0.070***	-0.070***	-0.114***	-0.115***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	-0.002***	-0.002***	-0.001	-0.001		
	(0.000)	(0.001)	(0.333)	(0.289)		
Constant	0.381***	0.450***	0.399***	0.396***	0.498***	0.523***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2,311,163	2,289,738	2,311,163	2,289,738	2,311,163	2,289,738
R-squared	0.135	0.140	0.590	0.593	0.610	0.613
Year FE	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	NO	NO
Country FE	YES	YES	YES	YES	NO	NO
Investor FE	NO	NO	YES	YES	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES
EI Ln No.Firms	-15.71		-20.89		-13.82	
EI (1-Herfindal)		-31.88		-18.99		-23.21
EI Ln(Sector Diversification)	-1.224	-0.984	-0.363	-0.398		

This table reports OLS regression results where I exclude countries with voluntary disclosure of financial statements as above and exclude countries with low compliance with the disclosure requirements (Portugal, Germany) or those with undefined disclosure requirements (Malta, Monaco, and Slovak Republic). The dependent variable is corporate cash holdings, defined as the ratio of cash and cash equivalent to total assets. Ln No. Firms is the natural log of the total number of firms in which a company's largest ultimate shareholder (e.g., the ultimate shareholder controlling the largest fraction of voting rights in the firm) holds shares directly or indirectly in a given year. The Herfindahl Index is the sum of the squared values of the weight of each investment in the largest shareholder's portfolio. Spread measures the difference between voting rights and cash flow rights of the ultimate owner. Private Company is a dummy variable that takes the value of one when the firm is privately held and zero when the firm is listed on a stock exchange. Net Working Capital is the difference between current assets and current liabilities excluding cash. Capex is defined as capital expenditures divided by total assets. R&D Expenditures is the R&D expenditures to total assets. ROA Volatility is the standard deviation of the country-industry adjusted ROA. Growth

Opportunities is the annual growth rate of total assets. Cash Flow is the ratio of income plus depreciation to total assets. Cash Flow Volatility is the standard deviation of cash flows at the country-year-industry level. Ln(1+Age) is the natural log of (1 + number of years since incorporation). Ln(TA) is the natural log of total assets expressed in 1999 prices. Leverage is the ratio of total debt to total assets. Ln(Sector Diversification) measures the natural log of the number of business segments reported by a firm. EI stands for Economic Impact, which is calculated by multiplying the estimated coefficient of the variable by one standard deviation of the same variable, and the product is then divided by the mean of the dependent variable. P-values adjusted for heteroscedasticity are reported in brackets below the coefficients. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

LARGE SHAREHOLDER DIVERSIFICATION AND

CORPORATE CASH HOLDING

Internet Appendix

In this section, I report on a series of additional tables and further robustness tests performed on the data.

Table A1 reports the breakdown of sample coverage by country.

In Table A2, I replicate my main tests but use growth in sales as a proxy for growth opportunities instead of growth in total assets.

In Table A3, the sample is divided into three cohorts based on size to verify the robustness of the results across different size cutoffs.

In Table A4, the sample is split into three groups according to the level of cash flow rights held by the largest investor. This allows for an isolation of firms with increasingly dominant owners, which is crucial for capturing the effect of the largest shareholder in my analysis.

In Table A5, I employ year*industry*country fixed effects, rather than separate year, industry, and country fixed effects, to better control for nuanced unobserved heterogeneity within these groups.

Tables A6, A7, and A8 address different types of clustering for standard errors to account for potential correlations within different clusters. Specifically, Table A6 clusters at the investor level, Table A7 clusters at the firm level, and Table A8 uses double clustering at both the investor and firm levels.

In Tables A9, A10, and A11, three variations of the Heckman correction model are reported. More specifically, Table A9 reports the results where no exclusion restriction is imposed in the first stage, and the sample is not restricted to observations with data for geographical distance being available (as in Table V). In Tables A10 and A11, I base the measure of investable firms on measures of geographical distance of five miles (A10) and 25 miles (A11). As reported in footnote 7 above, the impact of the exclusion restriction is limited, and reporting a maximum of three decimals results in seemingly identical tables. For this reason, here I report six decimals.

Table A1

	Observations	Percentage of sample	Cumulative percentage of sample
Albania	738	0.03	0.03
Austria	36,302	1.26	1.28
Belgium	82,574	2.86	4.14
Bosnia Herzegovina	6,983	0.24	4.38
Bulgaria	24,461	0.85	5.23
Croatia	15,148	0.52	5.75
Cyprus	1,271	0.04	5.80
Czech Republic	34,912	1.21	7.01
Denmark	55,804	1.93	8.94
Estonia	10,541	0.36	9.30
Finland	26,409	0.91	10.22
France	283,432	9.81	20.03
Germany	222,464	7.70	27.73
Greece	34,849	1.21	28.93
Hungary	10,635	0.37	29.30
Iceland	3,894	0.13	29.44
Ireland	27,914	0.97	30.40
Italy	613,440	21.23	51.63
Kosovo	61	0.00	51.64
Latvia	6,847	0.24	51.87
Lithuania	8,042	0.28	52.15
Luxembourg	6,995	0.24	52.39
Malta	3,567	0.12	52.52
Montenegro	1,889	0.07	52.58
Netherlands	37,322	1.29	53.87
Macedonia	2,939	0.10	53.98
Norway	84,240	2.92	56.89
Poland	88,366	3.06	59.95
Portugal	68,669	2.38	62.33
Republic Of Moldova	234	0.01	62.34
Romania	46,736	1.62	63.95
Russian Federation	213,579	7.39	71.35
Serbia	19,384	0.67	72.02
Slovakia	15,467	0.54	72.55
Slovenia	12,566	0.43	72.99
Spain	320,771	11.10	84.09
Sweden	54,614	1.89	85.98
Switzerland	506	0.02	86.00
Turkey	41,247	1.43	87.42
Ukraine	30,178	1.04	88.47
United Kingdom	333,144	11.53	100.00
Total	2,889,134	100.00	

This table reports the distribution of observations in the sample, divided by country.

Table A2

	(1)	(2)	(3)	(4)	(5)	(6)
Ln No.Firms	-0.012***		-0.015***		-0.009***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.075***		-0.042***		-0.049***
		(0.000)		(0.000)		(0.000)
Spread	-0.000***	-0.000***	0.000***	0.000***	0.000	-0.000***
	(0.007)	(0.000)	(0.000)	(0.000)	(0.473)	(0.000)
Private Company	0.015***	0.015***	-0.003***	-0.003***	-0.017***	-0.018***
	(0.000)	(0.000)	(0.002)	(0.001)	(0.000)	(0.000)
Net Working Capital	-0.118***	-0.121***	-0.108***	-0.110***	-0.155***	-0.161***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.120***	-0.120***	-0.087***	-0.088***	-0.090***	-0.093***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.048**	0.011	0.050***	0.048***	0.012	0.011
	(0.011)	(0.575)	(0.005)	(0.006)	(0.734)	(0.760)
ROA Volatility	0.122***	0.115***	0.063***	0.064***	0.062***	0.064***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	-0.000***	-0.000***	-0.000***	-0.000***	-0.000**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.028)	(0.010)
Cash Flow	0.057***	0.059***	0.035***	0.037***	0.027***	0.028***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.012***	0.012***	0.003**	0.004***	0.007***	0.009***
	(0.000)	(0.000)	(0.020)	(0.002)	(0.000)	(0.000)
Ln(1+Age)	0.001***	0.001***	0.002***	0.002***	-0.005***	-0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(TA)	-0.010***	-0.012***	-0.010***	-0.010***	-0.008***	-0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.127***	-0.129***	-0.083***	-0.083***	-0.118***	-0.121***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	-0.000	0.000	-0.000	-0.000		
	(0.913)	(0.964)	(0.654)	(0.605)		
Constant	0.345***	0.401***	0.348***	0.347***	0.367***	0.383***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	1,911,115	1,894,837	1,911,115	1,894,837	1,911,115	1,894,837
R-squared	0.143	0.148	0.594	0.596	0.618	0.621
Year FE	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	NO	NO
Country FE	YES	YES	YES	YES	NO	NO
Investor FE	NO	NO	YES	YES	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES

EI Ln No.Firms	-13.18		-16.56		-10.12
EI (1-Herfindal)		-26.18		-14.89	-17.08
EI Ln(Sector Diversification)	-0.0356	0.0146	-0.179	-0.207	

This table reports the OLS regression results, where the growth rate in total sales is used as a proxy for growth options in place of growth in total assets. As discussed in the text, the variable sales contain many more missing data points, which leads to a loss of observation.

Table A3

	(1) SMALL	(2) SMALL	(3) MEDIUM	(4) MEDIUM	(5) LARGE	(6) LARGE
Ln No.Firms	-0.025***		-0.019***		-0.015***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.057***		-0.055***		-0.062***
		(0.000)		(0.000)		(0.000)
Spread	-0.096***	-0.097***	-0.080***	-0.081***	-0.040***	-0.041***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Private Company	0.057**	0.059**	0.082***	0.083***	0.052***	0.052***
	(0.012)	(0.012)	(0.002)	(0.001)	(0.000)	(0.000)
Net Working Capital	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Capex	0.015***	0.015***	0.002	0.003	-0.012***	-0.012***
	(0.001)	(0.001)	(0.511)	(0.436)	(0.000)	(0.000)
R&D Expenditures	-0.121***	-0.125***	-0.106***	-0.108***	-0.066***	-0.066***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA Volatility	-0.082***	-0.084***	-0.089***	-0.090***	-0.064***	-0.064***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.032***	0.033***	0.032***	0.032***	0.017***	0.016***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.004***	0.004***	0.006***	0.006***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.011***	0.012***	0.044***	0.045***	0.044***	0.045***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(1+Age)	0.004	0.006**	0.004*	0.005**	-0.002	-0.002
	(0.147)	(0.024)	(0.068)	(0.021)	(0.137)	(0.191)
Ln(TA)	0.003***	0.003***	0.004***	0.004***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.020***	-0.021***	0.000	0.000	-0.008***	-0.008***
	(0.000)	(0.000)	(0.870)	(0.667)	(0.000)	(0.000)
Ln(Sector Diversification)	0.001	0.001	-0.000	-0.000	-0.002**	-0.002**
	(0.573)	(0.578)	(0.880)	(0.892)	(0.019)	(0.016)
Constant	0.505***	0.507***	0.182***	0.178***	0.302***	0.305***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	963,046	948,414	963,044	953,566	963,044	956,757
R-squared	0.670	0.675	0.706	0.708	0.635	0.638
Year FE	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
Investor FE	YES	YES	YES	YES	YES	YES

Firm FE	NO	NO	NO	NO	NO	NO
EI Ln No.Firms	-27.96		-20.96		-16.41	
EI (1-Herfindal)		-20.02		-19.42		-21.71
EI Ln(Sector Diversification)	0.559	0.554	-0.119	-0.107	-1.041	-1.068

This table reports the OLS regression results, where the sample is split in three groups according to size: small, medium and large.

Table A4

	(1) LOW	(2) LOW	(3) MEDIUM	(4) MEDIUM	(5) HIGH	(6) HIGH
Ln No.Firms	-0.015***		-0.019***		-0.027***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.053***		-0.048***		-0.077***
		(0.000)		(0.000)		(0.000)
Spread	0.000***	0.000***	0.000***	0.000***	0.001**	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.010)	(0.110)
Private Company	0.030***	0.031***	0.045***	0.047***	0.037***	0.037***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Net Working Capital	-0.009***	-0.009***	-0.004*	-0.004**	-0.004	-0.005
	(0.000)	(0.000)	(0.054)	(0.049)	(0.172)	(0.128)
Capex	-0.071***	-0.072***	-0.114***	-0.117***	-0.114***	-0.117***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	-0.064***	-0.065***	-0.090***	-0.092***	-0.084***	-0.086***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA Volatility	0.069***	0.069***	0.032	0.028	0.003	0.006
	(0.000)	(0.000)	(0.256)	(0.330)	(0.897)	(0.774)
Growth Opportunities	0.004***	0.005***	0.007***	0.007***	0.004***	0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.020***	0.020***	0.024***	0.025***	0.015***	0.016***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	-0.002	-0.001	0.005**	0.007***	0.006***	0.008***
	(0.328)	(0.511)	(0.016)	(0.001)	(0.006)	(0.001)
Ln(1+Age)	0.004***	0.004***	0.004***	0.005***	0.006***	0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(TA)	-0.011***	-0.012***	-0.012***	-0.012***	-0.015***	-0.015***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.052***	-0.053***	-0.084***	-0.085***	-0.086***	-0.087***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	0.001	0.001	-0.003*	-0.003*	-0.000	-0.000
	(0.119)	(0.130)	(0.066)	(0.061)	(0.843)	(0.800)
Constant	0.363***	0.353***	0.373***	0.375***	0.450***	0.458***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	964,207	956,082	979,789	970,525	945,138	932,130
R-squared	0.555	0.557	0.646	0.649	0.648	0.652
Year FE	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
Investor FE	YES	YES	YES	YES	YES	YES

Firm FE	NO	NO	NO	NO	NO	NO
EI Ln No.Firms	-16.78		-21.55		-30.55	
EI (1-Herfindal)		-18.56		-16.94		-27.12
EI Ln(Sector Diversification)	0.700	0.681	-1.400	-1.432	-0.147	-0.188

This table reports the OLS regression results, where the sample is split into three groups according to the cash flow rights of the largest owner: low, medium and high.

Table A5

	(1)	(2)	(3)	(4)
Ln No.Firms	-0.014***		-0.019***	
	(0.000)		(0.000)	
(1-Herfindhal)		-0.095***		-0.059***
		(0.000)		(0.000)
Spread	0.000*	-0.000***	0.000***	0.000***
	(0.071)	(0.000)	(0.000)	(0.000)
Private Company	0.007***	0.008***	-0.008***	-0.008***
	(0.000)	(0.000)	(0.000)	(0.000)
Net Working Capital	-0.107***	-0.111***	-0.095***	-0.097***
	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.117***	-0.117***	-0.082***	-0.084***
	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.108***	0.091***	0.058***	0.058***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA Volatility	0.074***	0.069***	0.039***	0.039***
	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.007***	0.007***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.028***	0.030***	0.019***	0.020***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(1+Age)	0.001***	0.002***	0.004***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(TA)	-0.011***	-0.013***	-0.013***	-0.013***
	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.107***	-0.108***	-0.071***	-0.071***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	0.000	0.001	-0.001	-0.001
	(0.469)	(0.293)	(0.242)	(0.215)
Constant	0.384***	0.448***	0.402***	0.400***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2,889,134	2,858,737	2,889,134	2,858,737
R-squared	0.192	0.200	0.630	0.634
(Year*SIC4*Country) FE	YES	YES	YES	YES
Investor FE	YES	YES	YES	YES
Firm FE	NO	NO	NO	NO
EI Ln No.Firms	-15.60		-21.59	
EI (1-Herfindal)		-33.48		-20.70
EI Ln(Sector Diversification)	0.235	0.343	-0.475	-0.505

This table reports OLS results where I control for Year*Industry*Country fixed effects as opposed to three separate sets of Year, Industry and Country fixed effects.

Table A6

	(1)	(2)	(3)	(4)	(5)	(6)
Ln No.Firms	-0.014***		-0.019***		-0.012***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.096***		-0.059***		-0.070***
		(0.000)		(0.000)		(0.000)
Spread	-0.106***	-0.106***	-0.070***	-0.071***	-0.109***	-0.110***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Private Company	0.117***	0.098***	0.058***	0.058***	0.000	-0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.995)	(0.716)
Net Working Capital	-0.000	-0.000***	0.000***	0.000***	0.000	-0.000***
	(0.882)	(0.000)	(0.000)	(0.000)	(0.847)	(0.000)
Capex	0.009***	0.009***	-0.007***	-0.008***	-0.019***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	-0.108***	-0.111***	-0.094***	-0.096***	-0.141***	-0.146***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA Volatility	-0.114***	-0.114***	-0.079***	-0.081***	-0.085***	-0.087***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.073***	0.068***	0.039***	0.040***	0.032***	0.034***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.007***	0.007***	0.005***	0.005***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.030***	0.032***	0.020***	0.021***	0.014***	0.014***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(1+Age)	0.010***	0.008***	0.002	0.004**	0.010***	0.012***
	(0.000)	(0.000)	(0.169)	(0.034)	(0.000)	(0.000)
Ln(TA)	0.001***	0.002***	0.005***	0.005***	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.661)	(0.894)
Leverage	-0.011***	-0.013***	-0.013***	-0.013***	-0.017***	-0.017***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	0.002*	0.002**	-0.000	-0.000		
	(0.068)	(0.035)	(0.942)	(0.892)		
Constant	0.374***	0.439***	0.395***	0.393***	0.498***	0.523***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2,889,134	2,858,737	2,889,134	2,858,737	2,889,134	2,858,737
R-squared	0.128	0.136	0.600	0.603	0.607	0.612
Year FE	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	N/A	N/A
Country FE	YES	YES	YES	YES	N/A	N/A
Investor FE	NO	NO	YES	YES	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES

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EI Ln No.Firms	-15.67		-21.82		-13.30	
EI (1-Herfindal)		-33.85		-20.58		-24.70
EI Ln(Sector Diversification)	0.948	1.100	-0.0380	-0.0703	

This table reports the OLS regression results, where I allow for clustering of the standard error at the investor level.

Table A7

	(1)	(2)	(3)	(4)	(5)	(6)
Ln No.Firms	-0.014***		-0.019***		-0.012***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.096***		-0.059***		-0.070***
		(0.000)		(0.000)		(0.000)
Spread	-0.106***	-0.106***	-0.070***	-0.071***	-0.109***	-0.110***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Private Company	0.117***	0.098***	0.058***	0.058***	0.000	-0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.995)	(0.761)
Net Working Capital	-0.000	-0.000***	0.000***	0.000***	0.000	-0.000***
	(0.674)	(0.000)	(0.000)	(0.000)	(0.625)	(0.000)
Capex	0.009***	0.009***	-0.007***	-0.008***	-0.019***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	-0.108***	-0.111***	-0.094***	-0.096***	-0.141***	-0.146***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA Volatility	-0.114***	-0.114***	-0.079***	-0.081***	-0.085***	-0.087***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.073***	0.068***	0.039***	0.040***	0.032***	0.034***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.007***	0.007***	0.005***	0.005***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.030***	0.032***	0.020***	0.021***	0.014***	0.014***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(1+Age)	0.010***	0.008***	0.002	0.004**	0.010***	0.012***
	(0.000)	(0.000)	(0.159)	(0.026)	(0.000)	(0.000)
Ln(TA)	0.001***	0.002***	0.005***	0.005***	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.664)	(0.894)
Leverage	-0.011***	-0.013***	-0.013***	-0.013***	-0.017***	-0.017***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	0.002	0.002*	-0.000	-0.000		
	(0.107)	(0.062)	(0.951)	(0.910)		
Constant	0.374***	0.439***	0.395***	0.393***	0.498***	0.523***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2,889,134	2,858,737	2,889,134	2,858,737	2,889,134	2,858,737
R-squared	0.128	0.136	0.600	0.603	0.607	0.612
Year FE	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	N/A	N/A
Country FE	YES	YES	YES	YES	N/A	N/A
Investor FE	NO	NO	YES	YES	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES

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	(1)	(2)	(3)	(4)	(5)	(6)
EI Ln No.Firms	-15.67		-21.82		-13.30	
EI (1-Herfindal)		-33.85		-20.58		-24.70
EI Ln(Sector Diversification)	0.948	1.100	-0.0380	-0.0703		

This table reports the OLS regression results, where I allow for clustering of the standard error at the firm level.

Table A8

	(1)	(2)	(3)	(4)	(5)	(6)
Ln No.Firms	-0.014***		-0.019***		-0.012***	
	(0.000)		(0.000)		(0.000)	
(1-Herfindhal)		-0.096***		-0.059***		-0.070***
		(0.000)		(0.000)		(0.000)
Spread	-0.106***	-0.106***	-0.070***	-0.071***	-0.109***	-0.110***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Private Company	0.117***	0.098***	0.058***	0.058***	0.000	-0.005
	(0.000)	(0.000)	(0.000)	(0.000)	(0.995)	(0.761)
Net Working Capital	-0.000	-0.000***	0.000***	0.000***	0.000	-0.000***
	(0.674)	(0.000)	(0.000)	(0.000)	(0.625)	(0.000)
Capex	0.009***	0.009***	-0.007***	-0.008***	-0.019***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	-0.108***	-0.111***	-0.094***	-0.096***	-0.141***	-0.146***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA Volatility	-0.114***	-0.114***	-0.079***	-0.081***	-0.085***	-0.087***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.073***	0.068***	0.039***	0.040***	0.032***	0.034***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.007***	0.007***	0.005***	0.005***	0.005***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.030***	0.032***	0.020***	0.021***	0.014***	0.014***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(1+Age)	0.010***	0.008***	0.002	0.004**	0.010***	0.012***
	(0.000)	(0.000)	(0.159)	(0.026)	(0.000)	(0.000)
Ln(TA)	0.001***	0.002***	0.005***	0.005***	-0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.664)	(0.894)
Leverage	-0.011***	-0.013***	-0.013***	-0.013***	-0.017***	-0.017***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	0.002	0.002*	-0.000	-0.000		
	(0.107)	(0.062)	(0.951)	(0.910)		
Constant	0.374***	0.439***	0.395***	0.393***	0.498***	0.523***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2,889,134	2,858,737	2,889,134	2,858,737	2,889,134	2,858,737
R-squared	0.128	0.136	0.600	0.603	0.607	0.612
Year FE	YES	YES	YES	YES	YES	YES
SIC4 FE	YES	YES	YES	YES	N/A	N/A
Country FE	YES	YES	YES	YES	N/A	N/A
Investor FE	NO	NO	YES	YES	NO	NO
Firm FE	NO	NO	NO	NO	YES	YES

	(1)	(2)	(3)	(4)	(5)	(6)
EI Ln No.Firms	-15.67		-21.82		-13.30	
EI (1-Herfindal)		-33.85		-20.58		-24.70
EI Ln(Sector Diversification)	0.948	1.100	-0.0380	-0.0703		

This table reports the OLS regression results, where I allow for double clustering of the standard error at the investor and firm level.

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Table A9

	(1) No Excl. Restriction	(2) No Excl. Restriction	(3) No Excl. Restriction	(4) No Excl. Restriction
Ln No.Firms	-0.013***		-0.009***	
	(0.000)		(0.000)	
(1-Herfindhal)		-0.047***		-0.066***
		(0.000)		(0.000)
Lambda	-0.018***	-0.005***	-0.022***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
Spread	0.000***	0.000***	-0.000***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
Private Company	-0.007***	-0.007***	-0.017***	-0.020***
	(0.000)	(0.000)	(0.000)	(0.000)
Net Working Capital	-0.094***	-0.096***	-0.141***	-0.146***
	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.078***	-0.080***	-0.083***	-0.087***
	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.057***	0.058***	-0.003	-0.005
	(0.000)	(0.000)	(0.805)	(0.677)
ROA Volatility	0.037***	0.039***	0.029***	0.034***
	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.005***	0.005***	0.006***	0.005***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.021***	0.021***	0.015***	0.015***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.002	0.003***	0.008***	0.012***
	(0.147)	(0.003)	(0.000)	(0.000)
Ln(1+Age)	0.005***	0.005***	-0.000	0.000
	(0.000)	(0.000)	(0.635)	(0.891)
Ln(TA)	-0.014***	-0.013***	-0.019***	-0.017***
	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.071***	-0.071***	-0.110***	-0.110***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	-0.000	-0.000		
	(0.840)	(0.821)		
Constant	0.397***	0.391***	0.523***	0.525***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	2,889,122	2,858,725	2,889,122	2,858,725
R-squared	0.601	0.603	0.609	0.612
Year FE	YES	YES	YES	YES
SIC4 FE	YES	YES	NO	NO
Country FE	YES	YES	NO	NO
Investor FE	YES	YES	NO	NO
Firm FE	NO	NO	YES	YES

This table reports the Heckman treatment effects model, where no exclusion restriction is imposed in the first stage, and the sample is not restricted to observations with data for geographical distance being available.

Table A10

	(3) Geo Distance	(4) Geo Distance	(7) Geo Distance	(8) Geo Distance
Ln No.Firms	-0.013967***		-0.010162***	
	(0.000)		(0.000)	
(1-Herfindhal)		-0.062204***		-0.064275***
		(0.000)		(0.000)
Lambda	-0.017008***	-0.000378	-0.021896***	-0.003602***
	(0.000)	(0.797)	(0.000)	(0.004)
Spread	0.000103**	0.000232***	-0.000140***	-0.000294***
	(0.029)	(0.000)	(0.002)	(0.000)
Private Company	-0.002652	-0.003616	-0.010973*	-0.013010**
	(0.258)	(0.123)	(0.071)	(0.034)
Net Working Capital	-0.106776***	-0.108416***	-0.159953***	-0.166043***
	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.093278***	-0.095802***	-0.095451***	-0.098921***
	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.109961***	0.112478***	0.043556	0.044795
	(0.000)	(0.000)	(0.185)	(0.178)
ROA Volatility	0.039065***	0.040460***	0.024322***	0.026826***
	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.006538***	0.006646***	0.007544***	0.007743***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.017730***	0.017866***	0.011742***	0.011720***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.000744	0.001602	0.002631	0.003360
	(0.764)	(0.521)	(0.389)	(0.271)
Ln(1+Age)	0.004556***	0.004776***	-0.000174	-0.000027
	(0.000)	(0.000)	(0.874)	(0.981)
Ln(TA)	-0.016463***	-0.015939***	-0.020579***	-0.020305***
	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.082262***	-0.082804***	-0.123213***	-0.125096***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	-0.002112*	-0.002028		
	(0.090)	(0.104)		
Constant	0.456610***	0.460585***	0.567611***	0.588832***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	583,801	578,192	583,801	578,192
R-squared	0.608	0.609	0.704	0.707
Year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
SIC4 FE	YES	YES	NO	NO
Investor FE	YES	YES	NO	NO
Firm FE	NO	NO	YES	YES

This table reports the results obtained using the Heckman treatment effects model. Models (1), (2), (5), and (6) are omitted because they are produced via a first-stage probit where no exclusion restriction is included; thus, they are identical to those reported in Table V. Models (3), (4), (7), and (8) are produced via a first-stage probit, where the average number of companies located within a 5 miles radius of each large shareholder in each country in each year is used as an exclusion restriction in the first stage.

Table A11

	(3) Geo Distance	(4) Geo Distance	(7) Geo Distance	(8) Geo Distance
Ln No.Firms	-0.013962***		-0.010155***	
	(0.000)		(0.000)	
(1-Herfindhal)		-0.062098***		-0.064066***
		(0.000)		(0.000)
Lambda	-0.017035***	-0.000432	-0.021917***	-0.003708***
	(0.000)	(0.769)	(0.000)	(0.003)
Spread	0.000102**	0.000231***	-0.000140***	-0.000295***
	(0.031)	(0.000)	(0.002)	(0.000)
Private Company	-0.002477	-0.003463	-0.010933*	-0.012997**
	(0.289)	(0.139)	(0.072)	(0.035)
Net Working Capital	-0.106785***	-0.108429***	-0.159945***	-0.166043***
	(0.000)	(0.000)	(0.000)	(0.000)
Capex	-0.093251***	-0.095778***	-0.095442***	-0.098914***
	(0.000)	(0.000)	(0.000)	(0.000)
R&D Expenditures	0.109540***	0.112147***	0.043407	0.044752
	(0.000)	(0.000)	(0.186)	(0.178)
ROA Volatility	0.039091***	0.040468***	0.024336***	0.026819***
	(0.000)	(0.000)	(0.000)	(0.000)
Growth Opportunities	0.006538***	0.006647***	0.007542***	0.007743***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow	0.017731***	0.017859***	0.011753***	0.011726***
	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow Volatility	0.000710	0.001564	0.002637	0.003357
	(0.775)	(0.531)	(0.388)	(0.271)
Ln(1+Age)	0.004563***	0.004780***	-0.000169	-0.000028
	(0.000)	(0.000)	(0.877)	(0.980)
Ln(TA)	-0.016463***	-0.015942***	-0.020579***	-0.020314***
	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.082289***	-0.082827***	-0.123220***	-0.125095***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(Sector Diversification)	-0.001624***	-0.001583***		
	(0.000)	(0.000)		
Constant	0.458438***	0.462390***	0.567552***	0.588815***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	583,801	578,192	583,801	578,192
R-squared	0.608	0.610	0.705	0.707
Year FE	YES	YES	YES	YES
Country FE	YES	YES	NO	NO
SIC4 FE	YES	YES	NO	NO
Investor FE	YES	YES	NO	NO
Firm FE	NO	NO	YES	YES

This table reports the results obtained using the Heckman treatment effects model. Models (1), (2), (5), and (6) are omitted because they are produced via a first-stage probit where no exclusion restriction is included; thus, they are identical to those reported in Table V. Models (3), (4), (7), and (8) are produced via a first-stage probit, where the average number of companies located within a 25 miles radius of each large shareholder in each country in each year is used as an exclusion restriction in the first stage.