Multiple Large Shareholders and Corporate Risk-taking: Evidence from France

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Abstract

We investigate whether multiple large shareholders (MLS) affect corporate risk-taking. Using hand-collected data on French publicly-listed companies over the period 2003-2007, we show that the presence, number and cumulated votes of MLS, other than the largest controlling shareholder (LCS), are associated with less predictable operating performance (ROA), market value (Tobin's Q) and stock returns. This indicates that MLS are able to prevent the LCS to dictate its preference for low-risk projects in order to protect its future consumption of private benefits. As a result, firms undertake better investments regardless of their intrinsic risks, and this eventually leads them to achieve higher performance. MLS are thus confirmed to play a critical role in corporate governance.

JEL classification: G30; G32; G34

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1. Introduction

Recent corporate governance literature documents the prevalence of closely-held firms around the word, especially outside the US and the UK (e.g., La Porta et al., 1999; Claessens et al., 2002; Faccio and Lang, 2002). In these firms, ownership is typically concentrated in the hands of a few large shareholders whose voting power enables them to significantly affect firm decisions and extract private benefits at the detriment of small shareholders (Harris and Raviv, 1988; Grossman and Hart, 1988).[1] Beside the largest controlling shareholder (LCS) other blockholders are usually present. For instance, La Porta et al. (1999) report that about one quarter of the firms in their sample of 600 publicly traded firms across 27 countries have multiple large shareholders (MLS). These blockholders play an important role in a firm's governance by monitoring the LCS (e.g., Pagano and Roëll, 1998; Bolton and Von Thaden, 1998) and competing for control (Bloch and Hege, 2001). However, they may also collude in order to extract divisible private benefits of control (Zwiebel, 1995; Kahn and Winton, 1998; Bennedsen and Wolfenzon, 2000; Gomes and Novaes, 2005).

A growing number of studies indicate that the presence, number, and voting power of MLS have a strong impact on a firm's performance and financial policy. Maury and Pajuste (2005) and Attig et al. (2009) establish that MLS are associated with higher market values in Finland and East Asia. Laeven and Levine (2008) show that the value of firms with MLS is significantly different from the value of firms with a single LCS or the value of widely-held firms. Faccio et al. (2001) point that the presence of MLS is associated with higher dividend payouts. Attig et al. (2008) examine the effect on a firm's cost of equity. Using data for 1,165 East Asian and Western European corporations, they conclude that the implied cost of equity decreases with the presence, number, and voting power of MLS other than the LCS.

In this paper, we contribute to this line of research by examining the influence of MLS on corporate risk-taking. Our main hypothesis is that MLS have a positive influence on a firm's risk taking. In the absence of other blockholders, the power of the LCS is unimpeded and this leads firms to take less risk. One reason put forward by Mishra (2011) is that the LCS is likely to be under-diversified, especially if it represents an individual or a family. Given that most of

[1] A large number of empirical studies have analyzed the agency costs imposed by LCSs. For example, some studies present evidence that they tunnel resources out of firms (e.g., Bertrand et al., 2002; Bae et al., 2002). Other studies investigate the impact of controlling shareholders on firm valuation (e.g., Claessens et al., 2002; Lemmon and Lins, 2003, Cronqvist and Nilsson, 2003), on the informativeness of the firm's earnings (Fan and Wong, 2002), on information asymmetry and stock liquidity (Attig et al., 2006), on the extent of analyst following (Boubaker and Labégorre, 2008), on the costs of equity capital and corporate borrowing (Guedhami and Mishra, 2009; Lin et al., 2011), among others.

their wealth is tied to the firm, these shareholders will prefer prudent strategies even though this could undermine the firm's performance. Maximizing the firm's value is not a major concern because their objective is not to sell, but rather to extract a stream of private benefits. Another reason to shun risk is that risk taking increases the probability of experiencing a cash shortfall. In that case, the firm may require an increase in capital. But being financially constrained, the LCS would have to pass up the capital raising which would dilute its stake and possibly weaken its control over the firm. Because control is the prime objective, the LCS will display a strong propensity to avoid risk. In contrast, other blockholders, particularly institutional investors, are likely to be more diversified and concerned about achieving the best return on their investments. They are also more likely to have deep pockets and would be able to raise their stake if necessary. Hence, we expect the presence and voting power of MLS to mitigate the negative influence of the LCS on the firm's risk taking. As a result, MLS should to be associated with higher risk taking.

Using a hand-collected sample of 2,210 firm-year observations representing 525 French publicly traded firms over the period 2003-2007, we show that excess control, represented by the difference between voting rights and cash flow rights, leads to lower risk taking. This supports the view that the LCS tends to spurn risk because of greater financial constraints. We also show that corporate risk-taking increases with the presence, number and voting power of MLS. In particular, we find evidence of higher volatility in corporate performance (measured by ROA, Tobin's Q and stock returns) when MLS are present. These results hold both across and within firms and suggest that MLS play an important monitoring role in mitigating the overly conservative behaviour of the LCS. For this reason, MLS can be viewed as protecting the interests of minority (other) shareholders.

Our results complement those of Mishra (2011) who examines the risk taking behavior of a sample of East Asian firms over the period 1996-2005. There are, however, a number of key distinctions between French and Asian firms. From a macroeconomic viewpoint, growth has been more sluggish in Europe over the last decade. This has certainly affected the strategies available to French firms and thus their risk taking behavior. From a governance viewpoint, Asian firms are often characterized by extensive cross-holdings and ownership by families whose controlling interests span numerous industries (La Porta et al., 1999; Claessens et al., 2002). Although family control is also pervasive in France, it tends to be concentrated on individual firms (rather than groups of firms). The control by the LCS is also stronger. While the presence of MLS is quite common (Boubaker, 2007) the LCS usually holds a much higher

share of the votes (Attig et al., 2009). Other indicators of power concentration such as the Herfindhal index and Shapley value indicate that the control of the LCS may not be easily challenged. Yet, the evidence confirms the ability of MLS to counter the LCS's influence.

Our findings are more robust for a number of reasons. First, we follow the methodology pioneered by Adams et al. (2005) and measure risk each year by the absolute deviation from the firm's expected performance (instead of measuring the deviation from the firm's average performance). Second, we use three different measures of performance: return on assets, market-to-book value of assets and stock returns. Third, our hand-collected dataset allows us to run panel regression with firm effects and therefore affords a better degree of control for unobserved firm heterogeneity. Last, but not least, our sample period covers a benign episode. In many respects, this is more reasonable than using a crisis period. In the case of East Asia, the late 1990s corresponds to the outbreak of the devastating Asian financial crisis. Inference based on crisis periods can be totally misleading. For instance, risky assets will be found to yield lower returns, implying that high risk is associated with lower returns (a statement that is patently incorrect). Extending the tests and providing evidence from a different period and context was therefore essential to instill confidence in Mishra's results.

By documenting the positive role of MLS, this study contributes to the existing literature on corporate risk-taking. Prior studies have established the influence of managerial ownership (Chen and Steiner, 1999), managerial compensation (Guay, 1999; Coles et al., 2006; Wright et al., 2007), board size (Cheng, 2008), CEO power (Adams et al. 2005), investor protection (John et al., 2008) and creditor rights (Acharya et al., 2011). Together with Mishra (2011), we add to this line of research by showing that MLS are also a key contributor to corporate risk taking. Our results resonate well with other studies documenting the positive effects arising from the presence of MLS. For instance, MLS have been shown to enhance corporate valuations (Maury and Pajuste, 2005; Laeven and Levine, 2008; Attig et al., 2009) and decrease the cost of equity capital (Attig et al., 2008). This is not surprising given that MLS play a strong monitoring role over the LCS. As a result, the latter is less likely to divert corporate resources and more inclined to see them put to their best use (for example, by voting in favour of investing in more risky value-enhancing projects).

The remainder of the paper proceeds as follows. Section 2 discusses the possible links between multiple large shareholders and corporate risk-taking. Section 3 describes the sample and provides descriptive statistics. Section 4 presents the empirical design. Section 5 tests the hypothesis and discusses the results. Section 6 concludes the paper.

2. The effect of shareholding structure on corporate risk-taking

In this section, we review the relevant literature and outline the implications deriving from ownership structures whereby the LCS has excessive power relative to minority shareholders. We then draw the consequences from the presence of other blockholders (or MLS) with sufficient power to restrict the influence of the LCS.

2.1. Risk taking with a single blockholder

Corporate governance studies show that LCSs can use various mechanisms to separate ownership from control, such as pyramiding, cross holdings and dual-class shares (Bebchuk et al., 2000). As a result, LCSs have incentives to adopt a self-serving behaviour and divert corporate resources to the detriment of other shareholders (Harris and Raviv, 1988; Grossman and Hart, 1988). The higher the amount of private benefits they can expect to extract, the more eager they will be to protect these benefits (John et al., 2008). It follows that LCSs are likely to tip corporate investments towards low risk projects.

Another argument suggested by Mishra (2011) is that the controlling blockholder is more likely to be *under-diversified*. One particular case is when the LCS is represented by an individual or a family. Because most of their wealth is invested in the company, these shareholders are reluctant to take risks and strive instead to protect their capital. Financial institutions represent other type of large blockholders. These shareholders are clearly more diversified and can therefore tolerate a higher degree of risk. However, they are unlikely to represent the largest shareholder since their objective is financial (i.e. to obtain a good return on their investments) rather than managerial (i.e. to direct the firm's strategy). As a result, LCSs are expected to be characterized by a relatively high level of risk aversion, which should be reflected in the firm's lower risk profile.

A third reason for expecting a lower propensity to take risk is that LCSs are likely to be *financially constrained*. For instance, family owners must often hold the main part of their wealth in the company in order to retain control. In addition, other control mechanisms, such as the use of pyramids (which are quite common in France) and dual-class shares (which may be less common), allow family owners to hold a disproportionate percentage of the voting rights despite a relatively low capital commitment. As a consequence, these shareholders are expected to be opposed to external equity raisings because this could dilute their control given the fact that they may not be able to supply the funds to maintain their share of the votes. To

avoid the risk of being forced to lose control, they are likely to press in favor of low risk corporate policies. Furthermore, because the firm will mostly rely on internal cash flows to fund its investments, it is likely to adopt low-risk projects.

Based on the LCS's under-diversified wealth, financial constraints, and incentives to protect its private benefits, the above arguments suggest the following hypothesis:

H_1: *Firms with one LCS (no MLS) are characterized by lower corporate risk-taking.*

In fact, it is possible to propose a more precise statement. When control and cash flow rights are highly divergent, the LCS is able to extract more private benefits and will therefore be more committed to safeguard these benefits. Hence a stronger impact can be expected with regard to the firm's risk profile. Similarly, the wedge between control and cash flow rights can be viewed as indicating that the financial constraints facing the LCS are strongly binding. This also suggests that the LCS has no other sources of funds to alleviate these constraints, which implies that its wealth is under-diversified. From this situation, it follows that the wedge between control and cash flow rights should be strongly related to the firm's risk. We articulate this idea in our second hypothesis:

H_2: *Greater divergence between the control and cash flow rights of the LCS is associated with lower corporate risk-taking.*

2.2. Risk taking with multiple blockholders

Beside the LCS, other blockholders are usually found in the shareholding structure of most firms. For instance, La Porta et al. (1999) examine a sample of 600 publicly traded firms across 27 countries and observe that one quarter of these firms have MLS. Focusing on East Asia, Claessens et al. (2000) report that 32.2% of the firms in that area have more than one large shareholder. Faccio and Lang (2002) report that 39% of Western European firms have at least two blockholders[2] (at the 10% threshold) of which 41% have at least three blockholders. Likewise, Laeven and Levine (2008) use a sample of 1,657 European firms and find that 34% of them have at least two large blockholders. In the case of France, Boubaker (2007) indicates that MLS are present in almost 34% of French publicly listed firms.

[2] The terms *large shareholder* and *blockholder* are used interchangeably as synonyms.

The presence of MLS that engage in monitoring activities represents a protection for minority shareholders because MLS have both the incentives and power to moderate the diversion of corporate resources by the dominant owner (e.g., Winton, 1993; Pagano and Roëll, 1998; Bolton and Von Thaden, 1998). Hence, monitoring by MLS is expected to reduce the private benefits extracted by the LCS. This idea is supported by studies showing that the presence of MLS is associated with higher firm values (Maury and Pajuste, 2005; Laeven and Levine, 2008; Attig et al., 2009). Since minority shareholders are better protected against expropriation, they also require a lower return on equity (Attig et al., 2008).

One way by which the LCS can divert corporate resources is by rejecting positive NPV projects that present a high level of risk. Minority shareholders lose out because the return on their capital is not maximized. But the LCS may be better off because of a higher aversion to risk (due to under-diversified wealth) and because control offers private benefits that are not shared with other shareholders. Without being able to contest the power of the LCS, minority shareholders have no means to protect their interests aside from marking down the firm's value and requiring a higher return on their equity. The presence of MLS alters the balance of power in their favour and reduces the propensity of the firm to select low-risk projects (as instructed by the LCS). As a result, the firm is more likely to undertake riskier investments that tend to be more valuable. Ultimately, these decisions are reflected in a higher corporate value (Maury and Pajuste, 2005; Laeven and Levine, 2008; Attig et al., 2009).

Accordingly, the above arguments suggest the following hypothesis:

H_3: *The presence, number and voting power of MLS are associated with higher corporate risk-taking.*

Mishra (2011) offers a test of this hypothesis using a sample of East Asian firms. Because ownership and control are measured in 1996, corporate risk taking is evaluated over the subsequent 10-year period going from 1996 to 2005. The main finding is that MLS induce firms to take more risk. There are unfortunately several problems associated with his dataset. The first, and most important one, is that the period encompasses the Asian financial crisis. During a crisis, the usual relationships dictated by theory tend to break down and are often reversed. For instance, high-risk investments provide lower returns. Hence, confirming Mishra's findings using a different sample period appears to be necessary. In addition, the Asian financial crisis has triggered a significant change in the governance and ownership

structure of many firms that have been affected. This again pleads in favor of using a more stable period for testing the relationship between MLS and risk taking.

Nonetheless, hypothesis 3 appears to be solidly grounded and Mishra's results are unlikely to be caused by his specific sample (or sample period). Nguyen (2012) provides evidence that indirectly supports the same outcome. Focusing on the risk taking of Japanese firms, his results indicate that foreign investors lead firms to increase their risk taking. In this case, foreign investors appear to exert a positive influence by challenging the control of Japanese financial institutions which tend to be overly conservative (Weinstein and Yafeh, 1998).

3. Data

This section describes the sample selection criteria and data sources. It also presents the process of constructing ultimate ownership and control data and defines the variables used in the analysis. Finally, the salient characteristics of the sample are provided.

3.1. Sample selection

The initial sample consists of all French listed firms appearing in the Worldscope database over the 2003-2007 period. We exclude from the sample: (1) financial firm having a two-digit SIC code between 6000 and 6999 (2) firms with less than two usable observations during the sample period, (3) widely held firms where there is no controlling shareholder who owns more than 10% of the voting rights, (4) firm with missing or incomplete ownership, return or financial data. These restrictions result in a final sample of 525 firms and 2,210 firm-year observations. Ownership and voting data are hand-collected collected from the firm's annual reports. Financial data are from Worldscope, stock return and monthly market returns (SBF 250 index) are downloaded from Datastream.

3.2. Ultimate ownership and control rights of the LCSs

For each firm in our sample, we compute the ultimate cash flow rights (UCF) and the ultimate control rights (UCO) of the LCSs as follows: First, we determine the shareholder that controls the largest block of direct voting rights. Second, we identify the latter's direct largest shareholder, and we repeat this procedure until reaching the ultimate LCS of each sampled firm. LCSs are classified into three types, namely families, the State and widely held corporations and financial institutions (Claessens et al., 2002). Finally, we use all ownership

and control chains to compute ultimate owners' UCF and UCO. Following Claessens et al. (2002), we calculate UCO by summing the weakest links along the different control chains and using a 10% threshold. UCF are obtained by summing the products of direct cash flow rights along the different ownership chains. To illustrate this point, consider a firm B controlled directly by another firm A that holds 60% of its cash flow rights and voting rights; i.e., $O_{A,B} = C_{A,B} = 60\%$ (see, Figure 1). Firm A is itself controlled by a family that owns directly 50% of its cash flow rights and 70% of its voting rights; i.e., $O_{Family,A} = 50\%$ and $C_{Family,A} = 70\%$. The family also owns directly 5% (10%) of firm B's cash flow (voting) rights; i.e., $O_{Family,B} = 5\%$ and $C_{Family,B} = 10\%$. The family is the LCS of firm B. Its ultimate cash flow rights, UCF_{Family}, equals the sum of products of direct cash flow rights along the different ownership chains; that is, $UCF_{Family,B} = (O_{Family,A} \; c \; O_{A,B}) + O_{Family,B} = 35\%$. Its ultimate ccontrol rights, $UCO_{Family,B}$, is the sum of weakest links along the different control chains; that is, $UCO_{Family,B} = min\,(C_{Family,A}\,;\, C_{A,B}) + C_{Family,B} = 70\%$. The excess control of the family, $EC_{Family,B}$, is the difference between $UCO_{Family,B}$ and $UCF_{Family,B}$, all divided by $UCO_{Family,B}$; that is, $EC_{Family,B} = (UCO_{Family,B} - UCF_{Family,B}) / UCO_{Family,B} = 50\%$.

3.3. Definition of variables

Following previous studies (e.g., Adams et al., 2005; Cheng, 2008), we consider three measures of corporate performance. The first measure is the monthly stock returns. The second measure is the annual return on assets (ROA), which is the ratio of earnings before interest and taxes to the book value of assets at the beginning of the fiscal year. The third measure of corporate performance is the Tobin's Q, calculated as the ratio of the market to book value of assets.

Consistent with Attig et al (2008) and Attig et al. (2009), we employ variables reflecting MLS presence, number and voting size. The first variable, *MLSD*, takes the value of one if the firm has at least two large shareholders and zero otherwise. A large shareholder is a legal entity that controls, directly or indirectly, at least 10% of the firm's voting rights (La Porta et al., 2002). We also consider a second variable, *MLSN*, measuring the number of large shareholders, other than the LCS, up to the fourth. To measure control contestability, we use the sum of voting rights of the second, third and fourth largest blockholders (*VR234*) and the ratio of this sum to the voting rights of the LCS (*VRRATIO*). To proxy for control dispersion, we use the Herfindhal index (*HERFINDHAL*) calculated as follows:

$$HERFINDHAL = (VR1 - VR2)^2 + (VR2 - VR3)^2 + (VR3 - VR4)^2 \quad (1)$$

where *VR1*, *VR2*, *VR3* and *VR4* equal the voting rights of the first, second, third and fourth largest shareholders, respectively. Higher level of *HERFINDHAL* implies lower control contestability of the LCS.

Moreover, for each firm we calculate the age (*AGE*) which equals the number of years since its first date of incorporation[3], the size (*SIZE*) measured by natural logarithm of total assets, the financial leverage (*LEVERAGE*) proxied by the ratio of firm's total debt over assets, growth opportunities (*GROPPORT*) measured by firm's capital expenditures divided by sales, diversification (*DIVERSIFICATION*) that equals the number of business segments in which the firm operates (that is, the number of different two-digit SIC code industries) and the excess control of the LCS (*EC1*)[4].

3.4. Summary statistics

Table 1 shows the distribution of the 2,210 sampled firm-year observations across industries and years. Corporations in the services and consumer durables industries dominate our sample, accounting for 26.06% and 16.70% of the total number of firm-year observations, respectively. Petroleum companies make up the smallest share of the sample with only 0.59% of the firm-year observations. Table 1 shows also that the firms are evenly distributed across the studied period.

Table 2 provides descriptive statistics of the MLS variables and the characteristics of our sampled firms. Panel A (Table 1) shows that MLS are present in almost 38% of the sampled firms (2,210 firm-year observations). This finding is consistent with that of Faccio and Lang (2002) who find that 39% of Western European firms have more than one large shareholder (at the 10% threshold). For the subsample of firms with MLS (839 firm-year observations), the average (median) total voting rights held by the three largest shareholders, beyond the LCS, is 26.358% (25.020%). Using the whole sample, we find that the average power of the second, third and fourth largest shareholders, relative to the LCS, is 0.399. Panel B presents summary statistics concerning the corporate performance measures and other firm characteristics. The sampled firms exhibit a high separation between the UCO rights and UCF

[3] The number of years since the first date of incorporation is capped at 100. Our key findings are insensitive to this restriction.

[4] The Appendix presents the definitions and data sources for the variables used in our study.

rights of their controlling owners. This separation leads to a mean excess control (*EC1*) of 20.752% and indicates that our sampled firms are, in general, vulnerable to agency costs between LCSs and minority shareholders.

4. Empirical design

4.1. Glejser's (1969) heteroskedasticity tests

The application of Glejser's (1969) heteroskedasticity tests proceeds in two steps. First, we estimate the following market model to predict monthly stock returns:

$$R = \beta M + u \tag{2}$$

where, M_t is the monthly market return. For ROA and Tobin's Q, we consider the following performance models using firm-year observations[5] (the subscripts are dropped for notational convenience):

$$ROA = \alpha_0 + \alpha_1 MLSVAR + \alpha_2 EC1 + \alpha_3 SIZE + \alpha_4 GROPPORT + \alpha_5 AGE + \alpha_6 LEVERAGE + \alpha_7 DIVERSIFICATION + \sum INDUSTRY + \sum YEAR + u \tag{3}$$

$$Q = \alpha_0 + \alpha_1 MLSVAR + \alpha_2 EC1 + \alpha_3 SIZE + \alpha_4 GROPPORT + \alpha_5 AGE + \alpha_6 LEVERAGE + \alpha_7 DIVERSIFICATION + \alpha_8 ROA + \alpha_9 ROA_{t-1} + \sum INDUSTRY + \sum YEAR + u \tag{4}$$

where *MLSVAR* equals *MLSD*, *MLSN*, *VR234*, *VRRATIO* or *HERFINDHAL*. *INDUSTRY* (*YEAR*) denotes a vector of two-digit SIC industry dummies (year dummies). Second, we run the following regression:

$$|\hat{u}| = \gamma_0 + \gamma_1 MLSVAR + \gamma_2 EC1 + \gamma_3 SIZE + \gamma_4 GROPPORT + \gamma_5 AGE + \gamma_6 LEVERAGE + \gamma_7 DIVERSIFICATION + \sum INDUSTRY + \sum YM + \varepsilon \tag{5}$$

where the dependent variable, $|\hat{u}|$, is the absolute value of the residuals from equations 2, 3 and 4. When we use the residuals obtained from equation 2 (3 and 4), the variable YM is a vector of year (month) dummies. To calculate our *t*-statistics, we correct the standard errors for heteroskedasticity by using the asymptotically-corrected covariance matrix of White.

4.2. MLS and within-firm, over time variability in performance and value

We define the within-firm, over-time variability in corporate performance (value) as the standard deviation of our performance (value) measure over the sample period (Adams et al.,

[5] We obtain the residuals from OLS regressions by using pooled time-series and cross section data (Cheng, 2008). The results are robust to the use of OLS after clustering at the firm level.

2005; Cheng et al., 2008). Therefore, for each sampled firm, we compute the standard deviations of annual ROA, Tobin's Q and monthly stock returns. We then estimate the following regression:

$$RISKTAKING = \alpha_0 + \alpha_1 MLSVAR + \alpha_2 EC1 + \alpha_3 SIZE + \alpha_4 GROPPORT + \alpha_5 AGE + \alpha_6 LEVERAGE + \alpha_7 DIVERSIFICATION + \sum INDUSTRY + u \quad (6)$$

where

RISKTAKING is the standard deviation of annual ROA, Tobin's Q or monthly stock return, over the sample period. *MLSVAR* is the average value of *MLSD*, *MLSN*, *VR234*, *VRRATIO* or *HERFINDHAL*, over the study period. The firm age (*AGE*), size (*SIZE*), financial leverage (*LEVERAGE*), growth opportunities' measure (*GROPPORT*), diversification (*DIVERSIFICATION*) and excess control of the LCS (*EC1*) are also averaged over the sample period. Older, larger and more diversified firms are expected to have lower performance variability. For example, larger firms are more able to diversify their products or lines of business, which reduce their performance variability. Besides, the LCSs may have strong incentives to extract private benefits of control. John et al. (2008) show that these incentives may affect corporate risk-taking. Therefore, we control for the degree of separation between ownership and control of the LCSs using their excess control as a proxy. *INDUSTRY* denotes industry fixed-effects and *u* is the error term. Compared to the Glejser's (1969) procedure, which is based both on within-firm and cross-sectional variability in performance, model (6) isolates the effect of MLS on the within-firm, over-time variability in performance. Tables 5, 6 and 7 present the estimates of model 6 using standard deviation of annual ROA, Tobin's Q or monthly stock return, respectively[6].

5. MLS and performance variability

This section covers the empirical evidence and tests the sensitivity of the results.

5.1. Univariate analysis

Table 3 reports the Pearson and Spearman correlation coefficients between the variables used in the cross-sectional regressions (model 6). Without surprise, the indicators of risk

[6] We rerun our regressions after winsorizing all the variables at the 1st and 99th percentiles, the results remain qualitatively the same. We also re-estimate model (6) using median regressions to mitigate the impact of outliers. The signs and the degree of significance of the independent variables are not affected.

taking represented by the standard deviation of ROA, Tobin's Q and monthly stock returns are positively correlated. This indicates that firms with volatile operating results (ROA) are characterized by volatile returns and unstable market values. In turn, the indicators of risk are positively correlated with the presence (*MLSD)*, number (*MLSN)*, and voting power of MLS (*VR234* and *VRRATIO*). In contrast, their lack of power to contest the LCS (*HERFINDHAL*) is associated with lower risk taking. These findings lend preliminary support to hypotheses H_1 and H_3 (our main hypothesis). The wedge between control and cash flow rights (*EC1*) tends to be associated with lower risk taking. However, the (negative) correlation does not appear to be highly significant. Hence, hypothesis H_2 is only weakly validated using univariate analysis.

The correlation with the other variables is generally consistent with established evidence. For instance, older firms tend to be bigger and more diversified. Larger, older and more diversified firms are characterized by significantly lower risk taking indicators. On the other hand, firms presenting high growth opportunities are associated with a higher volatility of their performance indicators. Finally, the well-known leverage effect is apparent from the significantly higher volatility of stock returns, while the other performance indicators do not seem to be more volatile for highly leveraged firms.

To provide a better sense of the economic importance of MLS, table 4 displays the difference in risk taking between firms where MLS are present and have sufficient power to contest the decisions of the LCS and firms where MLS are absent or have no such power. All the results are consistent with the view that MLS contribute to mitigate the preference of the LCS for lower risk. For instance, the average volatility of ROA is about 4.85% when the LCS is the only blockholder, but increases to about 6.77% when other blockholders are present. Similarly, when the three largest blockholders after the LCS have little voting rights and cannot challenge the LCS the average volatility of ROA is about 4.6%. This volatility reaches about 7% when these blockholders control a greater fraction of the votes and can thus pose a credible challenge to the LCS. All the differences are statistically significant at the 1% level.

Likewise, the volatility of Tobin's Q and monthly stock returns is much lower when firms have only one LCS or when the other blockholders have a relatively small share of the votes. The average Tobin's Q is around 0.25 in that case, but increases by one third to around 0.34 when MLS are present and control a relatively large percentage of the votes. The difference in stock volatility is also statistically significant, but comparatively smaller in magnitude with an average monthly return volatility of about 10% when the LCS is unchallenged and slightly under 12% when the LCS must compromise with other blockholders.

5.2. Glejser heteroskedasticity tests

The results of Glejser heteroskedasticity tests are reported in this section. Table 5 shows that the absolute deviation of ROA relative to its expected value is about 0.9% higher and highly significant when firms have more than one blockholder (specification 1). In comparison, the univariate result displayed in Table 4 indicates that the difference is about 1.35%. This implies that the other variables (firm characteristics) only explain a small fraction of the difference in the volatility of ROA. The economic importance of MLS in monitoring the LCS and enabling a better governance of the firm is thus clearly demonstrated.

By contrast, the result suggests that when the power of the LCS is unimpeded by the presence of other blockholders, firms tend to take significantly less risk. This behaviour is in line with hypothesis 1 and supports the prediction that the LCS prefers to take less risk because of the private benefits it tries to preserve, because of its large under-diversified equity stake or because financial constraints are likely to lead to a loss of control in case of a cash shortfall (resulting from a high risk strategy). These arguments appear to be supported by the negative coefficient on EC1 which captures the wedge between the voting rights and cash flow rights of the LCS. As predicted in hypothesis 2, a large wedge would make the extraction of private benefits more valuable to the LCS and their possible loss all the more regrettable. In consequence, the LCS has a strong motivation to reduce the firm's risk taking.

The other regressions confirm the role of MLS in determining corporate risk taking. The number of blockholders beside the LCS (specification 2) has a similarly positive effect on the volatility of ROA. Likewise, the cumulated votes of the other blockholders (up to the fourth) and their relative power (specifications 3 and 4) are seen to be associated with a higher volatility of ROA. In contrast, when the concentration of the votes is relatively high (which is likely to indicate a strong control by the LCS) the level of risk is significantly lower.

The control variables have generally the effects predicted by theory and confirmed in most empirical studies. Consistent with Adams et al. (2005), Cheng (2008) and Mishra (2011), larger firms are characterized by significantly lower volatility of operating profits. However, the number of business segments has little impact, possibly because the diversification effect of risk is already captured by firm size. Firms with higher growth opportunities usually display a higher volatility of operating profits due to the high level of uncertainty associated with their investments. In contrast, older firms display greater predictability in their operating performance which is also the case of US firms (Adams et al., 2005; Cheng, 2008).

Table 6 presents the results of Glejser heteroskedasticity tests using Tobin's Q as indicator of performance. The coefficients on the variables representing the presence and power of MLS have the expected signs. Compared to the results with ROA, the coefficients tend to display higher statistical significance. Specification 1 demonstrates that the presence of other blockholders alongside the LCS helps to increase the volatility of the firm's market value. This is consistent with the prediction articulated in hypothesis 3 that MLS encourage firms to take greater risks (thus the higher volatility in their market values). The absence of MLS leads necessarily to lower risk taking with a difference is about 6.5%. Consistent with hypothesis 2, the coefficients on EC1 indicating a greater control by the LCS relative to its actual ownership is significantly negative. Thus the greater stability in operating performance apparent in the previous table is confirmed by an even greater predictability in the firm's market value. This suggests that investors are sensibly factoring the incentives for the LCS to decrease the firm's risk profile as well as the actual reduction in the firm's earnings variability.

The conclusions derived from the predictability of operating performance are confirmed using Tobin's Q. The higher percentage of voting rights in the hands of other blockholders (specification 3), especially relative to the voting rights of the LCS (specification 4), is associated with a less predictable firm value. In contrast, their lack of power to contest the LCS's stranglehold on the firm's policy (specification 5) results in a more predictable firm value, suggesting that the LCS is successful in reducing the firm's risk taking. As in the previous table, the predictability of the firm's market value is seen to decrease with the firm's size, but to increase with its level of growth opportunities. Leverage is also found to increase the unpredictability in the value of French firms in contrast to the US where leverage appears to have an insignificant effect (Cheng, 2008) or to decrease the volatility of Tobin's Q (Adams et al., 2005).

In Table 7, our attention is turned to the predictability of stock returns (conditional on the market's realised return and the firm's fitted beta). The results are consistent with those reported for the two previous performance measures. The presence of another blockholder is associated with significantly higher deviation of returns. This indicates that stock returns are less predictable and supports the assumption that the presence of MLS prevents firms from reducing their risk taking policies. Again, the absence of other blockholders appears to allow the LCS to persuade the firm to take less risk. The incentive to decrease risk is strongly related to the divergence between the voting and cash flow rights (EC1) of the LCS. Either because this wedge leads to a lower volatility of earnings (or their greater predictability) or

because investors are able to anticipate the incentives for the LCS to make the firm pursue low risk projects, the firm's stock returns end up being much more predictable.

Consistent with Adams et al. (2005) and Cheng (2008), larger and older firms appear to have significantly lower stock returns volatility. On the other hand, leverage is seen to increase stock volatility as predicted in literature.

5.3. Robustness tests

We test the robustness of our results by running several sensitivity checks. First, we use a cross-sectional approach (model 6) to relate the standard deviation of ROA, Tobin's Q and stock returns to the average ownership and firm characteristics calculated over the same period. This so-called within-firm over-time performance variability approach is primarily used by Cheng (2008) and Mishra (2011). The results are similar to those obtained with Glejser heteroskedasticity tests and are not tabulated to save space. In essence, the presence and voting scale of MLS are associated with higher performance volatility. For instance, ROA volatility is 1.65% higher when other blockholders are present. In comparison the univariate tests point to a difference of 1.92%. Hence, most of the difference in volatility due to the presence of MLS cannot be explained away by other firm characteristics. Likewise, the volatility of Tobin's Q is found to be 7.78% higher when firms have more than two blockholders. Again, the difference of about 9% indicated by a simple univariate comparison demonstrates that MLS have a material impact on corporate risk taking.

In a second test, we construct an index of the MLS variables using principal component analysis (PCA). The index is a weighted linear combination of the five MLS proxies used in this study. Its purpose is to aggregates the individual MLS variables into a single factor that better captures the general influence of MLS. In our case, PCA generates only one factor with an eigenvalue greater than 1. Using cross-sectional (panel) data, the eigenvalue equals 3.858 (3.729), which explains 77.16% (74.60%) of the total variance. Table 8 shows that the constructed index enters positively and significantly at the 1% level in all of the regressions. The results confirm the strong connection between MLS and corporate risk-taking.

In a third test, we consider an alternative proxy for the contestability of the LCS in the form of the Shapley value. We define the variable Shapley1 as the Shapley value solution for the largest controlling shareholder in a four shareholder voting game where the four largest blockholders are individual players and the rest are considered as an "ocean". We expect a negative relation between this variable and the proxies of corporate risk-taking.

The results of cross sectional regressions and Glejser heteroskedasticity tests are reported in Table 9. These results reveal that Shapley1 enters negatively and significantly at the 1% level in all regressions. Hence, these results provide additional evidence that higher contestability of the LCS's voting power by MLS leads to higher corporate risk-taking.

Finally, we reproduce the results reported in Tables 5-10 using the industry-adjusted ROA, the industry-adjusted Tobin's Q and the market-adjusted monthly stock return. Following Cheng (2008), the industry-adjusted ROA (Tobin's Q) is the difference between the firm's ROA (Tobin's Q) and the industry ROA (Q) in the same year. The latter is defined as the average ROA (Q) of the firms having the same two-digit SIC code. The market-adjusted monthly stock return is the difference between the firm's monthly stock return and the SBF 250 monthly return. The results remain qualitatively unchanged. We also use the CAC 40 index as proxy for the market portfolio (instead of the SBF 250) and find that this does not affect our results. Lastly, we check that the results are robust to the exclusion of regulated utilities (SIC 49). For these firms, the risk-taking levels, the profitability and the valuation can be influenced by government regulations and European Union directives rather than by agency issues. But again the results remain qualitatively unchanged.

6. Conclusion

The presence of MLS is believed to promote better governance (Pagano and Roëll, 1998; Bolton and Von Thaden, 1998; Bloch and Hege, 2001) and to increase firm value (Maury and Pajuste, 2005; Attig et al., 2009; Laeven and Levine, 2008). The exact mechanism by which MLS enhance firm performance is, however, not clearly established. The conventional view posits that MLS prevent the LCS to divert corporate resources for its own benefit. Tunnelling of cash flows and related party transactions are typical examples, especially in emerging markets where the rule of law is often poorly enforced (Bae et al., 2002; Cheung et a., 2006).

One way by which the LCS can divert corporate resources from their best use is by dissuading the firm to undertake high-risk projects despite the fact that these projects are usually more valuable. Minority shareholders suffer from this inefficient resource allocation. But the LCS can better protect its stranglehold of the firm and consequently the stream of private benefits it can derive from a controlling stake (John et al., 2008). The presence of MLS helps to thwart this plan and is considered to result in higher corporate risk taking.

In this paper, we show that this is well and truly the case by examining a large sample of French companies over the period 2003-2007. When MLS are absent, operating performance, market value and stock returns are both much more predictable, indicating that firms are selecting low-risk projects. In contrast, the presence and voting power of MLS is found to result in less predictable performance, consistent with the selection of high-risk investments. The difference in risk is not only statistically significant, but also economically meaningful. For instance, the average deviation from the firm's expected market value is found to be one third larger when MLS are present in the firm's ownership structure.

By challenging the LCS's preference for low-risk projects and impeding its attempts to guide the firm toward more conservative policies, MLS play an important role which might explain why their presence and voting rights are associated with higher market value and why investors are more eager to invest in these firms, as indicated by their lower cost of equity capital (Attig et al., 2008). Our results complement those recently provided by Mishra (2011) for East-Asian firms. However, our sample period is not contaminated by the crisis that has swept through East Asia in the late 1990s. Nonetheless, we acknowledge some limitations to our study and, in particular, our inability to find appropriate instruments to control for the endogenous presence of MLS. Further research should also shed more light on the type of corporate decisions that are more precisely affected by the presence of MLS.

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Appendix: Definition of variables

Variable	Definition	Source
RISKTAKING	Standard deviation of monthly stock returns, annual ROA or Tobin's Q, over the sample period. ROA is the ratio of earnings before interest and taxes to the book value of assets. Tobin's Q is the ratio of the market to book value of assets.	Worldscope and authors' calculations
MLSD	Dummy that equals 1 if the firm has at least two large shareholders, and 0 otherwise. A large shareholder is a legal entity that controls, directly or indirectly, at least 10% of the firm's voting rights (La Porta et al., 2002).	Authors' calculations
MLSN	The number of large shareholders, other than the LCS, up to the fourth.	Authors' calculations
VR234	The sum of voting rights of the second, third and fourth largest shareholders.	Authors' calculations
VRRATIO	The sum of voting rights of the second, third and fourth largest blockholders divided by the voting rights of the LCS.	Authors' calculations
HERFINDHAL	The sum of squared differences between the voting rights of the four largest shareholders, i.e., $(VR1 - VR2)^2 + (VR2 - VR3)^2 + (VR3 - VR4)^2$ Where *VR1*, *VR2*, *VR3* and *VR4* equal the voting rights of the first, second, third and fourth largest shareholders, respectively.	Authors' calculations
AGE	The number of years since the first date of incorporation.	Authors' calculations
SIZE	Natural logarithm of total assets.	Worldscope
LEVERAGE	The ratio of firm's total debt over assets.	Worldscope
GROPPORT	Capital expenditures divided by sales.	Worldscope
DIVERSIFICATION	The number of business segments.	Authors' calculations
EC1	The excess control of the largest controlling shareholder. Excess control (at the 10% threshold) is the ratio of the difference between LCS's ultimate control rights (UCO) and ultimate cash flow rights (UCF), to the ultimate control rights (i.e., (UCO – UCF) / UCO).	Annual reports and authors' calculations

Figures

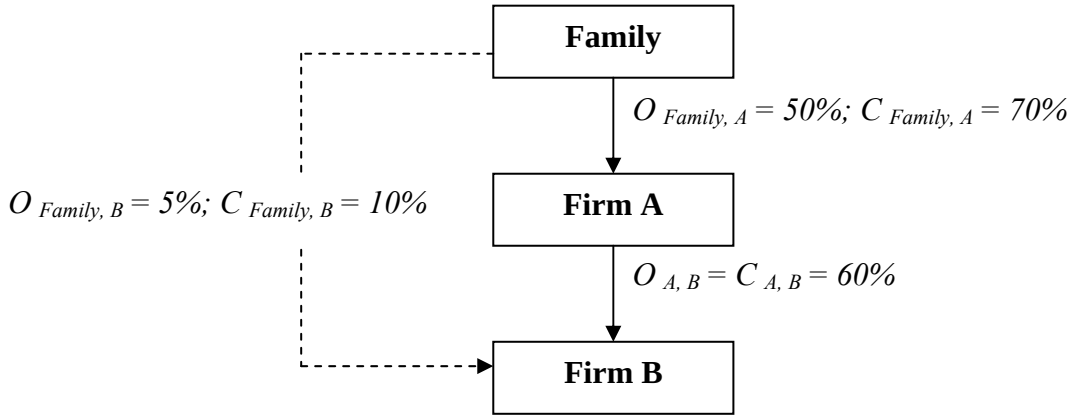

Figure 1. Example of ultimate cash flow (UCF) rights and ultimate control (UCF) rights calculations in a three-tier pyramid. $O_{i,j}$ (*Vij*) indicates the direct cash flow (voting) rights of entity *i* in entity *j*. In this figure, the family is the largest (ultimate) controlling shareholder of firm B. Its ultimate cash flow rights $UCF_{Family,B}$ equals the sum of products of direct cash flow rights along the different ownership chains; i.e., $UCF_{Family,B} = (O_{Family,A}\ c\ O_{A,B}) + O_{Family,A} = 35\%$. Its ultimate ccontrol rights $UCO_{Family,B}$ is the sum of weakest links along the different control chains; i.e., $UCO_{Family,B} = min\ (C_{Family,A}\ ;\ C_{A,B}) + C_{Family,B} = 70\%$. The excess control of the family is the difference between $UCF_{Family,B}$ and $UCO_{Family,B}$, all divided by $UCO_{Family,B}$; i.e., $((UCO_{Family,B} - UCF_{Family,B}) / UCO_{Family,B}) = 50\%$.

Tables

Table 1

Distribution of sample firms across industries and years.

This table shows the distribution of the 2,210 sample firm-year observations across industries and years, based on Campbell's (1996) industrial classification. We exclude financial firms (SIC 60-69). The industries are petroleum (SIC 13, 29), consumer durables (SIC 25, 30, 36, 37, 50, 55, 57), basic industry (SIC 10, 12, 14, 24, 26, 28, 33), food and tobacco (SIC 1, 2, 9, 20, 21, 54), construction (SIC 15, 16, 17, 32, 52), capital goods (SIC 34, 35, 38), transportation (SIC 40, 41, 42, 44, 45, 47), utilities (SIC 46, 48, 49), textiles and trade (SIC 22, 23, 31, 51, 53, 56, 59), services (SIC 72, 73, 75, 76, 80, 82, 87, 89), leisure (SIC 27, 58, 70, 78, 79).

Industry (SIC codes)	2003	2004	2005	2006	2007	Total	
						Number per industry	Percentage of total
Petroleum (13, 29)	2	2	3	3	3	13	0.59
Consumer durables (25, 30, 36, 37, 50, 55, 57)	67	75	75	78	74	369	16.70
Basic industry (10, 12, 14, 24, 26, 28, 33)	41	44	42	47	41	215	9.73
Food and tobacco (1, 2, 9, 20, 21, 54)	29	29	29	28	26	141	6.38
Construction (15, 16, 17, 32, 52)	22	22	21	20	18	103	4.66
Capital goods (34, 35, 38)	47	49	45	47	44	232	10.50
Transportation (40, 41, 42, 44, 45, 47)	8	10	10	13	12	53	2.40
Utilities (46, 48, 49)	17	19	23	29	27	115	5.20
Textiles and trade (22, 23, 31, 51, 53, 56, 59)	54	55	51	49	41	250	11.31
Services (72, 73, 75, 76, 80, 82, 87, 89)	105	111	120	129	111	576	26.06
Leisure (27, 58, 70, 78 , 79)	30	31	30	27	25	143	6.47
Total number per year	422	447	449	470	422	2,210	100.00
Percentage of total	19.09	20.23	20.32	21.27	19.09	100	

Table 2

Summary statistics on MLS variables and firm characteristics

In this table, we provide summary statistics on the MLS variables (Panel A) and firm charcteristics (Panel B). MLSD is a dummy variable that equals 1 if the firm has at least two large shareholders and 0 otherwise. MLSN is the number of large shareholders, other than the largest controlling shareholder (LCS), up to the fourth. VR234 is the sum of voting rights of the second, third and fourth largest shareholders. VRRATIO is the sum of voting rights of the second, third and fourth largest blockholders divided by the voting rights of the LCS. HERFINDHAL equals the sum of squared differences between the voting rights of the four largest shareholders, that is, $(VR1 - VR2)^2 + (VR2 - VR3)^2 + (VR3 - VR4)^2$; where VR1, VR2, VR3 and VR4 equal the voting rights of the first, second, third and fourth largest shareholders, respectively. ROA is the firm's annual return on assets, which equals the ratio of earnings before interest and taxes to the book value of assets at the beginning of the fiscal year. Tobin's Q is calculated as the ratio of the market to book value of assets. Firm's age (AGE) equals the number of years since its first date of incorporation. The number of years since the first date of incorporation is capped at 100. The financial leverage (LEVERAGE) is calculated as the ratio of firm's total debt over assets. GROPPORT is the firm's capital expenditures divided by sales. DIVERSIFICATION equals the number of business segments. EC1 is the excess control of the largest controlling shareholder. For each variable, the table provides the number of firm-year observations (N), the mean (Mean), the standard deviation (S.D.), the minimum (Min.), the 25th percentile, the median (Median), the 75th percentile and the maximum (Max.).

Variable	N	Mean	S.D.	Min.	25th percentile	Median	75th percentile	Max.
Panel A: MLS variables								
MLSD ($N_{(MLSD=1)}$ = 839)	2,210	0.379	0.485	0.000	0.000	0.000	1.000	1.000
MLSN	2,210	0.469	0.662	0.000	0.000	0.000	1.000	3.000
VR234 (%)	839	26.358	9.619	10.000	19.360	25.020	33.500	46.860
VRRATIO	2,210	0.399	0.508	0.000	0.000	0.196	0.609	2.175
HERFINDHAL	2,210	0.272	0.251	0.000	0.057	0.195	0.428	0.906
Panel B: Firm charachteristics								
Stock returns	24,757	0.016	0.103	-0.248	-0.038	0.003	0.059	0.425
Market returns	24,757	0.011	0.034	-0.063	-0.011	0.017	0.031	0.127
ROA	2,210	5.934	11.390	-40.665	2.230	6.791	11.324	38.130
Tobin's Q	2,210	0.491	0.687	-2.950	0.321	0.668	0.915	1.270
AGE	2,210	42.961	32.465	1.000	17.000	29.000	72.000	100.000
LEVERAGE	2,210	0.216	0.166	0.000	0.072	0.198	0.325	0.721
Total Assets (€ million)	2,210	2,224.071	7,391.024	4.403	39.116	134.048	606.142	50,550.300
GROPPORT	2,210	0.060	0.111	0.000	0.014	0.030	0.057	0.805
DIVERSIFICATION	2,210	2.746	1.487	1.000	2.000	2.000	4.000	8.000
EC1 (%)	2,210	20.750	20.547	-25.104	1.330	17.845	31.716	93.421

Table 3

Pearson and Spearman correlations between all regression variables.

This table reports Pearson (below the diagonal) and spearman (above the diagonal) correlations between all regression variables used in cross sectional regressions (model 6). The sample consists of 525 nonfinancial French publicly traded firms over the period 2003-2007. S.D of ROA , S.D of Tobin's Q and S.D of monthly stock return are the standard deviations, over the sample period, of annual ROA, Tobin's Q and monthly stock return, respectively. All the other variables are averaged over the sample period. MLSD is a dummy variable that equals 1 if the firm has at least two large shareholders and 0 otherwise. MLSN is the number of large shareholders, other than the largest controlling shareholder (LCS), up to the fourth. VR234 is the sum of voting rights of the second, third and fourth largest shareholders. VRRATIO is the sum of voting rights of the second, third and fourth largest blockholders divided by the voting rights of the LCS. HERFINDHAL equals the sum of squared differences between the voting rights of the four largest shareholders, that is, $(VR1 - VR2)^2 + (VR2 - VR3)^2 + (VR3 - VR4)^2$; where VR1, VR2, VR3 and VR4 equal the voting rights of the first, second, third and fourth largest shareholders, respectively. ROA is the firm's annual return on assets, which equals the ratio of earnings before interest and taxes to the book value of assets at the beginning of the fiscal year. Tobin's Q is calculated as the ratio of the market to book value of assets. EC1 is the excess control of the largest controlling shareholder. SIZE equals the natural logarithm of total assets. Firm's age (AGE) equals the number of years since its first date of incorporation. The number of years since the first date of incorporation is capped at 100. The financial leverage (LEVERAGE) is calculated as the ratio of firm's total debt over assets. GROPPORT is the firm's capital expenditures divided by sales. DIVERSIFICATION equals the number of business segments. The subscripts c, b and a denote statistical significance at the 10%, 5% and 1% level, respectively

	S.D. of ROA	S.D. of Tobin's Q	S.D. of monthly stock return	MLSD	MLSN	VR234	VRRATIO	HERFINDHAL	EC1	SIZE	GROPPORT	AGE	LEVERAGE	DIVERSIFICATION
S.D. of ROA	1.000	0.456[a]	0.580[a]	0.168[a]	0.169[a]	0.192[a]	0.179[a]	-0.160[a]	-0.037	-0.466[a]	-0.104[b]	-0.288[a]	-0.074[c]	-0.212[a]
S.D. of Tobin's Q	0.488[a]	1.000	0.336[a]	0.181[a]	0.179[a]	0.214[a]	0.196[a]	-0.167[a]	-0.015	-0.326[a]	-0.064	-0.304[a]	-0.249[a]	-0.206[a]
S.D. of monthly stock return	0.569[a]	0.346[a]	1.000	0.153[a]	0.181[a]	0.213[a]	0.184[a]	-0.214[a]	-0.062	-0.477[a]	-0.194[a]	-0.374[a]	0.023	-0.238[a]
MLSD	0.187[a]	0.167[a]	0.124[a]	1.000	0.976[a]	0.825[a]	0.741[a]	-0.466[a]	0.177[a]	-0.212[a]	-0.070	-0.262[a]	-0.117[a]	-0.184[a]
MLSN	0.177[a]	0.163[a]	0.147[a]	0.893[a]	1.000	0.850[a]	0.770[a]	-0.487[a]	0.191[a]	-0.225[a]	-0.083[c]	-0.265[a]	-0.093[b]	-0.192[a]
VR234	0.226[a]	0.180[a]	0.161[a]	0.825[a]	0.822[a]	1.000	0.935[a]	-0.617[a]	0.206[a]	-0.202[a]	-0.081[c]	-0.306[a]	-0.076[c]	-0.213[a]
VRRATIO	0.228[a]	0.192[a]	0.172[a]	0.676[a]	0.711[a]	0.864[a]	1.000	-0.764[a]	0.239[a]	-0.150[a]	-0.066	-0.345[a]	-0.056	-0.221[a]
HERFINDHAL	-0.176[a]	-0.155[a]	-0.160[a]	-0.490[a]	-0.475[a]	-0.626[a]	-0.696[a]	1.000	-0.252[a]	0.011	0.055	0.331[a]	0.051	0.142[a]
EC1	-0.096[b]	-0.058	-0.114[a]	0.177[a]	0.228[a]	0.212[a]	0.250[a]	-0.293[a]	1.000	0.058	-0.091[b]	-0.011	0.035	-0.007
SIZE	-0.412[a]	-0.282[a]	-0.427[a]	-0.191[a]	-0.209[a]	-0.202[a]	-0.129[a]	-0.006	0.069	1.000	0.275[a]	0.380[a]	0.309[a]	0.396[a]
GROPPORT	0.127[a]	0.126[a]	0.178[a]	-0.046	-0.035	-0.050	-0.047	0.105[b]	-0.054	-0.039	1.000	0.207[a]	0.265[a]	0.177[a]
AGE	-0.236[a]	-0.216[a]	-0.281[a]	-0.169[a]	-0.165[a]	-0.193[a]	-0.212[a]	0.163[a]	0.012	0.337[a]	0.013	1.000	0.164[a]	0.433[a]
LEVERAGE	0.048	-0.038	0.189[a]	-0.006	0.000	-0.008	-0.029	0.004	0.029	0.053	0.049	0.027	1.000	0.160[a]
DIVERSIFICATION	-0.204[a]	-0.163[a]	-0.189[a]	-0.168[a]	-0.162[a]	-0.218[a]	-0.232[a]	0.143[a]	0.004	0.403[a]	0.053	0.378[a]	0.056	1.000

Table 4

Univariate tests

This table shows the means and medians of the different risk-taking proxies for above- and below-median subsamples of MLS variables and presents the mean and median difference tests. MLSVAR equals MLSD, MLSN, VR234, VRRATIO or HERFINDHAL. MLSD is a dummy variable that equals 1 if the firm has at least two large shareholders and 0 otherwise. MLSN is the number of large shareholders, other than the largest controlling shareholder (LCS), up to the fourth. VR234 is the sum of voting rights of the second, third and fourth largest shareholders. VRRATIO is the sum of voting rights of the second, third and fourth largest blockholders divided by the voting rights of the LCS. HERFINDHAL equals the sum of squared differences between the voting rights of the four largest shareholders, that is, $(VR1 - VR2)^2 + (VR2 - VR3)^2 + (VR3 - VR4)^2$; where VR1, VR2, VR3 and VR4 equal the voting rights of the first, second, third and fourth largest shareholders, respectively. ROA is the firm's annual return on assets, which equals the ratio of earnings before interest and taxes to the book value of assets at the beginning of the fiscal year. Tobin's Q is calculated as the ratio of the market to book value of assets. In panels A, B and C, the risk-taking proxies are the standard deviations, over the sample period (2003-2007), of annual ROA, Tobin's Q and monthly stock return, respectively and MLS variables are averaged over the sample period. In panels D, E and F, the risk-taking proxies are the absolute value of the residuals from equations (3), (4) and (2), respectively. The subscripts c, b and a denote statistical significance at the 10%, 5% and 1% level, respectively

	Means			Medians		
	Low MLSVAR	High MLSVAR	t-Statistics	Low MLSVAR	High MLSVAR	Z-Statistics
Panel A: Standard Deviation of annual ROA						
MLSD	4.857	6.776	-4.310[a]	4.628	3.314	-3.790[a]
MLSN	4.956	6.776	-4.045[a]	4.628	3.314	-3.804[a]
VR234	4.635	6.899	-5.152[a]	4.651	3.171	-4.068[a]
VRRATIO	4.752	7.143	-5.346[a]	4.701	3.314	-3.806[a]
HERFINDHAL	6.446	4.663	3.960[a]	3.315	4.629	3.538[a]
Panel B: Standard Deviation of Tobin's Q						
MLSD	0.251	0.340	-3.890[a]	0.259	0.177	-4.166[a]
MLSN	0.255	0.341	-3.695[a]	0.259	0.175	-4.253[a]
VR234	0.256	0.329	-3.228[a]	0.231	0.177	-3.377[a]
VRRATIO	0.256	0.343	-3.746[a]	0.231	0.168	-3.874[a]
HERFINDHAL	0.323	0.245	3.343[a]	0.179	0.225	2.841[a]
Panel C: Standard Deviation of monthly stock return						
MLSD	0.102	0.118	-3.319[a]	0.103	0.085	-3.793[a]
MLSN	0.103	0.117	-2.883[a]	0.103	0.085	-3.784[a]
VR234	0.100	0.119	-4.158[a]	0.104	0.085	-4.496[a]
VRRATIO	0.101	0.121	-4.067[a]	0.103	0.085	-4.246[a]
HERFINDHAL	0.117	0.099	3.754[a]	0.085	0.104	4.534[a]

Panel D: Absolute value of ROA residuals

MLSD	6.163	7.517	-5.289[a]	4.510	5.181	-4.106[a]
MLSN	6.159	7.503	-5.266[a]	4.526	5.152	-4.141[a]
VR234	6.023	7.474	-5.809[a]	4.324	5.243	-5.066[a]
VRRATIO	6.161	7.500	-5.202[a]	4.435	4.993	-3.055[a]
HERFINDHAL	7.120	5.952	4.628[a]	5.151	4.201	4.886[a]

Panel E: Absolute value of Tobin's Q residuals

MLSD	0.315	0.394	-6.312[a]	0.254	0.320	-6.233[a]
MLSN	0.319	0.390	-5.694[a]	0.262	0.312	-5.161[a]
VR234	0.318	0.380	-5.125[a]	0.250	0.310	-5.420[a]
VRRATIO	0.322	0.387	-5.076[a]	0.251	0.308	-5.254[a]
HERFINDHAL	0.369	0.302	5.418[a]	0.296	0.257	4.311[a]

Panel F: Absolute value of monthly stock return residuals

MLSD	0.059	0.064	-8.145[a]	0.046	0.050	-6.719[a]
MLSN	0.059	0.064	-8.118[a]	0.046	0.050	-6.742[a]
VR234	0.058	0.064	-9.699[a]	0.044	0.049	-8.043[a]
VRRATIO	0.059	0.064	-7.387[a]	0.045	0.049	-6.764[a]
HERFINDHAL	0.063	0.058	8.134[a]	0.049	0.045	7.353[a]

Table 5

Results of using Glejser's (1969) heteroskedasticity test: the dependent variable is the absolute value of ROA residuals

This table presents the results of Glejser's (1969) heteroskedasticity tests for the firm's annual return on assets (ROA). The dependent variable is the absolute value of the residuals from equation (3). ROA is the firm's annual return on assets, which equals the ratio of earnings before interest and taxes to the book value of assets at the beginning of the fiscal year. MLSD is a dummy variable that equals 1 if the firm has at least two large shareholders and 0 otherwise. MLSN is the number of large shareholders, other than the largest controlling shareholder (LCS), up to the fourth. VR234 is the sum of voting rights of the second, third and fourth largest shareholders. VRRATIO is the sum of voting rights of the second, third and fourth largest blockholders divided by the voting rights of the LCS. HERFINDHAL equals the sum of squared differences between the voting rights of the four largest shareholders, that is, $(VR1 - VR2)^2 + (VR2 - VR3)^2 + (VR3 - VR4)^2$; where VR1, VR2, VR3 and VR4 equal the voting rights of the first, second, third and fourth largest shareholders, respectively. EC1 is the excess control of the largest controlling shareholder. SIZE equals the natural logarithm of total assets. Firm's age (AGE) equals the number of years since its first date of incorporation. The number of years since the first date of incorporation is capped at 100. The financial leverage (LEVERAGE) is calculated as the ratio of firm's total debt over assets. GROPPORT is the firm's capital expenditures divided by sales. DIVERSIFICATION equals the number of business segments. Heteroskedasticity-robust *t*-statistics are in parentheses. The subscripts c, b and a denote statistical significance at the 10%, 5% and 1% level, respectively

Variable	Specification 1	Specification 2	Specification 3	Specification 4	Specification 5
MLSD	0.89402[a]				
	(3.525)				
MLSN		0.62467[a]			
		(3.335)			
VR234			3.98867[a]		
			(3.944)		
VRRATIO				0.94053[a]	
				(3.408)	
HERFINDHAL					-2.82110[a]
					(-5.349)
EC1	-1.34885[b]	-1.38961[b]	-1.39601[b]	-1.39404[b]	-1.72393[a]
	(-2.310)	(-2.362)	(-2.381)	(-2.353)	(-2.872)
SIZE	-0.57598[a]	-0.57398[a]	-0.57922[a]	-0.60365[a]	-0.66069[a]
	(-8.794)	(-8.723)	(-8.835)	(-9.311)	(-9.900)
GROPPORT	0.10037[a]	0.10016[a]	0.09841[a]	0.09144[a]	0.09499[a]
	(3.68)	(3.677)	(3.614)	(3.366)	(3.219)
AGE	-0.00930[a]	-0.00931[a]	-0.00911[a]	-0.009[a]	-0.00913[a]
	(-3.285)	(-3.289)	(-3.219)	(-4.28)	(-4.235)
LEVERAGE	0.51184	0.46887	0.52176	0.60110	0.50664
	(0.982)	(0.899)	(1.001)	(1.157)	(0.830)
DIVERSIFICATION	-0.14813	-0.14856	-0.13365	-0.08662	-0.13220
	(-1.125)	(-1.128)	(-1.015)	(-0.659)	(-1.020)
Constant	12.14576[a]	12.22465[a]	11.88940[a]	12.30400[a]	14.32499[a]
	(11.350)	(11.433)	(11.012)	(11.658)	(13.219)
Fixed effects included	Year; Industry	Year; Industry	Year; Industry	Year; Industry	Year; Industry
Sample size	2,210	2,210	2,210	2,210	2,210
Adjusted-R^2	0.117	0.116	0.118	0.112	0.119
F-value	14.357[a]	14.290[a]	14.453[a]	13.690[a]	14.637[a]

Table 6

Results of using Glejser's (1969) heteroskedasticity test: the dependent variable is the absolute value of Tobin's Q residuals

This table presents the results of Glejser's (1969) heteroskedasticity tests for the firm's Tobin's Q, which equals the ratio of the market to book value of assets. The dependent variable is the absolute value of the residuals from equation (4). MLSD is a dummy variable that equals 1 if the firm has at least two large shareholders and 0 otherwise. MLSN is the number of large shareholders, other than the largest controlling shareholder (LCS), up to the fourth. VR234 is the sum of voting rights of the second, third and fourth largest shareholders. VRRATIO is the sum of voting rights of the second, third and fourth largest blockholders divided by the voting rights of the LCS. HERFINDHAL equals the sum of squared differences between the voting rights of the four largest shareholders, that is, $(VR1 - VR2)^2 + (VR2 - VR3)^2 + (VR3 - VR4)^2$; where VR1, VR2, VR3 and VR4 equal the voting rights of the first, second, third and fourth largest shareholders, respectively. EC1 is the excess control of the largest controlling shareholder. SIZE equals the natural logarithm of total assets. Firm's age (AGE) equals the number of years since its first date of incorporation. The number of years since the first date of incorporation is capped at 100. The financial leverage (LEVERAGE) is calculated as the ratio of firm's total debt over assets. GROPPORT is the firm's capital expenditures divided by sales. DIVERSIFICATION equals the number of business segments. Heteroskedasticity-robust *t*-statistics are in parentheses. c, b and a indicate statistical significance at the 10%, 5% and 1% level, respectively

Variable	Specification 1	Specification 2	Specification 3	Specification 4	Specification 5
MLSD	0.06543[a]				
	(5.293)				
MLSN		0.03733[a]			
		(4.076)			
VR234			0.19611[a]		
			(3.961)		
VRRATIO				0.06293[a]	
				(4.665)	
HERFINDHAL					-0.15924[a]
					(-6.158)
EC1	-0.11523[a]	-0.11122[a]	-0.10631[a]	-0.12422[a]	-0.13552[a]
	(-4.049)	(-3.867)	(-3.705)	(-4.290)	(-4.685)
SIZE	-0.02837[a]	-0.02851[a]	-0.02916[a]	-0.02970[a]	-0.03295[a]
	(-8.887)	(-8.863)	(-9.088)	(-9.372)	(-10.405)
GROPPORT	0.00636[a]	0.00647[a]	0.00645[a]	0.00601[a]	0.00661[a]
	(4.795)	(4.863)	(4.842)	(4.527)	(5.004)
AGE	0.00006	0.00005	0.00004	0.00006	0.00001
	(0.497)	(0.417)	(0.347)	(0.463)	(0.093)
LEVERAGE	0.06632[a]	0.06331[b]	0.06590[a]	0.06524[b]	0.05964[b]
	(2.612)	(2.484)	(2.584)	(2.569)	(2.358)
DIVERSIFICATION	-0.01051	-0.01190[c]	-0.01072[c]	-0.01000	-0.00939
	(-1.640)	(-1.850)	(-1.664)	(-1.558)	(-1.471)
Constant	0.66942[a]	0.68948[a]	0.68013[a]	0.70141[a]	0.80499[a]
	(12.833)	(13.186)	(12.869)	(13.592)	(15.433)
Fixed effects included	Year; Industry	Year; Industry	Year; Industry	Year; Industry	Year; Industry
Sample size	2,210	2,210	2,210	2,210	2,210
Adjusted-R^2	0.127	0.122	0.120	0.124	0.132
F-value	15.660[a]	15.076[a]	14.783[a]	15.219[a]	16.355[a]

Table 7

Results of using Glejser's (1969) heteroskedasticity test: the dependent variable is the absolute value of monthly stock return residuals

This table presents the results of Glejser's (1969) heteroskedasticity tests for the firm's monthly stock return. The dependent variable is the absolute value of the residuals from equation (2). MLSD is a dummy variable that equals 1 if the firm has at least two large shareholders and 0 otherwise. MLSN is the number of large shareholders, other than the largest controlling shareholder (LCS), up to the fourth. VR234 is the sum of voting rights of the second, third and fourth largest shareholders. VRRATIO is the sum of voting rights of the second, third and fourth largest blockholders divided by the voting rights of the LCS. HERFINDHAL equals the sum of squared differences between the voting rights of the four largest shareholders, that is, $(VR1 - VR2)^2 + (VR2 - VR3)^2 + (VR3 - VR4)^2$; where VR1, VR2, VR3 and VR4 equal the voting rights of the first, second, third and fourth largest shareholders, respectively. EC1 is the excess control of the largest controlling shareholder. SIZE equals the natural logarithm of total assets. Firm's age (AGE) equals the number of years since its first date of incorporation. The number of years since the first date of incorporation is capped at 100. The financial leverage (LEVERAGE) is calculated as the ratio of firm's total debt over assets. GROPPORT is the firm's capital expenditures divided by sales. DIVERSIFICATION equals the number of business segments. Heteroskedasticity-robust *t*-statistics are in parentheses. The subscripts c, b and a denote statistical significance at the 10%, 5% and 1% level, respectively.

Variable	Specification 1	Specification 2	Specification 3	Specification 4	Specification 5
MLSD	0.00293[a]				
	(4.341)				
MLSN		0.00334[a]			
		(6.557)			
VR234			0.01613[a]		
			(5.951)		
VRRATIO				0.00546[a]	
				(7.233)	
HERFINDHAL					-0.01281[a]
					(-9.006)
EC1	-0.00477[a]	-0.00561[a]	-0.00542[a]	-0.00652[a]	-0.00754[a]
	(-2.987)	(-3.497)	(-3.375)	(-4.009)	(-4.616)
SIZE	-0.00322[a]	-0.00315[a]	-0.00318[a]	-0.00326[a]	-0.00351[a]
	(-18.558)	(-18.077)	(-18.309)	(-18.874)	(-20.201)
GROPPORT	-0.00003	-0.00004	-0.00004	-0.00004	-0.00003
	(-0.504)	(-0.571)	(-0.557)	(-0.610)	(-0.491)
AGE	-0.00004[a]	-0.00004[a]	-0.00004[a]	-0.00004[a]	-0.00004[a]
	(-6.718)	(-6.650)	(-6.702)	(-6.593)	(-6.620)
LEVERAGE	0.01088[a]	0.01073[a]	0.01084[a]	0.01069[a]	0.01084[a]
	(7.730)	(7.631)	(7.712)	(7.604)	(7.712)
DIVERSIFICATION	-0.00020	-0.00017	-0.00017	-0.00013	-0.00020
	(-0.578)	(-0.501)	(-0.493)	(-0.372)	(-0.577)
Constant	0.09129[a]	0.09036[a]	0.08977[a]	0.09145[a]	0.09997[a]
	(31.548)	(31.278)	(30.782)	(31.934)	(33.980)
Fixed effects included	Year-month; Industry	Year-month; Industry	Year-month; Industry	Year-month; Industry	Year-month; Industry
Sample size	24,757	24,757	24,757	24,757	24,757
Adjusted-R^2	0.051	0.052	0.051	0.052	0.053
F-statistic	61.586[a]	62.743[a]	62.380[a]	63.190[a]	64.569[a]

Table 8

The results of cross sectional regressions and Glejser's (1969) heteroskedasticity tests using the variable Index constructed by means of principal component analysis.

This table shows the results of cross-sectional regressions and Glejser's (1969) heteroskedasticity tests using the variable Index (constructed by means of principal component analysis) as a proxy for MLS. ROA is the firm's annual return on assets, which equals the ratio of earnings before interest and taxes to the book value of assets at the beginning of the fiscal year. Tobin's Q is calculated as the ratio of the market to book value of assets. EC1 is the excess control of the largest controlling shareholder. SIZE equals the natural logarithm of total assets. Firm's age (AGE) equals the number of years since its first date of incorporation. The number of years since the first date of incorporation is capped at 100. The financial leverage (LEVERAGE) is calculated as the ratio of firm's total debt over assets. GROPPORT is the firm's capital expenditures divided by sales. DIVERSIFICATION equals the number of business segments. The dependent variables identified in the second, third and fourth columns are the standard deviations of annual ROA, annual Tobin's Q and monthly stock returns over the period 2003-2007. All the independent variables includes in the cross sectional regressions (second, third and fourth columns) are averaged over the same period 2003-2007. Heteroskedasticity-robust *t*-statistics are in parentheses. The subscripts c, b and a denote statistical significance at the 10%, 5% and 1% level, respectively.

	Cross-sectional regressions			Glejser's (1969) heteroskedasticity test		
Dependent variable	Annual ROA variability	Tobin's Q variability	Monthly stock return variability	Absolute value of ROA residuals	Absolute value of Tobin's Q residuals	Absolute value of monthly stock return residuals
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
Index	0.50802[a]	0.02164[a]	0.00337[a]	0.30080[a]	0.01806[a]	0.00129[a]
	(4.299)	(3.612)	(3.270)	(4.414)	(5.654)	(7.180)
EC1	-3.66221[a]	-0.14319[b]	-0.04061[a]	-1.59868[a]	-0.12562[a]	-0.00651[a]
	(-3.406)	(-2.359)	(-3.400)	(-2.646)	(-4.387)	(-4.078)
SIZE	-0.87306[a]	-0.02403[a]	-0.01016[a]	-0.58925[a]	-0.02907[a]	-0.00320[a]
	(-7.056)	(-3.651)	(-8.864)	(-8.836)	(-8.515)	(-19.436)
GROPPORT	0.00207[a]	0.00012[a]	0.00002[a]	0.09571[a]	0.00628[a]	-0.00004
	(6.879)	(9.365)	(8.335)	(3.205)	(4.074)	(-0.567)
AGE	-0.00525	-0.00032	-0.00011[a]	-0.00888[a]	0.00006	-0.00004[a]
	(-1.452)	(-1.430)	(-3.001)	(-4.120)	(0.514)	(-7.458)
LEVERAGE	3.84040[a]	-0.04661	0.07618[a]	0.51672	0.06688	0.01081[a]
	(2.656)	(-0.473)	(5.457)	(0.811)	(1.375)	(6.188)
DIVERSIFICATION	0.00619	0.00648	0.00274	-0.12333	-0.00923	-0.00014
	(0.026)	(0.506)	(1.318)	(-0.948)	(-1.332)	(-0.403)
Constant	14.75772[a]	0.60911[a]	0.19941[a]	12.59155[a]	0.70499[a]	0.08855[a]
	(9.632)	(7.287)	(9.999)	(12.119)	(13.774)	(30.010)
Fixed effects included	Industry	Industry	Industry	Year; Industry	Year; Industry	Year-month; Industry
Sample size	525	525	525	2,210	2,210	24,757
Adjusted-R^2	0.236	0.149	0.302	0.119	0.128	0.061
F-value	9.994[a]	6.115[a]	13.624[a]	14.653[a]	15.773[a]	49.797[a]

Table 9

The results of cross sectional regressions and Glejser's (1969) heteroskedasticity tests using the variable Shapley 1 as a proxy for the control contestability of the largest controlling shareholder.

This table shows the results of cross-sectional regressions and Glejser's (1969) heteroskedasticity tests using the variable Shapley1 as an alternative proxy for the control contestability of the largest controlling shareholder. Shapley1 is the Shapley value solution for the largest controlling shareholder in a four shareholder voting game. ROA is the firm's annual return on assets, which equals the ratio of earnings before interest and taxes to the book value of assets at the beginning of the fiscal year. Tobin's Q is calculated as the ratio of the market to book value of assets. EC1 is the excess control of the largest controlling shareholder. SIZE equals the natural logarithm of total assets. Firm's age (AGE) equals the number of years since its first date of incorporation. The number of years since the first date of incorporation is capped at 100. The financial leverage (LEVERAGE) is calculated as the ratio of firm's total debt over assets. GROPPORT is the firm's capital expenditures divided by sales. DIVERSIFICATION equals the number of business segments. The dependent variables identified in the second, third and fourth columns are the standard deviations of annual ROA, annual Tobin's Q and monthly stock returns over the period 2003-2007. All the independent variables includes in the cross sectional regressions (second, third and fourth columns) are averaged over the same period 2003-2007.Heteroskedasticity-robust *t*-statistics are in parentheses. The subscripts c, b and a denote statistical significance at the 10%, 5% and 1% level, respectively.

	Cross-sectional regressions			Glejser's (1969) heteroskedasticity test		
Dependent variable	Annual ROA variability	Tobin's Q variability	Monthly stock return variability	Absolute value of ROA residuals	Absolute value of Tobin's Q residuals	Absolute value of monthly stock return residuals
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
Shapley1	-3.70287[a]	-0.13296[a]	-0.02872[a]	-1.59348[a]	-0.08032[a]	-0.00921[a]
	(-5.286)	(-3.578)	(-4.667)	(-4.307)	(-4.400)	(-9.221)
EC1	-2.90133[a]	-0.10592[c]	-0.03638[a]	-0.89194	-0.10428[a]	-0.00477[a]
	(-2.796)	(-1.777)	(-3.211)	(-1.566)	(-3.877)	(-3.058)
SIZE	-1.02210[a]	-0.02980[a]	-0.01125[a]	-0.70359[a]	-0.03232[a]	-0.00358[a]
	(-8.478)	(-4.649)	(-10.108)	(-10.536)	(-9.492)	(-21.428)
GROPPORT	0.00202[a]	0.00012[a]	0.00002[a]	0.10089[a]	0.00669[a]	-0.00004
	(6.988)	(8.719)	(8.706)	(3.443)	(4.333)	(-0.628)
AGE	-0.00471	-0.00031	-0.00010[a]	-0.00981[a]	0.00005	-0.00004[a]
	(-1.325)	(-1.361)	(-2.900)	(-4.626)	(0.458)	(-7.401)
LEVERAGE	3.50999[b]	-0.05881	0.07367[a]	0.50428	0.05625	0.01018[a]
	(2.441)	(-0.590)	(5.426)	(0.782)	(1.059)	(5.898)
DIVERSIFICATION	-0.00625	0.00561	0.00272	-0.05646	-0.01287[c]	-0.00029
	(-0.027)	(0.443)	(1.319)	(-0.442)	(-1.883)	(-0.833)
Constant	19.59339[a]	0.78685[a]	0.23623[a]	14.99972[a]	0.82739[a]	0.10141[a]
	(11.040)	(8.540)	(11.389)	(13.112)	(14.886)	(31.214)
Fixed effects included	Industry	Industry	Industry	Year; Industry	Year; Industry	Year-month; Industry
Sample size	525	525	525	2,210	2,210	24,757
Adjusted-R^2	0.253	0.151	0.316	0.119	0.125	0.062
F-value	10.908[a]	6.215[a]	14.481[a]	14.593[a]	15.461[a]	50.761[a]

Supplementary results

Table A1

Cross-sectional regressions of annual ROA variability on MLS and other control variables

This table presents the results of cross-sectional regressions of annual return on assets (ROA) variability on MLS and other control variables. The dependent variable is the standard deviation of annual ROA over the period 2003-2007. All the independent variables are averaged over the same period. MLSD is a dummy variable that equals 1 if the firm has at least two large shareholders and 0 otherwise. MLSN is the number of large shareholders, other than the largest controlling shareholder (LCS), up to the fourth. VR234 is the sum of voting rights of the second, third and fourth largest shareholders. VRRATIO is the sum of voting rights of the second, third and fourth largest blockholders divided by the voting rights of the LCS. HERFINDHAL equals the sum of squared differences between the voting rights of the four largest shareholders, that is, $(VR1 - VR2)^2 + (VR2 - VR3)^2 + (VR3 - VR4)^2$; where VR1, VR2, VR3 and VR4 equal the voting rights of the first, second, third and fourth largest shareholders, respectively. EC1 is the excess control of the largest controlling shareholder. SIZE equals the natural logarithm of total assets. Firm's age (AGE) equals the number of years since its first date of incorporation. The number of years since the first date of incorporation is capped at 100. The financial leverage (LEVERAGE) is calculated as the ratio of firm's total debt over assets. GROPPORT is the firm's capital expenditures divided by sales. DIVERSIFICATION equals the number of business segments. Heteroskedasticity-robust *t*-statistics are in parentheses. The subscripts c, b and a denote statistical significance at the 10%, 5% and 1% level, respectively.

Variable	Specification 1	Specification 2	Specification 3	Specification 4	Specification 5
MLSD	1.65870[a]				
	(3.157)				
MLSN		1.05092[a]			
		(2.721)			
VR234			8.19680[a]		
			(4.001)		
VRRATIO				2.61800[a]	
				(4.327)	
HERFINDHAL					-4.83255[a]
					(-5.035)
EC1	-2.94740[a]	-3.06061[a]	-3.27842[a]	-3.60551[a]	-3.77521[a]
	(-2.818)	(-2.934)	(-3.079)	(-3.311)	(-3.437)
SIZE	-0.87702[a]	-0.87077[a]	-0.86322[a]	-0.90756[a]	-0.97390[a]
	(-6.983)	(-6.884)	(-6.929)	(-7.390)	(-7.942)
GROPPORT	0.00198[a]	0.00196[a]	0.00202[a]	0.00200[a]	0.00221[a]
	(6.631)	(6.742)	(6.821)	(6.860)	(6.704)
AGE	-0.00598	-0.00615[c]	-0.00582	-0.00505	-0.00542
	(-1.632)	(-1.681)	(-1.598)	(-1.408)	(-1.500)
LEVERAGE	3.95585[a]	3.82012[a]	3.75738[a]	3.75430[a]	3.80410[a]
	(2.702)	(2.6034)	(2.615)	(2.594)	(2.633)
DIVERSIFICATION	-0.02844	-0.03766	0.00232	0.04160	-0.01222
	(-0.123)	(-0.162)	(0.010)	(0.182)	(-0.053)
Constant	14.03722[a]	14.24975[a]	13.44900[a]	14.23978[a]	17.15961[a]
	(8.853)	(8.989)	(8.603)	(9.229)	(10.839)
Fixed effects included	Industry	Industry	Industry	Industry	Industry
Sample size	525	525	525	525	525
Adjusted-R^2	0.221	0.217	0.230	0.238	0.240
F-value	9.288[a]	9.102[a]	9.714[a]	10.102[a]	10.217[a]

Table A2

Cross-sectional regressions of Tobin's Q variability on MLS and other control variables

This table presents the results of cross-sectional regressions of Tobin's Q variability on MLS and other control variables. The dependent variable is the standard deviation of annual Tobin's Q over the period 2003-2007. All the independent variables are averaged over the same period. MLSD is a dummy variable that equals 1 if the firm has at least two large shareholders and 0 otherwise. MLSN is the number of large shareholders, other than the largest controlling shareholder (LCS), up to the fourth. VR234 is the sum of voting rights of the second, third and fourth largest shareholders. VRRATIO is the sum of voting rights of the second, third and fourth largest blockholders divided by the voting rights of the LCS. HERFINDHAL equals the sum of squared differences between the voting rights of the four largest shareholders, that is, $(VR1 - VR2)^2 + (VR2 - VR3)^2 + (VR3 - VR4)^2$; where VR1, VR2, VR3 and VR4 equal the voting rights of the first, second, third and fourth largest shareholders, respectively. EC1 is the excess control of the largest controlling shareholder. SIZE equals the natural logarithm of total assets. Firm's age (AGE) equals the number of years since its first date of incorporation. The number of years since the first date of incorporation is capped at 100. The financial leverage (LEVERAGE) is calculated as the ratio of firm's total debt over assets. GROPPORT is the firm's capital expenditures divided by sales. DIVERSIFICATION equals the number of business segments. Heteroskedasticity-robust *t*-statistics are in parentheses. The subscripts c, b and a denote statistical significance at the 10%, 5% and 1% level, respectively.

Variable	Specification 1	Specification 2	Specification 3	Specification 4	Specification 5
MLSD	0.07772[a]				
	(2.828)				
MLSN		0.05472[a]			
		(2.813)			
VR234			0.31736[a]		
			(3.030)		
VRRATIO				0.10431[a]	
				(3.316)	
HERFINDHAL					-0.18990[a]
					(-3.645)
EC1	-0.11602[c]	-0.12594[b]	-0.12256[b]	-0.13683[b]	-0.14272[b]
	(-1.944)	(-2.155)	(-2.033)	(-2.230)	(-2.217)
SIZE	-0.02395[a]	-0.02331[a]	-0.02389[a]	-0.02558[a]	-0.0282[a]
	(-3.603)	(-3.457)	(-3.622)	(-3.907)	(-4.396)
GROPPORT	0.00012[a]	0.00012[a]	0.00012[a]	0.00012[a]	0.00013[a]
	(9.013)	(8.777)	(9.155)	(8.786)	(10.065)
AGE	-0.00035	-0.00035	-0.00035	-0.00032	-0.00033
	(-1.549)	(-1.550)	(-1.557)	(1.408)	(-1.461)
LEVERAGE	-0.04099	-0.04720	-0.05002	-0.05018	-0.04820
	(-0.412)	(-0.474)	(-0.507)	(-0.504)	(-0.492)
DIVERSIFICATION	0.00513	0.00480	0.00609	0.00772	0.00555
	(0.400)	(0.374)	(0.475)	(0.602)	(0.436)
Constant	0.57274[a]	0.57684[a]	0.56082[a]	0.59016[a]	0.70552[a]
	(6.597)	(6.625)	(6.462)	(6.926)	(8.151)
Fixed effects included	Industry	Industry	Industry	Industry	Industry
Sample size	525	525	525	525	525
Adjusted-R^2	0.141	0.141	0.142	0.148	0.148
F-value	5.815[a]	5.789[a]	5.833[a]	6.057[a]	6.089[a]

Table A3

Cross-sectional regressions of monthly stock return variability on MLS and other control variables

This table presents the results of cross-sectional regressions of monthly stock return variability on MLS and other control variables. The dependent variable is the standard deviation of monthly stock returns over the period 2003-2007. All the independent variables are averaged over the same period. MLSD is a dummy variable that equals 1 if the firm has at least two large shareholders and 0 otherwise. MLSN is the number of large shareholders, other than the largest controlling shareholder (LCS), up to the fourth. VR234 is the sum of voting rights of the second, third and fourth largest shareholders. VRRATIO is the sum of voting rights of the second, third and fourth largest blockholders divided by the voting rights of the LCS. HERFINDHAL equals the sum of squared differences between the voting rights of the four largest shareholders, that is, $(VR1 - VR2)^2 + (VR2 - VR3)^2 + (VR3 - VR4)^2$; where VR1, VR2, VR3 and VR4 equal the voting rights of the first, second, third and fourth largest shareholders, respectively. EC1 is the excess control of the largest controlling shareholder. SIZE equals the natural logarithm of total assets. Firm's age (AGE) equals the number of years since its first date of incorporation. The number of years since the first date of incorporation is capped at 100. The financial leverage (LEVERAGE) is calculated as the ratio of firm's total debt over assets. GROPPORT is the firm's capital expenditures divided by sales. DIVERSIFICATION equals the number of business segments. Heteroskedasticity-robust *t*-statistics are in parentheses. The subscripts c, b and a denote statistical significance at the 10%, 5% and 1% level, respectively

Variable	Specification 1	Specification 2	Specification 3	Specification 4	Specification 5
MLSD	0.00821[c]				
	(1.723)				
MLSN		0.00708[b]			
		(2.033)			
VR234			0.04310[b]		
			(2.412)		
VRRATIO				0.01715[a]	
				(3.285)	
HERFINDHAL					-0.04667[a]
					(-5.076)
EC1	-0.03457[a]	-0.03671[a]	-0.03655[a]	-0.04011[a]	-0.04619[a]
	(-2.967)	(-3.068)	(-3.138)	(-3.422)	(-3.925)
SIZE	-0.01029[a]	-0.01014[a]	-0.01020[a]	-0.01039[a]	-0.01094[a]
	(-8.911)	(-8.792)	(-8.924)	(-9.104)	(-9.756)
GROPPORT	0.00002[a]	0.00002[a]	0.00002[a]	0.00002[a]	0.00003[a]
	(8.263)	(8.455)	(8.311)	(8.491)	(7.841)
AGE	-0.00012[a]	-0.00012[a]	-0.00012[a]	-0.00011[a]	-0.00010[a]
	(-3.151)	(-3.130)	(-3.150)	(-2.990)	(-2.907)
LEVERAGE	0.07667[a]	0.07605[a]	0.07568[a]	0.07561[a]	0.07598[a]
	(5.503)	(5.433)	(5.411)	(5.421)	(5.544)
DIVERSIFICATION	0.00246	0.00245	0.00263	0.00297	0.00276
	(1.185)	(1.178)	(1.268)	(1.442)	(1.332)
Constant	0.19686[a]	0.19592[a]	0.19337[a]	0.19606[a]	0.22075[a]
	(9.797)	(9.749)	(9.514)	(9.764)	(10.798)
Fixed effects included	Industry	Industry	Industry	Industry	Industry
Sample size	525	525	525	525	525
Adjusted-R^2	0.293	0.295	0.296	0.303	0.319
F-value	13.119[a]	13.212[a]	13.272[a]	13.655[a]	14.692[a]