Large shareholders and firm risk-taking behavior

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Research Question/Issue:
The largest controlling shareholder (LCS) has various incentives to restrain corporate risk-taking. However, other blockholders may have the power to mitigate this distortion, thus resulting in higher corporate risk-taking. We investigate whether this is the case using hand-collected ownership data on French publicly-listed firms over the period 2003-2007.

Research Findings/Results:
We show that the presence of a single LCS is associated with lesser variability in operating performance (ROA), market value (Tobin's Q) and stock returns, especially when the divergence between the LCS's control rights and cash-flow rights is large. In contrast, the presence, number and voting power of multiple large shareholders (MLS), other than the LCS, are associated with greater variability in firm performance. This effect is found to be concentrated in family-controlled firms.

Theoretical Implications:
The results suggest that the LCS has strong incentives to select lower-risk investments in order to protect her future extraction of private benefits. However, MLS are found to be effective in preventing the LCS from imposing her preference for low-risk projects. By contesting the control of the LCS, MLS are confirmed to play an important role in corporate governance. Their monitoring role can be viewed as protecting the interests of minority shareholders.

Practical Implications:
The LCS may choose to reject value-enhancing risky investments to safeguard her private benefits of control. This exposes minority shareholders to potential expropriation problems. Firms with MLS display a greater ability to undertake speculative investments, which may explain why they achieve higher performance, particularly in family-controlled firms. Equity investors should favor firms in which the distribution of control is more balanced.

Keywords: risk-taking, ownership structure, benefit of control, contestability, corporate governance

INTRODUCTION

Recent corporate governance literature highlights the prevalence of closely-held firms around the world, especially outside the US and the UK (Claessens, Djankov, Fan & Lang, 2002; Faccio & Lang, 2002; La Porta, Lopez-de-Silanes & Shleifer, 1999). 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 (Grossman & Hart, 1988; Harris & Raviv, 1988). A number of empirical studies emphasize the agency costs caused by the largest controlling shareholder (LCS). For instance, Bae, Kang and Kim (2002) and Bertrand, Mehta and Mullainathan (2002) establish that LCSs tunnel resources out of firms. Other studies examine the impact of controlling shareholders on firm values (Claessens, Djankov, Fan & Lang, 2002; Cronqvist & Nilsson, 2003; Lemmon & Lins, 2003), on the informativeness of the firm's earnings (Fan & Wong, 2002), on information asymmetry and stock liquidity (Attig, Fong, Gadhoum & Lang, 2006), on the extent of analyst following (Boubaker & Labégorre, 2008), on the costs of equity capital and corporate borrowing (Guedhami & Mishra, 2009; Lin, Ma, Malatesta & Xuan, 2011).

Beside the LCS, other blockholders are generally present. La Porta, Lopez-de-Silanes and Shleifer (1999) indicate that about 25% of the firms in their sample of 600 publicly traded firms across 27 countries have multiple large shareholders (MLS). Focusing on East Asia, Claessens, Djankov and Lang (2000) find that 32.2% of the firms have more than one large shareholder. Faccio and Lang (2002) note that 39% of Western European firms have at least two blockholders (at the 10% threshold) of which 41% have at least three blockholders. Likewise, Laeven and Levine (2008) examine a sample of 1,657 European firms and show that 34% have at least two large blockholders. Boubaker (2007) also finds that MLS are present in 34% of French publicly-listed firms. These blockholders play an important role in the firm's governance by monitoring the LCS (Bolton & Von Thaden, 1998; Pagano & Roëll, 1998) and competing for control (Bloch & Hege, 2001).

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 policies. For instance, Maury and Pajuste (2005) and Attig, El Ghoul and Guedhami (2009) establish that MLS are associated with higher market values in Finland and East Asia, respectively. 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, Lang and Young (2001) note that the presence of MLS is associated with higher dividend payouts. Attig, Guedhami and Mishra (2008) examine the effect on the firm's cost of equity. Using data for 1,165 East Asian and Western European corporations, their study reveals 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 large shareholders on corporate risk-taking. We argue that, in the absence of other blockholders, the control of the LCS is unimpeded and this generally induces firms to take less risk. One argument put forward by John, Litov and Yeung (2008) is that LCSs are likely to be under-diversified, especially if they represent an individual or a family. Given that most of their wealth is tied to the firm, these shareholders will prefer to select prudent strategies even though this could undermine the firm's performance. Maximizing the firm's value is not a prime concern because their objective is not to achieve capital gains, but rather to extract 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 might have to pass up the share issue, which would dilute her stake and possibly weaken her control over the firm. Because control is the main objective, the LCS will display a strong propensity to avoid risk. However, other blockholders should have a positive influence on the firm's risk-taking. For instance, institutional investors are likely to be more diversified and focused on achieving the highest 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 be associated with higher risk.

Using a hand-collected sample of 2,210 firm-year observations representing 525 French publicly-listed firms over the period 2003-2007, we show that excess control, represented by the difference between the control and cash-flow rights of the LCS, leads to lower risk-taking. This supports the view that the LCS tends to spurn risk out of concern for her future private benefits. 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 by counterbalancing the overly conservative behavior promoted by the LCS. For this reason, MLS can be viewed as protecting the interests of minority shareholders.

Our results regarding French firms complement those of Mishra (2011) who examines the risk-taking behavior of a sample of firms in East Asia 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 fairly 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 (Claessens, Djankov, Fan & Lang, 2002; La Porta, Lopez-de-Silanes & Shleifer, 1999). Although family control is also pervasive in France, it tends to be concentrated on individual firms rather than entire business groups. 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, El Ghoul & Guedhami, 2009). Other indicators of power concentration such as the Herfindahl index and Shapley value suggest that the control of the LCS may not be easily challenged. Yet, our empirical evidence confirms the ability of MLS to counter the LCS's influence on the firm's risk-taking policy.

Our findings are more robust for a number of reasons. First, we follow the methodology pioneered by Adams, Almeida and Ferreira (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 regressions instead of relying on a cross-sectional analysis. Last, but not least, our sample period is more representative since it does not involve any major financial crisis. In many respects, this is more sensible. 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 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 obviously incorrect). Extending the tests and providing evidence from a different period and context was therefore essential to increase confidence in Mishra's results.

Furthermore, we show that the LCS's negative influence on corporate risk-taking occurs primarily in family-controlled firms. This result is unsurprising given the fact that family firm

owners are more likely to extract substantial private benefits of control, for example through employment of family members and private use of company assets. Family-firm owners also tend to be under-diversified since most of their wealth is invested in the company. As a result, their incentives to reduce risk-taking are stronger since they would be particularly hard hit by the company's failure (Naldi, Nordqvist, Sjöberg & Wiklund, 2007). In addition, family firm owners are usually financially-constrained and would find it impossible to provide fresh capital to prop up the firm should it experience financial troubles. In that event, the firm would need to raise equity externally, thus diluting the shares and weakening the LCS's grip over the firm. However, concerns over control loss have been proved to explain why family firms prefer to raise funds using debt rather than equity (Croci, Doukas & Gonenc, 2011) and why they also prefer to pay acquisitions in cash rather than exchanging shares (Basu, Dimitrova & Paeglis, 2009). It follows that the LCS should be particularly reluctant to select risky projects; thus resulting in the family firm's low-risk profile. In turn, these more significant distortions explain why MLS have a greater impact in family firms as opposed to non-family firms.

By documenting the negative influence of the LCS and the positive role played by MLS, this study contributes to the existing literature on corporate risk-taking. Prior studies have established the influence of managerial ownership (Denis, Denis & Sarin 1997; Chen & Steiner, 1999), managerial compensation (Coles, Daniel & Naveen, 2006; Guay, 1999; Rajgopal & Shevlin, 2002; Wright, Kroll, Krug & Pettus, 2007), board size (Cheng, 2008; Nakano & Nguyen, 2012), CEO power (Adams, Almeida & Ferreira, 2005; Lewellyn & Muller-Kahle, 2012), investor protection (John, Litov & Yeung, 2008) and creditor rights (Acharya, Amihud & Litov, 2011). Together with Mishra (2011), we add to this line of research by showing that MLS are also a key determinant of 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 (Attig, El Ghoul & Guedhami, 2009; Jara-Bertin, Lopez-Iturriaga & Lopez-de-Foronda, 2008; Laeven & Levine, 2008; Maury & Pajuste, 2005) and decrease the cost of equity capital (Attig, Guedhami & Mishra, 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 favor of riskier value-enhancing projects).

The remainder of the paper proceeds as follows. In the next section, we discuss the link between ownership structure and corporate risk-taking. The following section is dedicated to a description of the sample. We then present the methodology employed in this study. The next section contains the empirical results. The last section concludes.

REVIEW AND HYPOTHESES

In this section, we review the relevant literature and outline the implications arising from ownership structures where the LCS has excessive power over minority shareholders. We then draw the consequence of the presence of other blockholders (or MLS) with sufficient voting power to counter the influence of the LCS.

Risk-Taking with a Single Large Shareholder

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, Kraakman & Triantis, 2000). For instance, Claessens, Djankov and Lang (2000) find that, in nine East Asian countries, ultimate owners frequently achieve control in excess of their ownership rights through pyramid structures and cross-holdings. Faccio and Lang (2002) report a similar result for Western European countries. These mechanisms allow LCSs to secure control over a firm despite holding a relatively small fraction of its cash-flow rights. Bebchuk, Kraakman and Triantis (2000) argue that this separation creates incentives for LCSs to extract private benefits of control at the expense of minority shareholders. Similarly, La Porta, Lopez-de-Silanes and Shleifer (1999) suggest that the main agency problem in publicly traded firms stems from the separation between ownership and control of the controlling shareholders. The higher the amount of private benefits LCSs can expect to extract, the more eager they will be to protect these benefits (John, Litov & Yeung 2008). It follows that LCSs are likely to steer corporate investments towards low-risk projects.

Another argument suggested by John, Litov and Yeung (2008) is that the controlling blockholder is likely to be *under-diversified*. One particular case is when the LCS represents 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. Faccio, Marchica and Mura (2011) show that firms controlled by under-diversified large shareholders are likely to select less risky projects compared to diversified large shareholders. Financial

institutions represent a different 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 high 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 most of their wealth in the company in order to retain control. In addition, other control mechanisms, such as the use of pyramids and dual-class shares, 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 hostile to external equity raisings because this could dilute their control considering the fact that they may not be able to contribute the funds to maintain their share of voting rights (Croci, Doukas & Gonenc, 2011). To avoid the risk of being forced to lose control, they are likely to support low risk corporate policies. Furthermore, because the firm will mostly rely on internal cash-flows to fund its investments, it has every reason to select low-risk projects to ensure a more stable stream of internal cash-flows.

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

Hypothesis 1: Firms with a LCS (no MLS) are characterized by lower corporate risk-taking.

It is possible in fact to articulate a more precise statement. When the ultimate control and cash-flow rights of the LCS are highly divergent, the latter becomes deeply entrenched and is more likely to extract large private benefits of control. Claessens, Djankov, Fan and Lang (2002) and Lemmon and Lins (2003) show evidence that greater deviations of control from cash-flow rights lower firm values in Asian countries. Dyck and Zingales (2004) and Villalonga and Amit (2006) come to a similar conclusion. The higher the private benefits of control, the more eager the LCS will be to protect these benefits (John, Litov & Yeung, 2008). In that case, the LCS is expected to tip the firm toward suboptimal risk-taking as a way to safeguard her consumption of private benefits. Moreover, 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 her wealth is under-diversified. From this situation, it follows that the wedge between control and cash-flow rights should be negatively related to the firm's risk-taking. We express this idea in our second hypothesis:

Hypothesis 2: Greater divergence between the control and cash-flow rights of the LCS is associated with lower corporate risk-taking.

Risk-Taking with Multiple Large Shareholders

The presence of MLS that engage in monitoring activities offers a protection to minority shareholders because MLS have both the incentives and power to moderate the diversion of corporate resources by the dominant owner (e.g., Bolton & Von Thaden, 1998; Pagano & Roëll, 1998; Winton, 1993). 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 (Attig, El Ghoul & Guedhami, 2009; Jara-Bertin, Lopez-Iturriaga & Lopez-de-Foronda, 2008; Laeven & Levine, 2008; Maury & Pajuste, 2005). Since minority shareholders are better protected against expropriation, they also require a lower return on equity (Attig, Guedhami & Mishra, 2008).

One way by which the LCS can protect her private benefits of control is by rejecting positive net present value (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 her under-diversified wealth) and because control offers private benefits that are not shared with other shareholders. Being powerless to counter the influence of the LCS, minority shareholders have no means to protect their interests but to mark down the firm's value and require a higher return on their equity capital. The presence of MLS shifts the balance of power in their favor and reduces the propensity of the firm to select low-risk projects (preferred by the LCS). As a result, the firm is more likely to undertake riskier investments that tend to be more valuable. Ultimately, these decisions should be reflected in higher corporate values (Attig, El Ghoul & Guedhami, 2009; Jara-Bertin, Lopez-Iturriaga & Lopez-de-Foronda, 2008; Laeven & Levine, 2008; Maury & Pajuste, 2005).

Accordingly, the above arguments suggest the following hypothesis:

Hypothesis 3: The presence, number and voting power of MLS are associated with higher corporate risk-taking.

Mishra (2011) tests this hypothesis using a sample of East Asian firms. Because ownership is 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 regular period for testing the relationship between MLS and risk-taking.

Nonetheless, Hypothesis 3 appears to be firmly grounded and Mishra's results may not be simply due to 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 & Yafeh, 1998).

DATA AND VARIABLES

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

Sample Selection

The initial sample consists of all French listed firms appearing in the Worldscope database over the period 2003-2007. We exclude from the sample: (1) financial firms with a two-digit SIC code between 6000 and 6999, (2) firms with less than two usable observations for the whole sample period, (3) widely held firms where there is no controlling shareholder with more than 10% of the voting rights, (4) firms 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 taken from the firm's annual reports. Financial data are from Worldscope, stock return, while monthly market returns (SBF 250 index) are sourced from Datastream.

Ultimate Ownership and Control Rights of the LCS

For each firm in our sample, we compute the ultimate cash-flow rights (UCF) and the ultimate control rights (UCO) of the LCS 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, Djankov, Fan & Lang, 2002). Finally, we use all ownership and control chains to compute the ultimate owner's UCF and UCO. Following Claessens, Djankov, Fan and Lang (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 owned directly by another firm A that holds 60% of its cash-flow rights and control 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 control 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 (control) 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, $UCF_{Family,B}$, equals the sum of products of direct cash-flow rights along the different ownership chains; that is, $UCF_{Family,B} = (O_{Family,A} \times O_{A,B}) + O_{Family,B} = 35\%$. Its ultimate control 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, $EC_{Family,B} = (UCO_{Family,B} - UCF_{Family,B}) / UCO_{Family,B} = 50\%$.

Definition of Variables

We proxy for the degree of separation between the ultimate control and cash-flow rights of the LCS using excess control (EXCESS CONTROL). This variable is defined as the difference between the LCS's ultimate control and cash-flow rights, divided by her ultimate control rights (i.e., (UCO – UCF) / UCO). Consistent with Attig, Guedhami and Mishra

(2008), we define several variables reflecting the presence, number and voting size of MLS. 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, Lopez-de-Silanes, Shleifer & Vishny, 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 Herfindahl index (HERFINDAHL) calculated as follows:

$$\text{HERFINDAHL} = (\text{VR1} - \text{VR2})^2 + (\text{VR2} - \text{VR3})^2 + (\text{VR3} - \text{VR4})^2 \qquad (1)$$

where VR1, VR2, VR3 and VR4 equal the voting rights of the first, second, third and fourth largest shareholders, respectively. Higher values for the index imply a lower control contestability of the LCS.

For each firm, we also compute the following variables: size (SIZE) is measured by the natural logarithm of total assets, growth opportunities (GROPPORT) are measured by capital expenditures divided by sales, age (AGE) is equal to the number of years since the firm's first date of incorporation, financial leverage (LEVERAGE) is proxied by the ratio of total debt over total assets; and diversification (DIVERSIFICATION) is equal to the number of business segments in which the firm operates (using two-digit SIC codes). Appendix A provides the definitions and data sources for the variables used in this study.

Summary Statistics

Table 1 shows the distribution of the 2,210 firm-year observations across industries and years. Firms 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 proportion of the sample with only 0.59% of all firm-year observations. Table 1 also shows that firms are evenly distributed across the sample period.

Table 2 provides descriptive statistics for the ownership variables and firm characteristics. It shows that a significant proportion of all firms exhibit a separation between the UCO and UCF of their controlling owners. This separation leads to a mean excess control (EXCESS CONTROL) of 20.750% and suggests that firms in our sample are, in general, vulnerable to

agency conflicts between the LCS and minority shareholders. MLS are present in almost 38% of the firms (2,210 firm-year observations). This finding is consistent with Faccio & Lang (2002) who report 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.

EMPIRICAL DESIGN

Consistent with Adams, Almeida and Ferreira (2005) we measure corporate risk-taking by the deviation of performance from its expected value. This procedure, commonly known as Glejser (1969) heteroskedasticity test, presents the advantage of preserving the panel structure of the data. In comparison, the standard deviation of performance used by Cheng (2008) has the consequence of collapsing the panel data into a single cross-section. Nevertheless, we describe both methods, but use the latter mainly for sensitivity checks. Three measures of performance are involved. The first is return on assets (ROA), defined as the ratio of earnings before interest and taxes to the book value of assets at the beginning of the year. The second is Tobin's Q, proxied by the market-to-book value of assets. The third measure is represented by monthly stock returns.

Glejser Heteroskedasticity Tests

The procedure involves two steps. The first step requires a model of firm performance in order to determine its expected value. For ROA and Tobin's Q, we consider the following models using firm-year observations (the subscripts are dropped for notational convenience):

$$\begin{aligned} ROA = {} & \alpha_0 + \alpha_1 \, EXCESS\ CONTROL + \alpha_2 \, MLSVAR + \alpha_3 \, SIZE + \alpha_4 \, GROPPORT + \alpha_5 \, AGE \\ & + \alpha_6 \, LEVERAGE + \alpha_7 \, DIVERSIFICATION + \sum INDUSTRY + \sum YEAR + u \end{aligned} \quad (2)$$

$$\begin{aligned} Q = {} & \alpha_0 + \alpha_1 \, EXCESS\ CONTROL + \alpha_2 \, MLSVAR + \alpha_3 \, SIZE + \alpha_4 \, GROPPORT + \alpha_5 \, AGE \\ & + \alpha_6 \, LEVERAGE + \alpha_7 \, DIVERSIFICATION + \alpha_8 \, ROA + \alpha_9 \, ROA_{t-1} \\ & + \sum INDUSTRY + \sum YEAR + u \end{aligned} \quad (3)$$

MLSVAR equals MLSD, MLSN, VR234, VRRATIO or HERFINDAHL, while INDUSTRY (YEAR) denotes a vector of two-digit SIC industry dummies (year dummies). To predict monthly stock returns, we use the standard market model:

$$R = \beta M + u \tag{4}$$

where M is the return on the market portfolio (proxied by the SBF 250 index).

In the second step, we run the following regression:

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

where the dependent variable, $|\hat{u}|$, is the absolute value of the residuals from equations 2-4. Note that when we use the residuals from equations 2-3 (equation 4), the variable YM is a vector of year (month) dummies. Equation 5 is estimated using OLS regressions with cluster effects at the firm level. We do not use fixed firm effects because, for most firms, ownership structure changes slowly over time. In that case, it is likely that the fixed effects estimator would fail to detect the influence of excess control and MLS on corporate risk-taking, even if it actually exists (Adams, Almeida & Ferreira, 2005; Zhou, 2001).

Within-Firm Performance Variability

Following Cheng (2008) we define within-firm over-time performance variability as the standard deviation of performance for each firm and over the whole sample period. We then run the following cross-sectional regression:

$$\text{RISKTAKING} = \alpha_0 + \alpha_1 \text{EXCESS CONTROL} + \alpha_2 \text{MLSVAR} + \alpha_3 \text{SIZE} + \alpha_4 \text{GROPPORT} + \alpha_5 \text{AGE} + \alpha_6 \text{LEVERAGE} + \alpha_7 \text{DIVERSIFICATION} + \sum \text{INDUSTRY} + u \tag{6}$$

where RISKTAKING is the standard deviation of ROA, Tobin's Q or monthly stock return over the sample period. EXCESS CONTROL is the excess control of the LCS. MLSVAR represents MLSD, MLSN, VR234, VRRATIO or HERFINDAHL. All these ownership variables are averaged over the sample period. Firm size (SIZE), growth opportunities (GROPPORT), firm age (AGE), financial leverage (LEVERAGE) and diversification (DIVERSIFICATION) are also averaged over the same period. Older, larger and more diversified firms are expected to exhibit lower performance variability. For example, larger firms are able to diversify across products and geographic markets; which decreases their performance variability. INDUSTRY denotes a vector of industry dummies.

RESULTS

We open this section by carrying out a simple univariate analysis before presenting the main results consisting of Glejser heteroskedasticity tests. A number of sensitivity checks follow. We complete the analysis by distinguishing family and non-family firms.

Univariate Analysis

Table 3 reports the Pearson and Spearman correlation coefficients between the variables in the cross-section. As expected, the three indicators of risk-taking measured by the standard deviation of ROA, Tobin's Q and stock returns are strongly correlated. This result indicates that firms with more volatile operating profits (ROA) are characterized by more volatile market values and stock returns. In turn, the wedge between control rights and cash-flow rights (EXCESS CONTROL) tends to be associated with lower risk-taking. However, this (negative) correlation does not appear to be highly significant. Hence, Hypothesis 2 is only weakly validated by the univariate analysis. On the other hand, the indicators of risk are positively correlated with the presence (MLSD), number (MLSN), and voting power of MLS (VR234 and VRRATIO) whereas their lack of power to contest the LCS (HERFINDAHL) is associated with lower risk-taking. These findings lend preliminary support to Hypothesis 3.

The correlation between the other variables is consistent with the relationships documented in literature. For instance, older firms tend to be larger and more diversified. Larger, older and more diversified firms are characterized by significantly lower risk-taking indicators. In contrast, 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 economically significant role played by MLS, Table 4 displays the difference in risk-taking between firms where MLS are present and have sufficient power to contest the preferences of the LCS and firms where MLS are absent or have little power. The median value of the relevant variables is used to determine the cut-off point. All the results are consistent with the view that MLS contribute to mitigate the preference of the LCS for lower risk. For instance, Panel A shows that 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 4.63%. This volatility reaches about 6.90% 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, Panel B and C show that the volatility of Tobin's Q and monthly stock returns is much lower when firms have only one LCS or when the other blockholders control a relatively small proportion of the total votes. The average volatility of 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 stock return volatility of about 10% when the LCS is unchallenged and slightly under 12% when the LCS must compromise with the other blockholders.

The comparison of absolute deviation relative to expected performance in Panels D to F confirms that firms with a single LCS take significantly less risk while the presence and relative power of other blockholders besides the LCS are associated with significantly higher risk. For instance, the absolute deviation of ROA is 6.163% when the LCS is the only blockholder, but jumps to 7.517% (a 22% increase) when MLS are present. Similarly, the absolute deviation of Tobin's Q increases from 0.315 to 0.394 (a 25% increase) when other blockholders are able to contest the influence of the LCS.

Glejser Heteroskedasticity Tests

The results for Glejser heteroskedasticity tests are reported in separate tables for each performance measure. Table 5 shows that when the power of the LCS is unimpeded by the presence of other blockholders, firms tend to take significantly less risk as indicated by the less significant deviation of ROA from its expected value (or greater predictability in the firm's operating performance). This behavior is in line with hypothesis 1 and supports the prediction that the LCS prefers to take less risk because of the private benefits she tries to preserve, due to her 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 EXCESS CONTROL which captures the wedge between the control 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 undesirable. It follows that the LCS has a strong incentive to reduce the firm's risk-taking.

By contrast, the results suggest that the absolute deviation of ROA relative to its expected value is about 0.9% higher and significant at the 1% level when firms have more than one blockholder (regression 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.

The other regressions confirm the role of MLS in determining corporate risk-taking. The number of blockholders beside the LCS (regression 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 (regressions 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 found in most empirical studies. Consistent with Adams, Almeida and Ferreira (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 on 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, Almeida & Ferreira, 2005; Cheng, 2008).

Table 6 presents the results of Glejser heteroskedasticity tests using Tobin's Q as indicator of performance. Compared to the results with ROA, the coefficients on the ownership variables tend to exhibit higher statistical significance and all they have the anticipated signs. Regression 1 demonstrates that the absence of MLS leads necessarily to lower risk-taking with a difference of about 6.5%. Consistent with hypothesis 2, the coefficients on EXCESS CONTROL − indicating a greater control by the LCS relative to her actual ownership − is significantly negative. Thus the greater stability in operating performance apparent in the previous table is confirmed with 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 (ROA) variability. However, the presence of other blockholders beside the LCS contributes 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 other conclusions derived from the predictability of operating performance (ROA) are confirmed using Tobin's Q. A higher percentage of voting rights in the hands of other blockholders (regression 3), especially relative to the voting rights of the LCS (regression 4), is associated with a lower predictability in firm value. In contrast, the lack of power of MLS to contest the LCS's stranglehold on the firm's policy (regression 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 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, Almeida & Ferreira, 2005).

In Table 7, we turn our attention to the predictability of stock returns (conditional on the market's realized return and the firm's fitted beta). The results are consistent with those reported for the two previous performance measures. The absence of other blockholders appears to allow the LCS to push the firm to take less risk. The incentive to decrease risk is strongly related to the divergence between the control and cash-flow rights (EXCESS CONTROL) 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 (using the market model). Again, the presence of another blockholder is associated with significantly higher deviation of stock 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.

Robustness Tests

We test the robustness of our results by running several sensitivity checks. First, we use a cross-sectional approach (equation 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). The results are qualitatively similar to those obtained with Glejser heteroskedasticity tests.[1] In essence, the presence and voting power 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.[2]

In a second test, we construct an index of contestability of the LCS's power using principal component analysis (PCA). The index is a 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. The eigenvalue equals 3.729 and explains 74.60% of total variance. Columns 1-3 in Table 8 reveal that the constructed index enters positively and significantly at the 1% level in all of the regressions. This result confirms the strong connection between MLS and corporate risk-taking. Another proxy for the contestability of the LCS is 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". The relation between this variable and the proxies of corporate risk-taking is expected to be negative. Columns 4-6 in Table 8 show that the Shapley value enters negatively and significantly at the 1% level in all the regressions. Hence, the results provide additional evidence that higher contestability of the LCS's voting power by MLS is associated with higher corporate risk-taking.

We then address the potential endogeneity problem due to reverse causality between ownership structure and risk-taking. Previous research suggests that the ownership structure depends on the firm's valuation and contracting environment. For example, La Porta, Lopez-de-Silanes and Shleifer (1999) argue that that the domestic legal environment affects the ownership structure of firms. Demsetz and Lehn (1985, p.1155) underscore that "the structure of corporate ownership varies systematically in ways that are consistent with value maximization." Moreover, large shareholders may prefer to invest in low-risk firms with the view, for instance, of correcting their deviations from optimal risk-taking. Following

Cheng (2008), we address this potential endogeneity concern by running cross-sectional regressions using each firm's first valid observation over the whole period 2003-2007 for all the independent variables (EXCESS CONTROL, MLSVAR, AGE, SIZE, LEVERAGE, GROPPORT, and DIVERSIFICATION). By using this approach, we mitigate concerns that the variability of corporate risk-taking could foreshadow changes in the ownership structure variables. The (untabulated) results confirm the negative and statistically significant coefficient on EXCESS CONTROL. The coefficients for MLSD, MLSN, VR234 and VRRATIO (HERFINDAHL) are positive (negative) and significant at the 1% level. These findings suggest that endogeneity is not a serious concern and that causation is more likely to run from ownership structure to firm performance variability.[3]

Finally, 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.

Difference between Family and Non-Family Firms

The traditional agency conflict between managers and shareholders caused by differing managerial objectives is resolved in the case of family firms by the fact that family members are in charge of the firm's decision making.[4] On the other hand, the conflicts of interests between family owners and other shareholders are likely to be amplified (Jara-Bertin, Lopez-Iturriaga & Lopez-de-Foronda, 2008; Maury & Pajuste, 2005). One significant point of divergence involves the optimal level of risk-taking. As the LCS, family owners have strong incentives to decrease the firm's risk even though a higher level of risk would increase the firm's value. The reason for this suboptimal choice is because a failure of the company (as a consequence of higher risk-taking) would disproportionately hurt the family given that most of its wealth is typically invested in the firm's capital (Anderson & Reeb, 2003; Faccio, Marchica & Mura, 2011).

Since personal and business matters can be difficult to tell apart in family firms, family owners have greater incentives to indulge in the consumption of perquisites whose costs are mainly borne by other shareholders. A type of private benefits frequently extracted by family members is employment at lucrative conditions. The protection of such private benefits

implies that family owners will urge the company to adopt a lower risk profile, including if necessary by passing up valuable but risky investment opportunities.

In addition, family owners are likely to be financially constrained. The use of dual-class shares and pyramids is a reflection of their desire to strengthen their control without providing a large amount of the firm's capital. In fact, these control enhancement mechanisms are used to allow family owners to relax their financial constraints. At the same time, the situation suggests serious restrictions to their ability to contribute further capital to support the firm's growth. Because of their reluctance to surrender control by opening up the firm's capital to outside investors, family owners develop a preference for debt financing (Anderson & Reeb, 2003; Croci, Doukas & Gonenc, 2011). However, this choice implies that family firms have to select lower risk projects to maintain their debt capacity and comply with possible loan restrictions.

Furthermore, family owners are likely to recognize that in case the firm should experience a significant cash shortfall, they might be not be in a position to provide a backstop. This may thus put the firm at risk of failure or compel the firm to raise capital externally, which would dilute the family's ownership and potentially result in their loss of control (Du and Dai, 2005). Again, this argument suggests that the incentives for family owners to shun risk should be particularly strong.

By their presence and voting power, other blockholders may be able to resist the family's preferences for low risk investments. This is especially true if these blockholders are large institutions characterized by a diversified asset portfolio (Faccio, Marchica & Mura, 2011). In that case, risk is unlikely to enter the objective function but is more likely to represent one of the variables employed for maximizing return on investment. Hence, the greater the deviation from optimal risk-taking induced by family owners, the greater the opportunity for other blockholders to correct the deviation and lead firms toward higher risk-taking. Overall, we can expect Hypotheses 1-3 to strongly apply to the case of family firms.

In non-family firms, the LCS is generally a financial institution (e.g., investment bank or private equity firm). Due to their more diversified portfolios, these shareholders are not particularly concerned about taking risk, which is selected for its ability to generate optimal returns. Cash shortfalls arising from adverse risky outcomes can be offset by gains in other portfolio investments and are not feared as much as in family firms where they might lead to ruin or induce a loss of control. As a result, the LCS's impact on the firm's risk-taking is expected to be weak to indeterminate in non-family firms. In other words, deviations from

optimal risk-taking should not be systematically observed in relation to the presence of a LCS. It follows that other blockholders have little or no systematic opportunity to modify the firm's risk-taking behavior. Hence their influence on corporate risk-taking should also be weak to indeterminate.

To test the above predictions, we separate family and non-family firms in two groups. Family firms are identified as having a family as the LCS. Table 9 compares their mean values for the ownership variables and firm characteristics. Excess control is visibly higher in family firms (21.2% against 17.3%), which is consistent with the fact that family owners face financial constraints and are hence more likely to use control enhancing mechanisms to relax these constraints. Other blockholders are less likely to be present in family firms (37.1% against 41.7%), but the difference is not statistically significant. However, the large concentration of voting rights in the hands of the LCS combined with the weaker presence of other blockholders lead to a significantly higher Herfindahl index (0.29 against 0.16) in family firms. The performance indicators (ROA, Tobin's Q and stock returns) are not systematically different across the two groups. On the other hand, family firms are clearly smaller and less diversified, and exhibit lower rates of capital expenditures.

In Table 10, we evaluate the influence of MLS on the three risk-taking indicators (i.e. the absolute deviation from expected firm performance) for family and non-family firms. To conserve space, we only present the results for the variable (MLSD) indicating the presence of other blockholders since the results for the other variables (MLSN, VR234, VRRATIO and HERFINDAHL) convey a similar message.

In all the regressions, the coefficient on excess control is negative and highly significant for family firms, but indistinguishable from zero for non-family firms. The coefficient on MLSD is also systematically positive and significant for family firms, but close to zero for non-family firms. Taken together, the results suggest that the incentives to decrease risk arise primarily in family firms and could be exacerbated by financial constraints and larger private benefits of control (as indicated by a greater use of control enhancement mechanisms). However, the presence of other blockholders helps to mitigate this bias toward less risk-taking and is associated with a significant increase in risk. For instance, the absolute deviation of ROA is 1.07% higher when family firms have multiple blockholders.

In contrast, the presence of other blockholders appears to have no effect on the volatility of performance in non-family firms. This result seems to originate from the fact that the LCS does not restrain the firm's risk-taking behavior. Indeed, while the LCS tends to hold control

rights in excess of her cash-flow rights, this wedge is not associated with lower risk-taking because the LCS is not particularly under-diversified or financially-constrained as the LCS in family firms. Hence, other blockholders may not detect a specific need to intervene on the firm's risk-taking policy and therefore reveal a systematic pattern through their presence.

CONCLUSION

The presence of MLS is believed to promote better governance (Bloch & Hege, 2001; Bolton & Von Thaden, 1998; Pagano & Roëll, 1998) and to increase firm value (Attig, El Ghoul & Guedhami, 2009; Jara-Bertin, Lopez-Iturriaga & Lopez-de-Foronda, 2008; Laeven & Levine; 2008; Maury & Pajuste, 2005). The exact mechanism by which MLS enhance firm performance is, however, not clearly established. The conventional view is that MLS prevent the LCS from diverting corporate resources for her own benefit. Tunneling of cash-flows and related party transactions are typical examples, especially in emerging markets where the rule of law is often poorly enforced (Bae, Kang & Kim, 2002; Cheung, Rau & Stouraitis, 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 tend to be more valuable. Minority shareholders suffer from this inefficient allocation of resources. But the LCS can better protect her control of the firm and therefore the stream of private benefits she can derive from her controlling stake (John, Litov & Yeung, 2008). The presence of MLS helps to thwart this plan and is assumed 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 listed companies over the period 2003-2007. When MLS are absent or in a weaker position, 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 large. For instance, the average deviation from the firm's expected market value is found to be up to 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 her 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 willing to invest in these firms, as indicated by their lower cost of equity capital (Attig, Guedhami & Mishra, 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. 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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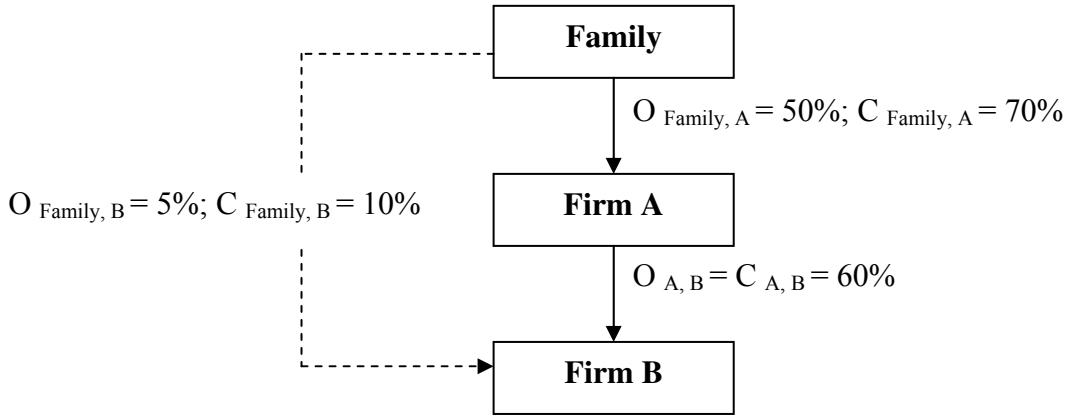
FIGURE 1



Example of ultimate cash-flow (UCF) rights and ultimate control (UCF) rights calculations in a three-tier pyramid. $O_{i,j}$ (C_{ij}) indicates the direct cash-flow (control) 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., $UCF_{Family,B} = (O_{Family,A} \times O_{A,B}) + O_{Family,A} = 35\%$. Its ultimate control 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., $((UCO_{Family,B} - UCF_{Family,B}) / UCO_{Family,B}) = 50\%$.

TABLE 1
Distribution of sample firms across industries and years

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	

Notes: This table shows the distribution of the 2,210 sample firm-year observations across industries and years, based on Campbell's (1996) industrial classification. Financial firms (SIC 60-69) are excluded. 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) and leisure (SIC 27, 58, 70, 78, 79).

TABLE 2
Summary statistics for ownership structure variables and firm characteristics

Variable	N	Mean	S.D.	Min.	25th percentile	Median	75th percentile	Max.
Panel A: Ownership structure variables								
EXCESS CONTROL (%)	2,210	20.750	20.547	-25.104	1.330	17.845	31.716	93.421
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
HERFINDAHL	2,210	0.272	0.251	0.000	0.057	0.195	0.428	0.906
Panel B: Firm characteristics								
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 (€ billion)	2,210	2.224	7.391	0.004	0.039	0.134	0.606	50.550
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

Notes: This table provides summary statistics for the ownership structure variables (Panel A) and firm charcteristics (Panel B). EXCESS CONTROL is the excess control of the largest controlling shareholder. MLSD is a dummy variable that equals one if the firm has at least two large shareholders, and zero 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. HERFINDAHL 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 return on assets, measured by the ratio of earnings before interest and taxes to the book value of assets at the beginning of the year. Tobin's Q is the ratio of market to book value of assets. The firm's age (AGE) is measured by the number of years since its first date of incorporation and capped at 100 years. Financial leverage (LEVERAGE) is the ratio of total debt over total assets. GROPPORT is the firm's capital expenditures divided by sales. DIVERSIFICATION is the number of business segments. 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.).

TABLE 3
Pearson and Spearman correlation coefficients between variables

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

Notes: This table reports Pearson (below the diagonal) and Spearman (above the diagonal) correlation between the regression variables used in the cross sectional regressions (model 6). The sample consists of 525 nonfinancial French listed firms over the period 2003-2007. S.D. of ROA, S.D. of Tobin's Q and S.D. of stock return are the standard deviations, over the sample period, of ROA, Tobin's Q and monthly stock return. ROA is the ratio of earnings before interest and taxes to the book value of assets at the beginning of the year. Tobin's Q is the market to book value of assets. SIZE is the natural logarithm of total assets. All the other variables are averaged over the sample period. EXCESS CONTROL is the excess control of the largest controlling shareholder. 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. HERFINDAHL is the sum of squared differences between the control 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. Firm age (AGE) is the number of years since the firm's first date of incorporation. Financial leverage (LEVERAGE) is the ratio of total debt over total assets. GROPPORT is capital expenditures divided by sales. DIVERSIFICATION is the number of business segments. **, * and † denote statistical significance at the 1%, 5% and 10% level.

TABLE 4
Difference in risk-taking by degree of contestability of the LCS

	Mean			Median		
	Low MLSVAR	High MLSVAR	t-statistic	Low MLSVAR	High MLSVAR	z-statistic
Panel A: Standard deviation of ROA						
MLSD	4.857	6.776	-4.310**	3.314	4.628	-3.790**
MLSN	4.956	6.776	-4.045**	3.314	4.628	-3.804**
VR234	4.635	6.899	-5.152**	3.171	4.651	-4.068**
VRRATIO	4.752	7.143	-5.346**	3.314	4.701	-3.806**
HERFINDAHL	6.446	4.663	3.960**	4.629	3.315	3.538**
Panel B: Standard deviation of Tobin's Q						
MLSD	0.251	0.340	-3.890**	0.177	0.259	-4.166**
MLSN	0.255	0.341	-3.695**	0.175	0.259	-4.253**
VR234	0.256	0.329	-3.228**	0.177	0.231	-3.377**
VRRATIO	0.256	0.343	-3.746**	0.168	0.231	-3.874**
HERFINDAHL	0.323	0.245	3.343**	0.225	0.179	2.841**
Panel C: Standard deviation of stock return						
MLSD	0.102	0.118	-3.319**	0.085	0.103	-3.793**
MLSN	0.103	0.117	-2.883**	0.085	0.103	-3.784**
VR234	0.100	0.119	-4.158**	0.085	0.104	-4.496**
VRRATIO	0.101	0.121	-4.067**	0.085	0.103	-4.246**
HERFINDAHL	0.117	0.099	3.754**	0.104	0.085	4.534**
Panel D: Absolute value of ROA residuals						
MLSD	6.163	7.517	-5.289**	4.510	5.181	-4.106**
MLSN	6.159	7.503	-5.266**	4.526	5.152	-4.141**
VR234	6.023	7.474	-5.809**	4.324	5.243	-5.066**
VRRATIO	6.161	7.500	-5.202**	4.435	4.993	-3.055**
HERFINDAHL	7.120	5.952	4.628**	5.151	4.201	4.886**
Panel E: Absolute value of Tobin's Q residuals						
MLSD	0.315	0.394	-6.312**	0.254	0.320	-6.233**
MLSN	0.319	0.390	-5.694**	0.262	0.312	-5.161**
VR234	0.318	0.380	-5.125**	0.250	0.310	-5.420**
VRRATIO	0.322	0.387	-5.076**	0.251	0.308	-5.254**
HERFINDAHL	0.369	0.302	5.418**	0.296	0.257	4.311**
Panel F: Absolute value of stock return residuals						
MLSD	0.059	0.064	-8.145**	0.046	0.050	-6.719**
MLSN	0.059	0.064	-8.118**	0.046	0.050	-6.742**
VR234	0.058	0.064	-9.699**	0.044	0.049	-8.043**
VRRATIO	0.059	0.064	-7.387**	0.045	0.049	-6.764**
HERFINDAHL	0.063	0.058	8.134**	0.049	0.045	7.353**

Notes: This table compares the mean and median of the risk-taking proxies by degree of contestability of the LCS defined by a value for the variable(s) MLSVAR above or below the median. 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. HERFINDAHL 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 return on assets. Tobin's Q is 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, of ROA, Tobin's Q and stock return. The MLS variables are averaged over the sample period. In panels D, E and F, the risk-taking proxies are the absolute values of the residuals from equations 2-4. ** denotes statistical significance at the 1% level.

TABLE 5
Influence of control contestability on deviation from expected ROA

Variable	(1)	(2)	(3)	(4)	(5)
EXCESS CONTROL	-1.34885*	-1.38961*	-1.39601*	-1.39404*	-1.72393**
	(-2.271)	(-2.330)	(-2.361)	(-2.325)	(-2.913)
MLSD	0.89402**				
	(3.358)				
MLSN		0.62467**			
		(3.102)			
VR234			3.98867**		
			(3.881)		
VRRATIO				0.94053**	
				(3.292)	
HERFINDAHL					-2.82110**
					(-5.332)
SIZE	-0.57598**	-0.57398**	-0.57922**	-0.60365**	-0.66069**
	(-8.612)	(-8.540)	(-8.673)	(-9.047)	(-10.198)
GROPPORT	0.10037**	0.10016**	0.09841**	0.09144**	0.09499**
	(3.307)	(3.306)	(3.278)	(3.081)	(3.512)
AGE	-0.00930**	-0.00931**	-0.00911**	-0.009**	-0.00913**
	(-4.276)	(-4.284)	(-4.193)	(-4.288)	(-3.245)
LEVERAGE	0.51184	0.46887	0.52176	0.60110	0.50664
	(0.811)	(0.727)	(0.803)	(0.911)	(0.979)
DIVERSIFICATION	-0.14813	-0.14856	-0.13365	-0.08662	-0.13220
	(-1.137)	(-1.140)	(-1.023)	(-0.670)	(-1.011)
Intercept	12.14576**	12.22465**	11.88940**	12.30400**	14.32499**
	(11.570)	(11.563)	(11.307)	(11.718)	(13.424)
Year dummies	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes
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

Notes: The dependent variable is the absolute deviation of ROA from the value predicted by Equation 2. ROA is the ratio of earnings before interest and taxes to the book value of assets at the beginning of the year. EXCESS CONTROL is the excess control of the largest controlling shareholder. 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. HERFINDAHL 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. SIZE is the natural logarithm of total assets. Firm age (AGE) is the number of years since the firm's first date of incorporation. Financial leverage (LEVERAGE) is total debt over total assets. GROPPORT is capital expenditures over sales. DIVERSIFICATION is the number of business segments. The *t*-statistics in parentheses are computed with standard errors clustered by firm. **, * and † denote statistical significance at the 1%, 5% and 10% level.

TABLE 6
Influence of control contestability on unexpected firm value measured by Tobin's Q

Variable	(1)	(2)	(3)	(4)	(5)
EXCESS CONTROL	-0.11523**	-0.11122**	-0.10631**	-0.12422**	-0.13552**
	(-4.115)	(-3.966)	(-3.754)	(-4.380)	(-4.794)
MLSD	0.06543**				
	(5.166)				
MLSN		0.03733**			
		(4.027)			
VR234			0.19611**		
			(3.959)		
VRRATIO				0.06293**	
				(4.578)	
HERFINDAHL					-0.15924**
					(-6.061)
SIZE	-0.02837**	-0.02851**	-0.02916**	-0.02970**	-0.03295**
	(-8.242)	(-8.863)	(-8.403)	(-8.687)	(-9.823)
GROPPORT	0.00636**	0.00647**	0.00645**	0.00601**	0.00661**
	(4.106)	(4.101)	(4.129)	(3.915)	(4.297)
AGE	0.00006	0.00005	0.00004	0.00006	0.00001
	(0.530)	(0.450)	(0.372)	(0.510)	(0.103)
LEVERAGE	0.06632	0.06331	0.06590	0.06524	0.05964
	(1.429)	(1.290)	(1.322)	(1.278)	(1.207)
DIVERSIFICATION	-0.01051	-0.01190†	-0.01072†	-0.01000	-0.00939
	(-1.515)	(-1.726)	(-1.549)	(-1.451)	(-1.360)
Intercept	0.66942**	0.68948**	0.68013**	0.70141**	0.80499**
	(12.731)	(13.248)	(12.967)	(13.730)	(15.782)
Year dummies	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes
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

Notes: The dependent variable is the absolute deviation of Tobin's Q relative to its predicted value given by Equation 3. EXCESS CONTROL is the excess control of the largest controlling shareholder. 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. HERFINDAHL 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. SIZE is the natural logarithm of total assets. Firm age (AGE) is the number of years since the firm's first date of incorporation. Financial leverage (LEVERAGE) is total debt over total assets. GROPPORT is capital expenditures over sales. DIVERSIFICATION is the number of business segments. The *t*-statistics in parentheses are computed with standard errors clustered by firm. **, * and † denote statistical significance at the 1%, 5% and 10% level.

TABLE 7
Influence of control contestability on unexpected stock returns

Variable	(1)	(2)	(3)	(4)	(5)
EXCESS CONTROL	-0.00477** (-3.012)	-0.00561** (-3.535)	-0.00542** (-3.407)	-0.00652** (-4.043)	-0.00754** (-4.641)
MLSD	0.00293** (4.271)				
MLSN		0.00334** (6.146)			
VR234			0.01613** (5.700)		
VRRATIO				0.00546** (6.948)	
HERFINDAHL					-0.01281** (-8.944)
SIZE	-0.00322** (-19.413)	-0.00315** (-18.884)	-0.00318** (-19.169)	-0.00326** (-19.763)	-0.00351** (-21.078)
GROPPORT	-0.00003 (-0.487)	-0.00004 (-0.551)	-0.00004 (-0.538)	-0.00004 (-0.590)	-0.00003 (-0.474)
AGE	-0.00004** (-7.584)	-0.00004** (-7.504)	-0.00004** (-7.569)	-0.00004** (-7.447)	-0.00004** (-7.470)
LEVERAGE	0.01088** (6.234)	0.01073** (6.194)	0.01084** (6.271)	0.01069** (6.218)	0.01084** (6.209)
DIVERSIFICATION	-0.00020 (-0.574)	-0.00017 (-0.497)	-0.00017 (-0.489)	-0.00013 (-0.369)	-0.00020 (-0.572)
Intercept	0.09129** (32.630)	0.09036** (32.277)	0.08977** (31.685)	0.09145** (32.958)	0.09997** (34.810)
Month dummies	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes
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

Notes: The dependent variable is the absolute difference between the firm's realized return and the return predicted by the market model outlined in Equation 4. EXCESS CONTROL is the excess control of the largest controlling shareholder. 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. HERFINDAHL 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. SIZE is the natural logarithm of total assets. Firm age (AGE) is the number of years since the firm's first date of incorporation. Financial leverage (LEVERAGE) is total debt over total assets. GROPPORT is capital expenditures over sales. DIVERSIFICATION is the number of business segments. The *t*-statistics in parentheses are computed with standard errors clustered by firm. **, * and † denote statistical significance at the 1%, 5% and 10% level.

TABLE 8

Robustness check using a contestability index obtained by principal component analysis and the Shapley value as proxy for contestability of control of the LCS

	Absolute value of ROA residuals	Absolute value of Tobin's Q residuals	Absolute value of stock return residuals	Absolute value of ROA residuals	Absolute value of Tobin's Q residuals	Absolute value of stock return residuals
Variable	(1)	(2)	(3)	(4)	(5)	(6)
EXCESS CONTROL	-1.59868**	-0.12562**	-0.00651**	-0.89194	-0.10428**	-0.00477**
	(-2.698)	(-4.350)	(-4.031)	(-1.566)	(-3.717)	(-3.033)
Contestability index	0.30080**(4.598)	0.01806**	0.00129**			
		(5.665)	(7.509)			
Shapley1				-1.59348**	-0.08032**	-0.00921**
				(-4.360)	(-4.462)	(-9.289)
SIZE	-0.58925**	-0.02907**	-0.00320**	-0.70359**	-0.03232**	-0.00358**
	(-9.041)	(-9.152)	(-18.601)	(-10.864)	(-10.133)	(-20.580)
GROPPORT	0.09571**	0.00628**	-0.00004	0.10089**	0.00669**	-0.00004
	(3.519)	(4.741)	(-0.587)	(3.757)	(5.062)	(-0.651)
AGE	-0.00888**	0.00006	-0.00004**	-0.00981**	0.00005	-0.00004**
	(-3.141)	(0.477)	(-6.597)	(-3.513)	(0.405)	(-6.551)
LEVERAGE	0.51672	0.06688**	0.01081**	0.50428	0.05625*	0.01018**
	(0.993)	(2.638)	(7.722)	(0.981)	(2.222)	(7.272)
DIVERSIFICATION	-0.12333	-0.00923	-0.00014	-0.05646	-0.01287*	-0.00029
	(-0.938)	(-1.441)	(-0.406)	(-0.435)	(-2.014)	(-0.838)
Intercept	12.59155**	0.70499**	0.08855**	14.99973**	0.82739**	0.10141**
	(11.977)	(13.759)	(29.289)	(13.339)	(14.938)	(30.901)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	2,210	2,210	24,757	2,210	2,210	24,757
Adjusted-R^2	0.119	0.128	0.061	0.119	0.125	0.062

Notes: This table shows the results using a contestability index and the variable Shapley1 as alternative proxies for the control contestability of the largest controlling shareholder (LCS). The contestability index is the common factor extracted from the variables MLSD, MLSN, VR234, VRRATIO and HERFINDAHL using principal component analysis. Shapley1 is the Shapley value solution for the largest controlling shareholder in a four shareholder voting game. ROA is return on assets. Tobin's Q is the market to book value of assets. EXCESS CONTROL is the excess control of the largest controlling shareholder. SIZE is the natural logarithm of total assets. Firm age (AGE) is the number of years since the firm's first date of incorporation. Financial leverage (LEVERAGE) is total debt over total assets. GROPPORT is capital expenditures divided by sales. DIVERSIFICATION is the number of business segments. **, * and † denote statistical significance at the 1%, 5% and 10% level.

TABLE 9
Summary statistics for family and non-family firms

	Family firms		Non-family firms		Test of difference	
	N	Mean (A)	N	Mean (B)	(B) – (A)	*t*-statistic
Panel A: Ownership structure						
EXCESS CONTROL (%)	1,886	21.241	324	17.303	-3.938	-2.988**
MLSD	1,886	0.371	324	0.417	0.046	1.442
MLSN	1,886	0.459	324	0.520	0.061	1.420
VR234 (%)	699	26.734	140	25.110	-1.624	-1.961†
VRRATIO	1,886	0.370	324	0.471	0.101	2.623**
HERFINDAHL	1,886	0.290	324	0.160	-0.130	-8.255**
Panel B: firm charcteristics						
Stock return	21,298	0.016	3,459	0.016	0.000	0.164
Market return	21,298	0.012	3,459	0.012	0.000	-0.047
ROA	1,886	6.101	324	4.938	-1.163	-1.567
Tobin's Q	1,886	0.496	324	0.454	-0.042	-0.905
AGE	1,886	43.404	324	38.933	-4.471	-2.278*
LEVERAGE	1,886	0.215	324	0.216	0.001	0.079
Total Assets (€ billion)	1,886	1.509	324	9.633	8.124	12.252**
GROPPORT	1,886	0.044	324	0.056	0.012	3.677**
DIVERSIFICATION	1,886	2.705	324	2.942	0.237	2.409*

Notes: This table provides summary statistics for the ownership structure variables (Panel A) and firm characteristics (Panel B) for family and non-family firms. The mean comparison tests between family firms and non-family firms are indicated in the last column. EXCESS CONTROL is the excess control of the largest controlling shareholder. MLSD is a dummy variable that equals one if the firm has at least two large shareholders, and zero 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 return on assets, measured by the ratio of earnings before interest and taxes to the book value of assets at the beginning of the year. Tobin's Q is the ratio of market to book value of assets. The firm's age (AGE) is measured by the number of years since its first date of incorporation. Financial leverage (LEVERAGE) is the ratio of total debt over total assets. GROPPORT is the firm's capital expenditures divided by sales. DIVERSIFICATION is the number of business segments. **, * and † denote statistical significance at the 1%, 5% and 10% level.

TABLE 10
Influence of multiple blockholders on corporate risk-taking in family and non-family firms

	Deviation in ROA		Deviation in Tobin's Q		Deviation in stock returns	
	Family	Non-family	Family	Non-family	Family	Non-family
Independent variable	(1)	(2)	(3)	(4)	(5)	(6)
EXCESS CONTROL	-1.29211*	-0.96815	-0.13711**	-0.01547	-0.00391*	0.00129
	(-2.001)	(-0.677)	(-4.298)	(-0.223)	(-2.197)	(0.272)
MLSD	1.07626**	0.79953	0.06502**	-0.03089	0.00273**	0.00030
	(3.917)	(1.231)	(4.790)	(-0.958)	(3.715)	(0.155)
SIZE	-0.59821**	-0.73853**	-0.02465**	-0.03286**	-0.00341**	-0.00354**
	(-7.926)	(-4.611)	(-6.610)	(-4.571)	(-17.016)	(-7.495)
GROPPORT	0.08723**	0.05511	0.00556**	0.00638†	-0.00005	0.00058*
	(2.974)	(0.811)	(3.842)	(1.788)	(-0.628)	(2.371)
AGE	-0.00585†	0.00187	-0.00003	-0.00009	-0.00004**	-0.00005**
	(-1.801)	(0.296)	(-0.197)	(-0.404)	(-5.009)	(-3.623)
LEVERAGE	0.82564	1.20571	0.09029**	-0.09056	0.01010**	0.02057**
	(1.531)	(0.662)	(3.389)	(-1.023)	(6.894)	(3.352)
DIVERSIFICATION	-0.17368	0.23153	-0.00985	0.01595	-0.00045	-0.00077
	(-1.241)	(0.619)	(-1.424)	(0.838)	(-1.191)	(-0.610)
Constant	11.87644**	10.22807**	0.64877**	0.43670**	0.09026**	0.08358**
	(10.132)	(3.300)	(11.203)	(3.992)	(26.803)	(9.193)
Fixed effects included	Year; Industry	Year; Industry	Year; Industry	Year; Industry	Year; Industry	Year; Industry
Sample size	1886	324	1886	324	21,298	3459
Adjusted-R^2	0.109	0.207	0.111	0.261	0.060	0.075
F-value	11.521**	4.844**	11.703**	5.690**	42.827**	9.221**

Notes: The dependent variable is the absolute deviation of performance relative to its expected value. Performance is measured by ROA (columns 1-2), Tobin's Q (columns 3-4), and stock returns (columns 5-6). EXCESS CONTROL is the excess control of the largest controlling shareholder. MLSD is a dummy variable that equals 1 if the firm has at least two large shareholders and 0 otherwise. SIZE is the natural logarithm of total assets. Firm age (AGE) is the number of years since the firm's first date of incorporation. Financial leverage (LEVERAGE) is total debt over total assets. GROPPORT is capital expenditures over sales. DIVERSIFICATION is the number of business segments. The *t*-statistics in parentheses are computed with standard errors clustered by firm. **, * and † denote statistical significance at the 1%, 5% and 10% level.

Appendix A: Definition of variables

Variable	Definition	Source
RISKTAKING	Standard deviation of ROA, Tobin's Q or monthly stock returns, calculated over the whole 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 market to book value of assets.	Worldscope, Datastream and authors' calculations
EXCESS CONTROL	Excess control of the largest controlling shareholder. Excess control (at the 10% threshold) is the ratio of the difference between the 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
MLSD	Dummy that equals 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).	Authors' calculations
MLSN	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
HERFINDAHL	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	Number of years since the first date of incorporation.	Authors' calculations
SIZE	Natural logarithm of total assets.	Worldscope
LEVERAGE	Ratio of total debt over total assets.	Worldscope
GROPPORT	Capital expenditures divided by sales.	Worldscope
DIVERSIFICATION	Number of business segments (using 2-digit SIC codes).	Authors' calculations

ENDNOTES

[1] We also re-estimate Equation 6 using median regressions to mitigate the impact of outliers. The signs and the degrees of significance of the independent variables are not affected.

[2] In addition, we reproduce the results of the cross-sectional regressions using industry-adjusted ROA, Tobin's Q and market-adjusted stock return as dependent variables. Industry-adjusted ROA (Tobin's Q) is the difference between the firm's ROA (Tobin's Q) and the industry ROA (Tobin's Q) in the same year. The latter is defined as the median ROA (Tobin's Q) of all firms with the same two-digit SIC code. Market-adjusted stock return is the difference between the firm's monthly stock return and the return on the SBF 250 index. 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 materially affect our results.

[3] A better control for endogeneity would require the use of instruments, that is to say variables uncorrelated with the risk-taking proxies, but highly-correlated with the MLS variables. Despite our best efforts, such instruments could not be identified.

[4] Furthermore, controlling families have a solid track record of ensuring management loyalty (DeAngelo and DeAngelo, 2000). Hence, even in family firms with professional managers (who are not family members), the agency conflict between management and shareholders is less likely to exist.