ON THE RELATIONSHIP BETWEEN OWNERSHIP-CONTROL STRUCTURE AND DEBT FINANCING: NEW EVIDENCE FROM FRANCE

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Abstract

The paper deals with external debt financing in controlling minority structures (CMSs), a very pervasive corporate organizational structure in France outside CAC 40 firms. Since large controlling shareholders in such firms maintain grip on control while owning only a small fraction of ownership rights, we are in a situation where their interests depart from that of the minority shareholders. Using a sample of 377 French firms, we show that firms featuring a substantial likelihood of expropriation (higher discrepancy between cash flow rights and control rights or group-affiliated), present lower leverage ratios than others due to debt supply restrictions. Contrariwise, the presence of second large controlling shareholder is perceived by external finance suppliers as a pledge against expropriation. Therefore, such firms exhibit high debt levels.

Keywords: Ownership structure, corporate governance, corporate structure

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1. Introduction

A considerable part of the financial economics literature links the firms ownership structure to leverage (Kim and Sorensen (1986), Friend and Lang (1988), Mehran (1992), Jensen et al. (1992), Braifold et al.(2002),…). Nevertheless, save few exceptions *(see endnote 1),* the existing researches used to study managerial firms characterized by a widely held ownership structure and did not distinguish between control rights and cash flow rights. Hitherto, little is known concerning the effect of separation between ownership and control or concerning the presence of one or more large controlling shareholders on the firm debt level. Controlled firms with a divergence between ownership and control are widespread in Western European countries (Faccio and Lang (2002)), in Eastern Asian countries (Claessens et al. (2000) and in numerous other countries (La Porta et al. (1999)). This paper is in the spirit of Faccio, Lang and Young (2005) study in that it shifts the focus of the analysis to these widespread patterns and studies the financing decision among controlling minority structures *(see endnote 2)*.

The debt may impact the behavior of the large controlling shareholders differently, contingently to the firm ownership and control characteristics. It may constrain any self-serving behavior in both managerial firms and controlled firms with small ownership-control discrepancy levels since in the former the managers are concerned with preserving their reputation capital and any misuse of the borrowed fund would highly impact the personal wealth of the large controlling shareholder in the latter. In fact, at small ownership-control discrepancy levels, the interest of the controlling shareholder is close to that of minority shareholders and we would expect that he act in maximizing the firm value by avoiding any rent-seeking behavior. Conversely, external financing may ease the expropriation of minority stakeholders in CMSs. Specifically, in a setting where there is a sharp discrepancy between ownership and control, the controlling shareholder is likely to be entrenched and his interests may not be in line with those of the residual claimants. In such a situation, the presence of high debt levels makes expropriation easy. We aim through the current study to disentangle the role played by debt depending on the discrepancy level between ownership and control.

We carry out an in-depth analysis of the role played by debt in corporate governance using a sample of 377 French listed firms. The use of firms belonging to the only French market instead of a cross-country study is motivated by at least three reasons. 1/ Besides, harmonized market rules shared by all European Community listed firms, firms within one country face some specific rules applicable to the only local market. Such country specificities matter in explaining the heterogeneity of the capital market institutions' effectiveness within several countries *(see endnote 3)*. 2/ Although Faccio et al.(2005) provide evidence on the role of debt in Western European countries, conclusions by country could not be drawn due to the research design. 3/ The controlling shareholders of French firms have the possibility to set CMSs through various devices *(see endnote 4)*.

The present study provides evidence that the French capital market institutions were effective in anticipating the misuse of debt by firms featuring a high level of discrepancy between the ownership stakes and the control stakes and those affiliated to a group. These firms exhibit low debt levels. To the best of our knowledge, the current research pioneers the study of the effect of sharing control on the firm's leverage in CMSs. The findings show a positive effect of the presence of a second large controlling shareholder on leverage. These results hold when excess control is high or when the firm is group-affiliated and are interpreted as follows: the financial capital markets perceive sharing the control as a device that alleviates expropriation. As a consequence, they do not hesitate to provide loans to firms where control is shared.

The organization of this study is as follows. Section II reviews the literature and presents the hypothesis regarding debt financing within CMSs. Section III discusses the effects of sharing control on the firm's debt level and introduces the hypothesis to be tested. Section IV describes the sample, variables' construction and methodology. The penultimate section presents the results. Section VI concludes.

2. Debt financing within an ownership-control discrepancy framework

Jensen and Meckling (1976) put forward one of the earliest analyses in which debt refrains from insiders' opportunistic behavior by compelling them to meet debt servicing requirements. In a subsequent study, Grossman and Hart (1982) argued that higher leverage levels discipline the insiders' behavior inasmuch as they bear substantial risk of financial distress and endanger their personal reputation capital. The role of leverage was also brought up by Jensen (1986) who emphasized debt importance in countervailing non-value maximizing activities in firms with higher levels of free cash flows. In fact, the constraints upon such firms to honor debt obligations force the insiders to remove cash from their discretion. Besides, debt suppliers cultivate unimpaired close relationship with firms having an enduring need for external finance. This relation comes often along with close monitoring provisions to enforce compliance with various covenants. These provisions encompass periodic and rich information flows provisions, frequent meetings with top management members,… ((Haubrich (1989), Holland (1994)). Recently, Bebchuk et al. (2000) argued that the presence of proficient banks as lenders in a CMS is beneficial to all shareholders due to the skills they have developed in implementing efficient monitoring devices. The authors predicted that shareholders would favor investing in leveraged CMS with skilled creditors-monitors in order to guard against controlling shareholders abuses.

From a contrasting point of view, the two following arguments state that debt facilitates expropriation in a setting where there is a divergence between the cash-flow interests and the control interests of the largest controlling shareholder.

The limited liability hypothesis states that the owner-entrepreneur's responsibility is limited to its cash-flow interests in a firm (Thomadakis, (1992)). The controlling shareholder, who allocates his own capital to various new projects, is more inclined to set up several legally independent concerns instead of favoring the growth of an already existing firm. The rationale underlying such behavior is twofold. First, limited liability insulates any firm belonging to the group from a possible distress that befalls the others under the same control. Second, the controlling shareholder's loss is limited to its cash flow interests in the firm. As a consequence, the controlling shareholder may seek to shape the structure of his control in such a fashion as to maintain grip on control while owning only a small fraction of ownership rights, that is limiting his liability to that fraction. Pyramiding, dual-class shares, and cross-holdings are among the mechanisms that depart cash flow rights from control rights. In the presence of debt, these structures allow the controlling shareholder to maximize the value of the default options held against debtholders and to toughen the latter's task to price such options. Black and Scholes (1973) argue that limited liability is at the source of a bundle of the default options held by the shareholders against debtholders in a situation of risky debt. Along these lines, Thomadakis (1992) contend that, in leveraged firms, the existence of limited liability incentivizes the controlling shareholder to select riskier investment projects thus harming debtholders by unfavorably modifying the distribution of the risks they face.

Another view that leads to quite similar conclusions is provided by the expropriation hypothesis. According to this hypothesis, more debt in a controlling minority structure would facilitate expropriation by making available more resources under to the firm grip of the controlling shareholder (Faccio et al. (2005)). The latter might misuse borrowed funds since he incurs only a small fraction of the costs of his egregious behavior. The resulting harmful effects are supported not only by minority shareholders but also by debtholders who might not be able to collect back their money. Besides, a substantial rely on borrowed funds enlarges the wedge between control rights and cash flow rights since both shareholders and debtholders have claims on firm's cash flows whereas debtholders are not entitled to cast any vote *(see endnote 5)*. For group-affiliated firms or pyramid-affiliated firms, the likelihood of expropriation might be important for at least two reasons. First, the reputation of the ultimate controlling shareholder of such firms may not suffer when debt is not paid off since his identity is hidden behind a hazy ownership-control pattern constituting an impervious veil. Second, within a group internal

capital market might constitute an alternative source of financing.

To assess, whether further debt makes harder or easier the expropriation, we test the effect of control excess, a proxy for the expropriation likelihood on leverage in the French context. The interpretation of the results is not straightforward and we need as in Faccio et al.(2005) to set "assumptions about the effectiveness of capital market institutions in ensuring transparent accounts and protecting the rights of external creditors and minority shareholders. This determines whether leverage decisions are dominated by the concern of informed external suppliers of capital or by the interests of the controlling shareholders".

The assumption that the French capital market institutions are effective seems to be plausible *(see endnote 6)*. In fact, the need to meet the various European economic harmonization directives and the increasing presence of foreign institutional investors have pushed firms to switch to international accounting standards, to practice active disclosure policy, and to comply with international transparency standards. In fact, the French disclosure rules have changed dramatically since the mid-1980s as part of the European Community legal harmonization. The 1966 French business law has been amended to include the European Transparency Directive (88/627/EEC of December 1998) concerning safety and transparency of financial markets *(see endnote 7)*. Clause 1 of article 4 of this directive warrants detailed information for external investors regarding the firm's affiliates since it compels any shareholder who holds more than 5% of the firm's cash flow rights or voting rights to report details on his ownership *(see endnote 8)*. The French firms shareholders are also constrained to publicly disclose any written, verbal or tacit pact or concerted action among them in order to exert a concerted policy towards the firm. The COB (Commission des Opérations de Bourse, the French market regulator) watches over the quality and the timing of firms' disclosure and does not hesitate to put online a list of the companies with overdue fillings. Such disclosure rules allow investors to unveil the actual controlling shareholder and to compute its stakes in the firm. French firms are required to establish consolidated accounts as early as they exert a noticeable influence on other entities. Such influence is assumed to happen when the direct and indirect stakes of the parent company exceed 20% of the voting rights of that entity.

La Porta et al. (1998) showed that French civil law countries generally have the weakest legal protection rules for creditors *(see endnote 9)*. However, France among these countries features the highest quality of accounting standards and this is, to a large extent, a consequence of the disclosure rules. The French index on accounting standards (69) is close to the mean of common law countries (69.62%) whereas other French civil law countries score worse on average (51.17%) *(see endnote 10)*. Such standards quality plays an important role for creditors to ensure the interpretability of disclosed information especially in an environment where the protection rules and law enforcement are weak (Hay et al. (1996)). The French business newspapers (e.g., Les Echos, la Tribune,..) enrich the informational environment and often act as "Whistle-blowers" by revealing private information. Moreover, the listed French firms are under the close scrutiny of financial analysts. In a study conducted on a sample of 47 countries around the world, Chang et al.(2000) documented that France is amongst the top five countries in terms of analyst following per firm (23.2) much higher than the all countries average (12.78). Their figures are computed on the basis of the 30 largest firms per country ranked by market capitalization. Many agencies, such as Deminor, assess the quality of the firm corporate governance and provide detailed analysis on of the firm practices upon request. Given the effectiveness of the French capital market institutions and the ability of any financial institution to procure the needed details allowing the assessment of the expropriation risk, we expect that external suppliers would be aware of the firm's vulnerability to expropriation, thus lending to firms where debt is anticipated to constrain expropriation and avoiding firms where the large controlling shareholder is likely to prey on debt.

$H1_a$: Higher debt level alleviates expropriation by forcing the firm to honor its debt obligations.

$H1_b$: Higher debt level eases expropriation by making available under the largest controlling shareholder's discretion more funds.

If the capital markets are effective in assessing the likelihood of expropriation, then a corporation presenting a higher risk of expropriation (important level of control excess) should be more levered under $H1_a$ and less levered under $H1_b$.

3. Debt financing in the presence of a second large controlling shareholder

It is worth recalling that the extant relevant studies did not deal with the incidence of control dilution among two or more controlling shareholders on leverage in controlling minority structures. In fact, they focus only on the effect of the largest controlling shareholder disregarding the distribution of votes among the remaining shareholders. Specifically, they did neither investigate the impact of the presence of a second largest controlling shareholder nor did they examine the effect of the challenge power of that shareholder on leverage. Accordingly, our study is motivated by the perception of what appears to be a gap in the corporate governance literature. The current paper tries to do a step forward in bridging this gap. It is aimed that a closer examination of this issue would provide additional insights on the role of the power interplay between large controlling shareholders on financing decisions.

In general, corporate governance literature agrees that external controlling shareholders are incentivized to perform an active monitoring function in order to warrant a fair return on their substantial investments (see, Shelifer and Vishny (1997) for extensive survey). The role of external controlling shareholders depends on the structure of ownership and control. In managerial firms, they are believed to restrict the managerial latitude, thus reducing the agency costs stemming from the conflict between hired managers and shareholders (Shleifer and Vishny (1986)). However, in controlled firms, they are argued to monitor the largest controlling shareholder preventing its opportunistic self-serving behavior and therefore lessening minority expropriation (Gomes and Novaes (2001)). Bebchuk et al. (2000) assimilated debtholders to minority shareholders. On the one hand creditors as shareholders have claims on the firm's cash flows which imply that debt might be considered as a device keeping apart the cash-flow rights and the control rights. On the other hand, they are non-voting stakeholders. By acting as monitors, the external controlling shareholders may contain the abuse of debt by preventing the incumbent insiders from misusing the firm's borrowed funds or from considering affiliates' debt as an Any Time Money.

Bloch and Hege (2003) demonstrated, in a two large shareholders setting, that the higher the control contestability the lower the private benefits that may be reaped. Namely, control benefits are attenuated when the difference in terms of block size between the two leading shareholders decreases. The underlying rationale is that the two leading shareholders compete together to gather minority votes when the latter is pivotal to seize control. Thus, they bind themselves to cut down rent extraction. Gomes and Novaes (2001) showed that when the unanimity among controlling shareholders is required to pass any decisions, the misuse of the firm's resources is unlikely to occur. Similar conclusions were reached by Bennedson and Wolfenzon (2000) in a different setting.

Contrariwise, some scholars contend that the presence of multiple controlling shareholders may not ensure the eschewal of expropriation. Zwiebel (1995) argued that when control benefits may be apportioned between moderate-sized blockholders depending on the relative size of the shareholder's interest, those blockholders may collude to maximize their private benefits from partial control. Besides, the other controlling shareholders may be prone to free ride (Winton (1993)) or may be passive voters preferring collusion with insiders to monitoring (Pound (1988)).

In order to distinguish between the hypotheses that the presence of a second large controlling shareholder constrains the expropriation and that his presence facilitates such expropriation through collusion, we test empirically the relation between debt level and a measure of the power of that shareholder.

The French capital market is aware about the role played by the different large blockholders in a firm. It has the ability to distinguish between active blockholders and those who vote by feet or collude. The information regarding all of repartition of voting rights among large shareholders, the occurrence of proxy contests, the composition of the board of directors, the number of meetings per year and the frequency of attendance of large shareholders is available on various supports in the French market. Besides, large shareholders are constrained to notify the competent authorities when acting within a pact with other blockholders.

$H2_a$: Higher power in the hands of the second largest controlling shareholder challenges the largest shareholder leeway to expropriate, thus ensuring more adequate use of debt.

$H2_b$: Higher power in the hands of the second largest controlling shareholder, the higher the collusion likelihood and hence expropriation.

If the capital markets are effective in assessing the actual role of the second large controlling shareholder, then a corporation that presents a higher risk of expropriation (important level of control excess) should be more levered under $H2_a$ and less levered under $H1_b$.

4. Data and model specification

4.1. Sample

Our initial sample consists of all French firms in the Worldscope database that have available 2000 end-of-year or end-of-fiscal year accounting data. We excluded all the firms that have missing accounting data or those for which ownership or voting data are incomplete, so that we cannot trace back the pyramids until the ultimate controlling shareholder. We ruled out also all unlisted firms and those listed since less than one year. As in extant studies, we deleted financial firms (SIC code 6000-6999) and regulated utilities (SIC code 4900-4999) since their liabilities and financial decisions are affected by the government regulatory restrictions and not in connection with the agency concern. We end up with 377 companies. The ownership and voting data were manually collected chiefly from the firm's annual reports accessible either in hard copy form or online from the COB's database (Commission des Opérations de Bourse). We supplement our data with information on firm's affiliates and their stakes, when necessary, from the firm's websites or from the Registre de Commerce *(see endnote 11)*. In many cases, data was graciously made available to us by the firm investors' relation services.

Since ownership and voting data were collected at different points of time during 2000, it does not fully overlap, for some firms, with the year-end or the fiscal year-end. In this case, we look over the appropriateness of such figures by examining threshold-crossing notifications published by the

CMF (Conseil du Marché Financier) and by verifying the stability of the ownership and voting structure over the 1998-2000 period.

Annual reports- the main data source for this study- provide the information on shareholders with shareholdings of, at least, 5% *(see endnote 12)*. Numerous firms disclose more detailed data even with 0.5% of ownership or voting rights *(see endnote 13)*. The firms provide such details when there is a by-law threshold notification clause of ownership, when a shareholder owning a small fraction (less than 5%) is a member of a group of shareholders forming a voting syndicate, or for a transparency commitment

4.2. Primary variables

4.2.1. Leverage

The debt over total assets ratio where debt is the sum of short- and long-term financial debt is used as a proxy for the financial leverage14. The denominator includes non-financial liabilities. The ratio is computed in book value terms rather than market value terms to avoid any spurious correlation with the proxy of growth opportunities (Titman and Wessels (1988)) and to warrant that it is purged from any expectation of expropriation (Faccio et al. (2005)).

4.2.2. The construction of the ownership and control variables

The following example of ownership structure is intended to improve the understanding of how French firms are owned and the manner used to compute the different metrics used in the present study. The figure elucidates the control of Valeo by Wendal family which is exercised through a combination of pyramiding, holdings through multiple control chains and non-traded high voting shares. There is neither non-voting shares nor voting pact within the firms forming the control chain. Valeo is controlled by three principal shareholders within the Wendel group: two unlisted wholly controlled firms by CGIP (FIGEMU and Trief Corporation with respectively (C=13.76%; V=22.5%) and (C=5.28%; V=4.4%) as direct stakes) and CGIP itself with a direct stake of (C=1.08%; V=0.91%). CGIP is in turn controlled by the listed firm Marine Wendel (C=51.8%; V=67.8%) itself controlled by the unlisted firm Wendel participation et associés (C=54.16%, V=69.71%). The latter is under the control of Wendel Family indirectly through La Société de Gérance de Valeurs Mobilières (SOGEVAL) and La Société Lorraine de Participation Sidérurgique (SLPS) with respectively (C=V=62.37%) and (C=V=24.13%). Wendel Family controls SOGEVAL (C=V=80.2%) and SLPS (C=V=81.98%). The ultimate ownership stake is computed as the sum of the products of ownership stakes along the different control chains. Thus Wendel family's overall cash flow stake right in Valeo is [80.2%*62.37%+81.98%*24.13%]*54.16%*51.8%*[13.76%+5.28%+1.08%] = 3.94%. The ultimate control stake is computed as the weakest control link in the pyramid chain, which gives (min ((22.5% + 4.4% + 0.91%), 67.8% + 69.71%, (62.37%+24.13%)= 27.81 %) *(see endnote 15)*. With 27.81% of control rights, Wendel is the largest controlling shareholder of Valeo at 10 percent threshold (and even 20 percent threshold). Ownership-control discrepancy is measured by ultimate control minus ultimate ownership over ultimate control ((UV-UC)/UV) and equals to 85.83% for Valeo. La Caisse de Dépôt et de Consignation is the second largest controlling shareholder of Valeo with (C=8.12%, V=8.36%). The corresponding Shapley value equals 0.11 whereas that of the largest controlling shareholder equals 0.41.

In the construction of our variables, we aggregate both the ownership and control rights of the same family members despite the likelihood of sibling disputes over the control. Are assumed belonging to the same family individuals with the same surname. For many firms, we were able to track down the family relationship between shareholders beyond this convention.

4.3. Descriptive statistics

The number of firms in each industry using Campbell's (1996) grouping is given in Table II (Panel A). About the quarter of the sample firms are in services industry. The main other industries represented are consumer durables (19.37%), textile and trade (12.99%), capital goods (10.34) and basic industry (10.08%). Petroleum and transportation firms along with unregulated utilities make up the less represented industries in our sample. Table II displays also group-affiliation by industry. The sample includes 101 group-affiliated firms (26.79%). Among group-affiliated firms, 20.79% (19.80%) are in services (consumer durables). Panel B summarizes both ownership and control variables along with accounting data used in the analysis for the 377 companies in the sample. The largest ultimate controlling owner has on average 40.1% of the cash flow rights and 50.53% of the control rights at a 10% cut-off point. The control excess ratio measured by the control rights minus ownership rights of the largest ultimate controlling owner, all divided by his control rights is equal to 22.5%. It ranges from -4% to 99.2%. This divergence from the one-share-one-vote rule is mainly due to the large use of pyramiding and double-high voting shares. This ratio is higher than the mean for the Western European corporations (13.2%) reported in Faccio and Lang (2002) but is closer to the figures for Belgium (22.1%) and Norway (22.4%) and slightly lower than that for Eastern Asian corporations (25.4%) (Claessens et al.(2000)). The average Shapley value of the second largest controlling shareholder equals 5.5%. The median value equals 0 suggesting that more than half of the sample firms feature a dominant large shareholder with more than 50% of the direct voting stakes. This variable varies from 0 corresponding to the case where only one dominant shareholder has power on the firm's decisions to 50% where the two largest controlling shareholders alone equally share the

power over the firm's decisions. The mean (median) of the direct voting rights of the second largest controlling shareholder equals 8.9% (5.5%). These lower values are due to the fact that an important proportion of the sample firms feature only one important shareholder. The sample contains both highly leveraged firms and unleveraged firms with an average of 22.8%. The sample firms range from those featuring high losses (profitability equals –0.703) to those very profitable (0.892) with a mean value of 0.129. Panel C (Table II) scrutinizes the firm debt level as the excess of control of the largest controlling shareholder increases. It also provides data on the number of firms for the considered excess ranges. The relation between excess of control and leverage appears to have an inverted U- shaped form. Leverage seems to increase with increasing excess control until reaching a maximum in the [10%, 15%] interval. However, beyond that point, it appears to begin decreasing with much more higher excess control levels. This descriptive finding suggests that the relation between leverage and excess control might be non-monotonic which we will examine deeply in the next section.

4.4. The controlling variables

Apart from key ownership and control variables, the leverage is influenced by some firm characteristics. To avoid any spurious relation between leverage and ownership-control structure variables, a set of control variables are introduced in the regressions. We rely on previous research in considering the following variables:

4.4.1. Size

The effect of size on leverage is not obvious. Two competing arguments emerge from the corporate finance literature. The informational argument suggests that large firms feature lesser informational asymmetries between insiders and the capital market. Such firms need not to be constrained while issuing securities in the equity markets and, hence, should have a lower debt level (Rajan and Zingales (1995) *(see endnote 16)*. An alternative argument is that size proxies for the probability of default. The firm size is expected to influence positively the firm's level of debt since larger diversified firms are less likely to go bankrupt and hence can maintain a high leverage level (Titman and Wessels (1988)). We use the natural logarithm of the book value of total assets as an indicator for the firm's size (lnTA). The logarithm transformation is motivated by the view that a possible size effect would affect primarily small firms.

4.4.2. Collateral value of assets

Galai and Masulis (1976), Jensen and Meckling (1976) and Myers (1977) argued that the controlling shareholders of leveraged firms are inclined to pursue suboptimal investment policies; or to take on riskier projects in order to expropriate the firm's debtholders. When collateralizable debts are provided, firms have little leeway to use the borrowed funds in unspecified projects and might refrain the misuse of debt. In the absence of collaterals, lenders are likely to impose much tighter lending terms to make up for the risk of asset substitution, which leads the firm to opt for equity as a cheaper financing source. Arguments put forth by Myers (1977) suggested that both the asset substitution problem and the debt overhang problem are less likely to come about in firms exhibiting higher value of tangible assets. Myers and Majulf (1984) suggested that issuing new equity comes along with costs when there is an informational asymmetry between inside and outside shareholders. As a result, firms with collateralizable debt may prefer by far issuing secured debt to shun these costs. Rajan and Zingales (1995) argued that tangible assets could be collateralized easily and therefore mitigate the agency costs of debt. As a consequence, to the extent that tangible assets picks up the collateral value of assets, it would be positively related to leverage.

Our model incorporates the ratio of Fixed to total assets as an indicator for the collateral value attribute.

4.4.3. Profitability

The pecking order theory put forward by Myers (1984) predicts that firms prefer retained earnings as the primary financing source instead of debt. The recourse to new equity issues is left as the last resort. This behavior may happen to exist due to the substantial transaction costs associated with external financing. In light of this argument, we should expect that firms exhibiting greater profitability rely lesser on debt.

Alternatively, Rajan and Zingales (1995) suggested that creditors have a preference for firms with higher contemporaneous cash flow. This positive relationship between leverage and profitability might also be due to the effect of interest deductibility. In fact, leveraging up is advantageous to profitable firms characterized with higher marginal tax rate.

We proxy for profitability by using the lagged ratio of earnings before interests, taxes and depreciation to total assets, both taken at the beginning of the year. This ratio is unaffected by the financing mode. The use of a lagged variable is motivated by the argument that the current leverage is influenced, to a larger extent, by anterior profitability (Titman and Wessels (1988)).

4.4.4. Growth

Titman and Wessels (1988) among others suggested that the agency costs of debt are well proxied by the firm's growth opportunities. They pinpointed firms in growing industries as those where the tendency to invest suboptimally is the much exacerbated. Such policy leads to the expropriation of wealth from the debtholders. Therefore, we expect that firms having lots of investment perspectives to be less leveraged to lessen this problem. Another reason for the negative relationship between growth and leverage stems from the belief that high growth firms are more profitable. Hence, they may rely much more on internal funds rather than on debt. This line of argument is concordant with the pecking order theory. Fama and

French (1992) provided an additional argument in favor of the inverse relationship. They argued that higher growth firms should be less leveraged since they are subjected to higher financial distress costs.

As pointed out by Titman and Wessels (1988), the ratio of capital expenditures over total assets is a good indicator of the firm's growth opportunities. Therefore, it can be used to estimate the agency costs due to Myers (1977) underinvestment problem.

4.4.5. Firm risk

Since leveraged firms are constrained to meet periodic payments of capital and interests, an increase in the business risk is considered as a serious threat to the creditors (Ferri and Jones (1979)). When business risk increases, creditors are inclined to cut back the supply of debt. In the same vein, Bradley et al. (1984) among others showed that the optimal firm leverage is inversely related to the volatility of earnings. Therefore, we should include a proxy of the firm's risk position as a potential determinant of the capital structure. The firm business risk is proxied here by the systematic risk measured by the beta. The beta is defined as the ratio of the covariance of the company return with market, and the variance of return of the market. The beta of each company was calculated against the SBF 250 index. We expect that the beta affects negatively the firm debt level.

4.4.6. Industry variables

Scott and Martin (1975) and Bradley et al.(1984) argued that firms belonging to the same industry face alike market conditions and risk characteristics, thus their leverage ratios should not vary dramatically. We include 11 industry variables throughout the regressions following Campbell's (1996) classification with leisure sector as a numeraire *(see endnote 17)*. We opt for this classification rather than the 2-digit SIC code classification to avoid constrictions on the regression degrees of freedom. Besides, the former classification spreads fairly thinly over the sample firm's with next to inexistent coverage in many industries. All variables used in the current study are presented in Table I.

5. Multivariate analysis

5.1. Excess control

The univariate results from Panel C of Table II suggest that the relation between the firm leverage level and the largest controlling shareholder excess control might be non-linear. In this part, we examine the possibility of a non-monotonic relation between these two variables. To do so, we regress cross-sectionally the leverage level against the excess control and the square of excess control. Firm size, collaterals, profitability, growth opportunities and risk are included to control for firm characteristics together with industry dummies. We use the following specification to test the proposition regarding the relationship between excess control and leverage*(see endnote 18)*. If the intuition from the descriptive statistics holds, a negative sign of the square of excess control should be observed *(see endnote 19)*.

$$Leverage_i = \beta_{0i} + \beta_{1i} Excess_i + \beta_{2i} (Excess_i)^2 + \beta_{3i} Size_i + \beta_{4i} Collaterals_i + B_{5i} Profitability_i + \beta_{7i} Growth_i + \beta_{8i} Risk_i + \Sigma \beta_{ji} INDUM_{ji} \quad (1)$$

i=1,…,377 and j=1,…11.

Before running any regression, the absence of multicollinearity is checked using variance inflation factors. Besides, the estimated coefficients are computed using heteroskedasticity-consistent standard errors using White (1980) procedure.

The equation 1 (Table III) provides evidence of the quadratic relationship between control excess and firm leverage. In fact the coefficients of Excess and $(Excess)^2$ confirm the curvilinear nature of the relationship between the debt level and the degree of excess control. In fact, the coefficient of $(Excess_i)^2$ is negative and economically and statistically significant at 5% level and that of Excess is positive and statistically significant at 10% level. Specifically, the debt level increases with the increase of the excess of control at small levels of Excess until reaching a critical excess value beyond which it begins to decrease. For high levels of excess control, excess negatively the firm's debt level suggesting that creditors are aware of the increasing expropriation vulnerability of the firm. Their awareness increases as the cash flow rights of the largest controlling shareholder depart from his control rights. This result provides support for the hypothesis H_a that higher debt level eases expropriation by making more funds available under the largest controlling shareholder discretion.

On the contrary, at small excess control levels, the excess control is positively related to the firm's debt suggesting that external suppliers of capital believe that debt should constrain any expropriation behavior. In such a situation, the controlling shareholder would behave in the interest of all the stakeholders since he incurs a substantial proportion of the costs of his misbehavior. The presence of a discrepancy between ownership and control might be beneficial to minority stakeholders when it does not exceed the critical level. Cronqvist and Nilsson (2003) argued that the lock on control while owning a small fraction of the cash flow rights allows the incumbent large shareholder to prevent potential "bad raiders" from acquiring the firm and consuming larger private benefits. Such a positive effect might also be explained by the higher easiness for the large controlling shareholder in monitoring managers with both less personal wealth constraints and lower risk support due to a more diversified portfolio. Our sample firms with low levels of excess control generally correspond to unaffiliated firms. These low levels might be reached with only repurchasing shares within the authorized limits of 10% of the firms voting rights. Concerning the controlling variables in the regression, we find that larger firms and those showing high proportion of fixed assets present higher

debt levels. The former result comes with support to the view that the direct costs of bankruptcy that might be faced by large-sized firms are lower than those of small- or medium-sized firms. Besides, larger firms are believed to have an easier access to the credit market. The latter result is consistent with the view that firms with a lot of collateralizable assets present higher leverage ratio. The estimated coefficient of the profitability is negative and economically and statistically significant supporting the pecking order theory in that high profit firms privilege the use of internal resources. The relation between the proxy for the growth opportunities and leverage is positive and statistically significant at 5% level suggesting that high growth firms are more inclined to rely on debt in financing new projects. This result is in contrast with the theoretical literature and the previous evidence on the US context but in concordance with Faccio et al. (2005) findings in the European and Asian context when the Tobin's Q is used as a proxy for the growth opportunities. They attribute this result to the related-party loans. Concerning the firm's risk, we find that the beta coefficient estimate is positive and insignificant across all regressions *(see endnote 20)*. The results show that sector dummies (unreported) are statistically significant testifying important differences in leverage between industries. The inclusion of these dummies increases both the adjusted R^2 and the F-statistic. The F-statistic is significant at 1% level showing the overall pertinence of the model.

To determine the point beyond which the effect of control excess on debt level turns to be negative, we run a piecewise linear regression model by estimating breakpoints through a switching regression technique as suggested by Goldfeld and Quandt (1973) *(see endnote 21)*. The estimation procedure is as follows: we experience all the possible values of the excess control variable as breakpoints. Each time, we fit the model to both subsamples and compute the log-likelihood function for each subsample couple. The critical breakpoint that fits best the data is that corresponding to the maximum log-likelihood value. The comparison of the log-likelihood value from the switching regime regression with that of the whole sample (no breakpoint) allows checking the robustness of the breakpoint. This procedure avoids the use of an arbitrary pre-defined breakpoint by allowing the endogeneization of the computation procedure. The switching modeling approach allows the estimation of a 2-piece linear model that best fits the data by endogenously determining the breakpoint. Empirically, we find that a 2-piece linear model with a breakpoint at 10.2% best explains the relationship between the excess of control and the firm debt level. This breakpoint allows us to construct a dummy variable describing the excess of control. This additional variable equals 1 if the excess control is greater than the a priori unknown breakpoint and 0 otherwise. We test for the non-linearity of the relationship using the following variable: the product of [Excess – break point (BP)] and Excess high. This variable is used to capture the excess of control for firms exhibiting a higher level of excess control. We test the following specification:

$$Leverage_i = \beta_{0i} + \beta_{1i} Excess_i + \beta_{2i} [(Excess\text{-}BP) * Excess\ high]_i + \beta_{3i} Size_i + \beta_{4i} Collaterals_i + \beta_{5i} Profitability_i + \beta_{7i} Growth_i + \beta_{8i} Risk_i + \Sigma \beta_{ji} INDUM_{ji} \quad (2)$$

i=1,…,377 and j=1,…11.

where we expect the ([Excess-BP]*Excess high) variable to be negatively related to the leverage level since financial creditors restrain loans to firms with higher expropriation vulnerability. Excess is expected to have a positive sign.

Table III reports the results of the equation 2. The tests of the relationship between excess control and debt level using a 2-piece linear model give qualitatively similar results as the use of both excess control and the square of excess control as explanatory variables. The Excess and [(Excess-BP)*Excess high] are, as expected, respectively positively and negatively related to the leverage suggesting once again the non-linear relation between excess control and the debt level. The coefficients are statistically significant at 1% level. This result corroborates that of Faccio et al. (2005) for 5 Western European countries firms using 1997 data. The results suggest that when excess control is below 10.2%, finance suppliers consider that running up a debt by a firm would constrain expropriation whereas debt eases such misbehavior for firms with higher excess control levels. We reach the same conclusions when we include only Excess high as an explanatory variable (Equation 3 of Table III). The coefficient of the dummy Excess high which takes the value of 1 if excess control exceeds the 10.2% and 0 otherwise is negative. The coefficients on all the controlling variables remain of consistent sign and all but risk are significant through the three specifications in Table III.

5.2. Group affiliation

In view of the above evidence supporting that at high excess control levels higher indebtedness eases expropriation by making more funds available under the largest controlling shareholder discretion, we attempt to clarify much more that relationship by studying if it holds for group-affiliated firms. We perform an OLS regression analysis to test if the external finance suppliers are aware of the vulnerability of the group-affiliated firms to the expropriation. To capture the effect of group-affiliation, we include in the first specification a group dummy variable. We consider as in the previous studies a firm as belonging to a group if it is either controlled through a pyramid, it controls one (or more) firms in the sample, it shares the same controlling shareholder with other firms in the sample or its controlling shareholder is a widely held firm (or widely held financial institution). As in the previous

regressions, we include the same controlling variables and industry dummies.

Table IV displays the results. The estimated coefficient of the binary variable associated with the affiliation to a group is negative and consistently statistically significant at 5% level. The evidence shows the importance of group-affiliation as a determinant of the firm leverage level. Group-affiliated firms seem to be less levered than other firms suggesting that external finance suppliers are effective in anticipating the expropriation behavior in such firms and thus favoring credits cut back. In a second specification, we test the interaction effect between group-affiliation and excess control. The results show that group-affiliated firms exhibiting excess control are less levered than others confirming the hypothesis that debt facilitates expropriation within vulnerable structures to expropriation. In the last specification (Table IV), we test the influence of the interaction between group-affiliation and excess control high on leverage. In other words, we test the effect on leverage of firms that are simultaneously group-affiliated and exhibiting excess control higher than the 10.2% breakpoint. The coefficient of the interaction term is negative consistent with the preceding results. The magnitude of the coefficient of that term is less than that of the interaction term in specification 2 insinuating the higher the excess control in a group-affiliated firm the higher the fear of external finance suppliers from expropriation and higher the firms' difficulties to get into debt *(see endnote 22)*. Through all the regressions of Table IV, there are no differences in the coefficients significance or signs among the controlling variables and the degrees of significance seldom change.

5.3. The presence of a large second controlling shareholder

To date, we have tested the effect of the separation of ownership and control, and group-affiliation on the firm's leverage and have found that both have a significant impact on the firm's capital structure. As yet, we do not know the effect of power interplay between large controlling shareholders on leverage. We address empirically this issue by testing the effect of the presence of a second large controlling shareholder on leverage in firms exhibiting higher degree of control excess and in those affiliated to groups. In order to gauge for the power wielded by the second largest controlling shareholder, we opt for the Shapley value of its direct voting rights instead of the direct voting rights itself *(see endnote 23)*. Such metric takes into account more than one element at the same time. Besides the fact that it considers the effect of the direct voting rights of any shareholder on leverage taken individually, it includes the effect of the different potential coalitions that he may form on this relation too. In so doing, we allow for the nonlinearity in the relationship betwixt the actual challenge power of the second large controlling shareholder and the proportion of his direct voting rights. Also, we heed to the capacity of minority shareholders to take part into coalitions by including all the available voting data. We elucidate the better quality of the Shapley value in measuring the power of the second largest controlling shareholder through the following example. Let we consider two firms each of which with two main shareholders and all others are minority shareholders forming the ocean *(see endnote 24)*. Suppose that the two main shareholders of Firm I (II) control directly 40% (45%) and 20% (25%) of voting rights each. The use of the ratio direct voting of the second largest controlling shareholder over that of the largest one is delusive. In fact, it shows that the second largest shareholder has more power in Firm II (V2/V1 = 0.555) than in Firm I (V2/V1 = 0.5) whereas its correspondent Shapley value is higher in Firm I (0.0625) than in Firm II (0.02777). Besides, the Shapley value ascribes no power for all the remaining shareholders when the largest one holds more than half of the voting rights while other measures based on voting proportions attribute some sway to them. Another example, that elucidates the divergence between the results that might be driven by the use of direct voting rights and Shapley value through the example of the listed French firm Dassault Aviation. This company is controlled by two major shareholders namely "GIMD" and "EADS France" with respectively 49.93% and 45.76% of the direct voting rights. The remaining part is diffused among the public. Whereas the ratio (V2/V1) shows a great importance of the two major shareholders in any decision making (V2/V1=91.648%), the actual balance of power is much more in favor of the largest controlling shareholder (his Shapley value equals 96.778% versus 0.026% for the second one). We consider a firm with n shareholders forming a set N where each shareholder i holds a proportion w_i of the direct voting rights. We denote by w(S) the sum of the direct voting rights of the shareholders forming the coalition S $(S \subseteq N)$. The Shapley index gauges the capacity of a shareholder to be determinant in a voting cast. It measures the likelihood that he can join a losing coalition so that he swings the outcome of a vote. In other words, a shareholder i is said to be pivotal if when added to a losing subset S of shareholders, transforms it to a winning subset $(S \cup \{i\})$. In a simple-majority voting rule, we have $½\text{-}w_i \leq w(S) < ½$ and $w((S \cup \{i\}) > ½$ when i is pivotal. The number of shareholders shaping the winning coalition is |S| +1. The Shapley value to a player i is defined as follows:

$$\varphi_i(v) = \sum_{S \subseteq N-\{i\}} \frac{|S|!\,(|N-S|-1)!}{|N|!}\,[v(S \cup \{i\}) - v(S)]$$

where |S| denotes the cardinal number of the set S, v(S) is a real-valued function so as to $v(\emptyset)=0$ and $[v(S \cup \{i\}) - v(S)]$ is the gain that the pivotal shareholder i brings to the losing coalition.

The computation of the Shapley value requires detailed data on direct voting rights of all shareholders whatever their stakes' size. Such information is unavailable for all French listed firms since the French law constrains shareholders to disclose their ownership rights or voting rights only when they exceed the 5% threshold *(see endnote 25)*. However, some firms bind themselves to disclose more detailed information by adopting statutory threshold notification in their bylaws *(see endnote 26)*. To remedy of this inconvenience, we compute the power indexes as in Guedes and Loureiro (2002) who assume that each unidentified shareholder holds 1% of the voting interests. To test the effect of the presence of the second largest controlling shareholder, we regress the Shapley value of that shareholder on leverage. Since our main focus in the current study is on CMSs, we include in our regression the product of SV_2 and Excess high to test the effect of sharing control when excess control is high *(see endnote 27)*. This variable allows us to check whether there is a counterbalancing effect of the presence of a second large controlling shareholder or whether there is collusion between the two main shareholders. The results of the different specifications are presented in Table V. The coefficient on the interaction term (Equation 1 of Table V) is consistently positive and significant at 5% level indicating that sharing control is perceived by the external finance suppliers as a pledge against expropriation when there is a high discrepancy between ownership and control. Hence, creditors might provide loans to firms as far as the large controlling shareholder does not have the full control over the firm. Namely, they consider that when the largest controlling shareholder is not free to take the firm's decision without the consent of the other shareholders, he will avoid expropriating them since that misbehavior is harmful for the other shareholders. We test the same model replacing SV_2 by SV_2d in the interaction term. The results of the equation 2 (Table V) are similar to those in the preceding equation and the same conclusions hold.

We turn now to test if such effect holds for group-affiliated firms. In equation 3 (TableV), we include the product of the group dummy and SV_2 to test the effect of sharing control within groups. In equation 4 of the same table, the interaction term includes SV_2d in lieu of SV_2. The regressions show that the coefficient of the interaction term is positive and significant in both equations. This suggests that for group-affiliated firms, when control is shared, the financial capital market, perceives lower expropriation likelihood and a monitoring role associated with the presence of a second controlling shareholder. In other words, when his power is challenged, the largest controlling shareholder might be constrained to steer clear from expropriating the debtholders. Since the financial capital market is aware of the monitoring role of the second controlling shareholder, he does not refrain from providing loans to them. These results support the hypothesis H_2a.

6. Conclusion

This paper examines the role of debt in CMSs using a sample of 377 French listed firms. In contrast to the previous findings of a linear relationship between excess control and leverage, our findings suggest a non-monotonic relationship between these two variables. In fact, the evidence from the French market suggests that debt constrains expropriations in firms with small levels of control excess and facilitates expropriation beyond the 10.2% excess level breakpoint. Besides, we find that leverage might constrain expropriation for firms exhibiting high excess control or those group-affiliated when these firms exhibit a second large controlling shareholder with a significant challenge power. The results suggest that the French financial institutions are effective in anticipating the firm's vulnerability to expropriation (group-affiliation or high excess control levels) and consider that sharing control in CMSs warrant a cut-down of expropriation.

References

1. Bebchuk, Lucian., Reinier, Kraakman., and George Triantis., 2000. Stock pyramids, cross-ownership, dual-class equity: The creation of agency costs of separating control from cash flow rights, in Randall K. Morck, ed.: Concentrated Corporate Ownership (University of Chicago Press, Chicago, I1.).
2. Bennedson, Morten., and Daniel, Wolfenzon., 2000, The balance of power in closely held corporations, Journal of Financial Economics 58, 113-139.
3. Black, Fischer., and Myron. Scholes., 1973, The pricing of options and corporate liabilities., Journal of Political Economy, 81, 637-654.
4. Bloch, L., Kremp, E., 2001. Ownership and voting power in France, in Barca, F., Becht, M.(Eds.), The Control of Corporate Europe, Oxford University Press.
5. Bianco, Magda., and Giovanna. Nicodano., 2005, Pyramidal groups and debt, forthcoming European Economic Review,
6. Bloch, Francis., and Ulrich. Hege., 2003. Multiple shareholders and control contests, mimeo.
7. Campbell, John., 1996.Understanding risk and return, Journal of Political Economy 104, 298-345.
8. Bradley, M., Jarrell, G.A., Kim, E.H., 1984. On the existence of an optimal capital structure: theory and finance. Journal of Finance 39, 857–879.
9. Brailsford, J. Timothy, Barry R. Oliver and Sandra L. H. Pua., 2002, On the relationship between ownership structure and capital structure, Accounting and Finance, 42, 2002, 1-26.
10. Chang, James, Tarun Khanna, and Krishna G. Palepu., 2001, Analyst Activity Around the World." Harvard Business School Working Paper Series, No. 01-061.
11. Claessens, Stijn., Djankov, Simeon.,and Lang, Larry. H.P., 2000. The separation of ownership and control in East Asian corporations. Journal of Financial Economics 58, 81-112.
12. Cronqvist, Henrik., Nilsson, Mattias., 2003. Agency costs of controlling minority shareholders. Journal of Financial and Quantitative Analysis 38, 695-719

13. Faccio, Marra., and Larry H.P. Lang., 2002. The ultimate ownership of Western European corporations. Journal of Financial Economics 65, 365-395.
14. Faccio, Marra., Larry. H.P. Lang, Leslie. Young., 2005, Debt and Corporate Governance, Working paper, Mendoza College of Business, University of Notre Dame.
15. Fama, Eugene, and Kenneth French., 1992. The Cross-Section of Expected Returns, Journal of Finance, 46.
16. Ferri, Michael G., and Wesley, H Jones., 1979, Determinants of Financial Structure: A New Methodological Approach, Journal of Finance, June, 34 (3), pp.631-644.
17. Friend, I., Lang, H., 1988. An empirical test of the impact of managerial self-interest on corporate capital structure. Journal of Finance 43, 271–281.
18. Galai, Dan. & Masulis, Ronald W., 1976, The Option Pricing Model and the Risk Factor of Stock, Journal of Financial Economics, Vol. 3, No. 1-2, pp. 53-81
19. Goldfeld, S.M. and Quandt R.E., 1973, The Estimation of Structural Shifts by Switching Regressions. Annals of Economics and Social Management 2/4, 475–485,
20. Guedes, José C., and Gilberto, Loureiro., 2002, Are European corporations fleecing minority shareholders? Results from a new empirical approach?, Working paper, Universidade Católica Portuguesa.
21. Harvey., Campbell R., Karl V. Lins, and Andrew H. Roper., 2002, The effect of capital structure when expected agency costs are extreme, NBER Working paper n° 8452.
22. Harvey, Campbell R., Karl V. Lins and Andrew H. Roper. "The Effect Of Capital Structure When Expected Agency Costs Are Extreme," Journal of Financial Economics, 2004, v74(1,Oct), 3-30.
23. Haubrich, Joseph G., 1989, Financial intermediation: Delegated monitoring and long-term relationships, Journal of Banking and Finance, vol. 13, pp. 9-20.
24. Hay, Jonathan., Andrei, Shleifer, and Robert.W Vishny., 1996, Toward a theory of legal reform, European Economic Review, 40, 559-67.
25. Holland, John., 1994, Bank lending relationships and complex nature of Bank-corporate relation, Journal of Business, Finance and Accounting, vol 13, p 221-235.
26. Jensen, Michael., 1986. Agency costs of free cash flow, corporate finance and takeovers. American Economic Review 76, 323–339.
27. Jensen, Michael, and William Meckling, 1976, Theory of the firm: Managerial behaviour, agency costs, and ownership structure, Journal of Financial Economics 3.
28. Jensen, G. R., Solberg, D. P., and Zorn, T. S. (1992) Simultaneous determination of insider ownership, debt, and dividend policies, Journal of Financial and Quantitative Analysis 27, 247–263.
29. Gomes, Armando., and Walter, Novaes., 2001, Sharing of control as a corporate governance mechanism, PIER Working paper 01-029, University of Pennsylvania Law School.
30. Grossman, S.J., Hart, O., 1982. Corporate finance structure and managerial incentives. In: McCall, J.(Ed.), The Economics of Information and Uncertainty. University of Chicago Press.
31. Kim, Wi Saeng, and Eric H. Sorensen., 1986, Evidence on the Impact of Agency Costs of Debt in Corporate Debt Policy, Journal of Financial and Quantitative Analysis, 21: 131-144.
32. La Porta, Rafael., Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny., 1998. Law and Finance, Journal of Political Economy, Vol. 106 (6).
33. La Porta, Rafael., Florencio. Lopez-de-Silanes, and Andrei. Shleifer., 1999. Corporate ownership around the world. Journal of Finance 54, 471-517.
34. Mehran, H., 1992. Executive incentive plans, corporate control, and capital structure. Journal of Financial and Quantitative Analysis 27, 539–560.
35. Milnor, J.W., Shapley, L.S., 1978. Values of large games: II. Oceanic games. Mathematics of Operations Research 3, 290–307.
36. Myers, S.C., 1977. Determinants of corporate borrowing. Journal of Financial Economics 5.
37. Myers, S.C., 1984. The capital structure puzzle. Journal of Finance 39, 575–592.
38. Myers, S.C., Majluf, N.S., 1984. Corporate finance and investment decisions when firms have information that investors do not have. Journal of Financial Economics 13, 187–221.
39. Pound, John., 1988., Proxy Contests and the Efficiency of Shareholder Oversight. Journal of Financial Economics, 20: 237-65.
40. Rajan, R.G., Zingales, L., 1995. What do we know about capital structure? Some evidence from international data. Journal of Finance 50, 1421–1460.
41. Scott, David F., and John D. Martin., 1975, Industry Influence on Financial Structure", Financial Management, 4, 67-73.
42. Shapley, L., 1953. A value for N-person games. In: Kuhn, H., Tucker, A. Eds. , Contributions to the Theory of Games II. Annals of Mathematics Studies, vol. 28, Princeton Univ. Press, Princeton, pp. 307–317.
43. Shapley, Lloyd S. and Martin Shubik., 1954, A Method of Evaluating the Distribution of Power in a Committee System, American Political Science Review, 48 (3), 787-792.
44. Shleifer, Andrei., and Robert R. Vishny., 1986. Large shareholders and corporate control. Journal of Political Economy 94, 461-488.
45. Shleifer, Andrei., and Robert R. Vishny., 1997. A survey of corporate governance. Journal of Finance 52.
46. Smith., Clifford W. Jr., 1977, Alternative Methods for Raising Capital, Journal of Financial Economics, 5.
47. Stulz, Rene, 1988, Managerial control of voting rights: Financing policies and the market for corporate control, Journal of Financial Economics 20, 25–54.
48. Thomadakis B., Stavros., 1992, Enterprise governance and growth: Notes on the theory of the firm in less developed capital markets, in Business finance in less developed capital markets, 267-281, Klaus P. Fisher and George J. Papaioannou, Greenwoold Press
49. Titman, S. and Wessels, R. (1988) The determinants of capital structure choice, Journal of Finance 43, 1–19.
50. Winton., Andrew, 1993, Limitation of liability and the ownership structure of the firm, Journal of Finance 48.
51. White, Halbert, 1980, A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity, Econometrica 48, 817-838.
52. Zwiebel, Jeffrey., 1995, Block investment and partial benefits of control, Review of Economic Studies 62.

Appendices

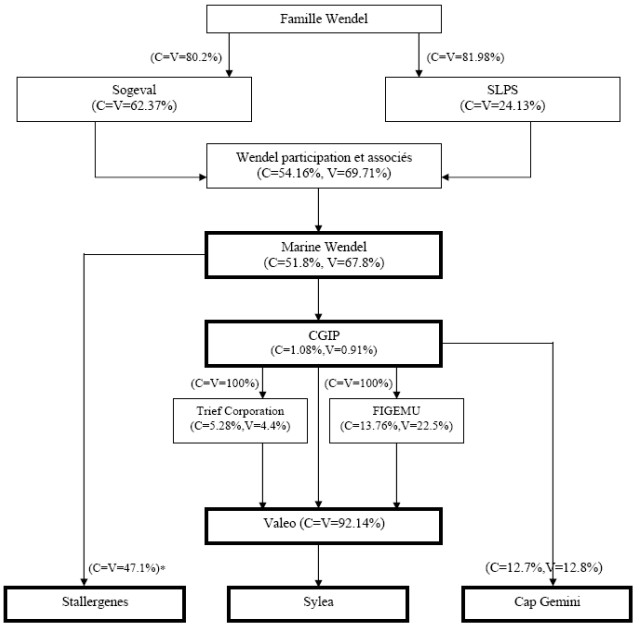

Figure 1. Wendel Family Group

This figure describes listed firms controlled by Wendel Family. Firms in thick boxes are publicly traded firms. "C" and "V" denote respectively direct cash flow stakes and direct voting stakes of the direct controlling shareholder. We trace back the ultimate ownership chain of Valeo. Valeo is controlled through a pyramid. Wendel Family controls Valeo through a pyramid at a 10% cut-off point (and at a 20% cut-off point also) with an ultimate cash flow stakes (UC) of 3.94% and 27.81% of ultimate control stakes (UV). Excess control for this firm measured by (UV-UC/UV) equals 85.83%. Stallergenes, Sylea and Cap Gemini are also controlled through pyramids with excess control of 62.11%, 86.94% and 21.94% respectively. All firms in this figure are group-affiliated firms under the overarching control of Wendel family.

(C=V=80.2%) (C=V=81.98%), (C=V=100%) (C=V=100%), (C=V=47.1%)∗ (C=12.7%,V=12.8%)

∗ Including indirect control via two 100% affiliates of Marine Wendel: SIMFOR and Financière de la Trinité.

- SOGEVAL : La Société de Gérance de Valeurs Mobilières.
- SPLPS : La Société Lorraine de Participation Sidérurgique.

Table 1. Description of variables used in this study

Variable	Description
Dependent variable	
D/TA	Book value of financial debt (excluding within group debts) over total assets
Independent Variables	
UC1	Ultimate cash flow rights of the largest controlling shareholder.
UV1	Ultimate voting rights of the largest controlling shareholder.
Excess	Excess control is the ownership-control discrepancy measure of the largest controlling shareholder. It is measured as (UV1-UC1)/UV1.
Excess high	Dummy equals 1 if the excess control exceeds the switching point (10.2%); and 0 otherwise.
Group	Dummy equals 1 if the firm is either controlled through a pyramid, it controls one (or more) firms in the sample, it shares the same controlling shareholder with other firms in the sample or its controlling shareholder is a widely held firm (or a widely held financial institution). (Faccio and al. (2002))
SV_i	The Shapley index of the i^{th} largest controlling shareholder (It was computed using the direct voting stakes).
$SV\ dummy_i$	Dummy equals 1 if the Shapley index of the i^{th} largest controlling shareholder is greater than zero; and 0 otherwise.
Control Variables	
Size	Natural logarithm of the book value of total assets.
Collaterals	Ratio of fixed to total assets
Profitabilty	The lagged (EBITDA/book value of total assets) where EBITDA is the earning before interest, taxes and depreciation.
Risk	Beta: the ratio of the covariance of the company return with market, and the variance of return of the market. The beta was calculated against the SBF 250 index.
Growth	Total capital expenditures/Book value of total assets

Table 2. Sample Description

This table presents characteristics of 377 firms in the sample. The sample consists of non-financial firms listed in the French Stock Market in 2000. Accounting data are procured from Worldscope. All data are as of December 2000 or the end of fiscal 2000.

Industry	SIC codes	Firms		Group-affiliated	
		Number	%	Number	%
Petroleum	13, 29	2	0.53	2	1.98
Consumer durables	25, 30, 36, 37, 50, 55, 57	73	19.37	20	19.80
Basic Industry	10, 12, 14, 24, 26, 28, 33	38	10.08	16	15.84
Food and Tobacco	1, 2, 9, 20, 21, 54	17	4.51	2	1.98
Construction	15, 16, 17, 32, 52	17	4.51	5	4.95
Capital Goods	34, 35, 38	39	10.34	4	3.96
Transportation	40, 41, 42, 44, 45, 47	11	2.92	6	5.94
Unregulated utilities	46, 48	11	2.92	4	3.96
Textiles and Trade	22, 23, 31, 51, 53, 56, 59	49	12.99	14	13.86
Services	72, 73, 75, 76, 80, 82, 87, 89	96	25.46	21	20.79
Leisure	27, 58, 70, 78, 79	24	6.37	7	6.93
Total		377	100	101	100

Panel B: Descriptive Statistics of the Sample					
Variable	Min	Mean	Median	Max	Standard deviation
UC1	0.001	0.401	0.392	0.951	0.239
UV1	0.026	0.509	0.539	0.951	0.248
Excess	-0.040	0.225	0.191	0.992	0.232
V1	0.026	0.523	0.564	0.951	0.250
V2	0.000	0.089	0.059	0.493	0.099
SV1	0.030	0.730	1.000	1.000	0.355
SV2	0.000	0.055	0.000	0.500	0.088
Debt/TA	0.000	0.228	0.209	1.807	0.174
Size	8.291	12.319	11.878	18.831	2.185
Collaterals	0.003	0.185	0.151	0.962	0.154
Profitability	-0.703	0.129	1.130	0.892	0.129
Growth	0.000	0.070	0.049	0.812	0.077
Risk	-0.476	1.009	0.672	7.407	1.038

Panel C: Break-down of excess of control and debt levels.		
Excess of control	Number of firms	Level of debt (D/TA)
Excess ≤ 0.05	99	0.218
0.05 < Excess ≤0.10	27	0.289
0.10 < Excess ≤ 0.15	35	0.294
0.15 < Excess ≤ 0.20	35	0.219
0.20 < Excess ≤ 0.25	45	0.202
Excess > 0.25	135	0.182

Table 3. Excess control and debt financing

All the regressions are run using an ordinary least squares specification. The dependent variable is D/TA defined as the book value of financial debt (excluding within group debts) over total assets. Excess control is the ownership-control discrepancy measure of the largest controlling shareholder. It is measured as (UV1-UC1)/UV1 where UV1 and UC1 are respectively the ultimate voting rights and the ultimate cash flow rights of the largest controlling shareholder. BP is the break point of the excess control. It equals 10.2% of the control excess and is the point beyond which the effect of control excess on debt level turns to be negative. It is computed using a switching regime regression with unknown breakpoint as suggested by Goldfeld and Quandt (1973). Excess high is a dummy variable that takes 1 if the excess of control exceeds the switching point and zero otherwise. Size is the natural logarithm of the book value of total assets. Collaterals is the ratio of fixed to total assets. Profitability is the lagged (EBITDA/book value of assets) where EBITDA is the earning before interest, taxes and depreciation (both the numerator and the denominator are taken at the beginning of year). Growth opportunities are poxied by the ratio of total capital expenditures over book value of total assets. Risk is proxied by the beta computed as the ratio of the covariance of the company return with market, and the variance of return of the market. The beta was calculated against the SBF 250 index. Industry dummies following Campbell's (1996) classification are included in the regression but not reported. a, b, and c indicate significance at the 1, 5, and 10% levels, respectively. The t-statistics are at the right of the coefficients and are based on White (1980) heteroskedasticity corrected standard errors.

	Equation 1		Equation 2		Equation 3	
Independent Variables						
Excess	0.091	1.939[c]	0.230	2.616[a]		
Excess squared	-0.147	2.435[b]				
(Excess-BP)*Excess high			-0.286	2.774[a]		
Excess high					-0.048	2.341[b]
Size	0.011	2.176[b]	0.012	2.317[b]	0.011	2.048[b]
Collaterals	0.291	3.621[a]	0.286	3.603[a]	0.252	3.150[a]
Profitability	-0.110	1.995[b]	-0.117	2.118[a]	-0.089	1.634
Growth	0.228	2.258[b]	0.237	2.368[b]	0.223	2.315[b]
Risk	0.010	0.695	0.011	0.443	0.011	0.445
Industry dummies	Included		Included		Included	
Intercept	-0.191	2.136[b]	-0.198	2.239b	-0.113	1.145
Number of firms	377		377		377	
Adjusted R squared	20.278%		20.468%		21.666%	
F-statistic	6.626[a]		6.692[a]		7.499[a]	

Table 4. Group affiliation and debt financing

All the regressions are run using an ordinary least squares specification. The dependent variable is D/TA defined as the book value of financial debt (excluding within group debts) over total assets. Excess control is the ownership-control discrepancy measure of the largest controlling shareholder. It is measured as (UV1-UC1)/UV1 where UV1 and UC1 are respectively the ultimate voting rights and the ultimate cash flow rights of the largest controlling shareholder. Group is defined as a dummy variable that equals 1 if: 1/ the firm is controlled through a pyramid, 2/ it controls one (or more) firm in the sample, 3/ it shares the same controlling shareholder with other firms in the sample or 4/ its controlling shareholder is a widely held firm or widely held financial institution and 0 otherwise (Faccio and al. (2002)). Excess high is a dummy variable that takes 1 if the excess of control exceeds the switching point and zero otherwise. BP is the break point of the excess control. It equals 10.2% of the control excess and is the point beyond which the effect of control excess on debt level turns to be negative. It is computed using a switching regime regression with unknown breakpoint as suggested by Goldfeld and Quandt (1973). Size is the natural logarithm of the book value of total assets. Collaterals is the ratio of fixed to total assets. Profitability is the lagged (EBITDA/book value of assets) where EBITDA is the earning before interest, taxes and depreciation (both the numerator and the denominator are taken at the beginning of year). Growth opportunities are poxied by the ratio of total capital expenditures over book value of total assets. Risk is proxied by the beta computed as the ratio of the covariance of the company return with market, and the variance of return of the market. The beta was calculated against the SBF 250 index. Industry dummies following Campbell's (1996) classification are included in the regression but not reported. a, b, and c indicate significance at the 1, 5, and 10% levels, respectively. The t-statistics are at the right of the coefficients and are based on White (1980) heteroskedasticity corrected standard errors.

	Equation 1		Equation 2		Equation 3	
Independent Variables						
Excess	0.079	1.654[c]				
Excess squared	-0.105	1.612				
Group	-0.043	2.284[b]				
Group*Excess			-0.060	1.882[c]		
Group*Excess high					-0.069	1.807[c]
Size	0.015	2.639[a]	0.012	2.309[b]	0.012	2.270[b]
Collaterals	0.297	3.949[a]	0.291	3.671[a]	0.292	3.669[a]
Profitability	-0.117	2.190[b]	-0.101	1.841[c]	-0.101	1.845[c]
Growth	0.205	2.000[b]	0.211	2.076[b]	0.212	2.084[b]
Risk	0.009	0.603	0.010	0.701	0.010	0.700
Industry dummies	Included		Included		Included	
Intercept	-0.211	2.331[b]	-0.186	2.052[b]	-0.185	2.038b
Number of firms	377		377		377	
Adjusted R squared	20.884%		20.477%		20.449%	
F-statistic	6.514[a]		7.051[a]		7.041[a]	

Table 5. Shared control and debt financing

All the regressions are run using an ordinary least squares specification. The dependent variable is D/TA defined as the book value of financial debt (excluding within group debts) over total assets. Excess control is the ownership-control discrepancy

measure of the largest controlling shareholder. It is measured as (UV1-UC1)/UV1 where UV1 and UC1 are respectively the ultimate voting rights and the ultimate cash flow rights of the largest controlling shareholder. Excess high is a dummy variable that takes 1 if the excess of control exceeds the switching point and zero otherwise. BP is the break point of the excess control. It equals 10.2% of the control excess and is the point beyond which the effect of control excess on debt level turns to be negative. It is computed using a switching regime regression with unknown breakpoint as suggested by Goldfeld and Quandt (1973). SV_i is the Shapley value of the i^{th} largest controlling shareholder. $SV_i d$ is a dummy that equals 1 if SV_i exceeds 0. Group is defined as a dummy variable that equals 1 if: 1/ the firm is controlled through a pyramid, 2/ it controls one (or more) firms in the sample, 3/ it shares the same controlling shareholder with other firms in the sample or 4/ its controlling shareholder is a widely held firm or widely held financial institution and 0 otherwise (Faccio and al. (2002)). Size is the natural logarithm of the book value of total assets. Collaterals is the ratio of fixed to total assets. Profitability is the lagged (EBITDA/book value of assets) where EBITDA is the earning before interest, taxes and depreciation. Growth opportunities are poxied by the ratio of total capital expenditures over book value of total assets. Risk is proxied by the beta computed as the ratio of the covariance of the company return with market, and the variance of return of the market. The beta was calculated against the SBF 250 index. Industry dummies following Campbell's (1996) classification are included in the regression but not reported. a, b and c indicate significance at the 1, 5 and 10% levels, respectively. a, b, and c indicate significance at the 1, 5, and 10% levels, respectively. The t-statistics are at the right of the coefficients and are based on White (1980) heteroskedasticity corrected standard errors.

	Equation 1		Equation 2		Equation 3		Equation 4	
Independent variables								
Excess					0.118	2.409[b]	0.108	2.275[b]
Excess squared					-0.194	3.280[a]	-0.183	3.124[a]
SV2 * Excess high	0.419	1.971[b]						
SV2d * Excess high			0.086	2.197[b]				
SV2*Group					0.526	2.882[a]		
SV2d*Group							0.059	1.922[c]
Size	0.010	2.025[b]	0.009	1.878[c]	0.010	1.816[c]	0.009	1.724[c]
Collaterals	0.279	3.458[a]	0.282	3.514[a]	0.280	3.504[a]	0.289	3.549[a]
Profitability	-0.110	1.971[b]	-0.113	2.026[b]	-0.097	1.679[c]	-0.099	1.695[c]
Growth	0.229	2.230[b]	0.228	2.207[b]	0.189	2.042[b]	0.218	2.284[b]
Risk	0.009	0.666	0.010	0.689	0.010	0.673	0.011	0.781
Industry dummies	Included		Included		Included		Included	
Intercept	-0.173	1.962[c]	-0.175	2.015[b]	-0.171	1.897[c]	-0.191	2.169[b]
Number of firms	377		377		377		377	
Adjusted R squared	20.347%		20.543%		22.143%		21.130%	
F-statistic	7.003[a]		7.076[a]		6.941[a]		6.596[a]	

Endnotes

[1] Faccio et al. (2002), Bianco and Nicodano (2005) and Harvey et al. (2002).

[2] Bebchuk et al. (2000) define a controlling minority structure (henceforth "CMS") as a firm controlled by an insider who holds only a small fraction of the equity claims on the firm's cash flows.

[3] La Porta et al.(1998) documented differences in shareholders' rights and creditors' rights between common law countries and civil law countries. They showed also that the legal origin of law (English, French, German or Scandinavian) matters in explaining the same differences.

[4] Non-voting traded shares, non-traded high voting shares, pyramiding, multiple controlling chains,…

[5] See also Stulz (1988) who showed that a recapitalization to higher level debt financing may be used by the controlling shareholders to magnify their voting power without neither diluting their equity interests nor owning supplementary stocks, resulting in a greater entrenchment and insulation from the market of corporate control forces.

[6] Faccio and al.(2002) validated this assumption for Western European countries (France, Germany, Italy, Spain and U.K).

[7] See Bloch and Kremp (2001) for further details.

[8] Besides the stakes owned directly, the ownership notification should include the stakes owned by third parties on behalf of the considered shareholder, stakes maintained by firms who control that shareholder, stakes owned by other persons or entities acting in a concerted manner with that shareholder and stakes that the considered shareholder has the possibility to buy according to an agreement.

[9] This indicator is an a posteriori measure. It assesses the potential that a country's legal rules (bankruptcy and reorganization laws) offer for the protection of the creditors once the firm goes bankrupt. For instance, it does not consider the array of laws, regulations and practices that might protect the creditors when the debt contract is signed.

[10] The accounting standards rating were produced by the Center of International Financial Analysis & Research in 1990. It is computed by examining and rating firm's annual reports for their inclusion or exclusion of 90 items. Theses items fall in the following categories: general information, income statements, balance sheets, funds flow statement, accounting standards, stock data and special items

[11] In few cases, we rely on Financial Extel Reports database or on Extel News Report when data is not available otherwise.

[12] The French law n°89-531 of August, 2nd, 1989 constrains any individual or legal entity acting by himself or in concert, who crosses upward or downward, directly or indirectly the 1/20, 1/10, 1/5, 1/3, 1/2 or 2/3 threshold of any listed firm listed on the French Stock Market with its headquarter in France to inform the competent authorities within a fifteen days period.

[13] Beside the compulsory disclosure rule, several firms adopt statutory thresholds in their bylaws. For example, any shareholder of Aventis owning, alone or as member of a group acting together in a concerted manner, 1 % of the outstanding shares has to notify the firm in the span of 5 business days. With this 1% threshold, notification should be renewed each time an increase of 0.5% or a decrease of 1% occurs. Statutory thresholds vary from one firm to another.

[14] Debt includes, among other elements, bank overdrafts and banking revolving credits and excludes non-financial liabilities.

[15] In each layer of the pyramid, other multiple control chains are taken into account in computing the ultimate control of the overarching entity.

[16] The rationale underlying this argument is that of Myers and Majluf (1984). They demonstrated that, in a situation of severe information asymmetry between outside investors and inside investors about the firm's value, funding projects by issuing equities might underprice the firm shares and hence lead to a higher cost of capital of these projects. In such a situation, relying on other less undervalued financing sources , e.g. riskless debt, constitutes a better solution for the firm. Since larger firms feature less informational asymmetries and are more visible, we expect that they are less levered. Smith (1977) attributed the small firms' high leverage level to the much more higher cost that they support to issue new equity in comparison to that for large firms or to that for other financing alternatives.

[17] Campbell(1996) classifies firms into 11 industries as follows : 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), unregulated utilities (SIC 46, 48), 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).

[18] We test for a possible cubic relation between excess control and leverage by regression leverage, simultaneously, on excess, $(\text{excess})^2$ and $(\text{excess})^3$. The results do not provide any support for such from.

[19] We have few observations in our sample for which the largest controlling shareholder holds more cash flow rights than voting rights. The excess control for these firms is no less than –4%. Since the debt ratio and the excess control variable need to be, by construction, non-negative, we assign 0 for these firms as control excess. We rerun regression while excluding these firms from the sample, the same results hold.

[20] The coefficient of the beta remains insignificant even when we use an unlevered beta.

[21] The concern here is not what model fits best our data (the 2-piece linear model or the non-monotonic model), but to show that both models outperform that where the relationship between excess control and leverage is considered to be linear.

[22] The same results hold when we use pyramid-affiliated firms instead of group-affiliated firms. 54 firms in our sample are pyramid-affiliated. The results are available from the author upon request.

[23] Two seminal papers were at the origin of a substantial literature on power measurement: Shapley (1953) and Shapley and Shubik (1954).

[24] In the particular case of a corporation with two major shareholders and a finite number of atomistic minority shareholders forming the ocean, Milnor and Shapley (1978) showed that the Shapley value formula might be written as follows:

$$\phi_1 = \frac{w_1}{\alpha} - \frac{w_1 w_2}{\alpha^2} \quad when\ \alpha \geq 1/2\ ; \qquad \phi_1 = \frac{(1 - 2\,w_2)^2}{4\alpha^2} \quad when\ w_1 \leq 1/2,\ w_2 \leq 1/2,\ \alpha \leq 1/2;$$

$$\phi_1 = 1 \quad when\ w_1 \geq 1/2;\ and\ 0 \quad when\ w_2 \geq 1/2.$$

Where w_1 (w_2) is the percentage of direct voting of the largest controlling shareholder (second largest controlling shareholding). α is percentage of direct voting of all the minority shareholders forming the ocean ($\alpha = 1-w_1-w_2$).

[25] The French law n°89-531 of August, 2nd, 1989 constrains any individual or legal entity acting by himself or in concert, who crosses upward or downward, directly or indirectly the 1/20, 1/10, 1/5, 1/3,1/2 or 2/3 threshold of any listed firm on the French Stock Market with its headquarter in France to inform the competent authorities within a 15 days period.

[26] Beside the compulsory disclosure rule, several firms adopt statutory thresholds in their bylaws. For example, any shareholder of Bic owning, alone or as member of a group acting together in a concerted manner, 2% of the outstanding shares has to notify the firm in the span of 15 business days. With this 2% threshold, notification should be renewed each time an increase of 1% (or a decrease of 1%) occurs. Statutory thresholds vary from one firm to another. The firms provide such details when there is a by-law threshold notification clause of ownership or when a shareholder owning a small fraction (less than 5%) is a member of a group of shareholders forming a voting syndicate.

[27] The sample contains 151 firms where the large controlling shareholder does not maintain full control on the firms decisions. Among these firms, 92 firms feature high excess control levels. The sample contains 42 group-affiliated firms that feature a second largest controlling shareholder.