



DOES MANAGEMENT OWNERSHIP EXPLAIN THE EFFECT OF LEVERAGE ON FIRM VALUE? AN ANALYSIS OF FRENCH LISTED FIRMS

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Abstract

The purpose of this study is to analyze the influence of leverage on firm value. The emphasis is placed on the importance of managerial ownership in explaining the disciplinary role of debt in controlling the opportunistic behavior of managers. The empirical investigation examines a sample of 246 French companies of the SBF 250 and observed over the period 1997-2007. The results of using a priori classification approach show that the influence of debt on firm value is non-monotonic, reflecting the importance of managerial ownership as a determinant of this relationship. Indeed, for low /high levels of managerial ownership, debt conveys a negative signal to investors confirming an entrenchment/expropriation effect of minority shareholders. The disciplinary role of debt is much more pronounced for moderate levels of managerial ownership justifying an effect of alignment of interests between managers and shareholders.

Keywords: firm value, leverage, managerial ownership, entrenchment, expropriation, agency costs.

1. INTRODUCTION

During recent years, an extensive research effort has been devoted to models where capital structure is determined by agency theory. This latter is based on relationships between different groups of investors where information asymmetry is the source of conflict between insiders and outsiders (Fama and Miller 1972, Jensen and Meckling 1976). Thus the use of external financing in the presence of asymmetric information can give rise to conflicts between owner-managers on

the one hand and creditors on the other. This may lead the company to a sub-optimal investment policy, which is not consistent with the objective of maximizing shareholder wealth. Jensen and Meckling (1976), examining the influence of the existence of outside shareholders on firm value by comparing manager's behavior as the exclusive owner of the company and what it would be if he held a portion of the capital. In this context, conflicts of interests between shareholders and manager arise because the latter do not hold the entire capital and therefore do not receive all the gains that are the result of their effort. According to Jensen and Meckling (1976), there is an optimal debt level for which total agency costs are minimized. Grossman and Hart (1980), also consider the issuance of debt as a means of solving conflicts between shareholders and managers. However, contrary to Jensen and Meckling (1976), they analyze the situation where managers do not hold shares or bonds. In this case, change in financial structure does not preclude managers to pursue a profit-maximizing objective. The incentive effect of debt will rather come from the long-run goal of manager to avoid interruption of business activities.

According to Jensen (1986), the presence of conflicts of interests between managers and shareholders are due to existence of non-profitable projects financed by free cash flows while these funds should be distributed to shareholders. Therefore, issuing debt is a way to monitor and control financial management behavior. In particular, entrenched managers with excess cash flow have incentives to spend inefficiently funds by practicing overinvestment policy. However, Jensen (1986) noted that the monitoring hypothesis does not imply that the issuance of debt has always positive effect on firm value. Companies must give the market the opportunity to evaluate the firm's prospects. The author concluded that shareholders are supposed to indirectly control managers through financial structure. Similarly, Stulz (1990) shows that debt and dividend policies may discipline managers to undertake unprofitable projects, since they have resources available after financing all profitable projects. However, it is optimal to prefer debt constraint if the tax cost of dividend exceeds the marginal gain of debt.

The role of debt as an important mechanism to reduce agency problems in firms characterized by separation between ownership and control is a central theme of corporate finance literature. Following Jensen (1986), the question of the disciplinary role of debt as an active mechanism in the hands of shareholders who can use it to mitigate managers' entrenchment strategies, raises more debate and needs further financial research (Grossman and Hart, 1980; Stulz, 1990, Hart and Moore, 1995, Agrawal and Knoeber (1996), Harvey et al. (2004), Datta et al (2005).). The argument underlying the disciplinary role of debt is as follows: When the firm has excess cash flows and low investment opportunities, debt can serve as a disciplinary mechanism that reduces agency problems between managers and shareholders. Debt implies the obligations to repay the liquidity in the form of principal and interest charges. If these obligations are not honored, creditors can declare the bankruptcy of the firm. Indeed, conflicts of interest and the risk of managers' opportunistic behavior increase the firm's capital cost, which implies that investors are reluctant to trust managers and provide more financial funds to the firm. In this case, the issuance of debt in the presence of excess cash flow may convey positive signal to the market which is replicated by an increase in firm value.

However, several studies have shown that this mechanism is not always effective. The positive effect of debt is not constantly observed. Two explanations are possible: (i) the negative reaction of stock prices to debt issues can be justified by the presence of negative "leverage effect". In particular, return on investment is insufficient to meet interest payments on debt, which reduces the profitability of financial capital and therefore creating a crowding- out effect of the arrival of

new investors. (ii) The second argument is justified by signaling theory which states that the opportunistic/expropriation behavior of the owner-manager outweighs the behavior of alignment of interest between them and minority shareholders. In this case, the resulting agency costs are sufficient to decrease the firm's market value.

The analysis of the previous literature on this subject shows divergence in the study of possible associations between firm value, leverage and managerial participation. Indeed, most studies focus more on the impact of managerial ownership on firm performance (Demsetz 1983, Stulz 1988, Morck et al 1988, McConnell and Servaes 1990 ...), others analyze the behavior of debt under the entrenchment hypothesis. In this case, the empirical studies addressing the impact of debt on firm value neglect the role of managerial ownership as a fundamental factor in explaining market reaction to debt issue (Zingales, 2000, Claessens et al. (2002) Bhagat and Jefferis (2002), Fluck (1998), Zhang (1998), Heinrich (2000), Brailsford et al (2002), Mahrt-Smith (2005), Ghosh (2007), Leonard (2009) Collins and Huang (2011)).

The purpose of this paper is to fill this gap by shedding light on the nature of the relationship between managerial ownership, firm value and debt. We seek to answer the following question: Does managerial ownership help to enhance or attenuate the relationship between firm value and debt as highlighted by Jensen and Warner (1988), Heinrich (2000), and Bhagat and Jefferis (2002)? In other words, for different levels of managerial shareholdings, is sensitivity of firm value to any change of debt significant? Consequently, the positive or negative effect of this latter variable can explain behavior of entrenchment / expropriation or alignment of the manager. To answer these questions, we have structured our study as follows: in the second section, we will analyze the previous theoretical and empirical literature which has developed the potential links between managerial ownership, debt and firm value. Section 3, will be devoted to the analysis of data and methodology. The results and empirical analysis are reported in section 4. Section 5 will conclude.

2. THEORETICAL MOTIVATION

Agency theory relative to corporate governance assumes firm as a nexus of contracts that relate all of its participants (shareholders, managers, creditors, customers, suppliers, employees ...). This research direction was initiated by Berle and Means (1932), Coase (1937), Alchian and Demsetz (1972), and developed by Jensen and Meckling (1976). Fama (1980), considers firm as a complex set of contractual relationships that define the rights of the parties involved. If each party maximizes its utility function, it is inevitable that conflicts of interests arise. In this context, several studies have examined the financial mechanisms that can limit and reduce the costs of these conflicts. According to Jensen and Meckling (1976), debt can be used to minimize agency costs. They showed that the larger a manager's ownership in the firm's capital, the lower is agency costs of equity (represented by a manager's private consumption) and thereby the greater the value of the firm is suboptimal. The model of Diamond (1989) and Hirshleifer and Thakor (1989) as part of agency theory, determines the optimal capital structure under the hypothesis of conflict of interest between shareholders and creditors. They show how managers are encouraged to invest in projects relatively safe even at the expense of the firm's reputation. According to Harris and Raviv (1990), managers are encouraged to continue the current operations of the firm even if investors prefer liquidation. Indeed, for managers liquidation means loss of their jobs, while for shareholders and creditors, it allows them to recuperate some of their funds (as residual claimants) and invest them in more profitable projects. Therefore, the use of debt reduces agency problem by giving creditors and shareholders an option to liquidate the firm if cash flows of investment are relatively low.

According to Stulz (1990), debt financing reduces the cost of overinvestment but increases the cost of under-investment. However, financing with equity increases the cash available to managers, reduces the costs of under-investment and increases the costs of overinvestment. The resulting optimal capital structure is determined by the trade-off between the benefits of debt consisting of the decrease of free cash flow (added discipline) and the cost of debt related to the possibility to abandon profitable projects because of the importance of financial distress risk. According to Zwiebel (1996), managers will not voluntarily increase leverage because it can be substituted by other mechanisms of governance. According to this view, managers try to avoid debt, but may be required by other governance mechanisms to increase leverage, which serves as an ultimate disciplinary mechanism to mitigate the problem of overinvestment.

Fishman (1989), Eckbo, Giammarino and Heinkel (1990) and Weston, Chung and Hoag (1990), Nandkumar and Switzer (1998) examined the impact of debt, managerial entrenchment, and other factors on stock prices reaction. Claessens et al. (2002) consider data from 1301 firms observed in eight Asian countries in order to examine the effect of ownership structure on firm value. They find that stock prices increase with cash flow right and decreases when the voting rights of largest shareholder exceed his property rights.

The paper of David and Diane (2006) is an extension of the empirical works developed by Myers (1977), Jensen (1986), Stulz (1990), Berger and Ofek (1995), Comment and Jarrell (1995), Lang and al. (1996) and Peyer and Shivdasani (2001), who consider the relationship between debt and investment, as well as empirical work of McConnell and Servaes (1990, 1995), who analyze the influence of debt on firm value. After examining descriptive statistics, David and Diane (2006) show that for diversified firms, the negative impact of leverage on investment is significantly more important for firms with high Tobin's Q than for firms with low Tobin's Q. The authors have also, examined the impact of debt on firm value and obtained results consistent with those of McConnell and Servaes (1995). Similarly the tests show that for firms with low growth opportunities, debt positively affects firm value. However, for firms with high growth opportunities, debt is inversely related to firm value.

Bunkawanicha et al. (2008) examine the relationship between debt and governance in emerging markets. The empirical results show that a poor governance system characterized by the presence of entrenchment problems led to high level of indebtedness. This relationship is much more observed in periods of crises. Garvey and Hanka (1999), Noe and Rebello (1996), Stulz (1990), Zwiebel (1996), Jensen and Meckling (1976), and Limpaphayom Ngamwutikul (2004) and Nam et al (2003), Leonard (2009) analyzed the relationship between manager ownership and the change in debt around the announcement date of shares issue. The empirical results show that managerial ownership affects positively and significantly leverage for capital shareholding between 5% and 25%.

Collins and Huang (2011) examine the problem of estimating the cost of equity under the assumption of manager entrenchment. Using the index provided by Bebchuck et al. (2009), they show that high level of entrenchment is associated with an increase in the cost of equity. With the choice of leverage ratio below the desired level, Wang (2011) shows that small firms are more affected by the negative effect of management entrenchment. This deviation is even more important as the increase of firm's risk. Thomas and Wang (2011) have generalized the model of Zwiebel (1996) by introducing different levels of manager entrenchments in analyzing the dynamic behavior of firms' debt.

3. DATA AND RESEARCH DESIGN

3.1 Summary statistics

Our sample consists of 246 non-financial French firms listed in the "SBF250" index for a period of 11 years from 1997 to 2007. This allowed us to form a cylinder panel data of 2706 observations. The data bases Mergentonline and Datastream are our primary sources of information. Similarly, we used Mergentonline to collect accounting and financial data from company financial statements. The market capitalization of firms is obtained by consulting Datastream Database. Regarding data on the ownership structure of firms, they are obtained after consultation of the annual reports of companies available in the Mergentonline Database.

Table 1 summarizes the characteristics of our sample according to three indicators: firm size, sector and managerial ownership. It seems that our 246 companies are fairly dispersed among SMEs (small and medium firms) (54%) and Large firms (46%). On the other hand, dispersion of firms by sector is heterogeneous, as the industrial sector occupies 47% of the observations followed by the service sector (21%) and trade (17%). For managerial ownership, we note that 41% of companies have managers with shares below 20%, while 55% of firms have managerial ownership between 20% and 80%. Only 4% of observations have managers with an ownership over 80%.

3.2 Variables description

The dependent variable: we use a single variable to explain: the value of firm (Q) is approximated by Tobin's Q (Morck et al. 1988, Kaplan and Zingales 1997). This variable is defined economically as the ratio between the market value of the assets of the firm and the replacement value of these assets.

$$\text{Tobin}Q = (\text{book value of assets} - \text{book value of equity} + \text{market capitalization of the firm}) / \text{Book value of assets.}$$

The explanatory variables: we distinguish two categories of variables: fundamental variables such as capital structure and managerial ownership and control variables related to market imperfections and firm financial characteristics such as firm size, tangibility, return on assets, dividend, research and development, Non debt tax shields and Free Cash Flow(see Table 2).

The financial structure (Lev): Leverage is defined as the sum of long-term debt and current liabilities divided by total assets. From agency perspective and signaling theories, an increase in debt reduces "Free Cash Flows" and agency cost to monitor managers. The sign of this variable is expected to be positive. However, this sign may vary depending on the level of managerial ownership: indeed, in the case of firms with low managerial shareholding, increased debt leads to over-investment policy. In this case, coefficient of debt is expected to be negative. Contrary to firms with high managerial ownership, debt plays a disciplinary role and coefficient of debt is expected to be positive.

Manager ownership (MOW): Leland and Pyle (1977) argue that manager's ownership is used as manager confidence and future growth opportunities. The variable is defined as the proportion of capital held by directors and board memberships. We use this variable as a classification criterion according to the work of Fazzari et al. (1988). Low manager ownership leads to an alignment effect of interests between managers and outside shareholders, which favorably affects the value of the firm. The influence of this variable is expected to be a positive one of the relationship between firm-value and debt. However, increased manager ownership leads to a

managerial opportunistic behavior combined with an expropriation policy of minority shareholders. Therefore, investors perceive negatively this situation which will decrease firm value.

Firm Size (Size): There are two explanations for the effect of Size on firm value: according to Friend and Lang (1988), Marsh (1982), large Size firm has the opportunity to create more tax savings, with better knowledge of the market and are able to employ the best managers. In such case, Size is positively correlated with firm value. While, Rajan and Zingales (1995), Himmelberg et al (1999), Jensen (1986) argue that large firms are less efficient and are confronted to management entrenchment problems more than small businesses, in such case size is negatively related to firm value. We measure size of the firm by a logarithm of total assets.

Age of the firm (Age) : As a control variable, we use the logarithm of the age of the firm. We consider that the age of the firm can significantly influence the value of the firm, since older firms transmit signals to investors about the company's financial survival and profitability, which will favorably affect shareholders' wealth. The coefficient of this variable is expected to be positive.

Tangibility of assets (TANG): According to Kroszner and Strahn (2001), the tangibility of assets is measured as the sum of tangible assets of the firm divided by total assets. Firms with fewer tangible assets are more exposed to problems of asymmetric information than firms with more tangible assets. The former firms should have difficulty in obtaining external funding and therefore are less leveraged. Hence, the coefficient of this variable is expected to be positive.

Return on assets (ROA): Return on assets is defined as net operating income (EBIT) divided by total assets. Profitability measures the degree of efficiency of asset utilization. It also indicates the ability of the firm to generate revenues in excess of expenses. A measure of current profitability may partially explain the opportunities for future growth and profitability, suggesting a positive relationship between profitability on assets and firm value.

Ratio of research and development (R & D): This ratio is approximated by research and development expenditures divided by total assets. Indeed, high levels of research and development lead to more future growth opportunities, which will increase firm value.

Dividend (Div): Dividends are measured by total dividends paid on total assets. For entrenched firms, payments of dividends will reduce the amount of "free cash flow" available in the hands of managers, which will lead to a positive effect on shareholder's wealth. Similarly, any decrease in dividend level should be classified as an expropriation form of minority shareholders, which has a negative effect on stock prices.

Non debt tax shields (NDTS): According to DeAngelo and Masulis (1980), firm can gain from alternative other than debt tax shield. Tax benefits non related to debt can be approximated by depreciation and amortization. The existence of these tax shields should affect positively shareholder's wealth and firm value.

Free Cash Flow (FCF): Considered as a measure of financial performance, free cash flow represents the funds that the company can generate after financing profitable projects. This variable is measured as the sum of net profits plus depreciation and amortization, minus changes in working capital needs and capital expenditures divided by total assets.

For firms with low growth opportunities, the presence of excess cash flows can exacerbate agency problems because managers who are encouraged to raise the firm beyond its optimal size will undertake projects with negative net present values. The argument is that an increase in debt can remedy this problem of over-investment by limiting managerial discretion on "Free Cash Flows." In other words, free cash flow seems to have a positive effect on firm value.

Volatility of stock prices (Volty): Volatility is approximated by the standard deviation of changes in stock prices. Used as a proxy of firm business risk, volatility is likely to decrease the amount of contracted debt (Myers, 1977; Kim and Sorensen, 1986). Similarly, higher volatility is associated to a higher level of profitability. The coefficient on this variable is expected to be negative.

Sectors: We introduce in this study the sectorial effect on firm value. In particular, we consider the following sectors: Industrial (IND), Commerce (COM), and Services (SER), Transport (TRA) and Oil (PET). We compute this variable as a binary variable (1 or 0) combined with the variable debt (IND * Lev, COM * Lev, SER*Lev, TRA * Lev, PET*Lev). In this case, we observe the values of indebtedness for each sector based on the level of managerial ownership.

3.3 The Model to be tested and Hypotheses development

The analysis of managerial ownership effect on the sensitivity of firm value to financial structure is performed using the indirect test that considers ownership as a priori classification criteria according to Fazzari et al. (1988). In this context we will proceed in two types of tests:

(i) *The impact of managerial ownership on the relationship between firm value and debt:* We test the relationship firm value-debt either in the absence (equation1) or in the presence of managerial ownership MOW (Equation 2).

$$Q_{it} = a_0 + a_1 Lev_{it} + a_2 X_{it} + \varepsilon_{it} \quad \text{For global sample} \quad (1)$$

The priori criteria for low or high levels of managerial ownership (for low level when MOW <5% and higher level when MOW > 20%).

$$Q_{it} = \lambda_0 + \lambda_1 Lev_{it} + \lambda_2 X_{it} + v_{it} \quad \text{For sub samples 1, 2, 3} \quad (2)$$

Where sub-sample 1 is for MOW <5%; sub-sample 2 where 5% < MOW < 20%, sub-sample 3 where MOW > 20%.

(ii) *Tests of the nonlinear relationship between firm value and debt:* we use two tests to validate the robustness of the sensitivity firm value-debt to managerial ownership:

-*The priori criteria:* according to the different classes of managerial ownership (MOW low <5% 5% < MOW < 20% 20% < MOW < 40% 40% < MOW < 60% 60% < MOW < 80% MOW > 80%), using the equation 2, we try to show that the sign of debt (Lev) changes.

-*The Analytical method:* we add two variables squared leverage (Lev²) and cubic leverage (Lev³) to the variable Leverage (Lev) in order to analyze their effects. A non-linear or non-monotonic relationship between firm value and debt is obtained when Lev and Lev³ have opposite signs to Lev². These tests are performed on the entire sample, the subsamples MOW low (<5%), MOW middle (5-20%), MOW high (> 20%).

$$Q_{it} = \lambda_0 + \lambda_1 Lev_{it} + \lambda_2 Lev_{it}^2 + \lambda_3 Lev_{it}^3 + \lambda_4 X_{it} + v_{it} \quad (3)$$

Where X summarizes the explanatory variables (size, age of the firm, research and development, return on assets, tangibility, free cash flow, NDTs, volatility of profits, dividends, sectors)

In our model, the highest level of manager ownership affects firm value according to the alignments/entrenchments hypotheses (Jensen and Meckling 1976). Similarly, if the debt acts as a disciplinary mechanism, we expect that the leverage ratio has a positive effect on firm value. Indeed, Jensen (1986) argues that managers of firms with low growth opportunities and generating substantial discretionary funds are expected to overinvest and develop activities which are not in the shareholders' interests. In this case, and according to the free cash flow hypothesis, debt is assumed to reduce the opportunistic behavior of managers. This argument

allows us to point to a positive relationship between debt and firm value. So our first hypothesis is formulated as follows

Hypothesis 1: in the presence of free cash flow and low investment opportunities, debt positively affects firm value.

The entrenchment hypothesis is considered for cases where managers with low/higher ownership. Also this hypothesis can be combined with the hypothesis of expropriation when managers strongly control the firm. Chen and Steiner (1999) argue that for high levels of managerial shareholdings, debt is negatively related to manager ownership. Similarly, in the context of agency theory, Jensen and Meckling (1976) argue that for high levels of managerial shareholdings, the entrenchment hypothesis will affect negatively firm value. So, our hypothesis can be presented as follows:

Hypothesis 2: For low or high level of managerial ownership, debt is negatively related to firm value (entrenchment/expropriation effect).

As part of agency theory, for medium levels of managerial ownership, where the existence of other controlling shareholders who can offset the control actions taken by the officer, Jensen and Meckling (1976) suppose the existence of the alignment of interests between managers and other large shareholders. So for medium levels managerial ownership, debt should positively affect firm value. Our hypothesis can be stated as follows:

Hypothesis 3: for medium levels of managerial shareholdings, debt positively affects firm value (alignment effect)

4. Analysis of empirical tests

4.1 Descriptive statistics

Descriptive statistics is summarized in Table 3 in the appendix. The results are reported for the entire sample. The percentage of the share of managers (MOW) is on average 35.52%. The debt ratio measured by the variable "Lev" is on average 48.29% and significantly different from zero. The variable Tobin's Q is on average 1.375833. Our sample is characterized by a relatively small proportion of tangible assets 19.55%, which makes firms with more asymmetry information problem. Finally, the average level of research and development (R&D) is less than 0.5%, which is very low relative to an average level of 2 to 3% for other developed countries. This suggests that the intensity of spending on research and development of French firms is still limited.

4.2 Empirical tests of impact of managerial ownership on the relationship between firm value and leverage

The purpose of this section is to test the hypothesis of the positive effect of debt on shareholders wealth. Table 4 in the appendix reports the estimation results of our models using a panel data method for the two sub-samples of firms with/without regard to managerial ownership:

- By making an estimate of the total sample and ignoring the effect of managerial ownership, results reported in Table 4 (regressions 1 and 2) provide us with quality adjustment of 62%. Indebtedness influences positively and significantly firm value at the 1%. In this case, leverage serves as a positive signal to the market. This relationship is much more confirmed for a profile of firms characterized by a small/medium size, low experience, with low distribution rate, and with important growth opportunities (low FCF) and collateral assets. These results invalidate the theorem of neutrality (MM 1958) and confirm the importance of market imperfections in explaining the impact of debt on stock prices. Indeed, the relevance of variables such as size, tangibility, NDTs, R&D, show us the importance of asymmetric information, tax and agency

costs in explaining the significant relationship between firm value and financial structure. But the significance of the constant suggests that the existence of other omitted variables could affect this relationship.

- Consideration of managerial ownership as a priori criteria for classification of low or high levels of ownership shows that the positive effect of debt as noted above is not verified for all ownership classes. Indeed for low ownership levels <5%, the impact of debt is significant and negative, while this sign changes to become positive when managerial participation becomes important (> 20%).

The negative and statistically significant **effect of debt** is explained by several reasons: (i) *The leverage effect*: The increase in debt reduces financial profitability of French firms because of the negative effect of leverage when the return on investment is less than the cost of debt, which induces a decrease in shareholder's wealth. Consequently, the increase of debt implies additional financial charges which increase the risk of bankruptcy of the firm, and therefore decreases firm value (Myers 1977). (ii) *Signaling effect*: An alternative explanation is that an increase of debt leads to an increase of the collateral assets imposed on firm's loan. This is negatively perceived by investors when firm ownership is concentrated in the hands of a few shareholders, which is the case of France, because managers with concentrated ownership act according to shareholders' interests. This result is consistent with the results obtained by McConnell and Servaes (1995) for U.S. firms. (iii) *The entrenchment effect and the disciplinary role of debt*: for low levels of managerial ownership, an executive-employee with a low stake in the company seeks to preserve the value of his/her personal wealth at the expense of dispersed shareholders' wealth. With incentives/sanctions mechanism introduced by shareholders in order to lead to a management behavior consistent with the objective of maximizing firm value, directors are much more oriented towards improving their reputations by trying to increase firm size beyond its normal size (Shleifer and Visny (1989), Morck et al (1988). Therefore, increasing leverage is much more observed as an instrument used by the manager to make investments with negative NPV(net present value). The negative effect on firm value is much more explained by the assumption of management entrenchment compared to the disciplinary role of debt.

Size: According to the work of Lang and Stulz (1994) and Servaes (1996), firm size is related inversely to firm value. This association is observed for the entire sample and for firms with managerial participation more than 5%. However, for firms with managerial ownership less than 5%, size has a positive influence. This divergent result of size reflects the importance of the agency problem in explaining the effect of this variable for different levels of managerial ownership. The negative effect of size in the case of companies where a manager owns substantial shares of the firm reflects the problems of control and expropriation that may result. Although, the positive impact of size in the case where managers hold small/insignificant shares shows that the advantages of being a large firm dominates the negative effect of management entrenchment.

The **Age** of the firm significantly negatively affects the value of the firm for the entire sample. This result means that young firms signal wrong signals to outside investors about the survival and profitability of the firm.

Research and Development: In accordance with what is expected; **R&D** has a positive and statistically significant coefficient for the whole sample and for firms with managerial ownership more than 5%. This result means that research and development convey positive signals to investors. Indeed, significant levels of research and development lead to higher future growth opportunities, which will increase firm value (Morck et al, 1988, McConnell and Servaes, 1990, Chung and Jo, 1996, Chen and Steiner, 2000).

Return on assets (ROA): The positive effect of expected return on assets is tested for the whole sample but statistically insignificant. However, contrary to what is expected, return on assets significantly and negatively affects shareholder wealth only for firms with managerial ownership from 5% to 20%. This result means that return on investment or economic performance of the firm conveys negative signal to the market when a manager acquires more power and control at the expense of minority shareholders.

Tangibility(TANG): This variable positively and significantly affects shareholder wealth for the whole sample, and for firms with managerial ownership more than 20%. This coefficient is also consistent with the argument that higher tangible assets can reduce agency costs of debt by providing more security value (Rajan and Zingales, 1995). The positive and significant impact of this variable for high managerial ownership means that firms strongly controlled use more and more tangible assets to undertake risky investments that could transfer wealth at the expense of creditors.

Free cash flows: In accordance with what is expected, the positive effect of this variable is observed only in case of managerial ownership between 5% and 20%. However the negative and significant effect of free cash flow is detected for the entire sample and for high managerial shareholdings (> 20%). This indicates that the beneficial effect of free cash flow is more observed for medium levels of managerial ownership at which the alignment effect outweighs expropriation behavior. However, when a manager has a majority control, the effect of entrenchment and expropriations are sufficient to accumulate private benefits of control and decrease thereafter firm value.

Non debt tax shields (NDTs): this variable exerts positive effect and statistically significant at 1% for the total sample and for firms with a managerial ownership above 20%. This result means that for high levels of non-debt tax shield, shareholder's wealth increases consequently. According to DeAngelo and Masulis(1980) debt tax shield is not the only tax saving mechanism used by shareholders to increase firm value. This conclusion is verified for any class of managerial ownership.

Volatility (Volty): for firms with managerial ownership between 5% and 20%, higher volatility of return affects negatively firm value. This result means that firm risk is much more severe when managers hold significant shares of the firm's capital structure.

Dividend (DIV): According to the agency and signaling theories, the distribution of dividends favorably affects stock prices. However, in our case, for all specifications, dividends negatively and significantly impact firm value. The negative effect of this variable means that the disciplinary role of debt does not support companies with high dividends. The increase of dividend is the opportunity for shareholders to capture the value created at the expense of creditors which constitute a negative signal conveyed to the market.

[Insert Table 4]

- For high levels of managerial ownership, we have divided the sample into sub classes of levels [20% - 40%], [40% - 60%] [60% -80] [80% -100%]. The results (see Table 5) show that the sign of debt is not homogeneous. Indeed, for levels below 80% of managerial ownership, financial structure has a positive effect. When ownership exceeds this threshold, debt effect becomes negative. This result confirms the assumption of non-linearity between debt and firm value.

Leverage (Lev): In accordance with agency and signaling theories, leverage has positive and statistically significant effect for the sample of firms with managerial ownership between 20% and 80%. In this case, debt plays its full disciplinary mechanism against the opportunistic manager's behavior. Under the hypothesis of alignment of interests between managers and

shareholders, the increase in debt reduces the discretionary funds in the hands of managers, which will favorably affect firm value. Beyond the 80% threshold, managers are in a majority position of the firm's capital; undertake more actions which maximize their private benefits of control at the expense of creditors and minority shareholders. This indicates that debt is perceived by investors as a tool available to managers who used it to increase their private wealth which will result in a negative impact on stock prices.

The Analysis of the signs of the coefficients of control variables for ownership classes between 20% and 80% allows us to draw the profile of the company where debt is considered as a disciplinary mechanism. These companies are characterized by being young, profitable, have strong collateral assets and medium-sized. These companies are also characterized by small risk and low payout ratio.

However, for the class of a managerial ownership above 80% which reflects an opportunistic behavior of managers where the disciplinary mechanism of debt is not operational. This class of firms are characterized by good experience, high research and development, large size, high level of Free cash flows, and distribute low level of dividend. Regarding the effect of sectors, the majority of firms belong to the industrial, services and transport sectors. Some companies are not well perceived by the market; others instead exert positive information content.

4.3 Testing the non-monotonic relationship between debt and firm value.

Model 3 reflects the non-linear effect between debt and firm value. MM (1958) attempted to test this hypothesis, but their empirical results show that debt has no effect on stock prices. In our case, this test is performed in order to justify the non-linear effect of the debt on firm value as showed in the earlier test. Indeed, review of previous literature shows that the impact of managerial ownership on firm value is ambiguous. Thus, some authors argue that the observed relationship is not linear (Stulz, 1988, Morck et al 1988 and McConnell and Servaes 1990), while other authors find no significant relationship (Demsetz and Lehn 1985, and Agarawal Knoeber 1996, Himmelberg et al 1999).

In Table 6, we see that the variables Lev and Lev^3 have opposite signs to the variable Lev^2 . This result is verified for all estimates and all classes of managerial ownership. However, these coefficients are only significant for ownership above 80%. Indeed, the coefficients on the variables Lev and Lev^2 are respectively positive and negative. The coefficient on the variable Lev^3 is positive. This indicates a nonlinear relationship between debt and firm value. For managerial ownership above 80%, the positive and significant coefficient on the variable Lev reflects an alignment effect between managers and shareholders. In doing so, the managers follow a maximizing behavior of shareholders' wealth and seek the reputation of the company. Therefore, an increase in debt sends a good signal to outside investors, which affects positively firm value. The meaning of variables Lev^2 and Lev^3 with respective negative and positive effects shows that the disciplinary behavior of debt (positive effect of the variable Lev) for the managerial ownership class above 80% is not stable. In this case we can expect heterogeneous behavior as a result of expropriation and entrenchment followed by an alignment effect.

5. Concluding Remarks

Our research is part of the work aimed at testing the empirical relevance of the effect of debt on firm value. The main objective of this study is to enrich the empirical debate on the effect of

managerial ownership in explaining the disciplinary role of debt. In general, empirical tests confirm our three research hypotheses. According to our first hypothesis, debt as a disciplinary mechanism has a positive effect on firm value. The empirical results show that this relationship is verified for the whole sample regardless of the level of managerial ownership. But the significance of the constant term in the regression leaves us worried about the stability of the relationship between debt and firm value. In our second and third hypotheses, the introduction of different managerial ownership classes should explain other effects of leverage, given that the manager's objective is not always the maximization of shareholders' wealth. Empirical tests show that debt negatively affects firm value for negligible (<5%) or high (> 80%) levels of managerial shareholdings. Such a result supports the entrenchment/expropriation hypothesis. In this case, the company's debt conveys a negative signal about costs resulting from the opportunistic behavior of the manager. Firm value will drop accordingly.

Finally, confirmation of the robustness of assumptions 2 and 3 is consistent with the justification of the nonlinear relationship between debt and firm value. This test was conducted by the introduction of the variables Lev^2 and Lev^3 in the basic equation. The results show that the expected effect is verified. However, the meaning of the parameters is observed for high managerial stakes (> 80%). In this case, the concentration of ownership in French companies is not only justified by the opportunistic behavior of the manager-shareholder. The instability of this fact underlines the importance of other considerations (such as corporate reputation/credibility and its influence on investors' perceptions) that may encourage shareholders to opt for an alignment of interests with minority shareholders.

Our line of research can lead to several future directions: (i) an initial investigation would be to integrate coalition strategies adopted by other large shareholders when a manager engages in expropriation of minority shareholders. (ii) A second possibility would be to take into account effects of complementarities or substitution of other governance mechanisms. (iii) Finally, another avenue would be to test using the methods of event, for different levels of managerial ownership, the impact of debt change on abnormal returns.

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Appendix: Tables

Table 1 : Sample description (246 French firms)

By sector		By size	Par CEO ownership	
PER	18(7%)	SME 134 (54%)	< 20%	101(41%)
IND	114(47%)		20% - 40%	41(16%)
TRA	20(8%)	LE 112(46%)	40% - 60%	50(21%)
COM	42(17%)		60% - 80%	45(18%)
SER	52(21%)		> 80%	9 (4%)
Total	246	246	246	

- sectors are Oil(PER) ,Industrial (IND), transport (TRA), Commerce (COM), service (SER)
- Size criterion if firm size < average size then it is classified as SME, otherwise it is classified as a big firm.SME :small and medium enterprises, LE: large enterprises.
- Managerial ownership is measured by percentage of shares held by managers and board members

Table 2: Variables measurement and research hypotheses

variables	symbol	Measures	Expected sign
Firm value	Q	book value of assets - book value of equity + market capitalization of the firm) / Book value of assets.	

<i>debt</i>	<i>Lev</i>	<i>[long-term debt + short term debt/total assets</i>	<i>+/-</i>
<i>Managerial ownership</i>	<i>MOW</i>	<i>Capital share held by managers and board members</i>	<i>+/-</i>
<i>Firm size</i>	<i>Size</i>	<i>Total assets logarithm</i>	<i>+/-</i>
<i>Firm age</i>	<i>Age</i>	<i>logarithm of the Firm age</i>	<i>+</i>
<i>R&D</i>	<i>R&D</i>	<i>(R&D expenses)/total assets</i>	
<i>Tangibility</i>	<i>Tang</i>	<i>Total of corporate funding/total assets</i>	<i>+</i>
<i>Free Cash-flow</i>	<i>FCF</i>	<i>[EBIT(1-T) + Depreciation & Amortization - change in Net Working Capital - capital expenditure]/total assets</i>	<i>+</i>
<i>Non-debt tax shield</i>	<i>NDTS</i>	<i>(depreciation + amortization)/Total assets</i>	<i>+</i>
<i>Profits volatility</i>	<i>VOLTY</i>	<i>The annualized standard deviation of stock price</i>	<i>-</i>
<i>dividend</i>	<i>Div</i>	<i>total dividends/ total assets</i>	<i>+/-</i>
<i>Return on assets</i>	<i>ROA</i>	<i>Earnings before interest and income tax/total assets</i>	<i>+</i>

Table 3: Descriptive Statistics of the variables

	OBS	MEAN	ST DEV	MIN	MAX
Q	2371	1.3758	1.6335	0.0126	15.5108
MOW	2475	0,3552	0,2792	0,0001	0,9992
Lev	2668	0,4828	0,1945	0	0,9777
MOW squared	2706	0,1866	0,2229	0	0,9984
SIZE	2701	19,8381	2,2938	10,5187	25,9498
AGE	2684	3,3364	1,0283	0	5,6454
R&D	2706	0,0144	0,0556	0	0,8774
Tang	2703	0,1954	0,01637	0	0,9506
FCF	2283	0,0729	0,1007	-0,8032	0,4780
NDTS	2699	0,0733	0,0999	-0,8497	0,94433
VOLTY	2431	0,5677	1,1600	0	12,8417
DIV	2572	0,0182	0,0419	0	0,6368
ROA	2706	0,0358	0,0985	-0,8461	0,7126

Table 4 : Effect of managerial ownership on the relationship between firm value and leverage

	Total Sample		Sub sample 1 CEO < 5%		Sub sample 2 5% < CEO < 20%		Sub sample 3 CEO > 20%	
	Model1	Model2	Model1	Model2	Model1	Model2	Model1	Model2
Constant	21.588 ^a	21.605 ^a	0.291 ^c	0.291 ^c	22.5187 ^a	22.743 ^a	18.275 ^a	18.375 ^a
Lev	0.529 ^a	0.643 ^b	-0.034 ^b	-0.0502 ^a	-0.250	0.116	0.996 ^a	1.564 ^a
Size	-1.004 ^a	-1.005 ^a	0.381 ^a	0.382 ^a	-1.015 ^a	-1.032 ^a	-0.881 ^a	-0.885 ^a
Age	-0.213 ^b	-0.211 ^c	0.016	0.023	0.026	0.071	-0.197	-0.195
R&D	3.264 ^b	3.263 ^b	0.003	NA	20.228 ^b	20.436 ^b	3.916 ^a	3.895 ^a
ROA	0.822	0.868	0.002	-0.007	-5.532 ^a	-5.430 ^a	-0.123	0.069
Tang	1.335 ^a	1.330 ^a	0.003	0.003	1.182	1.197	1.595 ^a	1.561 ^a
FCF	-0.995 ^c	-1.016 ^c	0.013	-0.008	5.802 ^a	5.768 ^a	-1.482 ^b	-1.646 ^b
NDTS	2.425 ^a	2.409 ^a	-0.568 ^a	-0.571 ^a	-2.020	-2.006	3.832 ^a	3.821 ^a
VOLTY	0.017	0.013	0.093	0.094	-0.976 ^c	-0.981 ^c	0.044	0.044
Div	-4.191 ^a	-4.199 ^a	-0.050	-0.054	-24.182 ^a	-23.774 ^a	-3.066 ^b	-3.106 ^b
PER*EVIER		-0.229		-0.406 ^b		1.462		-2.424 ^c
TRAD* LEVIER		-1.145		-0.061		1.614		4.668 ^b
COM*LEVIER		-1.418		-0.024		0.369		-0.2808

SER*LEVIER		1.700		-0.2003 ^b		0.114		1.837 ^a
IND*LEVIER		-0.235		0.048		-0.945		-1.058 ^b
R-squared	62,116%	62,102%	83,111%	83,153%	70,17%	70,121%	63,912%	67,808%
Observations	1877	1877	483	483	267	267	1136	1136
FIXED EFFECTS	YES	YES	NO	YES	YES	YES	YES	YES

a, b and c indicate significance at the 1%, 5%, and 10% levels respectively.

Table 5: Relationship between firm value and leverage for high class of managerial ownership

	Sub-Sample 3a		Sub-Sample 3b		Sub-Sample 3c		Sub-Sample 3d	
	20% <CEO< 40%		40% <CEO< 60%		60% <CEO< 80%		CEO>80%	
	Model1	Model2	Model1	Model2	Model1	Model2	Model1	Model2
c	31.710 ^a	31.013 ^a	-0.617 ^a	-0.614 ^a	18.445 ^a	16.271 ^a	-0.3606	-1.050
Lev	0.770	1.837 ^b	1.520 ^a	1.5194 ^a	0.775 ^b	1.239 ^a	-0.506	-0.825
size	-1.454 ^a	-1.416 ^a	0.004	0.004	-0.926 ^a	-0.835 ^a	-0.003	0.363 ^b
Age	-0.375	-0.481 ^c	0.003	0.003	-0.051	-0.033	0.316 ^b	0.253 ^c
R&D	-7.346 ^c	-7.016 ^c	0.025 ^c	0.025 ^b	-6.823	-6.300	5.571 ^b	4.959 ^b
ROA	4.432 ^c	4.489 ^c	0.183	0.181	1.152	0.613	11.341 ^b	8.133 ^c
Tang	3.109 ^a	3.143 ^a	-0.038	-0.039	-0.294	-0.197	-1.345	0.178 ^c
FCF	-3.381 ^b	-3.763 ^b	0.060 ^c	0.060 ^c	-1.926 ^b	-1.966 ^b	3.223 ^c	6.759 ^a
NDTS	-2.521	-2.121	0.003	0.003	5.500 ^a	5.885 ^a	-1.675	-3.811
VOLTY	0.011	0.016	0.001	0.0004	-0.635 ^b	-0.374 ^a	0.021	-5.279 ^a
Div	-3.697 ^c	-3.526 ^b	-0.003	-0.003	-7.999 ^a	-8.752 ^a	-1.258	6.550
PER*EVIER		-6.727 ^b		-0.008		-7.196 ^b		1.078
TRAD* LEVIER		-2.018		0.002		16.980 ^a		
COM*LEVIER		0.113		0.096		1.473		-2.992 ^c
SER*LEVIER		5.117 ^a		0.028		-1.841 ^a		-2.626 ^a
IND*LEVIER		-2.369		-0.013		1.287 ^b		0.990 ^c
R-squared	59.978%	60.543%	82.912%	82.861%	68.046%	73.185%	66.614%	71.240%
observations	336	336	383	383	350	350	76	76

a, b and c indicate significance at the 1%, 5%, and 10% levels respectively.

Table 6 Non-monotonic relationship between debt and firm value

	Total sample		between 0% et 5%		between 5% et 20%		between 20% et 80%		between 80% et 100%	
	Model1	Model2	Model1	Model2	Model1	Model2	Model1	Model2	Model1	Model2
Constant	21.462 ^a	21.902 ^a	0.387 ^a	0.392 ^b	23.616 ^a	24.040 ^a	19.104 ^a	18.994 ^a	-5.641 ^b	-6.710 ^a
Lev	1.800	2.240	0.014	-0.013	-7.104	-7.567	0.566	2.260	10.643 ^a	11.564 ^a
Lev ²	-3.623	-4.975	0.013	0.0213	13.410	15.994	0.014	-1.995	-18.16 ^a	-14.37 ^a
Lev ³	2.804	3.718	-0.008	-0.009	-7.781	-9.865	0.523	1.536	13.801 ^b	12.099 ^a
Size	-1.001 ^a	-1.019 ^a	0.215 ^b	0.219 ^b	-1.016 ^a	-1.039 ^a	-0.907 ^a	-0.911 ^a	0.052	0.126
Age	-0.219 ^b	-0.220 ^b	0.0104	0.016	0.002	0.061	-0.228	-0.219	0.346 ^a	0.3419 ^a
R&D	3.1854 ^a	2.369 ^c	-0.001	0.005	20.467 ^b	20.590 ^b	3.923 ^a	3.761 ^a	15.649 ^{**}	17.474 ^b
ROA	0.807	0.413	0.005	0.0008	-5.328 ^b	-5.1878 ^b	-0.204	-0.066	2.654	5.201
Tang	1.337 ^a	1.136 ^a	0.005	0.005	1.191	1.171	1.673 ^a	1.639 ^a	-1.283	-1.480 ^c
FCF	-0.978 ^c	-0.893 ^c	0.091	0.075	5.796 ^a	5.743 ^a	-1.379 ^c	-1.501 ^b	5.266 ^a	5.985 ^a
NDTS	2.427 ^a	2.345 ^a	-0.395 ^a	-0.400 ^a	-1.944	-1.970	3.691 ^a	3.644 ^a	0.800	0.176
VOLTY	0.017	0.014	0.109 ^b	0.110 ^b	-1.001 ^c	-1.009 ^c	0.046	0.044	0.410	0.498
Div	-4.159 ^a	-4.126 ^a	-0.0505	-0.052	-24.535 ^a	-24.149 ^a	-3.828 ^a	-3.790 ^a	7.064 ^c	7.149 ^c
PER*EVIER		-0.211		-0.255		1.357		-5.093 ^a		0.909

TRAD* LEVIER		-1.035		-0.041		1.963		4.511 ^a		
COM*LEVIER		-1.483 ^b		-0.023		1.055		-0.463		-0.463
SER*LEVIER		1.734 ^a		-0.152 ^c		-0.017		1.838		-1.284
IND*LEVIER		-0.249		0.034		-1.124		-1.055 ^b		-0.251
R-squared	62,10	62,64	83,53	83,53	70,03	70,00	64,05	64,19	73,30	73,49
observations	1877	1877	483	483	267	267	1060	1060	76	76
FIXED EFFECTS	YES	YES	NO	YES	YES	YES	YES	YES	YES	YES

a, b and c indicate significance at the 1%, 5%, and 10% levels respectively.

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