

THE EFFECT OF THE BOARD OF DIRECTORS' CHARACTERISTICS ON THE COST OF CAPITAL OF THE FRENCH COMPANIES

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Abstract

The board of directors and the cost of capital play fundamental roles in the profitability and the perennity of any business organization. The objective of this research is to try to evaluate the effect of the board of directors' characteristics on the cost of capital of the French companies. The results of this study, based on a sample of 87 French companies belonging to the French index SBF120 during 2005, show that the majority of the board of directors' characteristics have an important and significant effect on the cost of equity capital, on the cost of debt and on the balanced average cost of capital of the French companies.

Keywords: Board of directors' Characteristics, cost of debt, cost of equity capital

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1. Introduction

Accounting plays a significant role in the governance of Business Corporation. Accountability, transparency and disclosure constitute a few of the roles fulfilled by accounting in the governance process. The board of directors is the governance mechanism where most of the strategies and decisions related to these aspects are developed and monitored. Although various disciplinary mechanisms (internal or external) are designed to protect the interests of stakeholders from the possible abuses of managers, the board of directors occupies a privileged place among the whole of these mechanisms (Fama and Jensen, 1983 and Charreaux, 2000). Indeed, the board of directors is regarded as an internal means of control playing a significant and an important role in the procurement of the necessary resources, the determination of the strategic choices and in the resolution of the conflicts of interests between managers, shareholders and others stakeholders. The ability of the board of directors to achieve well the roles which are allotted to it depends, nevertheless, largely on its characteristics. In fact, several empirical studies have concluded that the effectiveness of the boards of directors in the achievement of their roles depends largely on their characteristics (Pearce and Zahra, 1992; Hendry and Kiel, 2004 and Godard and Schatt, 2005).

The board of directors plays two supreme roles in the organisation; a strategic role and an overseeing role

(Charreaux, 1994). On one hand, the board of directors, charged to represent the interests of the shareholders, seems to be the supreme authority of control in the company (Fama and Jensen, 1983). On the other hand, the strategic role of the board of directors appears through the creation of performance, the protection of the whole of the creative relations of value, the disclosure of reliable and transparent accounting information and the access to rare resources. In particular, the board of directors plays a critical role in providing and controlling a firm's resources particularly the financial resources.

Accounting-based numbers constitute a persistent and traditional standard that investors and creditors use to assess a firm's health and viability (Anderson et al., 2004). The importance creditors and investors place on accounting numbers and the countervailing managerial incentives to manipulate the accounting and financial statements suggest that bondholders potentially exhibit great concern over factors influencing the reliability and validity of the financial and accounting processes (Leftwich, 1983 and Smith, 1993). In fact, managers may have incentives to disclose misleading financial statements to conceal negative news and thereby provide private personal benefits or potential shareholder benefits reports (Dechow et al., 1996). Perhaps one of the most important factors influencing the reliability and the integrity of the financial and accounting process involves the board of directors. Boards of directors, among other tasks and roles, are

charged with monitoring senior management, and supplying audited financial statements to the firm's creditors and investors (Daley and Vigeland, 1983; Dichev and Skinner, 2002 and Anderson et al., 2004). In fact, the board of directors, supporting greater transparency and better control of the countable and financial reporting process, allows to reduce the financing cost by reducing the agency costs and the exposure of the firm to the risk of market.

The financing cost constitutes one of the aspects most discussed in the financial and accounting literature. This importance is as large in theoretical discussions as in managerial ones. Indeed, the cost of capital represents the yield required by investors and providers of funds thus constituting the major bond between the strategic decisions of investment and financing of the companies (Stulz, 1999).

To this end, our study proposes to examine the effect of the board of directors' characteristics on the financing cost of French companies through its two principal components connected in particular to the cost of debt and to the cost of equity capital. We consider that this issue proves to be relevant in several connections. Initially, this attention paid to the strategic and financial role of the board of directors constitutes a relatively new concern compared to previous accounting researches which generally studied the effect of the board's characteristics on various measures of the financial performance and not on the costs of various financing resources (Brown and Caylor, 2004; Dulewicz et al., 2004 and Kula, 2005). Moreover, the majority of the former accounting studies were restricted to appreciate the board of directors' characteristics, primarily, through the independence of its members, its size, the independence of its audit committee or the financial motivations of the directors (Bhojraj and Sengupta, 2003; Anderson et al., 2004 and Ashbaugh et al., 2004a&b). However, these characteristics, despite being the most studied dimensions of the board of directors, do not constitute the only engine of its effectiveness. Therefore, we considered useful to take account of other characteristics which seem to support and improve the appreciation of the effectiveness of the board of directors. Indeed, the analysis of several boards' characteristics makes it possible to better understand the financial and strategic role of the board in the governance system. Finally, all the former studies relating to similar research questions were undertaken in an Anglo-Saxon context which differs from the French context. In fact, the former studies in other countries cannot be generalized due to the institutional differences between the respective countries and their markets. The case of France is particular because the French firms use different accounting and governance systems and operate within a socio-economic environment which has many distinguishing features that may influence both the governance practices and the financing costs (Othman and Zeghal, 2006). As with all human activities, corporate governance rules and practices as well as

capital markets are affected by culture (Douglas, 1989; Wildavsky, 1989). As Hussein (1996) asserted, there is already awareness among many accounting researchers and standard setters of the social and cultural influences on corporate governance practices (Beresford, 1990; Gray, 1988 and Wirtz, 2004).

So, the results of our study can contribute to a better understanding of the impact of institutional differences on corporate governance and, in particular, this study's findings can provide an answer to the question of "What is the effect of the board of directors' characteristics on the financing cost, by equity capital and debt, of French companies?"

The board's characteristics are related, mainly, to the independence of directors, the duality of the functions of chief executive officer (CEO) and chairman of the board, the size and operation of the board, the financial motivations of directors, their expertise and experience, the size and independence of the audit committee and the representation of financial institutions in the firm's board of directors.

To check the effect of the board of directors' characteristics on the endogenous variables (financing costs), we led our study on a sample of 87 French companies belonging to the French index SBF120 during 2005. Within this framework of analysis, we developed two linear regression models to test the validity of our assumptions and to examine the relation between the board of directors' characteristics and the costs of financing by equity capital and debt. Moreover, we developed a third linear regression model in which we sought to test if the board of directors' characteristics has a direct and significant effect on the average cost of capital.

The remainder of this paper is structured as follows. In the second section, we present a review of previous studies and develop the hypotheses of our research. The methodology of investigation is presented in a third section. Finally, in a last section, we analyze and discuss the found results.

2. Review of literature and research hypothesis

The link between corporate governance mechanisms and the firms' cost of capital is one of the most fundamental issues in the actual economic situation. In particular, the board of directors, ensuring a better control of the opportunism of leaders and a better transparency in the revealed information through a better audit of the countable and financial reporting process, allows reducing the exposure of the firm to the risk of market which will result in the reduction in its cost of financing. Indeed, the cost of obtaining information for the investors being reduced and their anticipations becoming more homogeneous, the cost of capital also has to decrease (Fan Yu, 2005). However and as the results of former studies affirm it, the effectiveness of the boards of directors in the achievement of these functions depends largely on

theirs characteristics (Hendry and Kiel, 2004 and Kula, 2005).

The results of the empirical studies support that the firms that have a good system of governance present less risks of agency to the shareholders and other stakeholders, resulting in a lower cost of financing. As Standard & Poor's note in their credit rating documentation, board oversight of the accounting information process is a paramount concern in assessing firm default risk. In this framework, Ashbaugh et al. (2004a) showed that the firms which improved their structure of governance have profited from the reduction in their cost of financing. They highlighted that the governance mechanisms, ensuring a better control of the opportunism of the managers, have an impact on the cost of capital by decreasing the exposure of the firm to the risk of the market. Garmaise and Liu (2004) have also studied the effects of the governance system on the cost of capital by showing that the transfer of the rights of decision on the choices of investment and financing to the direction exposes the shareholders to a greater risk which will result in a more important cost of financing. Occupying a central and privileged place in the modern corporate governance, several studies sought to study the effect of corporate governance' characteristics on the cost of capital. In the following sub-sections, we develop testable hypotheses on the relation between financing costs and board structure.

2.1. The board of directors' composition

The role of the board of directors is to provide an independent and effective control of the direction and to make it responsible for its actions in regards of the shareholders. However, the effectiveness of this control depends largely on the percentage of independent directors in the board. While the bond between the board of directors' composition and the firm performance is not clear, there is a considerable obviousness admitting that the board of directors' composition can affect the risks and costs of agency to which are confronted the shareholders (Brown and Caylor, 2004).

The previous accounting literature assumes that independent directors are superior monitors of management and likely to provide credible financial reports (Bushman and Smith, 2001). Beasley (1996) and Dechow et al. (1996) suggest that independent directors are more willing to provide effective oversight and disclosure due to their desire to maintain their reputations. Smith and Warner (1979) and Kalay (1982) observe that bondholders' concerns lie with protecting their investment. One of the most important elements in bondholders' ability to protect their investments is the firm's financial accounting numbers. In this order, boards of directors have a primary responsibility of overseeing the firm's financial reporting process. Boards meet routinely with the firm's accounting staff and external auditors to review financial statements, audit procedures, and

internal control mechanisms (Klein, 2002a). As such, investors and creditors potentially view boards of directors and, in particular, board structure as critical elements in delivering credible and relevant financial statements.

Byrd and Hickman (1992) for instance, suggest that independent directors contribute expertise and objectivity that minimize managerial entrenchment and expropriation of firm resources. So, if independent boards provide superior oversight of the financial accounting process, then investors and creditors directly benefit through greater transparency and validity in accounting reports. Indeed, the empirical results of Anderson et al. (2004) indicate that bondholders view board independence as an important element in the pricing of the firm's debt, suggesting that creditors are sensitive to board attributes.

Moreover, the board of directors' independence supports a more effective control of the countable and financial process, management activities and decisions. Thus, the funds' backers and in particular the bankers will profit from this more effective control through a greater transparency and a better reliability of the countable reports, resulting in a lower cost of financing (Anderson et al., 2004 and Lambert et al., 2007). If lenders and shareholders are interested in the governance mechanisms which delimit managerial discretion and opportunism and make possible to improve the countable and financial reporting process, an effective control supported by the independence of the board of directors will result in a lower financing cost of French companies. This leads to our first testable hypothesis:

H₁: The board of directors' independence is negatively related to the cost of financing.

2.2. The board of directors' size

Klein (2002b) indicates that the number of directors on the board affects committee assignments and board monitoring. She suggests that board monitoring is increasing with the board size due to the ability to distribute the work load over a greater number of observers. Similarly, Adams and Mehran (2002) suggest that bigger boards of directors increase monitoring effectiveness and provide for greater board expertise. Monks and Minow (1995) extend this argument by suggesting that larger boards are able to commit more time and effort to overseeing management. Moreover, recent countable studies have showed that the board of directors' size plays a significant role in the directors' aptitude to control the leaders and to supervise the countable and financial process (Kula, 2005 and Lambert et al., 2007). Large boards of directors generally constitute controllers and effective supervisors of the countable and financial process for the lenders and creditors of the firm through the improvement of the transparency and reliability level in the financial statements. Anderson et al. (2004) have showed that the cost of debt of US companies is lower for firms having larger boards

which allow a greater transparency and a better reliability in revealed countable information. So, if larger boards are more effective monitors of the financial and accounting process, then investors and creditors should benefit through improved financial transparency and reliability. According to this fact, we expect that the financing cost of the French firms is lower for firms having larger boards which are more efficient monitors. This leads to our second testable hypothesis:

H₂: The board of directors' size is negatively related to the cost of financing.

2.3. The duality of the function of chief executive officer and chairman of the board

Several studies have showed that the separation of the function of chief executive officer (CEO) and chairman of the board of directors makes it possible to increase the value of the firm. Indeed, the role of the board of directors in the corporate governance is compromised when the head of the direction of the firm is himself the chairman of the board. On one hand, the duality of functions reduces the disciplinary power of the board of directors and increases, as a result, the agency and risk costs. Consequently, shareholders and creditors will require a more significant risk premium to compensate the lack of transparency and reliability on the disclosed countable information (Gompers et al., 2003). On the other hand, the duality of functions increases the risk that the new named directors are not independent of the direction although they are external directors.

If the separation of the functions of CEO and chairman of the board leads to a more efficient board particularly in the execution of its monitoring role of disclosed accounting information, then we expect stakeholders should benefit through improved financial transparency and reliability and will require less important risk premium. This leads to our third testable hypothesis:

H₃: The financing cost is higher for firms with duality of the functions of CEO and chairman of the board in their boards than firms which separate these functions.

2.4. The audit committee independence

For most large firms, boards of directors delegate direct oversight of the financial accounting process to a subcommittee of the full board, the audit committee. Audit committees are responsible for recommending the selection of external auditors to the full board; ensuring the soundness and quality of internal accounting and control practices; and monitoring external auditor's independence from senior management (Anderson et al., 2004). The audit committee plays an important role because it is concerned with establishing and monitoring the accounting processes to provide relevant and credible

information to the firm's stakeholders (Pincus et al., 1989 and Beasley, 1996).

Carcello and Neal (2000) document a positive and significant relation between greater audit committee independence and the quality of financial reporting. Similarly, the Blue Ribbon Committee report (1999) indicates that the independent members of the audit committee are more able to protect and to ensure the reliability of the countable reporting process. Moreover, responsible for the control of the countable and financial reporting process, an independent audit committee allows guaranteeing reliable and credible information to various stakeholders (Klein, 2002a). Indeed, a better control of the countable and financial reporting process, due to the presence of independent directors in the audit committee, leads to a lower firm risk and reduces, by consequence, the cost of financing.

In this framework, Ashbaugh et al. (2004a) and Anderson et al. (2004) have showed that a greater independence of the audit committee support more transparent and reliable countable information through a more effective audit committee in the achievement of its monitoring role of the countable and financial reporting process, which results in a reduction of the premium risk required by investors and creditors. If a greater independence of the audit committee supports the reduction of the risk for lenders and shareholders, then we expect that the financing cost will be lower for firms having more independent audit committees. From where the following testable hypothesis:

H₄: The audit committee independence is negatively related to the cost of financing.

2.5. The audit committee size

Firms having large audit committees are supposed to devote more significant resources to supervise the countable and financial reporting process and to guarantee a better transparency (Bushman and Smith, 2001). In fact, a firm with a small audit committee would be less effective in the execution of the functions which are allotted to it, in particular controlling the hiring of the audit service, supervising the direction and organising the meetings with the personnel of the internal audit system (Pincus et al., 1989). Anderson et al. (2004) have showed that larger audit committees are associated with a lower cost of financing. Larger audit committees, allowing a better protection and a better control of the countable and financial process, support a greater transparency for shareholders and lenders of the firm, which will result in lower costs of financing both by equity capital and by debt. In fact, a more effective audit committee leads to a better disclosure quality and a greater transparency. As a result, information asymmetry between leaders, shareholders and lenders will be reduced and agency problems will be limited (Fan Yu, 2005). According to the agency theory, the quality of information disclosed allows to reduce the monitoring costs of leaders by the investors and creditors

(Depoers, 2000). Thus, the cost of obtaining information for the investors being reduced and their anticipations becoming more homogeneous, the cost of financing of the firm also has to decrease. If larger audit committees are better monitors of managers' opportunism and particularly of the reporting process than small committees, we expect a lower financing cost for firms having larger audit committees. This leads to our fifth testable hypothesis:

H₅: The audit committee size is negatively related to the cost of financing.

2.6. The representation of financial institutions in the board of directors

The relations that firms maintain with the financial institutions, through the representation of these institutions in their boards of directors, make it possible to improve the information flow between the financial institution and the company and to increase, by consequence, the possibilities of financing from these organizations (Kroszner and Strahan, 2001).

In addition, the representation of financial institutions in the firms' board of directors improves the quality of control on the countable and financial reporting process and allows the reduction, at the same time, of the costs of internal and external financing for the firm. Indeed, these financial institutions will not be confronted with the problems of asymmetry of information and will face very limited risks and costs of agency through a greater transparency, a better evaluation and a better control of the actions and competences of the direction from the positions which they occupy in the board (Kroszner and Strahan, 2001). So, they will require a less important risk premium in granting credits. If the representation of the financial institutions in the board improves the monitoring role of the board and its committees and reduces the premium risk required by investors, we expect a negative relation between the financing cost and the representation of these institutions in the board. This leads to our sixth testable hypothesis:

H₆: The financing cost is lower for firms having representation of the financial institutions in their boards than firms without representation of these institutions in their boards.

2.7. The board of directors' tenure

As directors are qualified and experimented, the board of directors will be more attentive and more effective in the control of managers. Furthermore, effective monitoring is potentially an acquired skill, suggesting boards with greater tenure provide greater monitoring (Anderson et al., 2004). Gompers et al. (2003) and Garmaise and Liu (2004) have found a positive relation between the directors' experience, measured through the number of years during which directors occupy these positions, and the efficiency of the board in monitoring managers and particularly the reliability

of countable and financial information. Moreover, Anderson et al. (2004) and Ashbaugh et al. (2004b) have showed that the directors' expertise and experience support the disclosure of more reliable and more credible information for lenders and investors who will require, by consequence, a weaker risk premium.

If directors' tenure creates incentives for directors to more closely supervise and monitor firm managers, we then expect that the competence and experience of directors measured through board tenure is negatively related to the financing cost of the French companies. This leads to our seventh testable hypothesis:

H₇: The board of directors' tenure is negatively related to the cost of financing.

2.8. The meeting frequency of the board of directors

The 1999 Blue Ribbon Committee Report advocates that the board and its subcommittees, as supervisors of the financial and accounting process, can best assure the quality of the financial statements by having greater meeting frequency per year (Morrissey, 2000). The financial literature supports that the increase in the number of board meetings reduces risks and agency costs to which shareholders and lenders are exposed (Botosan, 1997 and Andres et al., 2005). Indeed, the meeting frequency of the board is positively connected to the quality of control exerted by the board on the direction and on the disclosed information to the whole of stakeholders (Davidson et al., 1998 and Vafeas, 1999). Similarly, Anderson et al. (2004) have found that a more effective board of directors; meeting in a more regular and more frequent way, allows to improve quality of revealed countable information and to increase the level of transparency. Thus, the agency costs and the costs of obtaining information for the investors will be reduced supporting, by consequence, the decrease of the financing costs for the firm. If the meeting frequency of the board supports the reduction of the risks and costs for investors, we anticipate a negative relation between the meeting frequency of the board and financing cost. From where the following testable hypothesis:

H₈: The meeting frequency of the board is negatively related to the cost of financing.

2.9. Financial motivations of external independent directors

According to the agency theory, the percentage of capital held by the directors can constitute a sufficient incentive for exerting an effective control on the direction of the firm. Jensen and Meckling (1976) argue that the director equity-ownership creates more powerful motivations for directors to monitor managers. The accounting literature suggests that independent directors with equity stakes are associated with greater monitoring. The alignment of the interests of directors with shareholders should thus support the

control of the leaders' management and contribute to the maximization of the firm value (Jensen, 1993). Thus, the shareholders will be confronted to limited risks and agency costs, which will result in a lower cost of financing. In this framework, Klock et al. (2004) and Nikolaev and Van Lent (2005) have showed that directors' holders of shares of the company ensure a more effective control of the countable and financial reporting process, allowing to reduce the cost of debt through a greater transparency, a more reliable disclosure and a more credible information. If director equity ownership creates powerful motivations for independent directors to closely supervise and monitor the management of the firm, then we expect a negative relation between board ownership and the financing cost. This leads to our final testable hypothesis:

H₀: The percentage of capital owned by the external directors is negatively related to the cost of financing.

2.10. Impact of the other characteristics of the firm on the costs of financing

We incorporate control variables into the analysis on firm specific attributes. These attributes include firm size, risk, leverage, growth opportunities, and profitability.

2.10.1. Firm size

The financial literature stipulates that there is a negative and significant correlation between the cost of financing and firm size (Ashbaugh et al., 2004a and Anderson et al., 2004). Indeed, large firms, profiting from a greater stability, face a weaker default risk which will result in a lower cost of financing both by own capital and debt.

2.10.2. Firm risk

Several studies have highlighted the positive relation between the level of firm risk and the costs of financing by equity capital and by debt (Bhojraj and Sengupta, 2003; Ashbaugh et al., 2004b and Lambert et al., 2007). In fact, when the level of risk is significant, the bankers and the shareholders will require a more important risk premium which will result in greater costs of financing.

2.10.3. Growth opportunities

Measured by the ratio; Market value of shares / Book value of equity capital (Market-to-Book ratio) in many previous studies like Fama and French (2004) and Ashbaugh et al. (2004a), the growth opportunities are negatively connected to the cost of equity capital.

2.10.4. Leverage

As noted in previous studies (Anderson et al., 2004), firms with high leverage are associated with more significant risks and bankruptcy costs, which result in an increase in the yield required by lenders and bankers.

2.10.5. Profitability

Several studies stipulate that the cost of debt is negatively connected to the profitability of the firm, measured through the *Return on Assets (ROA)* (Reeb et

al., 2001 and Bhojraj and Sengupta, 2003). In fact, a low value of the return on assets (ROA) reflects a high default risk which will result in a more significant and important cost of capital.

3. Methodology

3.1. Sample description and data collect

To test our hypotheses, we analyze the 2005 annual reports of the French companies belonging to the SBF120 French index: they are companies having the most significant stock exchange capitalization. Among the companies constituting the SBF120 index, we eliminate the foreign companies as well as the French companies evolving in the financial sector (banks, insurances, etc). We also exclude the companies for which one of the variables was missing and the foreign companies belonging to the SBF120 index and subject to specific regulations, which reduces our final sample to the whole of 87 French companies.

The data related to the board of directors' characteristics and the financial data were collected from the 2005 annual reports (reference documents) of the companies belonging to the SBF 120 index and which are published either in the Web site of the authority of French money market (www.amf-france.org), or in the Web sites of the companies. In accordance with the article 212-13 of the general regulation of the authority of the French money market, these reference documents generally contain information related to the corporate governance (composition and operation of the board of directors, remuneration of social agents...), the report of the president of the board on the interns' check procedures, the annual report of the board, group accounts, the social accounting and the general information on the company and its capital.

3.2. Variables measures

3.2.1. The costs of financing

- *The cost of equity capital (COST_EQ)*: This variable is measured using the Capital Asset Pricing Model (CAPM). In fact, the majority of volumes of finance and studies (Graham and Harvey, 2001 and Ansari, 2000) indicate that the CAPM is by far the most popular method of estimating the cost of equity capital using market beta coefficient, a measure of the systematic risk. This method has the advantage of the simplicity and the existence of a rigorous conceptual base. According to the CAPM equation, the cost of equity of an asset is equal to the sum of the risk-free interest rate and a market premium adjusted by market beta. In fact, market beta measures the sensitivity of the asset's return to variation in the market return and can be interpreted as the amount of non-diversifiable risk inherent in the security relative to the risk of the market portfolio. In other words, the expected return on any asset *i* is the risk-free interest rate, R_f , plus a

risk premium, which is the asset's market beta, β_i , times the premium per unit of beta risk, $E(R_m) - R_f$:

$$E(R_i) = R_f + \beta_i[E(R_m) - R_f]$$

$[E(R_m) - R_f]$ represents the market premium measuring the expected excess return on the market. It measures the additional return required by investors to invest in securities rather than in risk-free asset. In our study, the market return is measured by the average of the yields monthly of the French index SBF120 in 2005. This measure was also used by Ansari (2000) and Lambert et al. (2007).

- *The cost of debt (COST_DEB)*: This cost of financing corresponds to the weighted average of the costs of long-term debt and short-term debt.

- The cost of long-term debt is measured by the actuarial yield of debt. This rate corresponds to the actualisation rate which equalizes the emission price of the loan after expenses to the current value of the monetary flows that the company must spend (Mourgues, 1993 and Galesne, 1999).
- The cost of short-term debt is measured by the weighted average of the effective rate of the credits whose interests are post-counted and effective rate of the credits whose interests are pre-counted. These two rates are calculated as the following equations:

$$r_c = (1 + i\% * d/360)^{365/d} - 1 \quad (\text{post-counted interests})$$

$$r_c = [1 + (i\% * d/360) / (1 - i\% * d/360)]^{365/d} - 1 \quad (\text{pre-counted interests}).$$

With; i : the nominal interest rate and d : the duration of the share or the short-term credit.

- *The average cost of capital (AVC_CAP)*: This cost is determined by balancing the costs of the different sources of financing by their weights in the capital structure of the firm. The weights relating to each source of financing (equity capital, debt) are evaluated from the book values (Friend and Lang, 1988 and Galesne, 1999). Thus;

$$AVC_CAP = \frac{COST_DEB * Debt + COST_EQ * Equity\ capital}{Debt + Equity\ capital}$$

3.2.2. The board of directors' characteristics

- *Board of directors' size (BRD_SIZE)*: is measured by the number of directors in the board. This measure was used by several studies; Wen et al. (2002), Anderson et al. (2004) and Godard and Schatt (2005).

- *Board of directors' independence (BRD_IND)*: This variable is measured by the percentage of independent directors on the board according to the Bouton report (2002). This measure was also used by Dulewicz and Herbert (2004) and Andres et al. (2005). The director who fills the criteria indicated by the Bouton report (2002) is regarded as independent: a director is independent when he does not maintain any relation with the Company, its Group or its Direction, which can compromise the exercise of his independence of judgment.

- *The duality of the function of chief executive officer and chairman of the board (CEO_DUA)*: This

variable is measured by a dummy variable that equals one when the CEO is also the chairman of the board and zero otherwise. This measure was used by several previous researchers such as Bédard et al. (2004), Fosberg (2004) and Kula (2005).

- *Audit committee size (AUD_SIZE)*: is measured by the number of directors in the audit committee. This measure was also used by Klein (2002a), Godard and Schatt (2004) and Bédard et al. (2004).

- *Audit committee independence (AUD_IND)*: This variable is measured by the percentage of the independent directors, within the meaning of the Bouton report, on the audit committee. This measure was used by several previous studies such as Anderson et al. (2004) and Godard and Schatt (2004).

- *Financial motivations of external independent directors (FIN_MOTIV)*: This variable is measured by the percentage of capital owned by external independent directors. This measure was also used by Beasley (1996) and Dulewicz and Herbert (2004).

- *The frequency of meetings of the board of directors (MEET_FREQ)*: is measured by the number of board meetings per year. This measure was used by the studies of Vafeas (1999) and Andres et al. (2005).

- *The board of directors' tenure (TENURE)*: is measured through the average of function duration of directors in the company's board of directors. It corresponds to the sum of the number of years that the directors serve on the board divided by the number of directors. This measure was used by Anderson et al. (2004) and Dulewicz and Herbert (2004).

- *The representation of financial institutions in the board of directors (REP_FI)*: This variable is measured by a dummy variable that equals one when there are representatives of the financial institutions (banks, financial establishments or credit organizations) in the board of directors of the company and zero otherwise (Kroszner and Strahan, 2001).

3.2.3. Firm characteristics

- *Firm size (FIRM_SIZE)*: is measured by the natural logarithm of the book value of total assets. It is a traditional measure used also by Pearce and Zahra (1992) and Wen et al. (2002).

- *Profitability (ROA)*: is measured through the Return on Assets which is equal to the earning ratio before interest and taxes (EBIT) divided by total assets. This measure was also used by Reeb et al. (2001) and Wen et al. (2002).

- *Growth opportunities (MB)*: This variable is measured by the Market-to-Book ratio which is equal to the market value of securities (Stock Exchange prices) divided by the book value of equity. This measure was used by several previous researchers such as Fama and French (2004), and Andres et al. (2005).

- *Leverage (LEV)*: It is measured through the level of debt in the capital structure of the companies based on the book values, which correspond to the total financial debts divided by the total assets. It is a traditional measure of leverage used by several researchers (Agrawal and Knoeber, 1996; Wen et al., 2002 and Ashbaugh et al., 2004b).

- *Firm risk (VOLAT)*: It is measured by the volatility of securities' return which is equal to the standard deviation of monthly stock returns. This measure was also used by Anderson et al. (2004) and Mansi et al. (2006).

4. Results analysis

4.1. Descriptive Analysis

Table 1 presents the descriptive statistics. Results presented in part A of table 1 relating to the continuous variables indicate that the average cost of debt of the French companies is equal to 4,4%. This cost of financing varies between 3,04% and 5,98% with a standard deviation of 0,874. In addition, these descriptive statistics reveal that the average cost of equity capital is equal to 6,745%. Thus, the average cost of the capital, which corresponds to the weighted average of the cost of debt and the cost of equity capital, varies between 4,31% and 8,33% with an average of 5,843% and a standard deviation of 0,932.

The results presented in part A show also that the average board of directors' size is approximately 10 directors and that this size varies between 4 and 18 directors as predicted in the French trading law (Article L225-17). The examination of the board of directors' composition reveals that on average, 51,38% of directors are independents within the meaning of the Bouton report (2002) and own 0,025% of the capital of company. Moreover, these results reveal that the boards of directors of the companies selected in our sample meet at least 3 times and at most 17 times per year with an average of 8 meetings per year and show that the average tenure of the directors is equal to 7 years.

Finally and as indicated in part B of table 1 relating to the dummy variables, the separated structure; in which the functions of chief executive officer (CEO) and chairman of the board are separated, is more adopted by the French companies (55%). These results show also that only 47,13% of the French companies have representatives of financial institutions in their boards of directors.

[Insert Table 1 here]

4.2. Multivariate Analysis

In order to apprehend the effect of the board of directors' characteristics on the costs of financing by equity capital and by debt, we test the regression models (1) and (2) by integrating the control variables connected to the company size, profitability, growth opportunities, leverage and volatility in order to control their effect on the dependent variables.

$$\text{COST_DEB} = \beta_0 + \beta_1 \text{BRD_SIZE} + \beta_2 \text{BRD_IND} + \beta_3 \text{CEO_DUA} + \beta_4 \text{AUD_SIZE} + \beta_5 \text{AUD_IND} + \beta_6 \text{FIN_MOTIV} + \beta_7 \text{MEET_FREQ} + \beta_8 \text{TENURE} + \beta_9 \text{REP_FI} + \beta_{10} \text{FIRM_SIZE} + \beta_{11} \text{ROA} + \beta_{12} \text{LEV} + \beta_{13} \text{VOLAT} + \varepsilon \quad (1)$$

$$\text{COST_EQ} = \beta_0 + \beta_1 \text{BRD_SIZE} + \beta_2 \text{BRD_IND} + \beta_3 \text{CEO_DUA} + \beta_4 \text{AUD_SIZE} + \beta_5 \text{AUD_IND} + \beta_6 \text{FIN_MOTIV} + \beta_7 \text{MEET_FREQ} + \beta_8 \text{TENURE} + \beta_9 \text{REP_FI} + \beta_{10} \text{FIRM_SIZE} + \beta_{11} \text{MB} + \beta_{12} \text{VOLAT} + \varepsilon \quad (2)$$

4.2.1. Checking the application assumptions of linear regression

Owing to the fact that all the dependent variables are continuous and follow a normal distribution, we use the multiple linear regression model to estimate these two equations. However, the application of the linear regression model is subjected to several conditions. Indeed, this method requires the absence of problems of autocorrelation and heteroscedasticity of errors as well as the absence of multicollinearity between independent variables.

- Checking of the absence of heteroscedasticity

Being given that the problem of autocorrelation of errors does not arise for individual data (cross-section analysis), we test the possible existence of a problem of heteroscedasticity of errors. Within this framework, we used the test of White (1978). The results of this test show that there is no problem of heteroscedasticity in all the regression models used in our study.

- Checking of the absence of multicollinearity between independent variables

To test the absence of multicollinearity problems, we calculated the Pearson correlation coefficients between independent variables and we calculated the Variance Inflation Factor "VIF". As indicated in table 2, all the correlation coefficients are smaller than 0,8 which correspond to the limit fixed by Kennedy (1985) and from which we generally starts to have serious multicollinearity problems. Moreover, table 3 shows that any VIF does not exceed the limit of 3 what leads to conclude to the absence of any problematic multicollinearity.

[Insert Table 2 here]

4.2.2. Multiple regression analysis results

Analysis of results related to the effect of board of directors' characteristics on the cost of debt

The results of the linear regression model testing the effect of the board of directors' characteristics on the cost of debt show that the explanatory capacity of this model is satisfactory and significant as proved by F-statistics of Fisher of 6,99. In addition, the value of adjusted R^2 of 47,6% testifies to the quality of the adjustment compared to former studies.

The obtained results (table 3) reveal no significant effect of the board size on the cost of debt ($p = 0,896$). This result is not consistent with the hypothesis that the bigger the board's size is the lower the cost of debt is. In addition, these results show a negative and significant effect of board of directors' independence on the cost of debt showing that independent directors play a considerable role in monitoring and supervising firm management. These results highlight the importance of independent directors in the board by

showing the greater the proportion of independent directors in the board is, the lower the cost of debt is.

We also note that the cost of debt is lower for firms separating the functions of head of direction (CEO) and chairman of the board. Moreover, the results of this regression model show that the cost of debt is lower as the audit committee size is larger and as the frequency of board meetings per year is more important. These results show that the audit committee size as well as the frequency of the board's meetings are regarded as factors which can limit risks and agency costs to which are exposed the shareholders and the lenders, resulting in a decrease of the cost of debt for the French companies.

However, the results are not conclusive in regards to the audit committee independence, the financial motivations of the independent directors and the board tenure. In fact, we find that each of the percentage of capital owned by the independent directors, the audit committee independence and the average function duration of the directors in the board do not have a significant effect on the cost of debt.

Moreover, the results of the first regression model show that the more there are representatives of financial institutions in the board of directors, the lower the cost of debt is, corroborating thus that the representation of these institutions in boards of the French firms provides greater managerial oversight and leads to a lower financing cost.

The control variables in this model show signs which are consistent with theories and previous studies except for profitability. Indeed, table 3 shows a negative and significant effect of the firm size on the cost of debt. In addition, the found results show that firms with high leverage are associated with more significant risks and costs of bankruptcy which result in an increase in the yield required by the lenders and bankers. Finally, we note that the firm risk measured through the volatility of stock return has a positive and significant effect on the cost of the debt of the French companies corroborating the results of previous studies.

[Insert Table 3 here]

Analysis of results related to the effect of board of directors' characteristics on the cost of equity capital

The results of the linear regression model testing the effect of the board of directors' characteristics on the cost of the equity capital show a satisfactory and significant explanatory capacity as proved by F-statistics of Fisher of 7,88. In addition, the value of the adjusted R^2 of 49% testifies the quality of the adjustment compared to the former studies.

First, we note that, contrary to the cost of debt, the board of directors' size doesn't have a significant effect on the cost of equity capital. We also note that the duality or the separation of the functions of chief executive officer and chairman of the board don't have a significant effect on the cost of equity capital.

In addition, the found results (table 3) show that the minus and statistically significant coefficients associated to variables IND_CA and IND_AUD indicate that the higher the percentage of independent directors in the board and in the audit committee is, the lower the cost of equity capital is. This result once more shows the importance of the directors' independence in the reduction of the cost of financing of the French companies.

However, the results of this model aren't conclusive as regards to the audit committee size. In fact, we find a positive effect of this variable on the cost of equity capital contrary to the theoretical predictions which stipulate a negative effect of the audit committee size on this cost of financing. These results show also no significant effect of the board of directors' meeting frequency on the cost of equity capital of French companies.

Moreover, the results of this regression model show that the higher the percentage of capital owned by the independent directors is, the lower the cost of the equity capital is. This finding once more shows the importance of the independent directors, in particular when they are implied in the capital of the company, in the reduction of its cost of capital. In addition, the found results reveal no significant effects of the expertise and experience of the directors in the board (TENURE) and the representation of the financial institutions in the board of directors on the cost of equity capital.

Finally, referring to the control variables, the results show that firms with higher growth opportunities have a greater cost of equity capital. This result is not consistent with the results of the studies of Fama and French (2004) and Ashbaugh et al. (2004a) stipulating that the better the growth opportunities are, the lower the cost of the equity capital is. In addition, the results of this regression model show that the larger the company size is, the lower the cost of equity capital is. These results reveal also a positive and significant effect of the firm risk on the cost of equity capital showing that this cost of financing is greater when the level of risk of the firm is higher.

Additional analysis: Analysis of results related to the effect of board of directors' characteristics on the average cost of capital

In this section, we test the effect of the board of directors' characteristics on the balanced average cost of capital in order to check if these characteristics have a direct and significant effect on the average cost of capital of the French companies. As showing in the results presented at table 3, it appears that the estimated model has a high explanatory power with an adjusted R^2 of 47% and a significant F-statistics of Fisher at the 1% level ($F = 6,44$) testifying the quality of adjustment of this model.

The results of this regression model show a negative and significant effect of the independence of both board of directors and audit committee on the average cost of capital. The minus coefficient associated to BRD_IND and AUD_IND variables

confirms once again the negative and significant effect of the independence of directors on the cost of debt and the cost of equity capital showing the importance of the independence of directors in the reduction of the cost of financing of the French companies through the limitation of agency costs and risks to which stakeholders are exposed. These results show also that the average cost of capital is as lower when there are representatives of the financial institutions in the boards of directors of the French companies supporting thus the results of the first regression model showing that the cost of debt of the French companies is lower for firms having representatives of the financial institutions in their boards of directors.

In addition, we note that the other board of directors' characteristics don't have a significant effect on the balanced average cost of capital. Indeed, the negative coefficients associated to BRD_SIZE and TENURE are not statistically significant.

The coefficients associated to variables AUD_SIZE, FIN_MOTIV and MEET_FREQ are not consistent with the predicted signs and indicate that these variables don't have a direct and significant effect on the balanced average cost of capital. Moreover, the found results show also that the duality of the functions of chief executive officer and chairman of the board doesn't have a significant effect on the average cost of capital of the French companies.

In terms of the control variables, the results of this regression model show that the profitability and the volatility of stock return as a measure of firm risk have a positive and significant effect on the average cost of capital. However, the positives coefficients associated to LEV and MB are not statistically significant showing that both leverage and growth opportunities don't have a significant effect on the average cost of financing of the French companies. Finally, the negative and significant coefficient associated to FIRM_SIZE shows that the larger the firm size is, the lower the balanced average cost of capital is.

5. Summary and Conclusion

In conclusion, if we go back to the initial question of "What is the effect of the board of directors' characteristics on the financing cost, by equity capital and debt, of French companies?", the obtained results extend the previous accounting literature by showing the importance of the board of directors' characteristics, as a governance mechanism, in the determination of the costs of financing of the French companies. First, the results from these analyses indicate that the cost of capital is as lower when there are representatives of the financial institutions in the boards of directors of the French companies. These results show also a negative and significant effect of board's independence and board's meeting frequency on the cost of debt. Moreover, the found results show that the duality of the functions of chief executive officer and chairman of the board affects positively

and significantly this cost of financing like the level of debt in the capital structure and the firm risk.

In addition, the results of the linear regression model testing the effect of the board of directors' characteristics on the cost of equity capital show that the board of directors' independence, the financial motivations of the independent directors and the audit committee independence have a negative and significant effect on this cost of financing. These results show also that the cost of equity capital is lower as the firm size is larger and the level of firm risk is lower.

In addition, the results related to the analysis of the effect of the board of directors' characteristics on the balanced average cost of capital show a negative and significant effect of board and audit committee independence on the average cost of financing. These results reveal also that the average cost of capital is lower when there are representatives of the financial institutions in the boards of directors of the French companies. So, if French firms would like reduce their costs of financing both by debt or by equity capital in this difficult economic situation, they will have to attach a great importance and control their governance system generally and their board of directors particularly owing to the fact that the majority of board characteristics have showed a significant effect on the financing costs.

In this framework, futures studies could, if the necessary data are available, look further into this research topic by integrating other board of directors' characteristics such as competences and qualifications of the directors, the effect of the directors' networks as well as other governance mechanisms in the explanation of the costs of financing. Finally, it would be also interesting to integrate the influence of the institutional environment differences in the explanation of the costs of financing of the companies through an international comparison.

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Appendices

Table 1: Descriptive Analysis

Part A: Continuous Variables

Variables	N	Minimum	Maximum	Mean	Median	Std. dev
COST_DEB	87	3,04%	5,98%	4,40%	4,30%	0,87
COST_EQ	87	4,74%	10,87%	6,74%	6,58%	1,18
AVC_CAP	87	4,31%	8,33%	5,84%	5,83%	0,93
BRD_SIZE	87	4,00	18,00	10,44	10,00	3,73
BRD_IND	87	8,33%	100,00%	51,38%	50,00%	20,95
AUD_SIZE	87	2,00	6,00	3,55	3,00	0,89
AUD_IND	87	0,00%	100,00%	67,59%	66,67%	24,23
FIN_MOTIV	87	0,00003%	0,10326%	0,02482%	0,01044%	0,03
MEET_FREQ	87	3,00	17,00	7,97	8,00	2,81
TENURE	87	1,40	14,26	7,22	6,79	3,48
Total Assets (M€)	87	116,17	170914,93	5427,68	6941,93	5,69

FIRM_SIZE	87	8,07	11,23	9,73	9,84	0,76
ROA	87	-1,98%	28,96%	8,81%	6,82%	6,81
VOLAT	87	5,84%	87,42%	34,29%	29,24%	16,86
LEV	87	0,97%	70,30%	23,16%	20,24%	16,23
MB	87	11,72%	1559,34%	303,85%	231,25%	235,17

COST_DEB: Cost of debt
COST_EQ: Cost of equity capital
AVC_CAP: Average cost of capital
BRD_SIZE: Board of directors size
BRD_IND: Independence of the board
AUD_SIZE: Audit committee size
AUD_IND: Audit committee independence
LEV: Leverage (Total Debt / Total Assets)

FIN_MOTIV: Financial motivations (Percentage of capital owned by independent directors)
MEET_FREQ: Meeting frequency per year
TENURE: Board of directors tenure
FIRM_SIZE: Firm size (Log of Total Assets)
ROA : Return On Assets (EBIT / Total Assets)
VOLAT : Volatility of stock return
MB : Market-to-Book ratio

Table 1: Descriptive Analysis

Part B: Dummy Variables

CEO_DUA			
		Frequency	Percentage
Separation of fonctions	0	48	55,17%
Duality of fonctions	1	39	44,83%
REP_FI			
		Frequency	Percentage
No Representation of F.I. in the board	0	46	52,87%
Representation of F.I. in the board	1	41	47,13%

CEO_DUA: Duality of the functions of Chief Executive Officer (CEO) and Chairman of the board
REP_FI: Representation of Financial Institutions (F.I.) in the board of directors.

Table 2. Correlation matrix

Variables	BRD_SIZE	BRD_IND	CEO_DUA	AUD_SIZE	AUD_IND	FIN_MOTIV	MEET_FREQ	TENURE	REP_FI	FIRM_SIZE	ROA	LEV	VOLAT	MB
BRD_SIZE	1	-0,313** (0,003)	- 0,312** (0,003)	0,187 (0,084)	-0,027 (0,807)	0,434** (0,000)	0,297** (0,005)	0,328** (0,002)	0,460** (0,000)	0,318** (0,003)	- 0,334** (0,002)	0,592** (0,000)	0,065 (0,552)	0,202 (0,060)
BRD_IND		1	0,134 (0,214)	0,029 (0,789)	0,215* (0,046)	-0,152 (0,161)	0,092 (0,398)	-0,049 (0,653)	- 0,279** (0,009)	-0,155 (0,151)	0,270* (0,012)	- 0,457** (0,000)	-0,044 (0,687)	-0,185 (0,086)
CEO_DUA			1	-0,197 (0,067)	0,004 (0,971)	-0,238* (0,027)	-0,030 (0,781)	-0,202 (0,060)	- 0,295** (0,005)	-0,384** (0,000)	-0,229* (0,033)	- 0,400** (0,000)	-0,118 (0,276)	-0,185 (0,086)
AUD_SIZE				1	0,013 (0,904)	0,010 (0,926)	0,092 (0,397)	-0,200 (0,064)	-0,042 (0,697)	0,333** (0,002)	-0,166 (0,125)	0,142 (0,189)	-0,075 (0,491)	-0,081 (0,453)
AUD_IND					1	-0,047 (0,667)	0,133 (0,218)	0,088 (0,419)	-0,140 (0,197)	0,032 (0,768)	-0,038 (0,728)	-0,188 (0,082)	- 0,328** (0,002)	0,044 (0,685)
FIN_MOTIV						1	0,149 (0,169)	0,355** (0,001)	0,467** (0,000)	0,298** (0,005)	-0,163 (0,132)	0,316** (0,003)	-0,059 (0,588)	0,182 (0,092)
MEET_FREQ							1	0,247* (0,021)	0,243* (0,023)	0,156 (0,148)	0,001 (0,991)	-0,012 (0,910)	-0,039 (0,722)	0,047 (0,667)
TENURE								1	0,252* (0,019)	0,211* (0,050)	-0,172 (0,112)	0,130 (0,229)	-0,043 (0,695)	0,083 (0,446)
REP_FI									1	0,305** (0,004)	- 0,298** (0,005)	0,485** (0,000)	0,013 (0,908)	0,181 (0,093)
FIRM_SIZE										1	- 0,381** (0,000)	0,455** (0,000)	-0,088 (0,420)	0,103 (0,343)
ROA											1	- 0,450** (0,000)	-0,048 (0,659)	0,046 (0,675)
LEV												1	0,184 (0,088)	0,215* (0,045)
VOLAT													1	0,105 (0,334)
MB														1

** Correlation significant at the 1% level
() Bilateral significance
* Correlation significant at the 5% level

Table 3: Results of linear regressions testing the effects of board of directors' characteristics on the financing costs of the French companies

Dependent Variables: Financing Costs												
Variables	COST_DEB				COST_EQ				AVC_CAP			
	Predicted sign	β Coefficient	p	VIF	Predicted sign	β Coefficient	p	VIF	Predicted sign	β Coefficient	p	VIF
Intercept		0,0925***	0,000	0,000		0,0971***	0,000	0,000		0,0803***	0,000	0,000
BRD_SIZE	-	-0,00003	0,896	2,179	-	-0,00029	0,350	1,634	-	-0,00029	0,309	2,222
BRD_IND	-	-	0,010	1,374	-	-0,0093*	0,058	1,271	-	-0,00715*	0,073	1,410
CEO_DUA	+	0,0028*	0,080	1,374	+	0,0032	0,138	1,342	+	0,00139	0,430	1,443
AUD_SIZE	-	-0,0017*	0,059	1,414	-	0,0035***	0,005	1,401	-	0,00109	0,277	1,449
AUD_IND	-	-0,0039	0,215	1,271	-	-0,0080*	0,076	1,397	-	-0,00846**	0,020	1,447
FIN_MOTIV	-	1,197	0,669	1,513	-	-6,883**	0,038	1,266	-	2,823	0,347	1,504
MEET_FREQ	-	-	0,010	1,344	-	0,00051	0,160	1,229	-	0,00027	0,359	1,319
TENURE	-	-0,00027	0,243	1,453	-	-0,00004	0,886	1,414	-	-0,00019	0,454	1,471
REP_FI	-	-0,0037**	0,044	1,776	-	0,0031	0,189	1,623	-	-0,00415**	0,049	2,024
FIRM_SIZE	-	-	0,006	1,701	-	-	0,001	1,511	-	-0,00229*	0,080	1,770
ROA	-	0,0035	0,767	1,416					-	0,0292**	0,026	1,441
LEV	+	0,0161**	0,020	2,584					+	0,00167	0,813	2,433
VOLAT	+	0,00835*	0,069	1,248	+	0,0207***	0,001	1,290	+	0,01553***	0,002	1,292
MB					-	0,0012***	0,006	1,131	-	0,00025	0,469	1,199
Adjusted R ² = 0,476 F= 6,99 p= 0,00				Adjusted R ² = 0,49 F= 7,88 p= 0,00				Adjusted R ² = 0,47 F= 6,44 p= 0,00				

***: significant at the 1% level **: significant at the 5% level *: significant at the 10% level