

## **Do Board and Audit Committee Characteristics Affect Firm's Cost of Equity Capital?**

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### **Abstract**

This paper examines the association between board and audit committee characteristics and cost of equity capital. Using a sample of TSX-S&P 300 firms, our analysis shows that overall audit committee characteristics are negatively associated to the cost of equity capital. The size of the audit committee and the non-duality of the Chairman of the board are, however, positively related to the cost of equity capital. The results also confirm that being listed on the American stock exchange affects the relationship between non-duality of the Chairman of the board and cost of equity capital. However, being listed in the US capital market doesn't change the relationship between audit committee features and the cost of equity capital and this can be explained by the fact that audit committee regulatory requirements are similar and mandatory in both Canadian and American capital markets.

**JEL Classifications:** G30, K40

**Keywords:** Board of directors, audit committee, cost of equity capital, corporate governance.

### **1. Introduction**

The financial scandals that have hit financial markets and caused significant losses to investors have mainly been attributed to some defects in corporate governing systems. Regulators response to these scandals, such as Sarbanes-Oxley in the United States, and the principles of best practices of governance in Canada and elsewhere, were aimed to improving governance practices and restoring investors' confidence in financial markets. The Canadian regulation on the Board of directors, like many others national regulations, aims to achieve "a balance between the objectives of ensuring investors protection, foster fair and efficient capital markets and bolster confidence in financial markets" (National Policy 58-201). This procedure implicitly assumes that the stock market reacts positively to the improvement of internal governance mechanisms, hence our query concerns the nature of an alleged relationship between improving internal governance practices and the positive response of financial markets.

Good corporate governance practices are ensured through several structures and mechanisms that merge the divergent interests of managers, in one side, and shareholders and other stakeholders, in the other, toward the value maximization of the firm (Agrawal & Knoeber, 1996), mainly by ensuring better performance, limiting the transfer of wealth in favor of managers and reducing the

risk of dispossessing shareholders (Shleifer & Vishny, 1997). One way of maximizing value for shareholders is to get a lower financing cost (Naciri, 2008), through the minimization of the rate of the return required by investors, i.e. the cost of equity capital. Indeed, the cost of the capital is the discount rate that the market applies to the company's expected future cash flows, given a certain level of risk, for the computation of its current share price (Botosan & Plumlee, 2005; McInnis, 2010). Consequently, the lower a such rate is, the higher the share price will be. Actually, improving internal governance mechanisms may prove to represent the best way of insuring the respect of shareholders rights and reducing their risk of being dispossessed of their equity in the company (Shleifer & Vishny, 1997).

The relationship between internal governance mechanisms and the firm's financial performance has been largely documented (Bhagat & Black, 2002, Agrawal & Knoeber, 1996, Bhagat & Bolton, 2008; Iyengar & Zampelli, 2009) and so their effect on the company's risk (Beasley, 1996; Dechow, Sloan & Sweeney, 1996; Persons, 2006; Agrawal & Chadha, 2005), no study has, however, dealt with the issue of the impact of the board and audit committee characteristics on the firm's cost of the equity capital in Canada. This paper aims in filling such gap by addressing this issue, for the first time, while highlighting the differences between firms that are only subjected to Canadian regulations and those that are submitted to both Canadian and U.S. regulations on board of directors.

Our study contributes to the existent corporate governance literature at several levels. Researches on corporate governance regulation effects on cost of equity capital in Canada are quite inexistent. The Canadian context provides a particular regulatory environment that mixes two approaches: mandatory regulations applicable to the audit committee and a voluntary approach applicable to board of directors. Canadian context offers an interesting setting to examine market response to the board and audit committee characteristics as established by regulator.

While the previous studies on the subject used different characteristics of the board and audit committee as single measures (Anderson, Mansi, & Reeb, 2004; Abbott, Park, & Parker, 2000; Agrawal & Knoeber, 1996), we use an index as a global measure of board and audit committee features. Indexes seem to provide a more comprehensiveness and allow for comparability between firms (Bhagat, Bolton, & Romano, 2008).

Furthermore, we focus on the regulated features. Our results, especially for the audit committee characteristics indicate that those regulated features are related to the assessment by investors of the firms' risk as measured by the cost of equity capital.

Our results suggest a significant relation between the board and audit committee characteristics and the firm's cost of equity capital, given a firm's level of risk. Indeed, our analysis reveals a significant negative relationship between audit committee characteristics and cost firm's cost of equity capital. More importantly, trading in the U.S. market does not seem to alter such relationship.

The remainder of the paper is organized as follows: the second section is devoted to literature review and hypotheses development, the third section deals with the research methodology, the fourth section presents the results of the study and the final section contains conclusion and discussion.

## **2. Literature Review and Hypotheses**

The quality institutions and laws regulating the financial market seem to depend on the level of its development and sophistication (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997; La Porta, Lopez-De-Silanes, & Shleifer, 2006). Further, a legal system that fulfills its functions efficiently is supposed to protect outside investors and hence improve the ability of the firm to increase its

external funding and to take complete advantage of its growth opportunities. The strong protection of outside investors would always limit their expropriation by managers and would thus secure the firm's financing through the financial market (Hail & Leuz, 2006). In this regard, the Canadian capital market has undergone tremendous changes in the 2000; it was re-examined in both its legal, institutional and operational structures (Carnaghan & Gunz, 2007) to fit new reality. The latest changes to Canadian regulations regarding corporate governance practices of listed companies, have dealt primarily with the board of directors and its audit committee. Unlike the U.S. regulations on the same issue, Canadian regulations adopt a voluntary approach, based mainly on a series of suggestions of best practices regarding the board characteristics (National Policy 58-201). Apart from such difference in approach, the Canadian regulations would seem to be very similar to their American equivalents regarding audit committee characteristics (National Instrument 52-110).

### **2.1. The Relationship between the Characteristics of the Board and the Firm's Cost of Equity Capital**

Authors agree that one of the main responsibilities of the board is to insure the appropriate monitoring of the firm's management (Naciri, 2008, 2010; Fama & Jensen, 1983) and to have the responsibility and the power to hire and fire managers (Jensen, 1993). To monitor managers and ensuring their adherence to corporate governance rules, the board usually relies on its audit committee. The mean by which investors assess the efficiency by which the board is fulfilling rightly the job is usually measured by the investors' required rate of return, i.e. the cost of equity capital) (Khurana & Raman, 2006). Consequently, several studies focused on the relationship between the board's characteristics, such as board independence, board size, duality of the chairman, etc. and the company's financial performance.

A negative relationship between poor performance and increased board independence was commonly reported (Agrawal & Knoeber, 1996; Bhagat & Black 2002; Bhagat & Bolton, 2008; Iyengar & Zampella, 2009; Bhagat & Black 2000). Few studies found, however, that the stock price increases when companies appoint outside directors (Rosenstein & Wyatt, 1990). Others studies completely failed to establish any significant relationship between the duality of the chairman of the board and the financial performance (Iyengar & Zampella, 2009), while some found a significant negative relationship (Bhagat & Bolton, 2008).

Needless to underline the confusion that predominates the research landscape with regard to the possible effects of board's characteristics on the company's financial performance. It is, however, largely admitted that board endeavors toward putting in place appropriate corporate governance structure are mainly guided by its willingness to maximize the firm's market value (Agrawal & Knoeber, 1996). This is done by putting in place appropriate governance mechanisms that ensure investors protection of their investment in the company, reducing their risk of being dispossessed of their assets and providing them better financial performance (Shliefer & Vishny, 1997). We can therefore than hypothesize a relationship between the board characteristics and the investors' required return, as expressed by the firm's cost of equity capital:

**H1a:** The characteristics of the board of directors, such as board size, board independence and non-duality of the chairman, are negatively related to the cost of equity capital.

Canadian corporate governance regulations have focused primarily on improving the board characteristics and committees. The National Policy 58-201, suggests that firms should have a board of directors that contains a majority of independent members and that is chaired by an independent Chairman. It also suggests that the firm should have a code of ethics and a written charter that clearly defining the role and responsibilities of the board and the managers. This National Policy also recommends to the companies to ensure meetings with independent directors only, to conduct a periodic assessment and provide ongoing training for all board members. Canadian regulator intervention in financial markets, implicitly assumes that the stock market reacts

positively to the improvement of internal governance mechanisms. We can therefore expect that the improvement in characteristics of the board, as suggested by The National Policy 58-201, to affect the risk of investors and to lead in this case to a diminution in the risk premium required by investors and included in the cost of equity capital, and this justifies our second hypothesis:

**H1b:** The overall board's characteristics suggested by Canadian regulation is negatively related to the cost of equity capital.

## **2.2. The Relationship between the Characteristics of the Audit Committee and the Cost of Equity Capital**

Canadian regulations on corporate governance also emphasize the role played by the audit committee. Indeed, like the SOX in U.S., the Canadian National Policy 52-110 makes the audit committee mandatory for Canadian listed companies unlike the rest of the rules on the board. The National Policy gives an important role to the audit committee in monitoring, detecting and preventing frauds, therefore reducing shareholders' risk and improving the quality of the financial information they receive from the company. Some research findings seem to back up the stand of Canadian regulations with regard to the audit committee; the size and independence of the audit committee seem, indeed, to be negatively related to the cost of debt (Anderson *et al.*, 2004). Further, companies with independent audit committee seem to be less likely to be prosecuted for financial fraud (Abbott *et al.*, 2000). Finally, it is argued that the stock market reacts favorably to the appointment of a financial expert among the members of the Audit Committee (Defond, Hann, & Hu, 2005). We can expect a negative between the characteristics of the audit committee and the cost of capital. We can therefore hypothesize that:

**H2a:** The characteristics of the audit committee, such as the size of the committee and the presence of a financial expert among its members, are negatively related to the cost of equity capital.

In addition to the features of the audit committee studied in the literature, such as the Audit Committee size, its level of independence and the presence of a financial expert within its members (Defond *et al.*, 2005, Anderson *et al.*, 2004), Canadian regulations also require the complete independence of the audit committee, a minimum of three members and a written mandate. Such additional requirement can be expected to add more efficiency to the fraud detection role, exercised by the audit committee, helps improving disclosure and reducing companies' risks. We can therefore assume that:

**H2b:** The overall audit committee characteristics', as set out by Canadian regulations, is negatively related to the cost of equity capital.

## **2.3. The Differences between Canadian Regulations and U.S. Regulations on the Board of Directors and Audit Committee and Their Impact on the Cost of Equity Capital**

Studies, especially in the U.S. demonstrate the existence of a relationship between the strengthening of regulations in the financial market and the cost of capital of listed companies (Hail & Leuz, 2006; Himmelberg, Hubbard, & Love, 2004; Li, 2010). Despite appearances and although the Canadian and the U.S. regulations are similar with regard to the Audit Committee, the Canadian and the U.S. regulations seem also to show particularities in many respects, which includes their respective date of implementation and their mandatory requirements regarding the characteristics of the board. Unlike Sarbanes-Oxley Act, the implementation of the Canadian National Policy 58-201, on the characteristics of the board, is left to companies' willingness. Also the Canadian regulation provides more guidance and details. It worth also emphasizing that many Canadian companies

composing our sample are listed on both Toronto and New York Stock Exchanges and are therefore subject to dual regulations (Canadian and American). We can hence hypothesis that:

**H3a:** There is a difference in the relationship between the board characteristics' and the cost of equity capital for the Canadian companies listed on U.S. stock market.

As mentioned earlier, the Canadian Regulation (National Instrument 52-110) is similar to the U.S. regulation (SOX), with regard to the Audit Committee. We can expect that the impact on the cost of equity capital will be similar for those companies that are traded on the Canadian market only and those that are traded in both Canadian and American stock exchanges simultaneously and we can therefore hypothesis that:

**H3b:** There is no difference in the relationship between the audit committee characteristics' and the cost of capital for the Canadian companies listed on U.S. stock markets.

### 3. Research Methodology

#### 3.1. Model and Variables

To test our hypotheses we use the following model:

$$CC = \beta_0 + \beta_1(BC) + \beta_2AI + \beta_3Debtratio + \beta_4US + \beta_5Sector + \beta_6size + \beta_7Beta + \varepsilon_1$$

Where:

- CC: cost of capital measured by the formula of Ohlson and Juettner-Nauroth (2005).
- BC: Characteristics of the board or the Audit committee.
- AI: asymmetry of information measured by the ratio: market to book ratio [market value by net book value].
- Size: natural log of the market capitalization of the company during the year of analysis.
- U.S.: takes the value 1 if the company is listed on U.S. stock markets and 0 otherwise.
- Sector: Industry as defined on SEDAR. We identified 9 industries coded 1 to 9.
- Debt ratio: [Long Term debts / total assets].
- Beta: the business risk compared to market risk as measured by the sensitivity of stock price of the company in relation to changes in market prices.
- Bi: coefficients of the explanatory variables.
- Ei: model error.

##### 3.1.1. *Dependent Variable*

The cost of equity capital is determined by the method of earnings per share is calculated using the formula of Ohlson and Juettner-Nauroth (2005), which is as follows:

$$r_{PEG0} = \sqrt{\frac{eps_2 - eps_1}{p_0}}$$

Where:

$r_{PEG(0)}$ : estimate the cost of capital at the date of interest.

Eps(t): analysts' forecasts for earnings per share at 12 and 24 month from the date of interest.

P(0): stock price at the time of analysis.

The cost of capital as a measure of financial performance, unlike the ROA / ROE and Tobin's Q, is not an accounting measure and is therefore free from the classical biases inherent to accounting information (such as non-management account of intangible assets, the use of historical cost or choice of accounting methods). The cost of capital is based on financial data and the assessment by investors of the firms' risk. The cost of capital is used by Khurana and Raman (2006) to measure the confidence of investors in the market and that is what best fits the context of this study characterized by a loss of confidence in markets and low economic returns (Brown, 2008). The estimated cost of capital used in the study that is R pegprem, is actually borrowed from Botosan and Plumlee (2005) as based on the work of Ohlson and Juettner-Nauroth (2005) and operationalized by Easton (2004). This widely used methodology assumes a zero growth of abnormal returns, beyond the estimation horizon (Seow, Shangguan, & Vasudevan, 2006; Khurana & Raman, 2006; Botosan & Plumlee, 2005; Ohlson & Juettner-Nauroth, 2005; Easton, 2004).

### 3.1.2. *Independent Variables*

The independent variables, i.e. characteristics of the board and audit committee, are measured based on two different approaches: The first approach consists in using direct measures such as size, board independence and non-duality of the chairman, while, the second approach leans towards more aggregation and provides a broader measure of the characteristics of the board and audit committee. An alternative approach is also used in this study, following Bhagat *et al.* (2008). It consists of employing a specifically designed index to measure the characteristics of the board and audit committees and fitting the objectives and context of this study.

In our research, the various components of such index are actually directly derived from the Canadian regulation requirements on the board of directors and audit committee (See Appendix 1)<sup>1</sup>.

Indexes seem to provide a more comprehensiveness and allow for comparability between firms (Bhagat *et al.*, 2008) and numerous studies used them for these reasons (Gompers, Ishii, & Metrick, 2003; Defond *et al.*, 2005; Bhagat & Bolton, 2008), and so this study.

### 3.1.3. *Control Variables*

As the case in similar studies, we also chose to control for the following variables: firm size measured by natural log of the market capitalization of the company (Defond *et al.*, 2005; Yu & Wang, 2008; McInnis, 2010), information asymmetry as measured by the ratio price to book (Leuz & Verrecchia, 2000; Seow *et al.*, 2006; McInnis, 2010), US cote, debt ratio (Botosan & Plumlee, 2005; Seow *et al.*, 2006; Li, 2010), industry (Li, 2010) and Beta (Botosan & Plumlee, 2005; McInnis, 2010)<sup>2</sup>.

## 3.2. **Sample Selection and Data Sources**

Our sample is composed of Canadian companies that were part of the S & P / TSX 300 Toronto index in 2004, 2005 and 2006. The choice is based on the fact that companies included in this index covers about 95% of all shares traded on the Canadian market. The data collection covers the period 2004 to 2006. The final sample is composed by 139 firm-years observation. The sample selection is presented in Table 1.

Over 70% of companies in our sample are listed on both U.S. and Canadian markets.

**Table 1.** Sample selection

Companies	Total
Total companies in S&P /TSX from 2004 to 2006 <sup>3</sup>	710
Companies from financial industry	(103)
Delisted companies <sup>4</sup>	(204)
Missing data <sup>5</sup>	(228)
Companies with no estimate possible for cost of equity capital <sup>6</sup>	(32)
Outliers <sup>7</sup>	(4)
Total	139

### 3.4. Data Sources

The data related to board of directors and audit committee are manually collected from proxy circulars, proxy statements and annual reports published on SEDAR. The financial data, as well as the industry and Beta are extracted from the Compustat, Compustat-global and Back data databases.

## 4. Results

### 4.1. Descriptive Statistics

The companies' board size in the sample varies within an interval of 5 to 17 members and the size of the audit committee varies between 3 to 7 members.

Table 2 describes financial data and board and audit committee characteristics. The score of board is based a gradation of 9 levels, in accordance with Canadian regulations. It varies for all companies in the sample, within an interval of 0 to 9, with a mean and a standard deviation of 5.63 and 2.18 respectively. The score for the Audit Committee is based on gradation of 5 levels and varies between 0 to 5, with a mean of 4.45 and standard deviation of 0.60.

**Table 2.** Descriptive statistics

Variables	Minimum	Maximum	Mean	Standard deviation	Variance
Board size	5	17	10.453	3.08	9.481
Audit committee size	3	7	3.84	1.037	1.076
Board independence	0.375	0.9375	0.747	0.1345	0.018
Cost of equity capital	0	18.652	6.485	4.232	17.91
Price to book ratio	0.53	17.595	3.076	2.194	4.817
Debt ratio	0	0.565	0.166	0.142	0.020
BETA	-0.419	4.645	0.8577	0.7855	0.6171
Board score	0	9.00	5.6294	2.18083	4.756
Audit committee score	2.00	5.00	4.4545	0.60196	0.362

Board size: number of members on the board.

Audit Committee Size: Total members on audit committee.

Board independence: number of independent members of the board / total board members.

Cost of equity capital: cost of equity capital based on Ohlson and Juettner-Nauroth (2005) model.

Price to book: market value / book value of the company.

Debt Ratio: Long term debts / total assets.

BETA: Company's risk compared to market risk based on share price sensitivity.

Board score: 1 point for each of the 9 characteristics (see Appendix 1).

Audit committee score: 1 point for each of the 5 characteristics (see Appendix 1).

Price to book: market value / book value of the company.

Debt Ratio: Long term debts / total assets.

The strong correlations between the variables expressing the board and the audit committee characteristics, as evident by the correlation matrix presented Table 3. Consequently, we chose to introduce these variables one by one in our model.

**Table 3.** Correlation matrix

	1	2	3	4	5	6	7	8	9	10
1.Audit Committee Size	1									
2.Board Size	0.41**	1								
3.Board Independence	0.43**	0.112	1							
4.CC	0.168*	0.012	0.056	1						
5.Board score	0.305**	0.18*	0.26**	0.040	1					
6.Audit committee score	0.137	0.093	0.066	-0.099	0.38**	1				
7. Firm Size	0.40**	0.66**	0.165*	0.15*	0.31**	0.17*	1			
8. BETA	-0.111	-0.123	-0.18*	0.009	0.084	0.034	-0.122	1		
9.Price To Book	0.16*	0.020	-0.067	-0.133	0.121	0.030	-0.25**	0.131	1	
10.Debt Ratio	0.177	0.24**	-0.041	-0.064	0.065	-0.031	0.29**	-0.28**	-0.096	1

\* Significant at the 0.10 level two-tailed

\*\* Significant at the 0.05 level two-tailed

\*\*\* Significant at the 0.01 level two-tailed

Audit Committee Size: Total members on audit committee.

Board size: number of members on the board.

Board independence: number of independent members of the board / total board members.

CC: cost of equity capital based on Ohlson and Juettner-Nauroth (2005) model.

Board score: 1 point for each of the 9 characteristics (see Appendix 1).

Audit committee score: 1 point for each of the 5 characteristics (see Appendix 1).

Firm size: Natural log of market value of equity.

BETA: Company's risk compared to market risk based on share price sensitivity.

Price to book: market value / book value of the company.

Debt Ratio: Long term debts / total assets.

4.2. Multivariate Analysis

– Relationship between the characteristics of the board and the cost of equity capital

We use several indicators to explain the relationship between the characteristics of the board and the cost of equity capital, such as the board size, board independence, and the board score. To test the relationship between the cost of equity capital and the variables, we use linear regression with ordinary least squares (OLS). The results are presented in table 4.

**Table4.** Board characteristics and cost of capital

	Model 1	Model 2	Model 3	Model 4
Intercept	5.065**	4.762	4.386*	4.939**
Board size	-6.04E-02	–	–	–
Board independence	–	0.178	–	–
Non-duality	–	–	1.284*	–
Board score	–	–	–	-5.816E-02
US	1.286	1.228	1.147	1.335
Price to book	-0.287*	-0.285*	-0.295*	-0.283*
Debt ratio	-1.491	-1.782	-2.233	-0.283*
Firm size	0.371	0.322	0.291	0.345
BETA	-0.117	-8.99E-02	-9.45E-02	-8.801E-02
Sector	-0.154	-0.156	-0.136	-0.155
Adjusted R <sup>2</sup>	2.10%	1.90%	4%	2%
F	1.414	1.382	1.826*	1.397

Dependent Variable: cost of equity capital.

\*Significant at 10% level; \*\*Significant at 5% level; \*\*\* Significant at 1% level.

Cost of equity capital: based on Ohlson and Juettner-Nauroth (2005) model.

Board size: number of members on the board.

Board independence: number of independent members of the board / total board members.

Board score: 1 point for each of the 9 characteristics (see Appendix 1).

Firm size: Natural log of market value of equity.

BETA: Company’s risk compared to market risk based on share price sensitivity.

Price to book: market value / book value of the company.

Debt Ratio: Long term debts / total assets.

Only the non-duality of the Chairman is positively and significantly related to the cost of equity capital for firms in the sample. Our hypothesis H1a is rejected. The hypothesis H1b, tested with the developed board scores is also rejected. There is no obvious relationship between overall board features, as required by Canadian regulation, and the cost of equity capital.

– Relationship between the characteristics of the audit committee and the cost of equity capital

We use the size of the audit committee, the financial expertise on this committee and the score of audit committee to test the impact of audit committee characteristics on cost of equity capital (Table

5). The coefficient of the audit committee size is significantly positive. The size of the audit committee is positively related to the cost of equity capital of the firms of the sample. This finding does not confirm our hypothesis H2a.

The results in table 5 show that the score of the audit committee is negatively and significantly related to the cost of capital. The overall characteristics of the audit committee are then related to the cost of capital and this confirms our hypothesis H2b. These results indicate that for firms that are most in accordance with Canadian regulations regarding the requirements of the Audit Committee have lower costs of equity capital.

**Table 5.** Audit committee characteristics and cost of capital

	Model 5	Model 6	Model 7
Intercept	2.656	9.937***	5.057**
AC size	0,700*	–	–
AC score	–	-0.998*	–
Financial expert on AC	–	–	-0.718
US	0.973	1.228	1.251
Price to book	-0.372**	-0.277*	-0.273
Debt Ratio	-2.792	-1.892	-1.989
Firm size	0.252	0.391	0.347
BETA	4.03E-02	-9.74E-02	-0.103
Sector	-0.118	-0.192	-0.149
Adjusted R <sup>2</sup>	4.50%	3.90%	2.60%
F	1.794*	1.804*	1.53

Dependent Variable: cost of equity capital.

\*Significant at 10% level; \*\*Significant at 5% level; \*\*\* Significant at 1% level.

Audit committee size: number of audit committee members.

Audit committee score: 1 point for each of the 5 mandatory characteristics.

Financial expert: 1 if one of the audit committee members is a financial expert and 0 otherwise.

Firm size: natural log of market value of equity.

BETA: Company's risk compared to market risk based on share price sensitivity.

Price to book : market value / book value of the company.

DebtRatio: Long term debts / total assets.

US: 1 if the firm is listed on the American stock market and 0 otherwise.

Sector: 1 to 9 according to the firm's sector.

– The listing effect on the relationship between board and audit committee characteristics and cost of equity capital

Whether the discovered relationship varies depending on whether the company is listed on the U.S. market or not is an important question to ask for those variables that seem significantly related to the cost of capital. The results, based on the interaction terms are presented in table 6. For the

characteristics of the board, only the non-duality of the Chairman displays a significant coefficient. We introduce this variable in the presence of an interaction term (U.S.\*non-duality). The results, presented in table 6, indicate that indeed the coefficient of the interaction term (U.S. \*non-duality) is significant. This result shows that the relationship between any characteristic of the board and the cost of capital varies according to the listing on the U.S. market and this supports our hypothesis H3a.

**Table 6.** The impact of U.S. listing on the relationship between non-duality and cost of capital

Model 8		
Variables	Coefficients	Sig.
(Intercept)	6.521***	0.008
BETA	-0.157	0.735
Price to book	-0.270	0.106
Firm size	0.252	0.311
US	-1.585	0.209
Debt Ratio	-1.941	0.447
Sector	-0.158	0.332
US*NDUAL	4.364***	0.006
NDUAL	-1.714	0.192
Adjusted R2	8.7%	
F	2.641***	

Dependent Variable: cost of equity capital;

\*Significant at 10% level; \*\*Significant at 5% level; \*\*\* Significant at 1% level.

NDUAL: the non-duality takes 1 if the CEO is not the president of the board and 0 otherwise.

US: 1 if the firm is listed on the American stock market and 0 otherwise.

Cost of equity capital: based on Ohlson and Juettner-Nauroth (2005) model.

Firm size: natural log of market value of equity.

BETA: Company's risk compared to market risk based on share price sensitivity.

Price to book: market value / book value of the company.

Debt Ratio: Long term debts / total assets.

Sector: 1 to 9 according to the firm's sector.

For the characteristics of the audit committee, namely the size of the committee and the score, whose relationship with the cost of capital is significant, we introduced interaction terms in the following models: (U.S. \* audit committee size) (U.S. \*Audit committee score). The results in table 7 show that the coefficients of interaction terms are not significant. This confirm that the listing on the American market, where the regulatory approach is the same regarding the audit committee, doesn't affect the relationship between the cost of capital and features of the audit committee. Consequently, our hypothesis H3b is now confirmed.

**Table 7.** The impact of U.S. listing on the relationship between audit committee characteristics and cost of capital

Variables	Model 9		Model 10	
	Coefficient	Sig.	Coefficient	Sig.
(Intercept)	14.928***	0.005	7.248*	0.064
BETA	-0.158	0.740	-6.574E-02	0.892
Price to book	-0.227	0.189	-0.283	0.113
Firm size	0.346	0.180	0.208	0.424
US	-7.261	0.208	-3.627	0.327
Debt ratio	-1.719	0.508	-2.774	0.295
Sector	-0.204	0.222	-0.104	0.535
US*AC score	1.921	0.137	–	–
AC score	-2.298**	0.031	–	–
US*AC size	–	–	1.276	0.204
AC size	–	–	-0.428	0.648
Adjusted R <sup>2</sup>		4.8%		4.6%
F		1.873*		1.838*

Dependent Variable: cost of equity capital; \*Significant at 10% level; \*\*Significant at 5% level; \*\*\*Significant at 1% level.

A C size: number of audit committee members.

A C score: 1 point for each of the 5 mandatory characteristics.

Firm size: natural log of market value of equity.

BETA: Company's risk compared to market risk based on share price sensitivity.

Price to book: market value / book value of the company.

Debt Ratio: Long term debts / total assets.

US: 1 if the firm is listed on the American stock market and 0 otherwise.

Sector: 1 to 9 according to the firm's sector.

### 4.3. Sensitivity Analyses

#### – Detection of endogeneity

Endogeneity of the dependent variables is widespread problem among corporate governance measures (Bhagat & Black, 2002; Agrawal & Knoeber, 1996). We use the Hausman test for all our dependent variables measuring the board and audit committee characteristics. Only the size of the board is determined as endogenous variable. To overcome this problem, we use a double least squares method (2SLS). Our results (non-tabulated) confirm those obtained through OLS. This confirms that there is no relationship between board size and the cost of equity capital.

#### – Index measures sensitivity

We first use indexes with equal weight to each item to measure board and audit characteristics. Then we use the same index with different weights for each item. The weight of each item is based on the assessment of five corporate governance experts<sup>8</sup>. The weight allocated to different items

composing the index depends on the relevance of the item for the financial market. The weighted scores for the board and the audit committee are computed by multiplying each element by the average experts' weights.

The non-tabulated results of the regression performed with the weighted indexes are as the same as the results of our initial indexes.

– Sensitivity over time

Because the data collection period lasts from 2004 to 2006, we chose to control for the year variable by introducing dummies for 2004 and 2006 and as shown in appendix 7, the non-duality of the Chairman and therefore the scores of the Audit Committee keep their signs and their significance. Only the coefficient on the audit committee size loses its significance.

– Sensitivity to control variables

To avoid all possible interactions between our variables and the measure of the companies' size, we replaced the measure based on market capitalization by one based on total assets. The results, not tabulated, do not change following the change of the variable measuring the size of the company.

Some studies show relationship between audit quality, as measured by the size of the audit firm and the cost of capital (Khurana & Raman, 2006; Yu & Wang, 2008). Our results remain unchanged following the introduction of the variable audit quality.

## 6. Conclusion and Discussion

This paper examines the relationship between board and audit committee characteristics and the cost of equity capital.

Our results show that there a relationship between the characteristics of the board of directors and audit committee, in one hand and the cost of capital, in the other hand. Such relationship is more accentuated for the characteristics of the audit committee. As expected, trading in the U.S. market does not affect the relationship between audit committee characteristics and costs of equity capital. This result can be explained by the similarity of the regulatory approach between Canada and the United States regarding the audit committee.

The study results also show that the independence and the size of board do not affect the cost of capital for firms in the sample. Our findings regarding board independence are consistent with Bhagat and Bolton (2008), Yermack (1996) and Bhagat *et al.* (2008) who were unable to establish a significant relationship between independence and financial indicators.

The results indicate no significant relationship between board overall characteristics and the cost of capital, as measured by the scores of the Board. Such results are in line with those of Epps and Cereola (2008) and the findings of Bhagat *et al.* (2008) in the sense that the characteristics of governance, as measured by scores or measurement indices are not related to the company's financial indicators.

Analyses show that the size of the audit committee positively affects the cost of capital for firms in the sample. This finding is consistent with those of Yermack (1996) and Karamanou and Vafeas (2005) concerning the relationship between the size of the board of directors and financial performance of the company. These authors found a significant negative relationship between board size and financial performance of the company. Our result can be explained by the fact that a committee of large size, like a large board, is perceived as inflexible and less efficient (Yermack, 1996; Karamanou & Vafeas, 2005). The results are sensitive to the period of study.

The study results show a significant positive relationship between non-duality of the Chairman. The separation of the functions of CEO and chairman is generally recommended for the separation of the functions of management and control, in order to avoid the entrenchment of the CEO (Fama & Jensen, 1983). From this point of view, non-duality of the Chairman is a preventive measure that reduces the risk for shareholders of being dispossessed. From another point of view, having an in house manager at the head of the board, can prove to be beneficial; It may allow the board to better accomplish its task of monitoring and supervising (Iyengar & Zampella, 2009). Our result places the duality within the framework of this second view.

The results reveal a robust negative relationship between all the characteristics of the audit committee and the cost of capital. More companies comply with regulations regarding audit committee over the impact on the cost of capital is visible. This finding is consistent with Anderson *et al.* (2004), who found a negative relationship between certain characteristics of the audit committee, such as independence and size, and cost of debt.

The results have certain inherent limitations to measurements of variables such as the board characteristics or the cost of capital. Regarding the presence of a financial expert within the audit committee, our measure is based solely on the requirement of having a title of financial accounting and not on the experience of the person designated by the Board as an expert. This helped to avoid subjective interpretation of financial expertise of board members; however, it might also exclude many individuals with the required financial experience. This may explain the fact that no relationship was found between the presence of a financial expert on the audit committee and the cost of capital.

The cost of capital, unlike other indicators of financial performance used in the literature as the ROA and Tobin's Q, is not based on accounting numbers. It, therefore, avoids the biases inherent to accounting information. The Measure of the cost of capital used in this study is one of the most used in the literature (Ohlson & Juettner-Nauroth, 2005; Easton, 2004; Botosan & Plumlee, 2005; Khurana & Raman, 2006; Seow *et al.*, 2006). However, one major limitation of the estimator used in the cost of capital, is the fact that it is based, *inter alia*, on analysts' forecasts of investment returns to 12 and 24 months from the date of interest. This has led to the elimination of several firms from the sample. The problem is exacerbated by the appearance of estimates of investment returns and risk of errors in analysts' forecasts (Hail & Leuz, 2006). To our knowledge, the solution to this limit is still to be proposed in the literature.

For the board of directors, our analysis indicate that the regulated features are not related to the assessment by investors of the firms' risk as measured by the cost of equity capital. This result indicates the need for further researches to investigate the relationship between non-regulated board characteristics', such as diversity and activism, and the cost of equity capital.

Finally, our study was conducted over a period of three years only. Expanding the study period would have a better idea of the changing characteristics of the board and its committees and financial benefits of this development.

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**Notes**

- <sup>1</sup> We use the same index as Khemakhem, Gélinas, and Baillargeon (2014) and we add a section dedicated to audit committee based on National Instrument 52-110 (See Appendix 1).
- <sup>2</sup> We used the most common control variables in the literature. Our results remain the same after adding other control variables such as audit quality (big four vs not big four).
- <sup>3</sup> A company was eliminated from the start because of a financial scandal.
- <sup>4</sup> Consistent with several prior studies (e.g., Bozec, Bozec, & Dia, 2010), financial services companies were eliminated from the sample since their relative size in the Canadian context and their unique balance sheet dynamics could skew the results.
- <sup>5</sup> Analysts' estimates of EPS represent nearly all missing data.
- <sup>6</sup> For those companies we can't estimate the cost of equity capital with Ohlson and Juettner-Nauroth (2005).
- <sup>7</sup> The elimination of outliers regarding cost of equity capital is based on boxplot test. According to this test the companies that have 0 as cost of equity capital are not outliers. We choose to keep them in order to enhance the size of our simple.
- <sup>8</sup> We use a survey to determine the importance of each item for the financial market according to the participants' opinion. We ask them to rate each item of the index from 0 to 2.

**Appendix**

**(1) Corporate governance index**

	<b>Practices</b>	<b>Measures</b>
Board	Board independence	The board should have a majority of independent directors.
	Chairman of the board independence	The chair of the board should be an independent director.
	Non-duality of the chairman	The president of company is not the chairman of the board.
	Code of Business Conduct and Ethics	The board should adopt a written code of business conduct and ethics.
	Charter or mandate of the board	The board should adopt a written mandate
	Regular Board Assessments	The board, should be regularly assessed regarding its Effectiveness.
	Orientation and Continuing Education	The board should provide continuing education opportunities for all directors.
	Meetings of Independent Directors	The independent directors should hold regularly scheduled meetings at which non-independent directors are not in attendance.
	Financial expert	A board member is designated as a financial expert.
Audit committee	Entirely independent	All the members are independent directors.
	Or partially independent	At least should have a majority of independent directors.
	Charter or mandate	Should have a written mandate.
	Three members	Should have at least 3 members.
	Financial expert	A committee member is designated as a financial expert.

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