Overall Governance and Cost of Capital: Evidence From Canada Using Panel Data

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ABSTRACT

The governance-performance relationship literature has recently evolved from studies that use one or multiple governance attributes to studies that employ holistic governance ratings or indexes. The findings of US and Canadian studies are mixed or conflicting and as a result, it is difficult to draw any firm conclusion on the association between corporate governance scores and firm performance. Tobin’s Q has been extensively used as a proxy for firm performance or value. However, the use of Q is subject to more and more criticism. Therefore, the objective of this study is to further investigate the governance-performance relationship while proposing an alternative measure of firm performance: the weighted-average cost of capital (WACC). This research is conducted in Canada over a four-year period from 2002 to 2005 and uses panel data from 155 firms or 517 firm-year observations. Corporate governance is measured based on the ROB corporate governance index published by The Globe and Mail. Using fixed effects regressions in a 2SLS framework, we find strong evidence that the cost of capital decreases as the quality of corporate governance practices increases. Canadian firms with higher ROB scores have lower WACC.

Keywords: Corporate governance, ROB governance indexes, cost of capital, WACC, Canada.

INTRODUCTION

Recent financial scandals and the subsequent collapse of high profile corporations such as Enron and WorldCom in the US have been linked to, or at least exacerbated by, governance weaknesses. These scandals have stressed the importance of effective control mechanisms in ensuring use of investors’ funds in value-maximizing projects. Regulators have reacted quickly to the crisis by launching new market regulations. These initiatives are based on a common belief that better firm-level governance leads to better performance. Nowadays, an increasing number of parties, including media, institutional investors and shareholders’ rights watchdogs, are pushing for higher governance standards. A new market has developed for governance services with a growing number of shareholder advisers disclosing indexes on the quality of the corporate governance practices of publicly listed firms. These ratings or governance scores are intended to provide a readily comparable measure of a firm’s governance quality. A more holistic view of corporate governance has emerged.

This change of perspective is reflected in the recent shift of the governance-performance relationship literature. Scholars now tend to rely on governance ratings or indexes rather than firm specific governance attributes such as ownership structure and board composition. Index-based governance studies are growing in number. However, the findings of US and Canadian studies are mixed or conflicting and as a result, it is difficult to draw any firm conclusion on the association between corporate governance scores and firm performance (Bozec and Bozec, 2009).
Among the potential reasons for the lack of clear results is the absence of an accurate and stable measure of firm performance (Pham et al., 2007). Prior studies measured firm value directly using metrics such as Tobin’s Q. The objective of this study is to analyze further the interplay between overall firm-level governance and performance while proposing an alternative measure of firm performance, that is, cost of capital. A firm’s cost of capital is primarily a risk measure that reflects investors’ required return. More precisely, it is the discount rate, or time value of money, used to convert expected future cash flow into present value for all investors, that is, creditors and shareholders. This study therefore explores the channel through which corporate governance practices affect firm value. To our knowledge, this is the first index-based governance study to investigate the association between firm governance practices and the cost of capital.

Our study is conducted in Canada, where prior empirical studies have shown mixed results. Therefore, examining the link between firm-level governance and cost of capital in that context will provide an additional means to shed light on this issue. To that end, we use a panel of 155 Canadian firms (517 firm-year observations) covered in the Report on Business (ROB) index published by The Globe and Mail between 2002 and 2005. Following the finance literature, the firm’s cost of capital is estimated using the weighted-average cost of capital (WACC), which requires the assessment of both, the cost of equity capital and the cost of after tax debt.

Results show a strong relationship between ROB scores and WACC, suggesting that better firm governance practices are associated with a decreased cost of capital. This study complements and extends prior literature relating broad indexes of corporate governance to firm performance in the following two ways. First, we use WACC to measure firm performance. Second, prior studies are largely based on cross-sectional data. In this paper, we use firm fixed effects regressions in a two stage least squares (2SLS) framework in an attempt to address any potential problems of endogeneity including reverse causality and spurious correlation. By doing so, we rule out some of the main non-causal explanations for a correlation between governance and performance.

The paper is organized as follows. Section 2 presents the international evidence on the governance-performance relationship based on the use of governance indexes. Section 3 describes the methodology including sample selection, governance and cost of capital metrics, and regression models. Section 4 presents the results and section 5 concludes.

**PRIOR LITERATURE**

Bozec and Bozec (2009) provide a comprehensive review of the international index-based governance studies. Overall, evidence shows a clear positive relation between overall governance and performance in European counties and emerging economies. In contrast, findings from studies conducted in the US and Canada remain largely inconclusive. A number of reasons can explain conflicting international evidence. First, emerging markets are more likely to have poor legal environments, ineffective laws, and weak minority shareholders’ rights protection, therefore increasing the benefits of establishing good governance arrangements. Second, non-Anglo-American countries are characterized by ownership concentration (La Porta et al., 1999). The primary conflict in non-widely held firms is between the dominant or controlling shareholder and minority shareholders with the former being in a position to expropriate wealth from the latter. In addition, closely-held firms often deviate from the one share–one vote principle (Claessens et al. 2002). This situation increases the risk of expropriation and might call for more transparency and enhanced controls. Third, non-US countries follow a comply-or-explain approach...
to governance which allows firms more flexibility in applying governance standards than does a rule-based approach as employed in the US. Studies using non-US samples are therefore more likely to find inter-firm variations in corporate governance practices and thus potentially stronger results.

Measurement selection bias is another potential explanation for the lack of clear results. The majority of index-based studies use Tobin’s Q (Q) as the main measure for a firm’s performance. Q is defined as the market value of equity plus the book value of debt over total assets. Q assumes that capital markets know the correct value of a firm and that it is reflected by the current market value of shares. However, this assumption can be called into question since firm stock prices are subject to volatility. Furthermore, Q, like any other financial ratio, is subject to accounting treatment of balance sheet items. Finally, Q reflects a firm’s growth opportunities which arise in part from factors exogenous to managerial decisions, such as economic and industry conditions.

In light of these shortcomings, Chen et al. (2003) and Blom and Schauten (2008) extend the previous research by measuring performance using cost of equity capital and cost of debt, respectively. These metrics are expected to be more stable and accurate than traditional measures of firm value since they are not influenced by exogenous factors that affect future growth and profitability. They are linked to firm valuation indirectly via their impact on a firm’s expected cash flows. Findings of Chen et al. (2003) and Blom and Schauten (2008) support a negative relation between these risk measures and governance.

If cost of equity capital or cost of debt is arguably a good alternative measure of firm performance, we expect the full extent of the relation between governance and performance to be more accurately tested by WACC. WACC includes both cost of equity capital and cost of debt. In fact, cost of equity capital alone will not reflect precisely the overall risk if firms have a significant degree of leverage, nor will it reflect the risk if cost of debt is used for firms with a low debt ratio. In this study, we use WACC.

**SAMPLE SELECTION AND DATA**

**Sample Selection**

This study covers a period of four years from 2002 to 2005. Canada experienced important reforms during this period including the enactment of Bill 198 in 2002, the equivalent of the Sarbanes Oxley Act in the US. Therefore, we expect more variation in corporate governance practices during this time frame, a precondition for the use of panel regressions. Moreover, the ROB index and the weight assigned to each provision are relatively consistent across the four-year period under investigation. Substantial changes have been made in the construction of the index in the following years.

We initially selected firms covered in the 2005 Globe and Mail survey (hereafter, Report on Business or ROB). This survey is based on 209 firms listed on the S&P/TSX composite index. In line with previous studies, we deleted financial companies from the sample (n = 28) given their unique characteristics. We also deleted firms with incomplete data to compute the set of variables described below (n = 26). Our final sample is an unbalanced panel data of 155 Canadian firms and 517 firm-years observations.

**Weighted-Average Cost of Capital (WACC)**

As documented in Bierman (1993), Bruner, Eades, Harris and Higgins (1998) and Meier and Tarhan (2007), the WACC is widely used in practice to assess a firm’s cost of capital. Its computation requires the assessment of the after-tax cost of debt and the cost of equity, which are then weighted by the
market capitalization of debt and equity relative to the total market capitalization of the firm. WACC is calculated as follows:

\[
WACC_i = \frac{D}{D+E}(1-T_c)r_{D,i} + \frac{E}{D+E}r_{E,i}
\]

Where D and E denote, respectively, the market value of debt (short-term debt plus long-term debt) and equity (common and preferred stock). For debt and preferred stock, we use book values as an approximation for market values, which is standard practice in the literature. \(T_c\) is the marginal corporate tax rate. \(r_D\) and \(r_E\) are the cost of debt (pre-tax) and equity.

**Estimating the Cost of Equity**

The primary approach suggested by academics and used in the industry to estimate a company’s cost of equity is the capital asset pricing model (CAPM) (e.g. Graham and Harvey, 2001; Welch, 2008; Da, Guo, and Jagannathan, 2009). CAPM is calculated as follows:

\[
r_E = Rf + \beta [E(Rm) - Rf]
\]

The implementation of the CAPM requires a risk-free rate (Rf), the estimation of the sensitivity of the stock returns to changes in market returns - the beta coefficient (\(\beta\)) – and, the equity premium (\(E(Rm) - Rf\)), which quantifies the expected excess return on the market (\(E(Rm)\)) over the risk-free rate (Rf). The choice of the appropriate risk-free rate is motivated by the average length of a project of a firm. Because most firms use a long-term government bond yield, such as the yield to maturity on 10-year Treasury bonds as the risk-free rate (Bierman, 1993; Bruner et al., 1998), we assume an average project life of 10 years and use the 10-year Government of Canada benchmark yield prevailing at the date of the computation of cost of capital. In estimating the equity premium (\(E(Rm) - Rf\)), we rely on Booth (2001) who provides statistical evidence for Canadian data over the past four decades that stocks outperformed bonds by about 3%. However, as this estimate is influenced by a period of high government deficits in the 70s that pushed interest rates upwards and conditions on bond markets have changed since then, Booth (2001) recommends using an equity premium of about 4.5% for the Canadian market. Having assessed the risk-free rate and the equity risk premium, we use five years of monthly return data from CRSP (Center of Research in Security Prices) to estimate a firm’s beta coefficient by regressing a firm’s returns on the equity risk premium. All returns represent total returns and take into account reinvested dividend payments.

**Estimating the After-Tax Cost of Debt**

We assess a firm’s cost of debt (\(r_D\)) from its credit rating. More specifically, based on a firm’s credit rating, we add a fraction or multiple of the difference between the average, weighted, long-term corporate bond yields computed by Scotia Capital Inc. minus the 10-year Government of Canada benchmark yield (credit spread) to the 10-year Government of Canada benchmark yield. For all firms for which Compustat provides an S&P long-term senior debt rating, we assign the firm to four categories. For firms rated AAA to A-, we add 0.5 times the credit spread. For ratings from BBB+ to BB, we apply the credit spread for the average corporate bond. For ratings from BB- to B, we add 1.5 times the credit spread, and for firms with ratings below B, we add twice the credit spread. For all remaining firms without an S&P rating, we base our cost of debt estimate on Altman’s (1968) Z-score. For healthy firms with a Z-score below 1.81 (financially healthy firms), we use the 10-year Treasury bond rate plus the average corporate credit spread. For firms with a Z-score between 1.81 and 3, we add 1.5 times the credit spread, and for firms with Z-scores above 3 (unhealthy firms), we add two times the credit spread.
The tax rate in the WACC equation \( (T_c) \) should represent the marginal tax rate of the firm. The balance sheet provides information about the average tax rates which we use as an approximation of a firm’s marginal tax rate. For all firms in our sample, we compute the average ratio over the past three years of income tax payments divided by income before taxes. To avoid excessive estimates resulting as an artefact of accounting regulations on deferred taxes and tax credits, we trim these tax rates at 50%.

Table 2 reports descriptive statistics of WACC as well as of cost of equity and cost of debt for our sample. The average WACC for Canadian firms is 7.9% for the period under investigation (2002-2005). Using a sample of Australian firms, Pham et al. (2007) report an average WACC of 10% from 1994 to 2003. Table 2 also shows that the average of cost of debt and cost of equity is 5.9% and 8.9% respectively. These statistics are somewhat lower than the cross-country average of cost of equity (12.7%) reported by Hail and Leuz (2006) between 1992 and 2001.

Explanatory variables

Corporate Governance Metrics

We define governance practices using the index developed by ROB which captures a wide variety of governance indicators. More precisely, the index distinguishes between four blocks of corporate governance. The first block, board composition, (maximum of 37 marks out of 100), assesses the independence of the members serving on the board, the audit committee, the compensation committee and the remuneration committee. The second block deals with compensation (maximum of 25 marks) and captures, among other things, whether the directors and the CEO are required to own stocks. The third block, shareholder rights (maximum of 28 marks), evaluates different scenarios that could impair shareholder rights including the presence of nonvoting or subordinate shares and employee stock options. Finally, the fourth block, disclosure (maximum of 10 marks), measures both the availability and the quality of information on corporate governance. Appendix A presents the major criteria considered within the ROB rating categories for 2005.

Appendix A: Major Criteria Considered Within the Report on Business (ROB) Corporate Governance Rating Categories for 2005

The overall ROB index comprises four categories or sub-indexes which in turn include different factors. The data were obtained from the proxy information circular for shareholders. The maximum weight assigned to each factor is shown in brackets.

1. **Board composition** (37 marks)
   - Independence of the board of directors, the audit committee, the compensation committee and the nominating committee (19 marks)
   - Duality structure (position held by the Chairman and the CEO) (5 marks)
   - Relationship between directors (3 marks)
   - Engagement of the CEO versus other outside commitments (2 marks)
   - Women on the board (2 marks)
   - Performance evaluation of the board (3 marks)
   - Meetings of the board without management (3 marks)

2. **Compensation** (25 marks)
   - Stocks owned by directors and CEO (13 marks)
   - Loans to senior executives (2 marks)
   - Disclosure of compensation policies regarding CEO bonuses (4 marks)
-Disclosure of compensation policies regarding CEO and top executives (6 marks)

3. **Shareholder rights** (28 marks)
   - Election of the board (6 marks)
   - Degree of dilution when stock options are owned by employees (6 marks)
   - Other option plans (6 marks)
   - Presence of non-voting or subordinate voting shares (10 marks)

4. **Disclosure** (10 marks)
   - Related directors (1 mark)
   - Directors' biography (1 mark)
   - Disclosure of fees paid to an outside compensation consultant (1 mark)
   - Attendance record of directors at committees and meetings (2 marks)
   - Disclosure of the compensation paid to directors last year (3 marks)
   - Disclosure of directors’ ages and retirement policies (2 marks)

Since our study uses panel data, the index and the weight assigned to each provision must be consistent across the four-year period under investigation. This condition is largely met for the ROB index from 2002 to 2005. When minor differences do exist, we re-estimated the weights of the indexes and sub-indexes in line with the weighting scales of the ROB index of 2005. For instance, the maximum allocated to the board composition sub-index was 40 marks from 2002 to 2004 but only 37 marks in 2005. In that case, the adjustment consists of multiplying the sub-index “Board Composition” from 2002 to 2004 by 37/40. A similar process was carried out to standardize the other sub-indexes.

Table 1 presents descriptive statistics of the ROB governance indexes. The average index (TOTAL) is 68 out of 100. The highest mark is 97 and the lowest 37, indicating a large variation in the index among the sample companies. ROB scores are significantly different across industries (not reported here).

### Table 1: Descriptive Statistics

This table reports summary statistics on cost of capital, ROB index, and other firm characteristics for a sample of 155 firms or 517 firm/year observations, between 2002 and 2005. See Appendix B for definitions of variables.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Min</th>
<th>Max</th>
<th>Std. deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost of capital:</strong></td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>WACC</td>
<td>517</td>
<td>0.079</td>
<td>0.036</td>
<td>0.189</td>
<td>0.027</td>
</tr>
<tr>
<td>Cost of equity</td>
<td>517</td>
<td>0.087</td>
<td>0.036</td>
<td>0.205</td>
<td>0.028</td>
</tr>
<tr>
<td>Cost of debt</td>
<td>517</td>
<td>0.058</td>
<td>0.046</td>
<td>0.075</td>
<td>0.006</td>
</tr>
<tr>
<td><strong>ROB index:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>517</td>
<td>68</td>
<td>35</td>
<td>97</td>
<td>14</td>
</tr>
<tr>
<td>Board</td>
<td>517</td>
<td>28</td>
<td>6</td>
<td>37</td>
<td>8</td>
</tr>
<tr>
<td>Compensation</td>
<td>517</td>
<td>12</td>
<td>1</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>Shareholder</td>
<td>517</td>
<td>20</td>
<td>4</td>
<td>28</td>
<td>6</td>
</tr>
<tr>
<td>Disclosure</td>
<td>517</td>
<td>9</td>
<td>2</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td><strong>Firm-Level control variables:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size (Log Assets)</td>
<td>517</td>
<td>14.55</td>
<td>10.45</td>
<td>17.54</td>
<td>1.40</td>
</tr>
<tr>
<td>Debt</td>
<td>517</td>
<td>0.31</td>
<td>0.00</td>
<td>0.91</td>
<td>0.21</td>
</tr>
<tr>
<td>Market-to-Book</td>
<td>517</td>
<td>2.71</td>
<td>0.23</td>
<td>9.40</td>
<td>2.04</td>
</tr>
</tbody>
</table>

### Control Variables

In line with prior studies including Pham et al. (2007), we introduce a set of firm-specific control variables that are known to affect the cost of capital. Control variables include firm size (SIZE), defined as the log of total assets, leverage (DEBT), defined as the book value of long-term debt over total assets, and growth opportunities (Mk-to-Bk), defined as the market value of equity over the book value. Data is
collected from *Stock Guide*. We also control for industry (SECTOR) and year effects (YEAR) with dummy variables.

The relation *a priori* between SIZE and WACC is difficult to predict. On the one hand, larger firms usually have more diversified operating activities than do smaller firms. Therefore, one could expect a positive impact of firm size on firm value and a negative impact on cost of capital. On the other hand, larger firms may have less growth opportunity than younger and smaller firms (Claessens et al. 2002) which might impact negatively on firm value and positively on the cost of capital. In the same vein, leverage (DEBT) may lower a firm’s cost of capital because it offers tax savings, interest payments being tax deductible. However, higher leverage is also associated with higher risk (risk of bankruptcy) and, hence higher cost of equity (Fama and French, 1992). In line with the results from prior studies (e.g. Bozec and Laurin, 2008; Cronqvist and Nilsson, 2003) which support a positive relationship between growth opportunities and firm value, we expect a negative relation between market-to-book ratio (Mk-to-Bk) and cost of capital.

For firms in our sample, Table 1 shows that the average size (SIZE) is 14.55, the average firm leverage (DEBT) is 31%, and the average market-to-book ratio (Mk-to-Bk), is 2.71. Overall, these statistics are broadly consistent with prior Canadian studies (e.g. Klein et al., 2005) which tend to use similar samples, mainly large cap firms.

**EMPIRICAL TESTS AND RESULTS**

OLS regressions cannot rule out some of the potential non-causal explanations for a correlation between ROB scores and WACC including: (1) unobserved variables that are correlated with both ROB scores and WACC, leading to a spurious correlation, and (2) reverse causal relationship, in which WACC predicts governance. We conducted the Hausman (1978) test to determine if endogeneity needed to be addressed in our study. This test strongly rejects the hypothesis of no endogeneity. Therefore, ROB scores should be treated as endogenous variables. OLS regressions might generate biased and inconsistent estimates.

To address the risk of endogeneity (spurious correlation and reverse causality), we use a firm fixed effects methodology combined with the use of instrumental variables (IV) in a two-stage least squares framework (2SLS). The challenge with this approach is to find good instruments, that is, variables that are correlated with the endogenous variable (ROB), but uncorrelated (or not directly correlated) with the dependent variable (WACC). Finding such variables is not an easy task but is crucial for the instrumental variables regressions to yield unbiased estimates.

Given the lack of a specific theoretical framework, we follow previous Canadian studies using ROB index (Klein et al., 2005; Bozec and Bozec, 2007) and consider, as a potential instrument, a dummy variable indicating whether or not the firm is cross-listed on a US stock exchange (US-Listed). Recent studies (e.g. Doidge, 2004; Ben-Amar and Andre, 2006) consider cross-listing in the US as a signal that the foreign firm accepts tighter regulation including increased governance scrutiny, which may result in better governance ratings. About 40% of our sampled firms are listed on a US exchange. Consistent with Klein et al. (2005), we find that the dummy variable, US-Listed, is highly correlated with ROB index and sub-indexes but uncorrelated with WACC, which is a preliminary indication of the instrument’s validity. Therefore, we use the variable US-Listed as an instrument for ROB governance indexes in the following system of equations:
\[ \text{ROB}_{it} = \alpha + \beta_1 \text{US-Listed}_{it} + \beta_2 \text{SIZE}_{it} + \beta_3 \text{DEBT}_{it} + \beta_4 \text{Mk-to-Bk}_{it} + \beta_5 \text{WACC}_{it} + \beta_6 \text{YEAR}_{it} + \beta_7 \text{FIRM EFFECT}_t + \varepsilon_1 \]  

(1a)

\[ \text{WACC}_{it} = \delta + \theta_1 \text{Instrumented ROB}_{it} + \theta_2 \text{SIZE}_{it} + \theta_3 \text{DEBT}_{it} + \theta_4 \text{Mk-to-Bk}_{it} + \theta_5 \text{YEAR}_{it} + \theta_6 \text{FIRM EFFECT}_t + \varepsilon_2 \]  

(1b)

Equation 1(a) is the first-stage regression. The endogenous variable (ROB) is regressed on the instrument (US-Listed) and all the independent variables from Equation (1). Also, by including WACC in Equation 2(a), it is possible to control for reverse causality, if any. Equation (1b) is the second-stage regression that uses the fitted values from the first stage (Instrumented ROB). In doing so, we estimate the association between ROB indexes and WACC while taking into consideration the endogenous nature of the ROB indexes. Equation (1b) also includes firm fixed effects in order to capture unobserved firm heterogeneity that could be driving both ROB and WACC (spurious correlation).

2SLS panel regression results are reported in Table 2. Model 1 shows results of the first stage with the ROB total index as the dependent variable. It appears that US cross-listing (US-Listed) is a strong predictor of corporate governance ratings. As expected, the coefficient of US-Listed is positive and statistically significant (P<0.001). Canadian firms cross-listed in the US tend to adopt better corporate governance practices than do those that are not. We also note that the explanatory power of the model is high (Adjusted R²: 39%; F: 26.633, P<0.001). Therefore, these results support the use of US-Listed as a valid instrument for the ROB indexes.

Models 2 to 6 report results from the second-stage regressions. Model 2 uses global ROB index (TOTAL) as the main explanatory variable, and Models 3 to 6, the ROB sub-indexes. In the interests of brevity, we do not report results from the first-stage regressions involving each of the four ROB sub-indexes. These results are consistent with those from Model 1. US-Listed remains a strong predictor of ROB governance scores. The coefficients of the ROB total index and sub-indexes are all negative and statistically significant at conventional levels supporting a robust and strong relationship between a firm’s governance practices and the cost of capital (WACC). Mk-to-Bk is negative and significant throughout all specifications, except for Model 5, indicating that firms with good investment opportunities have lower cost of capital. We also note that high leveraged firms enjoy lower cost of capital as the coefficient for DEBT generally displays a significant negative coefficient. The coefficients for SIZE are positive and statistically significant in three of the five models.

Table 2: Results from 2SLS panel regressions of WACC on ROB governance indexes

<table>
<thead>
<tr>
<th>Expected sign</th>
<th>TOTAL</th>
<th>WACC</th>
<th>WACC</th>
<th>WACC</th>
<th>WACC</th>
<th>WACC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st stage</td>
<td>2nd stage</td>
<td>2nd stage</td>
<td>2nd stage</td>
<td>2nd stage</td>
<td>2nd stage</td>
</tr>
<tr>
<td>Intercept</td>
<td>(? )</td>
<td>28.548***</td>
<td>0.139***</td>
<td>0.105***</td>
<td>-0.041</td>
<td>-0.365</td>
</tr>
<tr>
<td></td>
<td>(1.97)</td>
<td>(2.42)</td>
<td>(2.62)</td>
<td>(-0.31)</td>
<td>(-1.48)</td>
<td>(-0.96)</td>
</tr>
<tr>
<td>US-Listed</td>
<td>(+ )</td>
<td>6.063***</td>
<td></td>
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<tr>
<td></td>
<td>(3.80)</td>
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<tr>
<td>TOTAL (x10)</td>
<td>(-)</td>
<td>-0.049***</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(-3.32)</td>
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<tr>
<td>BOARD (x10)</td>
<td>(-)</td>
<td></td>
<td>-0.088***</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(-4.18)</td>
<td></td>
<td></td>
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<tr>
<td>COMPENSATION (x10)</td>
<td>(-)</td>
<td></td>
<td></td>
<td>-0.245*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(-1.95)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SHAREHOLDER</td>
<td>(-)</td>
<td>-0.128**</td>
<td></td>
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</tr>
<tr>
<td>DISCLOSURE</td>
<td>(-)</td>
<td>-0.079***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE (x10)</td>
<td>(+/-)a</td>
<td>2.509*** 0.223** 0.174** 0.311 0.138 0.185**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEBT (x10)</td>
<td>(+/-)a</td>
<td>2.428 -0.494*** -0.328* -0.286 -0.263 -0.566***</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Mk-to-Bk (x10)</td>
<td>(-)a</td>
<td>-3.767*** -0.641*** -0.515*** -0.662** -0.036 -0.373***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WACC</td>
<td></td>
<td>55.109***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SHAREHOLDER**

**DISCLOSURE**

**SIZE (x10)**

**DEBT (x10)**

**Mk-to-Bk (x10)**

**WACC**

| Sector Dummies | ? | No | No | No | No | No | No |
| Year Dummies   | ? | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm fixed effects | ? | Yes | Yes | Yes | Yes | Yes | Yes |

**Adj. R2 or Pseudo**

| R2        | 0.392 0.407 0.378 0.383 0.379 0.381 |
| F         | 26.634*** 28.100*** 57.085*** 16.113*** 45.214*** 17.124*** |
| N         | 517 517 517 517 517 517 |

This table reports results from 2SLS panel regressions of the weighted-average cost of capital (WACC) on ROB governance indexes. The sample consists of an unbalanced panel data of 155 firms or 517 firm-year observations for the period 2002-2005. US-Listed is used to instrument ROB governance indexes. The independent variables are the ROB **instrumented** indexes (TOTAL, BOARD, COMPENSATION, SHAREHOLDER, and DISCLOSURE). Control variables include SIZE, DEBT, Mk-to-Bk, firm and year fixed effects. WACC is also included in the first stage regressions among independent variables. See Appendix B for variable definition. The t-value shown under the coefficient is corrected for heteroskedasticity (White, 1980). *, **, *** indicate statistical significance at 10%, 5%, and 1% levels, respectively.

a (+) is the expected sign for the first stage regression; b Coefficient not multiplied by 10 (x10) for the first stage regression.

**Robustness Checks**

To test the robustness of our results, we conducted the following additional tests. First, the Hausman (1978) test to compare the fixed and random effects estimates of coefficients marginally rejects the null hypothesis of equal coefficients (P<0.07). Therefore, we re-run our 2SLS panel regressions presented in Table 2 using firm random effects instead of firm fixed effects. In unreported regressions, we obtain qualitatively similar results.

Second, we consider other potential instruments for ROB scores including family ownership and deviation from the one share--one vote principle. Firms controlled by a family are common in Canada, even among the largest publicly listed firms (Bozec and Laurin, 2008; King and Santor, 2007). These firms are characterized by a high level of ownership concentration and a frequent deviation from the one share--one vote rule, leading to a family’s voting rights well exceeding its cash-flow rights. In a related study, Bozec and Bozec (2007) find a strong negative association between ownership concentration, voting and cash-flow rights diveregence, and ROB scores. We thus follow Bozec and Bozec (2007) and use as potential instruments the following: FAMILY, a dummy variable indicating whether or not the firm is controlled by a family and WEDGE, the difference between the ultimate owner’s voting rights and cash-flow rights. Although not reported here, when these two instruments are used instead of the US cross-listing variable, a negative association remains between ROB indexes and WACC.
Third, we re-run our 2SLS panel regressions using as dependent variables the two main components of WACC, that is, cost of equity (CE) and cost of debt (CD). Cost of equity and cost of debt are both negatively associated with ROB total index. Indeed, the coefficient of TOTAL is negative and statistically significant at 1% level across all models. These results suggest that firms with higher governance scores tend to have lower cost of equity and cost of debt. These results are in line with those of Blom and Schauten (2008) that show a negative correlation between Deminor ratings and cost of debt for a sample of 77 firms included in the FTSE 300. Results are also consistent with those generated by Chen et al. (2003) which support a negative link between CLSA rankings and cost of equity capital for a sample of firms from 9 Asian countries.

CONCLUSION

The objective of this study is to further investigate the governance-performance relationship while proposing an alternative measure of firm performance: the weighted-average cost of capital (WACC). This is the first index-based study using WACC as performance indicator. WACC is expected to be more stable and accurate than any traditional measures of firm value including Q since it is not influenced by exogenous factors that affect a firm’s future growth and profitability. WACC is linked to firm valuation indirectly via its impact on the firm’s expected cash flows.

We study the connection between firm-level governance of Canadian firms and WACC over 2002-2005, using firm fixed effects specifications in a 2SLS framework. We find strong evidence that the cost of capital is decreasing in relation to the quality of corporate governance practices. Canadian firms with higher ROB governance scores have lower WACC. The use of an instrumental variables technique in a firm fixed effects framework strengthens the case for a causal association between firm-level governance practices and WACC.

Given the inconclusiveness of the existing US and Canadian index-based studies that predominately use Q as performance measure, this study provides an alternative approach to investigate the relation between firm-level governance and performance. By showing that governance affects a firm’s WACC, our results highlight the relevance of post-Enron reforms that push for more homogeneity in corporate governance practices.

REFERENCES


