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Corporate governance and cost of debt financing: Empirical evidence from Canada

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ABSTRACT

We explore the impact of the Globe and Mail corporate governance index on bond spreads in a sample of Canadian listed companies. The index is composed of four sub-indices—board composition/structure, board compensation, shareholder rights, and disclosure—assessing the quality of the firm's governance. Our empirical findings point to a decrease in the bond spreads for an improvement of the overall quality of the corporate governance index. When we analyze the impact of each of the sub-indices, only the quality of the board composition/structure as well as the disclosure quality seems to matter to bondholders. We interpret our finding within the Canadian "comply or disclose" approach to governance where more responsibility is put on investors to assess and judge the quality of the governance practices. In such context, bondholders value stronger boards (in terms of composition as well structured board can mitigate agency problems), and are also particularly concerned with the quality of the firms' disclosure policies (to reduce information asymmetry). In addition to the Board Composition and the Disclosure sub-indexes, we also find a significant negative relationship between shareholder rights sub-index and the cost of debt for issuers headquartered in Quebec. Only in Quebec, features that protect shareholders from the managers (and major shareholders)' potential misbehavior seem to reduce the cost of debt. This might be due to the lower confidence that bondholders have in the Quebec French-Common-Law-based jurisdiction even after the adoption of the new Quebec Business Corporations Act in 2011.

1. Introduction

When companies need external funds to finance their investment opportunities, a trade-off between the two traditional financing vehicles, debt vs. equity, arises (Myers & Majluf, 1984). In the Finance literature, it is largely argued that debt financing has many advantages over equity. First, firms would benefit from tax shield when they choose to issue debt since corporate tax is calculated after interests being paid to debt holders (Ross, Westerfield, & Jordan, 2008). Second, debts might play a monitoring role within corporations since highly leveraged firms tend to pay more attention to the reactions of the debt markets. Third, debt might signal positive signs to the markets (signaling theory) which would potentially reduce the asymmetric information between the companies and the investors leading to a lower future financing costs. As such, debt provides an assessment on the firm's overall quality.

Recently, empirical researches have tried to address the relationship between the debt financing and some firm's corporate governance mechanisms. Sengupta (1998) provides evidence that corporate governance mechanisms could mitigate information asymmetry problems and hence lower the cost of debt financing. Moreover, Ashbaugh-Skaife, Collins, and LaFond (2006) find that firms that exhibit quality corporate governance enjoy lower cost of debt financing. Ertugrul and Hegde (2008) show that higher CEOs compensation, supposedly used to align the interests of the mangers with those of the owners, could reduce the cost of debt. Schauten and van Dijk (2010) show that better financial disclosure would reduce firms' cost of debt only if shareholder right is at a low level. Finally, Boubakri and Ghouma (2010) document that the voting/cash-flow rights wedge (as a proxy of major shareholders expropriation) and the family control have a positive and significant effect on bond costs. Their results suggest that a higher protection of debtholders' rights generally reduces the cost of debt financing. More importantly, the authors report that what really matters to bondholders and rating agencies is the level of enforcement of the debt laws rather than their mere existence on books.

Although this handful of studies bridges the literature on debt markets and corporate governance, it is noticeable that the majority of them was conducted in the USA (Ashbaugh-Skaife et al., 2006; Bhojraj & Sengupta, 2003; Sengupta, 1998). There is no

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clear evidence on how the quality of firm's corporate governance affect the cost of debt financing in other large developed countries. In the Canadian context for instance, only handful studies have investigated the impact of corporate governance on the firm's performance. Using Globe & Mail governance scores, Gupta, Kennedy, and Weaver (2009) examine possible associations between the corporate governance scores and various measures of firm value in the Canadian context. Their results do not support any association between the governance index (or its subcategories) and various measures of firm value. The authors conclude that the Globe and Mail governance rankings have no impact on firm value and hence does not appear to have any information content. Bozec and Bozec (2010) further investigate the relationship between corporate governance and the cost of capital, as a proxy for the firm's value. Their analysis finds strong evidence that the cost of capital decreases as the quality of corporate governance practices increase. However, the study has not examined the association between the direct cost of debt (as a component of the cost of capital) and the corporate governance scores. This leaves the question on the role of the Canadian debt markets in shaping corporate governance unanswered.

This paper aims to fill this gap in the literature. It seeks to empirically highlight the potential impact of the quality of corporate governance in a sample of Canadian firms listed on the Toronto Stock Exchange (TSX). The choice of Canada is motivated by two unique features of the Canadian context. First, while the corporate governance systems in Canada and the U.S. appear to be similar in certain aspects, they are fundamentally different with respect to corporate governance regulation (Broshko & Li, 2006). Corporate governance regime in Canada can be characterized as a "principles-based" approach (Adjaoud & Ben-Amar, 2010; Broshko & Li, 2006 among others) which relies on the "comply or disclose" principle. Canadian listed companies are required to comply with some suggested "best practices" (by the stock exchange authorities), and in case they depart from such guidelines, they will have to disclose and clarify to investors the procedures they implemented to achieve the same "suggested" governance objective. This transfers the monitoring role to the investors (markets) who will judge the effectiveness of the firms' corporate governance practices. In contrast, in the United States, where most of the related studies have been carried on, the governance system is mostly a "rules-based" approach where compliance with the stock exchange requirements is mandatory rather than voluntary. Given this distinguished feature of the higher responsibility of the Canadian markets, it is crucial to assess to which extent investors fulfill their monitoring responsibilities and discipline not well governed firms.

The second important feature of Canada is the coexistence of two different legal systems; the Common vs. Civil Law system. In spite of its common-law traditions, Canada has one of its largest province (Quebec) with a French civil-law heritage and jurisdiction. LaPorta, López-de-Silanes, Shleifer, and Vishny (1997, 1998, 2000, 2002) among other studies, report that investors enjoy the highest protection of their rights under Common Law systems, while they are the least protected under Civil Law systems, particularly those with French heritage as it is the case for Quebec. Hence, it is very informative to see whether the perception of the bondholders would be the same for bond issuers from Quebec (French Civil-Law) vs. the rest of Canada (Common-Law). Since the firms in our sample are all located in Canada (meaning that they are subject to the same accounting standards, political environment, as well as the same social, media, and public pressures), this reduces any cross country variations allowing us to directly test the impact of differences in investor protection on cost of debt. Finally, the Canadian context would allow us to assess, to some extent, the consequences of the attempts to align the Quebec Civil Law system with the Common Law one (in terms of investors protection). After being criticized for its poor investor protection, Quebec Government undertook profound changes to its Corporation Act. In 2011, the province introduced the new Quebec Business Corporations Act (QBCA), replacing the old Quebec Companies Act (QCA). The new QBCA has many new features that make it similar to the Federal Act. Since our study happens 3 years after the adoption of the new Act, we would be able to assess to which extent the bond markets react similarly/differently to issuances from or outside Quebec.

We use a corporate governance index published by The Globe and Mail, a famous Canadian national newspaper, as a proxy for the governance quality. The index is composed of four blocks: board composition, compensation, shareholder rights, and disclosure. In line with previous studies (Bhojraj & Sengupta, 2003; Boubakri & Ghouma, 2010; Sengupta, 1998), we use corporate bond spreads as proxy for debt costs. Bond spreads are obtained by subtracting the yield to maturity on the Government of Canada bonds from the yield to maturity on the corporate bond issue with similar maturity. We find evidence that firms with higher governance quality enjoy lower corporate bond costs. More precisely, an increase of 1% in the overall governance score (which by construction ranges from 0 to 100), reduces the spread by around 0.612 basis point. We also investigate the impact of each governance dimension (board composition, board and CEO compensation, shareholder rights, and board governance disclosure) on the cost of debt and our results show that only a better board composition and a higher firm's disclosure reduce the cost of debt financing. The firm's compensation scheme and the level of shareholder's protection seem to be irrelevant to bondholders within the Canadian context. This finding highlights two main channels through which Canadian firms can enjoy lower cost of debt financing. The first channel is the reduction of the agency problems within the firm. This can be achieved through a better board composition and structure (independence of board overall and its sub-committees, whether the chairperson is also the CEO, how busy are the board members, etc). The second channel is the mitigation of the information asymmetry between the firm and the bondholders. Information asymmetry can be mitigated via a better disclosure policy. Our findings suggest that lower bond spreads are associated with higher Disclosure score, which assesses the firm in terms of the quality of information it discloses about its board (such as related vs. unrelated directors, disclosing detailed director biographies and qualifications, directors meeting attendance, etc.). It is clear that in the context of the Canadian governance "comply or disclose" approach (where more responsibility is put on investors to assess the quality of the governance), bondholders are particularly concerned with the quality of the firms' disclosure policies.

We further split our sample into two subsamples; firms headquartered in Quebec (French Civil Law Province known to have lower investor's protection) vs. firms headquartered in the rest of Canada (Common Law system known to have higher investor's protection). Our results show that in both sub-samples, board composition and disclosure sub-indexes both remain significantly and negatively associated with the bond spreads. Interestingly, only for the Quebec sub-sample we find a significant negative relationship between shareholders rights and the cost of debt. It seems that only in Quebec, governance features that protect shareholders from the managers' potential misbehavior reduce the cost of debt. This might be due to the lower confidence of bondholders in the Quebec jurisdiction compared to the rest of Canada. Interpreted within the context of the Quebec new Corporation Act of 2011, these results show that 3 years after such amendment, the bond market has not yet priced that change.

Our findings contribute to the existing literature in many ways. First, the results contribute to our understanding of the role of the debt markets, outside the U.S. framework, which seem to price the quality of corporate governance. We are unaware of any study that tried to directly assess the "monitoring role" of the Canadian

debt markets. As stated before, the two distinguished features of Canada, namely the "principles-based" governance approach and the coexistence of the French Civil Law and the Common Law systems, make the Canadian context very unique in this sense. It is a fertile field to test whether the Canadian investors are playing their "assigned" role in disciplining firms with poor governance. If Canadian investors are not active in the markets by disciplining poorly governed firms, this would raise red flags on the efficiency of the "comply or disclose" Canadian approach to corporate governance.

Second, we are unaware of any study that assesses the new Quebec Business Corporations Act. Three years after its adoption, our findings suggest that investors are still more cautious about the extent to which the shareholders' right are protected in Quebec. Contrary to the rest of Canada, lower protection of shareholders rights is priced for issuers from Quebec. We acknowledge, however, that it might need more time for investors to fully understand and judge the effectiveness of the new Act.

Third, our findings shed more lights on an ongoing debate on the informational content of governance indices. Cheng, Collins, and Huang (2008) investigate the relationship between Standard & Poors transparency and disclosure scores, from one side, and abnormal returns and earnings response coefficients, from the other side. The authors fail to find a significant association between the composite rankings and the abnormal returns. However, they only found a negative relationship when companies show large differences between annual reports and required regulatory filings. Gupta et al. (2009) also did not find consistent association between the Globe and Mail corporate governance scores and various measures of firm value. These findings support the hypothesis stating that: "*the aggregation of publicly disclosed governance information into an index form has little information content or value relevance.*"[1] Our study doesn't support this statement though. Our empirical investigation suggests a high correlation between the four sub-categories of the Globe and Mail governance index. This multicolenearity has resulted in overinflated standard errors and very small t-statistics making some variables statistically insignificant. Following Boubakri and Ghouma (2010), we tackle the presence of multicollinearity between our explanatory variables using the Gram–Schmidt orthogonalization technique. This techniques produces a set of new orthogonal variables from the original ones, where each new variable is created in such a way that the effects of the other variables are removed. Contrary to previous studies (mainly Gupta et al., 2009) in the Canadian context, we found evidence that at least two of the governance sub-categories are significant in our regressions: the board composition and the board governance disclosure.

The rest of the paper is organized as follows. Section 2 presents the theoretical framework for our research and develops our main hypothesis. Section 3 describes our methodology and data, and provides some descriptive statistics. Section 4 discusses the empirical findings and Section 5 concludes.

2. Literature review and hypotheses development

Most of the empirical corporate governance studies have been dealing with the relationship between managers and owners. Managers, being the agent of the owners (principal) (Jensen & Meckling, 1976) have incentives to pursue their own interests which in most of the cases go against the interests of the principal. Corporate governance helps mitigating the agency problems by aligning the interests of these two actors. Different governance mechanisms have been designed to achieve that goal such as the board of directors, management compensation schemes, auditor choice, ownership structure, etc.

Surprisingly, despite the growing size of the domestic and international debt markets, only few studies have examined the impact of the firm's corporate governance quality on bondholders' wealth. Assessing such relation would certainly shed more lights on the role that different actors in the corporate debt markets might have in shaping corporate governance. Prior researches suggest that the main player in corporate debt markets, i.e. debtholders, face two threats: expropriation risk by controlling shareholders and opportunistic behaviors by the firm's managers.

The pioneering work of Jensen and Meckling (1976) suggests that (controlling) shareholders may have incentives to engage in expropriating the wealth from minority shareholders, but also from debtholders. This might happen by investing in new risky/ier projects after borrowing from the creditors. By doing so, owners reap most of the benefits, while debtholders bear most of the cost (Klock, Mansi, & Maxwell, 2005). As rational investors, bondholders would anticipate such behavior, and consequently will charge higher debt financing costs to firms exhibiting higher shareholders expropriation risks.

Managers can also represent a source of "threat" to debtholders. Financial theory suggests that management behavior can exacerbate the default risk of the firm. Managers, being imperfect agents for shareholders, may pursue a non value-maximizing activities resulting in reducing the firm's value. For instance, managers can entrench themselves by following a strategy that makes them very costly to be replaced. Making firm's contracts as implicit as possible and investing only in projects in which they have experience regardless of their impact on firm's value are few manifestations of the managers entrenchment strategy (Shleifer & Vishny, 1989). It has also been documented that managers, because of their superior information, are able to use their discretion and judgement in reporting financial information. Such opportunistic earnings management activities, while misleading, remain extremely difficult to detect or to prove. For instance, Roychowdhury (2006) finds evidence of real earnings management through reducing discretionary expenditures, lowering prices to temporarily increase sales, and overproducing to report lower costs. Moreover, many studies document earnings management activities prior to major corporate events such as Initial Public Offerings (IPOs) and Seasoned Equity Offerings (SEOs) (Roosenboom, van der Goot, & Mertens, 2003; Teoh, Welch, & Wong, 1998a, 1998b), mergers and acquisitions (Ericksona & Wang, 1999; Louis, 2004), spinoffs and divestitures (Lin & Yung, 2014), etc.

In relation to debt financings, Kieschnick and Urcan (2006) report evidence of income increasing discretionary accruals prior to the issuance of convertible debt. This behavior seems to be more pronounced for firms who usually have recourse to public placements. In Taiwan, Chin, Lin, and Lee (2005) document persistent earnings management activities in the year of issue of convertible bonds.

As a result of the major shareholders expropriation risk and the managerial opportunism threat, debtholders are expected to react. Their reaction would be translated into higher risk premiums. Using the corporate governance index of Gompers, Ishii, and Metrick (2003), Klock et al. (2005) report that anti-takeover provisions have a significant and negative effect on cost of debt. Ashbaugh-Skaife et al. (2006) point out that firms with lower corporate governance scores exhibit a higher cost of debt. In particular, the authors find that the number of blockholders and the CEO power are negatively associated with bond rating while better board independence, higher board stock ownership, and board expertise result in higher ratings. Boubakri and Ghouma (2010) examine the relationship between firms' ultimate ownership and the bond spread and rating in an international context. Their findings point to a positive (nega-

[1] Gupta, Kennedy, and Weaver (2009, p. 295).

tive) relationship between voting/cash-flow rights wedge and bond costs (ratings). Their findings also suggest that the enforcement of debtholders protection laws (but not the merely existence of these laws) lowers the cost of debt and improves the bond rating.

Anderson, Mansi, and Reeb (2004) examined the relationship between the characteristics of the board and bond spreads in a sample of S&P 500 firms. Their results suggest that larger and more independent boards imply lower bond spreads. Similarly, bond spreads seem also to be negatively related to the level of independency of the audit committee, its size and its meeting frequency. In the same vein, Lorca, Sanchez-Ballesta, and Garcia-Meca (2011) investigate whether board committees affect the cost of debt in Spain. In a sample composed of 151 Spanish firms listed on the Spanish Stock Exchange between 2004 and 2007, they report that higher level of directors' stock ownership and greater frequencies of board meetings reduce the cost of borrowing mainly due to a less asymmetry of information and agency risk. Moreover, their study suggests a non-linear relation between board size and debt financing cost where a maximum of 15 members on a board makes this committee more effective. Ghouma (2017) uses managerial entrenchment and earnings management activities to proxy for managers' opportunism. The author reports that low levels of managerial opportunism result in firms enjoying lower corporate bond costs. With respect to income management, his findings also suggest that higher bond costs are generally associated with income-increasing earnings management activities.

In the Canadian context, evidence on the link between key firm's performance (such as firm's value) and governance is less extensive. Only few academic studies investigated the impact of corporate governance on firm's characteristics. Most of those studies have used Globe and Mail corporate governance index. It is worth noting that findings from using Globe and Mail governance index are mixed. For instance, Klein, Shapiro, and Young (2005) examine the relationship between firm value and Globe and Mail corporate governance for a sample of 263 Canadian firms. The authors find that only few Globe and Mail sub-indices measuring effective compensation, disclosure and shareholder rights practices seem to affect performance. Surprisingly, the total governance index as well as the board composition/independence sub-index (one of the most important proxy of good governance) do not seem to impact firm performance. Bozec and Bozec (2010) report evidence that the cost of capital (the authors' proxy for the firm's value) decreases as the quality of corporate governance practices increases. However, Gupta et al. (2009) examine the impact of Globe and Mail governance index on various measures of firm value/performance between 2002 and 2005. They did not find any relation between these governance scores and firm value or accounting measures of firm performance. Moreover, their analysis fails to find any market reaction to the annual disclosures of the scores.

Beyond the scarcity of similar studies in the Canadian context, we are unaware of any study that tried to explicitly explore the link between corporate governance and bondholders' wealth. The only study that seems to be close to ours is the one by Bozec and Bozec (2010). However, their study differs from our research in many aspects. Our paper aims at analyzing the perception of the Bond market participants with respect to the quality of Canadian corporate governance. Stated differently, we would like to explore, in a cross-sectional framework, whether the bondholders price the quality of the corporate governance in Canada. This question is of importance particularly in the context of the "principles-based" Canadian approach to governance where investors are key players in assessing the firm's governance practices. The question that Bozec and Bozec (2010) investigate is different from ours for many reasons. First, they tried to explore the impact of corporate governance on an aggregate measure of the cost of capital (measured by the Weighted Average Cost of Capital). As such, the WACC does not only reflect the perception of bondholders. Indeed, it reflects an aggregate opinion and perception of all the financiers being shareholders (common and preferred stocks), banks (traditional bank loans), or bondholders (public bonds and private placements). Obviously, the weights (percentages of debt vs. Equity) have a great influence on the WACC, and hence on the aggregate opinion of the firm's capital providers (shareholders and debtholders). Unfortunately, in their study, the authors did not report the average of the weights (i.e. the capital structure) used to calculate their WACC. Nevertheless, one can tell from previous studies that the voice of shareholders would be more heard in that WACC. Indeed, in their international capital structure analysis, De Jong, Kabir, and Nguyen (2008) show that Canada has an average Leverage ratio (Debt to Market value of Total Assets) of only 15% (a median of 12.8%).[2] This suggests that the weight of debt is very low compared to the weight equity. Hence, in Bozec and Bozec (2010) study, the WACC is more inclined towards equity and reflects more the perceptions of the owners rather than the creditors. Moreover, Bozec and Bozec (2010) use an indirect method to assess the cost of debt financing. Their proxy for the cost of debt was based on the credit rating of the company plus a certain spread calculated as a difference between the yield on a long term corporate bond Index and the 10-year Government of Canada Bond yield. In the absence of the firm's credit rating, the authors use the Z-scores and subjectively estimate the cost of debt. This way of estimating the cost of debt does not capture the direct and precise cost of debt (hence does not precisely assess the bondholders' perception). Moreover, it gives an assessment of the overall cost of firm's debt, i.e. including bank loans. In our case, we directly use the yields on traded bonds from the markets. Our goal is to get a sense on whether bondholders, as the main players in bond markets, are sensitive to the quality of the firm's corporate governance.

The present paper tries to fill a gap in the literature by trying to investigate the possible relationship between corporate governance and the cost of debt financing. This would shed more light on the role that debt markets play in shaping the corporate governance of the Canadian firms. We conjecture that, given the above mentioned expropriation risk by major shareholders and the opportunistic behavior by the managers, bondholders would ask for higher costs from poorly governed firms.

2.1. Why Canada?

The choice of Canada to undertake this study is motivated by two main reasons: the significant differences in approaches to corporate governance between Canada and the United States, and the unique legal system that Canada has which reflects the coexistence of a Common and Civil Law systems.

2.1.1. Canada vs. the United States

Most of the studies exploring the relationship between corporate governance features and the cost of debt financing are done in the United States. When the Canadian context is called up, many would think that, since Canada is very close/similar to the United States, the same findings would most likely be found in the Canadian context. Nevertheless, the corporate governance systems in Canada and the U.S., while they seem to be similar in certain aspects, they are fundamentally different with respect to corporate governance regulation (Broshko & Li, 2006). Corporate governance regime in Canada can be characterized as a "principles-based" approach (Adjaoud & Ben-Amar, 2010; Broshko & Li, 2006) which

[2] The authors defined the leverage ratio as book value of long-term debt over market value of total assets, calculated as book value of total assets minus book value of equity plus market value of equity.

relies on the "comply or disclose" principle.[3] This principle simply requires the companies to comply with the recommended "best practices" (recommended by the stock exchange authorities), and in case companies depart from such guidelines, they will have to disclose and describe the procedures they implemented to achieve the same "recommended" corporate governance objective.[4] This regime has been effective since 1995, and while it *encourages* firms listed on the Toronto Stock Exchange to adhere to the best practice guidelines, it also *forces* companies to disclose (in their annual reports or in separate proxy circulars) the level of their compliances with the guidelines. In contrast, the U.S. governance system can be qualified as a "rules-based" approach where compliance with the stock exchange requirements is mandatory rather than voluntary.

While the Canadian corporate governance "comply or disclose" approach has been considered by some as being too weak to protect investors rights, others have argued that such an approach is the most appropriate for a Canadian-like context given the fundamental differences between the Canadian and the American capital markets. Some of these differences include the fact that more listed Canadian firms are closely held by families, and that the Canadian market is mainly dominated by small companies that are financially unable to comply with stricter and inflexible governance requirements.

In this context, the Canadian corporate governance "comply or disclose" approach has a natural implication on the role that financial markets (and the capital providers in particular) play in shaping the governance choices for Canadian companies. Canadian firms, while enjoying greater flexibility in terms of tailoring their corporate governance practices to their specific circumstances, they will have to disclose to investors enough information on their governance choices. This allows the investors to be the judge of the effectiveness of the firms' corporate governance practices. This in turn raises the question on the ability of investors to have (and allocate) enough expertise, time, and resources to undertake a thorough assessment of the firms' corporate governance practices. Hence, the motivation of exploring the relationship between the cost of debt and the corporate governance quality in Canada. The answer to this question would have serious implications for policy makers in Canada. For instance, if bondholders are not able to detect or value corporate governance qualities, this might imply that they are not ready or sophisticated enough to assume such monitoring role that the Canadian regulator has assigned to them. It would also mean that the policy maker must rely on other approaches (maybe to converge towards the American rules-based approach) to protect investors' rights. We expect that Canadian bond markets would carry on this function and play a monitoring role to reward companies with better governance quality (board quality).

2.1.2. Quebec vs. the rest of Canada: two different legal systems

In spite of its common-law traditions, Canada has one of its largest province (Quebec) with a French civil-law heritage and jurisdiction. Common law system, as inherited from the medieval England, is proven to provide better investor protection and better basis for financial development (LaPorta et al., 1997, 1998, 2000, 2002, 2002). In the contrary, the civil law system, mainly with French traditions (as it is the case for Quebec), seems to be the least protective of investor rights among all the legal systems (LaPorta et al., 1998). Investors are better protected in countries with common-law heritage, where stock markets are more developed, firms have higher market values, and ownership structure is less concentrated. Civil law countries, particularly those with French traditions, suffer from lower law enforcement, lower efficiency in the judicial systems, lower market development, lower transparency and higher bureaucracy. Thus, under the civil-law setting, investors (stockholders and creditors) feel less protected and run higher risks of being expropriated by major shareholders and/or management. This would result in a less developed financial markets suggesting less liquid markets but also and probably more expensive financing costs.

To the best of our knowledge, our study is the first to answer the question on whether the perception of the bondholders would be the same for bond issuers from Quebec vs. the rest of Canada. Boubakri and Ghouma (2010) use a sample of international bond issuances and report that better investor protection, particularly via law enforcement, reduces the cost of debt financing. Analyzing the impact of investor protection on the cost of debt within a single country framework rather than a multi-country setting provides more robustness to the findings as it would be possible to eliminate a number of cross-country biases. Indeed, in spite of the widely documented differences in terms of legal protection between Quebec and the rest of Canada (see for instance, Attig & Gadhoum, 2003; Boubakri, Bozac, Laurin, & Rousseau, 2011; Bozec, Rousseau, & Laurin, 2008; among others), all firms composing our sample are located in Canada meaning that they are subject to the same accounting standards, political environment, as well as the same social, media, and public pressure. This reduces any cross country variations and allows us to directly test the impact of any differences in investor protection on the cost of debt.

More importantly, exploring the impact of different legal systems on the cost of debt in the Canadian framework would also help assessing (at least indirectly) the recent attempts to improve the corporate governance regulations in Quebec. After being criticized for its poor investor protection compared to other provinces, Quebec Government undertook dramatic changes to its Corporation Act. In 2011, the province introduced the new Quebec Business Corporations Act (QBCA), replacing the old Quebec Companies Act (QCA). With more than a hundred innovative features, the new QBCA has many features that reinforce minority shareholders right and make it similar to the Federal Act assumed to be more protective to investors' rights. For instance, according to the new QBCA, directors and officers now owe a duty of loyalty to the corporation in addition to the duty of care to act with diligence. Moreover, minority shareholders would enjoy greater protection under the new QBCA. For instance, stockholders will enjoy protection against squeeze-out transactions, and will also be permitted to use cumulative voting for the election of directors. This latter would enhance the representation of the minority shareholders on the board. The new Act also simplifies some formalities such as allowing e-filings of corporate documents and board meetings outside Quebec.

Thus, with very revolutionary amendments, one would wonder whether bondholders price such move of Quebec Government or not. The current study offers an important opportunity to check whether the Canadian bond market has incorporated these changes or not yet.

3. Variables, data, methodology, and descriptive statistics

Our starting point is the 2013 Globe and Mail Report on Business governance index. To assess the quality of their governance practices, the Report on Business analyzes the boards of directors of 232 Canadian companies of the S&P/TSX composite index

[3] With the exception of some mandatory rules such as the rules relating to audit committees. The reader can find in Broshko and Li (2006) a good reference for a more detailed information on this approach and a complete comparison between the Canadian and the American Governance systems.

[4] The Canadian "principles-based" approach, as a voluntary regime, consists of a list of best practice guidelines with a mandatory disclosure requirement. For a comprehensive description of the Canadian best practice guidelines, see the National Policy NP 58-201 "Corporate Governance Guidelines" and the National Instrument NI-58-101 "Disclosure of Corporate Governance Practices".

as of September 1, 2013. Using proxy circulars filed by Canadian companies to the Ontario Securities Commission, the quality of corporate governance was assessed along four dimensions: Board Composition (worth 31 marks out of 100), Board Shareholding and Compensation (worth 28 marks out of 100), Shareholder Right (worth 28 marks out of 100), and Disclosure (worth 13 marks out of 100).

The first sub-index, the board composition, evaluates the quality of the structure and the composition of the board in terms of the independence of board overall and its sub-committees (audit, compensation, and nominating sub-committees), whether the chairperson is also the CEO, how busy are the board members, the presence of women, etc. The second sub-index, board shareholding and compensation, mainly assesses whether directors and CEOs are required to hold firms' stocks, and whether companies disclose the detailed managers' compensation information to investors. It also captures information on whether the directors and the CEOs own shares in their company.

The third sub-index, shareholder rights, aims at measuring the extent to which shareholders are protected. For instance, it captures, among other things, the presence or not of the majority voting policy, non-voting or subordinate voting shares, any performance hurdles for stock options, etc.

The last feature (disclosure sub-index) deals with the level of transparency of the firm in disclosing information about the board such as which directors are related or unrelated and why, detailed directors biographies and qualifications, directors meeting attendance, etc.

Data on corporate bond issuances are from Thomson Reuters Eikon. We searched for all outstanding bonds issued by the 232 Canadian companies as of yearend 2014. Our final sample consists of 169 firms making 1632 issuances over the period from 1986 to 2014. Following prior studies (for instance Boubakri & Ghouma, 2010) we proxy for the cost of debt using the corporate bond spread (SPREAD). It is obtained by calculating the difference between the yield to maturity on each corporate bond minus the yield to maturity on a Canadian government bond with the same (or closest) maturity:

$$SPREAD = YTM\ (of\ corporate\ bond) - YTM\ (of\ Government\ bond\ with\ same\ maturity)$$

Since the Globe and Mail governance scores are for the year 2013, the bond data are collected for the following year 2014. Hence, it is assumed that the cost of debt financing for the year 2014 is affected by the quality of the corporate governance of the year 2013. The yield to maturity of the corporate bond is calculated as the average of daily bond yields over the year 2014.

To test the relationship between the corporate governance and the cost of borrowing, we use the following general specification:

$$\begin{aligned} SPREAD_{i,2014} = {} & Intercept + \beta_0 \cdot GC_{Score_{i,2103}} + \beta_1 \cdot Risk_{i,2013} \\ & + \beta_2 \cdot Leverage_{i,2013} + \beta_3 \cdot Firm_{Size_{i,2013}} + \beta_4 \cdot Perform_{i,2013} \\ & + \beta_5 \cdot Reten_R ratio_{i,2013} + \beta_6 \cdot Quick_R ratio_{i,2013} \\ & + \beta_7 \cdot MB_R ratio_{i,2013} + \beta_8 \cdot EBIT_R ratio_{i,2013} + \beta_9 \cdot Issue_S ize_{i,2014} \\ & + \beta_{10} \cdot Maturity_{i,2014} + \beta_{11} \cdot Call_{i,2014} + \beta_{12} \cdot Covert_{i,2014} \\ & + \beta_{13} \cdot Sink_{i,2014} + IndustryDummies + YearDummies + \varepsilon_i \end{aligned}$$

Below are the descriptions of the variables:

SPREAD: Bond spread is measured by yield to maturity of corporate bonds minus yield to maturity of Canadian Treasury bonds with the same (or closest) maturity (in basis points).

CG_Score: A measurement of board quality. It can be either the total Globe and Mail index (ranging from 0 to 100) or one of its sub-indices described above which are: Board Composition (ranging from 0 to 31), Board Shareholding and Compensation (ranging from 0 to 28), Shareholder Right (ranging from 0 to 28 marks), and Disclosure (ranging from 0 to 13).

Maturity: the natural log of the number of days to the maturity of the bond.

Risk: the beta of firm's stock calculated using 3-year market (daily) prices.

Leverage: the ratio of total debt to total equity.

Firm_Size: the natural logarithm of total asset the company.

Issue_Size: the natural logarithm of the outstanding amount of the bond;

Perform: return on asset.

Reten_Ratio: the retention ratio calculated as the % of the income retained by the firm.

Quick_Ratio: is the ratio of cash and account receivables to current liabilities.

MB_Ratio: is the market-to-book ratio.

EBIT_Ratio: is the EBIT-to-sales ratio.

Call: a dummy variable equals to 1 if the bond is callable.

Sink: a dummy variable equals to 1 if the bond has a sinking fund provision.

Following prior researches (see for instance Adams & Mansi, 2009; Anderson et al., 2004; Boubakri & Ghouma, 2010), we estimate our model using the Ordinary Least Square (OLS) method.

Table 1 shows the distribution of our final sample. Panel A reports the number of outstanding bonds (as of yearend 2014) by year of issuance. Our final sample consists of 1632 issuances from 169 different firms. This gives an average of 9.6 issuances per company over the 29 years period (from 1986 to 2014), or almost 1 issue per company every 3 years. More than 90% of the bond issuances were issued after the year 2000, and around 65% issued after 2009. We can also notice that less than 7% of the bonds were issued during the 2007–2008 financial crisis which reduces any bias due to that period.

Table 2 reports descriptive statistics. The average cost of debt for our sample is around 163.5 basis points above the government yield. As per the corporate governance quality, an average company has an overall corporate governance score of 81.6 out of 100. Moreover, an average company in our sample scores 24.2 out of 31 in terms of board composition, 22.6 out of 28 in terms of Board Shareholding and Compensation, 23.8 out of 28 in terms of shareholder rights, and 11.1 out of 13 in terms of Disclosure.

Finally, we report Pearson correlations in Table 3. As we can see, the global governance index (CG_Score), as well as each of the individual sub-indices are negatively and significantly correlated with the cost of debt financing (SPREAD). This goes, a priori, with our conjecture that better governance quality reduces the cost of borrowing for Canadian firms. All the other control variables are also significantly and economically correlated with SPREAD except for MB_Ratio and CONVERT.

4. Empirical results

We now move to our multivariate analysis and use the OLS technique to estimate our main model. Our goal is to see whether the cost of debt financing for the Canadian firms is affected by the quality of their corporate governance, and if yes, which block of the sub-indices is the most relevant to bondholders.

Model (0) of Table 4 reports regression results for our basic model where no governance index is introduced. The model seems to be well designed with most variables being significant and having their expected economic signs. The exception is for the per-

Table 1
Data description. The following table reports the distribution of our sample per year (Panel A) as well as per industry (Panel B).

Panel A: sample distribution per years

Year	# of issuance	Percentage	Cumulative percentage
1986	1	0.06	0.06
1988	1	0.06	0.12
1989	1	0.06	0.18
1990	8	0.49	0.67
1991	11	0.67	1.35
1992	8	0.49	1.84
1993	10	0.61	2.45
1994	8	0.49	2.94
1995	17	1.04	3.98
1996	25	1.53	5.51
1997	26	1.59	7.11
1998	22	1.35	8.46
1999	16	0.98	9.44
2000	6	0.37	9.8
2001	19	1.16	10.97
2002	37	2.27	13.24
2003	113	6.92	20.16
2004	70	4.29	24.45
2005	53	3.25	27.7
2006	57	3.49	31.19
2007	64	3.92	35.11
2008	49	3	38.11
2009	66	4.04	42.16
2010	116	7.11	49.26
2011	116	7.11	56.37
2012	203	12.44	68.81
2013	233	14.28	83.09
2014	276	16.91	100

Panel B: sample distribution per industries

Industry	Number	Percent
Energy	287	17.59%
Financials	787	48.22%
Health care	15	0.92%
Industrials	66	4.04%
Materials	129	7.90%
Telecommunication	72	4.41%
Utilities	152	9.31%
others	124	7.60%
Total	1,632	100.00%

formance which loads with a negative sign as expected, but not significant at any reasonable statistical threshold. In Model (1), we introduce the total Globe and Mail corporate governance index and as we can see, it loads a negative and significant coefficient. An increase of the score by 1 point reduces the spread by more than 0.6 basis points. This result confirms, at least partially, our hypothesis that corporate governance matters to bondholders in Canada.

In Models (2)–(5) of Table 4, we introduce the sub-indices separately in our regressions with the aim to see how these sub-scores affect the cost of debt financing. As it can be seen from the coefficients of the sub-indices, it looks like bondholders pay attention to all components of the global index except for the Shareholder sub-index which is not significant. We can also note the relatively high coefficient of the disclosure index (−9.046) compared to the other sub-indices suggesting that bondholders seem to value all the components, but more attention is given to the quality of the disclosure. This goes with the expectation that, within the Canadian "comply or disclose" governance approach, investors are extremely sensitive to the disclosure quality as it allows them to assess and judge the effectiveness of the firms' governance practices.

Surprisingly, once we introduce all the sub-indices in the same regression model, we obtain mixed results. In fact, while the disclosure sub-index remains negative and highly significant (coefficient of −9.47), the shareholder rights sub-index becomes significant but positive. The other two sub-indices (board composition and shareholding & compensation) are not significant at any reasonable statistical level. At glance, this result seems strange, particularly with respect to the board composition sub-index which has the highest weight in the final index (31%) and which captures the most important quality of the corporate governance such as the independency of the board, the independency of the sub-committees (mainly the audit committee), the CEO-Chairperson duality, etc. In fact many studies have documented that the cost of debt financing is inversely related to board size and independence (see for example Anderson et al., 2004; Fields, Fraser, & Subrahmanyamb, 2012).

To investigate the reasons behind these findings, we take a closer look at the correlation matrix reported in Table 3. The correlations between the 4 components of the corporate governance index seem to be very high. It is generally higher than 64% except for the correlation between the Disclosure and the Shareholder rights sub-indices, where it is 43.2%. The correlation reaches its maximum of more than 74% between the board composition sub-score and the shareholder rights sub-score. This suggests a potential issue of multicollinearity which means that the information content of the four sub-indices is redundant.

4.1. Is multicollinearity an issue?

The above mentioned high correlations between the four corporate sub-indices suggests a serious multicollinearity issue. The primary concern is that the highly correlated explanatory variables leads the regression coefficients to become unstable with wildly inflated standard errors. As a consequence, the regression coeffi-

Table 2
Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
SPREAD	1632	163.494	128.231	−159.913	963.121
RISK	1632	0.932	0.515	−0.025	3.340
LEVERAGE	1632	134.891	105.280	0.000	773.237
FIRM SIZE (Log Assets)	1632	10.845	0.842	8.827	11.936
PERFORM	1632	2.680	4.246	−17.060	29.131
RETEN_RATIO	1632	13.49	49.295	0	1
QUICK_RATIO	1632	1.795	25.119	0.104	100.5
MB_RATIO	1632	2.160	1.362	0.224	11.07
EBIT_RATIO	1632	27.024	18.242	−98.69	118.94
ISSUE SIZE (Log)	1632	18.258	2.569	6.908	23.026
MATURITY (Log)	1632	7.563	1.155	3.871	10.481
CALL	1632	0.305	0.461	0	1
CONVERT	1632	0.001	0.025	0	1
SINK	1632	0.012	0.107	0	1
BOARD	1632	24.164	5.112	7	29
COMPENSATION	1632	22.589	4.200	8	28
SHAREHOLDER	1632	23.756	5.047	7	28
DISCLOSURE	1632	11.103	1.776	3	13
CG_SCORE	1632	81.612	14.16	38	98

This table reports descriptive statistics. The variables are: SPREAD: bond spread is measured by yield to maturity of corporate bonds minus yield to maturity of Canadian Treasury bonds with similar maturity (in basis points). CG_Score: the measurement of board quality. It can be either the total Globe and Mail index (ranging from 0 to 100) or one of its sub-indices described above which are: Board Composition (ranging from 0 to 31), Board Shareholding and Compensation (ranging from 0 to 28), Shareholder Right (ranging from 0 to 28 marks), and Disclosure (ranging from 0 to 13). Maturity: the natural log of the number of days to the maturity of the bond. Risk: the beta of firm's stock calculated using 3-year market (daily) prices. Leverage: the ratio of total debt to total equity. Firm Size: the natural logarithm of total asset the company. RETEN_RATIO: retention ration. QUICK_RATIO: current assets to current liabilities. MB_RATIO: market to book ratio. EBIT_RATIO: EBIT to sales ratio. Perform: return on asset. Issue Size: the natural logarithm of the outstanding amount of the bond. Call: a dummy variable equals to 1 if bond is callable. Sink: a dummy variable equals to 1 if bond has sinking fund.

cients tend to be economically unstable (as the signs keep changing) and statistically insignificant.

To test for the existence of the multicollinearity, we follow Boubakri and Ghouma (2010) and use the regression collinearity diagnostic procedures of Belsley, Kuh, and Welsch (1980). The technique analyzes the "conditioning" of the matrix of independent (explanatory) variables by computing its condition number (the largest singular value of the matrix). Belsley et al. (1980) suggest that collinearity would become a serious issue for any condition numbers equal or higher than 30. We calculate the condition number of the matrix of explanatory variables used in Model 6 of Table 4 where all the four governance sub-indices are included. We find a condition number of more than 113 which is a synonym of very high multicollinearity based on the threshold of 30 suggested by Belsley et al. (1980).

Now that the multicollinearity issue has been identified, we follow Boubakri and Ghouma (2010) and we apply the Gram–Schmidt orthogonalization method to generate a set of new orthogonal variables from the original ones. Each new orthogonalized variable is generated in such a way that any redundant information coming from the other variables is removed. As a consequence, the new set of variables used in our regressions would be the ones that capture the exact effect of our initial factors. We present in Appendix A a brief mathematical description of the Gram–Schmidt orthogonalization process.

Model 7 of Table 4 reports the results using the new orthogonalized governance variables. As in Model 6, the coefficient of the disclosure sub-index remains negative and highly significant. Canadian firms with higher levels of disclosure at the board enjoy lower cost of bond financing. Moreover, Model 7 also shows that the board composition sub-index is now negatively and significantly related to bond spreads. An increase in the board structure/composition sub-index by one level would result in a decrease in the cost of debt financing by 6.052 basis points. This confirms previous findings on the negative effect of the board structure on the cost of borrowing (Anderson et al., 2004; Fields et al., 2012). The two other sub-indices, board compensation and shareholder rights, remain insignificant which leads us to conclude that they do not seem to matter to bondholders in the Canadian markets.

Overall, our results point to a significant negative relationship between the bond spreads and two Globe and Mail sub-indices: Board Composition and Disclosure. This means that, overall, the bond market is generally playing its monitoring role. Better board composition and structure ensure higher protection of investors' rights and hence less pronounced agency problems. This absence (or at least the low level) of the agency problems represents an important channel that allows firms to enjoy a lower cost of debt financing.

Furthermore, the findings with respect the Disclosure sub-index are of particular importance as they suggest that bondholders value the quality of the information disclosed by the company with respect to their boards (such as related vs. unrelated directors, detailed directors biographies and qualifications, directors meeting attendance). It is clear that in the context of the Canadian governance "comply or disclose" approach, where more responsibility is put on investors to assess the quality of the governance, bondholders are particularly concerned with the quality of the firms' disclosure policies. Better disclosure quality reduces the information asymmetry and allows investors to fairly judge the firm's governance practices. This mitigated information asymmetry represents a second channel that makes firms enjoying lower cost of debt as bondholders are able to assess their governance practices. Again, to the best of our knowledge, we are unaware of any study that empirically tested this active role of the investors in Canada.

4.2. Quebec vs. the rest of Canada

To explore whether our findings depend on the legal traditions of the province of the issuer, we split our sample into two subsamples: firms headquartered in Quebec (French Civil Law Province with relatively lower investor rights protection) vs. firms headquartered in the rest of Canada (Common Law system with relatively higher investor rights protection). We then run our regression (Model 7) for the two sub-samples. Model 8 of Table 4 reports regression results for issuers headquartered in Quebec, while Model 9 of the same table reports results for the rest of Canada. Our results show that in both sub-samples, board composition and disclosure sub-indexes are both significantly and negatively associated with the bond spreads. Once again, this confirms our core findings that bondholders price (and appreciate) boards with better structure and composition as well as boards with high quality disclosure. Interestingly, only for the Quebec sub-sample we find a significant negative relationship between shareholder rights subindex and the cost of debt. It seems that only in Quebec, features that protect shareholders from the managers' potential misbehavior (or major shareholders' expropriation) reduce the cost of debt. This might be due to the lower confidence of bondholders in the Quebec jurisdiction compared to the rest of Canada. Indeed, in Quebec, bondholders appear to pay attention to (and value) firms with boards that adopt strong mechanisms to protect minority shareholders against managers or controlling shareholders. These companies, according to our findings, enjoy lower cost of debt financing (coefficient of SHAREHOLDER_O is negative and significant in Model 8). However, bondholders don't seem to pay such attention to firms headquartered outside Quebec (coefficient of SHAREHOLDER_O not significant in Model 9). This is probably due to the perception that, outside Quebec, shareholders' rights are already well protected. Finally, and with reference to the new Quebec Business Corporations Act (QBCA), our findings can also imply that the Canadian bond markets haven't (fully) incorporated yet the new changes (mainly with respect to minority shareholders protection) in the yields. In fact, our study is conducted in 2014 which is about 3 years after the adoption of the new Act in 2011. We believe that, it would generally take few more years for the markets to fully apprehend the value added of the new Act. This is maybe due to the fact that the Canadian bond market is still waiting to witness the enforcement of the new Act as what really matters to bondholders is the laws enforcement rather than their mere existence on books (Boubakri & Ghouma, 2010).

5. Conclusion

The main objective of this study is to analyze the relationship between the corporate governance and the cost of debt financing for a sample of Canadian firms. The impact of four corporate governance components (board structure/composition, board compensation, shareholder rights, and disclosure) was explored. Our main findings point to a negative relation between corporate governance and cost of debt, which is consistent with most previous researches. We also try to explore the impact of individual components of the overall governance score on bond yields. Using the Gram–Schmidt orthogonalization technique to address the multicollinearity issue, our empirical results show that only the structure of the board and the disclosure quality are associated with the cost of debt and hence are relevant to bondholders. Stronger board (in terms of composition and structure) ensures higher protection of investors' rights and hence reduces agency problems within the firm. These reduced agency problems represent an important channel that allows firms to enjoy a lower cost of debt financing. Moreover, higher disclosure tend to mitigate the information asym-

Table 3
Pearson correlation.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
SPREAD	1.000																	
RISK	0.299*	1.000																
LEVERAGE	−0.121*	−0.359*	1.000															
FIRM SIZE	−0.463*	−0.002	0.141*	1.000														
PERFORM	0.091*	−0.104*	−0.136*	−0.392*	1.000													
RETEN_RATIO	−0.147*	0.019	0.056*	0.157*	0.021	1.000												
QUICK_RATIO	−0.067*	0.001	0.011	0.033	−0.013	0.001	1.000											
MB_RATIO	−0.010	−0.127*	0.380*	−0.156*	0.184*	0.142*	−0.011	1.000										
EBIT_RATIO	−0.277*	−0.167*	0.201*	0.226*	0.033	−0.076*	0.030	−0.139*	1.000									
ISSUE SIZE	0.010*	−0.098*	0.124*	−0.413*	0.229*	−0.019	−0.061*	0.213*	0.038	1.000								
MATURITY	0.289*	−0.062*	−0.040	−0.341*	0.128*	−0.031	0.018	0.057*	−0.132*	0.203*	1.000							
CALL	0.375*	0.325*	−0.151*	−0.049*	0.038	−0.011	−0.014	0.027	−0.192*	−0.120*	0.148*	1.000						
CONVERT	−0.037	−0.029	−0.002	−0.020	−0.001	0.017	−0.001	−0.019	−0.007	−0.02	0.012	−0.016	1.000					
SINK	−0.108*	−0.043	0.024	0.024	−0.003	−0.012	0.272*	−0.010	0.004	−0.04	0.027	−0.047	−0.003	1.00				
COMPOSITION	−0.291*	0.055*	0.107*	0.511*	−0.311*	0.296*	0.025	−0.126*	0.242*	−0.313*	−0.25*	0.019	−0.001	0.001	1.000			
COMPENSATION	−0.359*	−0.129*	0.137*	0.527*	−0.272*	0.234*	0.017	−0.05*	0.151*	−0.302*	−0.173*	−0.098*	0.020	0.004	0.726*	1.000		
SHAREHOLDER	−0.284*	0.078*	−0.125*	0.531*	−0.203*	0.137*	0.023	−0.157*	0.332*	−0.305*	−0.272*	0.013	0.001	0.002	0.741*	0.702*	1.00	
DISCLOSURE	−0.328*	−0.161*	0.161*	0.3184*	−0.174*	0.137*	0.009	−0.051*	0.156*	−0.206*	−0.121*	−0.061*	0.013	0.019	0.642*	0.641*	0.432*	1.000
CG_SCORE	−0.354*	−0.011	0.055*	0.570*	−0.287*	0.242*	0.023	−0.122*	0.270*	−0.337*	−0.254*	−0.025	0.008	0.005	0.921*	0.889*	0.886*	0.701*

This table reports the correlations between the variables. The variables are: SPREAD: bond spread is measured by yield to maturity of corporate bonds minus yield to maturity of Canadian Treasury bonds with similar maturity (in basis points). CG_Score: the measurement of board quality. It can be either the total Globe and Mail index (ranging from 0 to 100) or one of its sub-indices described above which are: Board Composition (ranging from 0 to 31), Board Shareholding and Compensation (ranging from 0 to 28), Shareholder Right (ranging from 0 to 28 marks), and Disclosure (ranging from 0 to 13). Maturity: the natural log of the number of days to the maturity of the bond. Risk: the beta of firm's stock calculated using 3-year market (daily) prices. Leverage: the ratio of total debt to total equity. Firm Size: the natural logarithm of total asset the company. RETEN_RATIO: retention ration. QUICK_RATIO: current assets to current liabilities. MB_RATIO: market to book ratio. EBIT_RATIO: EBIT to sales ratio. Perform: return on asset. Issue Size: the natural logarithm of the outstanding amount of the bond. Call: a dummy variable equals to 1 if bond is callable. Sink: a dummy variable equals to 1 if bond has sinking fund.

* Implies significance at 5% level or better.

Table 4
Regression analyses.

	Model (0)	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)
Intercept	1022.2***	1023.4***	1029.0***	1011.2***	1022.4***	1079.7***	1085.7***	1005.2***	1895.4***	988.4***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
RISK	62.81***	61.38***	62.47***	60.16***	62.84***	59.81***	59.53***	59.53***	62.79	60.90***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.459)	(0.000)
LEVERAGE	0.164***	0.158***	0.167***	0.165***	0.164***	0.176***	0.207***	0.207***	0.474***	0.182***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
FIRM SIZE	−91.66***	−85.87***	−87.40***	−85.64***	−91.87***	−84.96***	−88.15***	−88.15***	−200.7***	−87.53***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
PERFORM	−0.992	−1.243	−1.322	−1.178	−0.985	−1.283	−1.250	−1.250	−6.464	−0.778
	(0.347)	(0.244)	(0.220)	(0.265)	(0.356)	(0.176)	(0.192)	(0.192)	(0.165)	(0.441)
RETEN_RATIO	−0.245***	−0.209***	−0.194***	−0.217***	−0.246***	−0.211***	−0.210***	−0.210***	1.108	−0.134
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.123)	(0.055)
QUICK_RATIO	−0.169***	−0.169***	−0.167***	−0.170***	−0.169***	−0.176***	−0.176***	−0.176***	−50.73	−0.176***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.588)	(0.000)
MB_RATIO	−6.206**	−6.379***	−6.739***	−6.359***	−6.218**	−6.780***	−7.372***	−7.372***	6.706	−19.74***
	(0.011)	(0.008)	(0.005)	(0.008)	(0.010)	(0.003)	(0.001)	(0.001)	(0.336)	(0.000)
EBIT_RATIO	−1.169***	−1.056***	−1.065***	−1.125***	−1.175***	−1.043***	−1.187***	−1.187***	0.419	−0.995***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.774)	(0.000)
ISSUE SIZE	−1.580*	−2.113**	−2.123**	−2.086**	−1.565*	−2.248**	−2.125**	−2.125**	0.174	−1.428
	(0.090)	(0.025)	(0.024)	(0.026)	(0.099)	(0.015)	(0.025)	(0.025)	(0.967)	(0.148)
MATURITY	15.82***	15.15***	15.11***	15.58***	15.85***	14.77***	15.44***	15.44***	46.45***	14.66***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CALL	71.92***	73.06***	73.66***	71.95***	71.87***	73.82***	72.97***	72.97***	48.29***	77.28***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)
CONVERT	−155.5***	−152.5***	−154.4***	−150.4***	−155.6***	−156.4***	−158.0***	−158.0***	–	−160.8***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	–	(0.000)
SINK	−93.23***	−93.25***	−93.16***	−94.24***	−93.25***	−91.41***	−92.26***	−92.26***	124.4***	−96.33***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.000)
CG_SCORE		−0.612***								
		(0.003)								
COMPOSITION			−1.752**				−0.474			
			(0.002)				(0.622)			
COMPENSATION				−1.897***			−0.694			
				(0.003)			(0.559)			
SHAREHOLDER					0.0688		2.206*			
					(0.910)		(0.027)			
DISCLOSURE						−9.046***	−9.472***			
						(0.000)	(0.001)			
COMPOSITION_O								−6.052**	−25.99*	−6.739**
								(0.031)	(0.085)	(0.018)
COMPENSATION_O								−1.352	−6.248	−0.270
								(0.559)	(0.564)	(0.911)
SHAREHOLDER_O								−1.409	−31.86**	−4.695
								(0.607)	(0.047)	(0.186)
DISCLOSURE_O								−10.19***	−29.89**	−9.051***
								(0.000)	(0.030)	(0.000)
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1632	1632	1632	1632	1632	1632	1632	1632	172	1460
Adj-R2	0.4735	0.476	0.476	0.475	0.473	0.485	0.487	0.487	0.859	0.512
F-statistic	35.92	35.41	35.46	35.38	35.06	36.77	34.62	34.62	28.56	34.22
Sig.	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

This table reports the correlations between the variables. The variables are: SPREAD: bond spread is measured by yield to maturity of corporate bonds minus yield to maturity of Canadian Treasury bonds with similar maturity (in basis points). CG_Score:the measurement of board quality. It can be either the total Globe and Mail index (ranging from 0 to 100) or one of its sub-indices described above which are: Board Composition (ranging from 0 to 31), Board Shareholding and Compensation (ranging from 0 to 28), Shareholder Right (ranging from 0 to 28 marks), and Disclosure (ranging from 0 to 13). Maturity: the natural log of the number of days to the maturity of the bond. Risk: the beta of firm's stock calculated using 3-year market (daily) prices. Leverage: the ratio of total debt to total equity. Firm Size: the natural logarithm of total asset the company. RETEN_RATIO: retention ration. QUICK_RATIO: current assets to current liabilities. MB_RATIO: market to book ratio. EBIT_RATIO: EBIT to sales ratio. Perform: return on asset. Issue Size: the natural logarithm of the outstanding amount of the bond. Call: a dummy variable equals to 1 if bond is callable. Sink: a dummy variable equals to 1 if bond has sinking fund.

* Implies significance at 10% level.
** Implies significance at 5% level.
*** Implies significance at 1% level.

metry between the firm and its investors. Thus, lower information asymmetry through better disclosure policy represents a second channel that explains the negative relationship between the cost of debt and the firm's governance quality. Overall, this means that the Canadian bond market is generally assuming its monitoring role within the "principles-based" governance approach.

In addition to the Disclosure and the Board Composition sub-indexes, we also find a significant negative relationship between shareholder rights sub-index and the cost of debt for issuers headquartered in Quebec. It seems that only in Quebec, features that protect shareholders from the managers' potential misbehavior reduce the cost of debt. This might be due to the lower confidence of the bondholders in the Quebec jurisdiction compared to the rest of Canada. This result is particularly interesting after the attempt in 2011 of the Government of Quebec to improve the investor protection in the province.

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Appendix A. Gram–Schmidt orthogonalization process

We follow Boubakri and Ghouma (2010) and use Gram–Schmidt orthogonalization technique to solve the multicollinearity issue. Gram–Schmidt orthogonalization process is an algorithm that allows to take any basis of a space of vector V and to transform it into an orthogonal basis. The algorithm uses orthogonal projections to generate new vectors. Consider the original basis B composed of vectors $\vec{V_1}, \vec{V_2}, \ldots \vec{V_m}$.

$B = \{\vec{V_1}, \vec{V_2}, \ldots \vec{V_m}\}$ is the basis of V

The goal is to transform V into an orthogonal basis composed of $\{\vec{u_1}, \vec{u_2}, \ldots \vec{u_m}\}$. This means that for any vectors $\vec{u_i}$ and $\vec{u_j}$ where $i \neq j$ we have $\vec{u_i} \perp \vec{u_j}$

The process starts by taking the first vector of the original basis ($\vec{u_1} = \vec{V_1}$) and then for each initial basis vector $\vec{V_k}$ it generates a new basis vector which is the initial vector $\vec{V_k}$ minus its projections on the already generated new vectors.

For instance, the new vector $\vec{u_2}$ is generated as follows:

$\vec{u_2} = \vec{V_2} - Proj_{\vec{u_1}}\left(\vec{V_2}\right)$ with $Proj_{\vec{u_1}}\left(\vec{V_2}\right)$ denotes the projection of the vector $\vec{V_2}$ on $\vec{u_1}$.

So the new vector $\vec{u_2}$ is equal to the initial vector $\vec{V_2}$ minus the component of $\vec{V_2}$ that already existed in $\vec{u_1}$ (computed as the projection of $\vec{V_2}$ onto $\vec{u_1}$).

In the same way, we can compute $\vec{u_3}$ as:

$$\vec{u_3} = \vec{V_3} - Proj_{\vec{u_1}}\left(\vec{V_3}\right) - Proj_{\vec{u_2}}\left(\vec{V_3}\right)$$

For $\vec{u_k}$, we will have: $\vec{u_k} = \vec{V_k} - \sum_{i=1}^{k-1} Proj_{\vec{u_i}}\left(\vec{V_k}\right)$ *for k: 2, 3, . . ., m*

References

Adjaoud, F., & Ben-Amar, W. (2010). Corporate governance and dividend policy: Shareholders' protection or expropriation? *Journal of Business Finance & Accounting*, *37*(5 & 6), 648–667.

Anderson, R. C., Mansi, S. A., & Reeb, D. M. (2004). Board characteristics, accounting report integrity, and the cost of debt. *Journal of Accounting and Economics*, *37*, 315–342.

Ashbaugh-Skaife, H., Collins, D. W., & LaFond, R. (2006). The effects of corporate governance on firms' credit ratings. *Journal of Accounting and Economics*, *42*, 203–243.

Attig, N., & Gadhoum, Y. (2003). *The governance of Canadian traded firms: An analysis of the ultimate ownership structure.*. Available at SSRN: https://ssrn.com/abstract=434160 or http://dx.doi.org/10.2139/ssrn.434160

Belsley, D. A., Kuh, E., & Welsch, R. E. (1980). *Regression diagnostics: Identifying influential data and sources of collinearity*. New York: John Wiley.

Bhojraj, S., & Sengupta, P. (2003). Effect of corporate governance on bond ratings and yields: The role of institutional investors and outside directors. *Journal of Business*, *76*, 455–475.

Boubakri, N., Bozac, Y., Laurin, C., & Rousseau, S. (2011). Incorporation law, ownership structure, and firm value: Evidence from Canada. *Journal of Empirical Legal Studies*, *8*(2), 358–383.

Boubakri, N., & Ghouma, H. (2010). Control/ownership structure, creditor rights protection: and the cost of debt financing: International evidence. *Journal of Banking & Finance*, *34*, 2481–2499.

Bozec, Y., & Bozec, R. (2010). Overall governance and cost of capital: Evidence from Canada using panel data. *Journal of Global Business Management*, *6*(1), 1–11.

Bozec, Y., Rousseau, S., & Laurin, C. (2008). Law of incorporation and firm ownership structure: The law and finance theory revisited. *International Review of Law and Economics*, *28*(2), 140–149.

Broshko, E. B., & Li, K. (2006). Playing by the rules: Comparing principles-based and rules-based corporate governance in Canada and the U.S. *Canadian Investment Review*, *19*(Winter), 18–25.

Cheng, C. S. A., Collins, D., & Huang, H. H. (2008). The market response to the standard & poors transparency & disclosure rankings. *Corporate Ownership & Control*, *5*(2), 242–255.

Chin, C. L., Lin, T. T., & Lee, C. C. (2005). Convertible bonds issuance terms, management forecasts, and earnings management: Evidence from Taiwan market. *Review of Pacific Basin Financial Markets and Policies*, *08*(03).

De Jong, A., Kabir, R., & Nguyen, T. T. (2008). Capital structure around the world: The roles of firm-and country specific determinants. *Journal of Banking & Finance*, *2008*, 1954–1969.

Ericksona, M., & Wang, S. W. (1999). Earnings management by acquiring firms in stock for stock mergers. *Journal of Accounting and Economics*, *27*(2), 149–176.

Ertugrul, M., & Hegde, S. (2008). Board compensation practices and agency costs of debt. *Journal of Corporate Finance*, *14*, 512–531.

Fields, L. P., Fraser, D. R., & Subrahmanyamb, A. (2012). Board quality and the cost of debt capital: The case of bank loans. *Journal of Banking & Finance*, *36*(5), 1536–1547.

Ghouma, H. (2017). How does managerial opportunism affect the cost of debt financing? *Research in International Business and Finance*, *39*(Part A), 13–29.

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *Quarterly Journal of Economics*, *118*, 107–155.

Gupta, P. P., Kennedy, D. B., & Weaver, S. C. (2009). Corporate governance and firm value: Evidence from Canadian capital markets. *Corporate Ownership and Control Journal*, *6*(3).

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*, 305–360.

Kieschnick, Jr., & Urcan, O. (2006). *Earnings management and convertible debt issuance. Working paper*. Dallas: University of Texas.

Klein, P., Shapiro, D., & Young, J. (2005). Corporate governance, family ownership and firm value: The Canadian evidence. *Corporate Governance*, *13*(6), 769–784.

Klock, M. S., Mansi, S. A., & Maxwell, W. F. (2005). Does corporate governance matter to bondholders? *Journal of Financial and Quantitative Analysis*, *40*, 693–719.

LaPorta, R., López-de-Silanes, F., Shleifer, A., & Vishny, R. (1997). Legal determinants of external finance. *The Journal of Finance*, *52*(3), 1131–1150.

LaPorta, R., López-de-Silanes, F., Shleifer, A., & Vishny, R. (1998). Law and finance. *Journal of Political Economy*, *106*(6), 1113–1155.

LaPorta, R., López-de-Silanes, F., Shleifer, A., & Vishny, R. (2000). Investor protection and corporate governance. *Journal of Financial Economics*, *58*(1–2), 3–27.

LaPorta, R., López-de-Silanes, F., Shleifer, A., & Vishny, R. (2002). Investor protection and corporate valuation. *The Journal of Finance*, *57*(3), 1147–1170.

Lin, Y. C., & Yung, K. (2014). Earnings management and corporate spinoffs. *Review of Quantitative Finance and Accounting*, *43*(2), 275–300.

Lorca, C., Sanchez-Ballesta, J. P., & Garcia-Meca, E. (2011). Board effectiveness and cost of debt. *Journal of Business Ethics*, *100*, 613–631.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*, 187–221.

Roosenboom, P., van der Goot, T., & Mertens, G. (2003). Earnings management and initial public offerings: Evidence from the Netherlands. *International Journal of Accounting*, *38*, 243–266.

Ross, S. A., Westerfield, R. W., & Jordan, B. D. (2008). *Fundamentals of corporate finance*. New York, NY: McGraw-Hill Companies, Inc.

Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, *42*, 335–370.

Schauten, M., & van Dijk, D. J. C. (2010). *Corporate governance and the cost of debt of large European firms, ERIM Report Series Reference No. ERS-2010-025-F&A*. Retrieved from. http://ssrn.com/abstract=1620719

Sengupta, P. (1998). Corporate disclosure quality and the cost of debt. *The Accounting Review*, *73*, 459–474.

Shleifer, A., & Vishny, R. W. (1989). Management entrenchment: The case of manager-specific investments. *Journal of Financial Economies*, *25*, 123–139.

Teoh, S. H., Welch, I., & Wong, T. J. (1998a). Earnings management and the post-issue underperformance in seasoned equity offerings. *Journal of Financial Economics*, *50*, 63–99.

Teoh, S. H., Welch, I., & Wong, T. J. (1998b). Earnings management and the long-run market performance of initial public offerings. *Journal of Finance*, *53*, 6.