Small Cap Firm Performance and Corporate Governance: A Simultaneous Equations Approach

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ABSTRACT

This study extends the international evidence on small-cap governance to Canada, where unlike the U.S., 'best practice' guidelines are provided, but not mandated, there are two legal systems, and multiple class voting structures are common. We test for the optimal deployment of four governance mechanisms by estimating a simultaneous equation system linking them to firm performance. When taking endogeneity into account, we find Canadian small-cap firms appear to over utilise debt as a control mechanism. No significant discount is observed for Quebec firms, or for those with multiple voting class shares. However, there is a premium for U.S. cross-listing.

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Introduction

The separation of ownership from control in corporations gives rise to conflicts of interest between shareholders and managers. Since Berle and Means' (1932) classic work, such conflicts have been addressed using various theoretical approaches, including agency theory (Jensen and Meckling (1976)), transactions cost theory (Williamson (1979)), and game theory (Dixit (2004)). The literature has evolved under the rubric of corporate governance, defined by Shleifer and Vishny (1997, p. 737) as "the ways in which suppliers of finance to corporations assure themselves of getting a return on their equity."

Some empirical work has been performed on governance issues for small-cap firms in the U.S. (see e.g. Eisenberg, Sundgren, and Wells (1998) and Ang, Cole, and Lin (2000). Little work exists in the area of governance of small-caps for other countries. Our paper serves to extend the international evidence to Canada, which should be a useful testing ground relative to the U.S..

The Canadian governance environment has some similarities with that of the U.S.. Firstly, Canada ranks highly in the La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998) metric for investor protection (antidirector rights). Secondly, Canadian firms, like U.S. firms are fairly widely held, well above the median for countries in the high investor protection grouping in La Porta et al. (1999).[1]

However, there are meaningful differences with the U.S. that seem worthy of investigation. First, the regulatory environment might be deemed less stringent in Canada relative to the U.S., which could give rise to less optimal deployment of

governance mechanisms as a whole. Exclusively Canadian listed firms are not subject to the rules-based approach used by the SEC or to the mandatory requirements of the Sarbanes Oxley Act of 2002 or to the governance requirements of the NYSE and NASDAQ. Instead, they have traditionally faced a "guidelines" approach to governance from their regulators. More recently the Ontario Securities Commission (OSC) has proposed mandatory governance rules. To date, those rules adopted refer to the roles of the CEO and CFO in ensuring true reporting of information, the formation of independent audit committees and the role of external auditors. As yet, there are no requirements for boards of directors, due in large part to the Canadian market being heavily populated by small-cap firms unable to recruit the directors who would meet strict rules. Since 1995, the Toronto Stock Exchange (TSE) has maintained a code of fourteen "Best Practices" that firms can ***voluntarily*** choose to adhere to, which include recommendations for a majority of independent board members, for separation of the roles of chairman and CEO, and for reduction of board sizes as a means to facilitate more efficient decision making. [2]

Canadian equities that are cross-listed on U.S. exchanges would of course be subject to U.S. governance requirements. Doidge, Karolyi, and Stulz (2004) suggest that there is a valuation premium associated with cross-listing that may be explained by bonding and monitoring benefits, although they note that there are other mechanisms that need to be explored that could lead to lower consumption of private benefits of control.

Another distinction is that Canada does not follow a uniform legal code across provinces. In particular, firms headquartered in Quebec, as opposed to the other provinces are subject to the French civil law tradition. According to La Porta et al (2000, p. 9) 'French

legal origin countries have the worst quality of law enforcement of the four legal traditions, even controlling for per capita income.'[3] La Porta et al. (2002) provide data to show that this tradition is inimical to corporate valuation. If that is true, then one might argue that Quebec based firms should demonstrate worse performance than firms headquartered in other provinces.

Third, unlike the U.S., many Canadian companies have dual or multiple class share structures, with significant deviations from the one share one vote rule (La Porta et al. (1998, Table 2). Deviations from one-share one vote are typically viewed as harmful to shareholder rights, although the empirical evidence on this matter is mixed.[4]

In a recent study of Canadian corporate governance, Chirinko and Schaller (2004) examine a dataset that covers the period 1975-1986 and conclude that agency problems do serve to distort firm investment decisions. The Canadian equity market has followed the trend identified by Fama and French (2004) of the U.S., in that since 1985 (i.e. post Chirinko and Schaller (2004) sample) there has been an explosion of new listings on the Toronto Stock Exchange, with a large contingent of small-cap companies represented in the market.[5] Indeed, the largest number of companies in the Canadian benchmark index, the S&P/TSX Composite Index consists of small-cap companies.[6] Hence, examining the governance characteristics at Canadian small class companies seems worthy in its own right.

Klein, Shapiro, and Young (2003) use the Globe and Mail's Governance ranking data to demonstrate that some corporate governance mechanisms appear to have value for shareholders in Canada, although traditional measures such as board composition and independence are not correlated with performance. Allaire and Firsirotu (2005) use the

same rankings for ***large*** cap Canadian firms, and conclude that governance mechanisms have virtually no impact on the performance of large cap corporations in Canada. These studies do not address the problem of the interdependence of the various mechanisms for controlling agency problems and the potential simultaneity between these mechanisms and the various measures of firm performance. Our study attempts to broaden our understanding of Canadian governance-performance link by extending the analysis to the Canadian small-cap universe, using recent data.

We develop and estimate for our sample of small-cap Canadian companies a system of equations that consists of four governance mechanisms that are jointly determined along with company performance. The endogenous mechanisms include: Board Independence, Pay Based Incentives for Managers, CEO Ownership, and Debt. Company performance is measured by Tobin's Q. We test two general hypotheses:

a) that the governance mechanisms are substitutes, and

b) that the levels of these mechanisms are jointly and optimally determined.

In regard to b), following Demsetz and Lehn (1985) and Agrawal and Knoeber (1996), we consider the internal determination of mechanism use will be made to maximise firm value: the use of each mechanism will be increased until the marginal costs to the firm equal the marginal benefits. A corollary to this is that with alternative, interdependent and endogenous mechanisms, the net performance impact of all mechanisms examined jointly will be insignificant when the mechanisms are deployed optimally. When firms optimally determine their usage of all governance mechanisms the impact of a change in one mechanism will be offset by another (or a combination of the others).

If it is the case that Canada's less stringent regulatory environment for corporate governance gives rise to less optimal usage of control mechanisms, we would expect some departure from the Agrawal and Knoeber (1996) finding of no significant relationship between control mechanisms and performance when they are estimated simultaneously.

This study also examines the hypothesis of La Porta et al. (2002) that civil law jurisdictions as opposed to common law jurisdictions are harmful to valuation, by testing for performance differentials between Quebec based companies and companies headquartered in another province.

We will also shed some new light on the implications of deviations from one-share one vote by looking at the relative impact of dual or multiple class share structures for firms.

Finally, we will look at the impact of cross-listing on a U.S. exchange as it affects some governance mechanisms as well as valuation for companies in the sample.

This paper tests for the optimality of deployment of governance mechanisms of Canadian small caps by estimating a simultaneous equation system that links four control mechanisms to firm performance, using recent data. The results confirm simultaneity between several governance mechanisms and Canadian small-cap firm performance. CEO ownership and shareholder rights are shown to determine board independence. CEO ownership in turn is shown to depend on the extent of shareholder rights and whether the CEO is also chairperson of the board. We do find a significant impact of certain governance mechanisms on performance when taking into account the endogeneity of the variables. In particular, Canadian small-cap firms appear to overutilise debt as a control mechanism. We also do not find any significant discount to performance for Quebec

based firms, or for firms with dual or multiple voting class shares structures. We do, however, find a significant premium to firms who cross-list on U.S. exchanges.

The remainder of the paper is organized as follows. Section I provides a brief review of the literature on the governance-performance interactions. The specification of our model is provided in section II. In section III we describe our sample. Empirical results follow in section IV. The paper concludes in section V with a summary of our findings.

I. Literature Review

Since Williamson (1979) and Fama (1980), governance mechanisms that have been identified and examined in the literature have been classified into two groups:

a) mechanisms internal to the firm – including the board of directors, the firm's compensation structure for managers (incentive contracts), and the ownership structure of the firm
b) mechanisms external to the firm – which includes the outside monitoring of bondholders (leverage – see e.g. Agrawal and Knoeber (1996), given the firm's capital structure choice), legal protection of shareholders, and the market for corporate control (mergers and acquisitions)

Most of the empirical research in this area focuses on U.S. based large capitalisation firms. Denis and McConnell (2003) provide a comprehensive survey of the international evidence.

Internal Governance Mechanisms

Boards of Directors

A large number of studies have appeared that examine boards of directors as a control mechanism. Demsetz (1983) and Hart (1983) suggest that boards are superfluous, since markets provide incentives to CEOs to act in shareholders' best interests. Conversely, Fama (1980) and Fama and Jensen (1983) suggest independent boards are an important method by which CEO behaviour can be monitored.

Several authors have presented empirical evidence supporting the proposal that boards of directors are an important mechanism for governance. Hermalin and Weisbach (1988) find that boards are more likely to elect an outsider after poor performance. Weisbach (1989) finds that CEO turnover is more highly correlated with firm performance in firms with outsider-dominated boards. Rosenstein and Wyatt (1990) find that the share-price reaction to an outside director appointment is significantly positive.

Several U.S. studies question the effectiveness of boards of directors, and potential benefits from differential composition and size. For example, direct relations between outsiders and firm performance, either by accounting measures or Tobin's Q, are generally insubstantial (e.g. Mehran (1995), Bhagat and Black (2000)) or even negative (Agrawal and Knoeber (1996)). Furthermore, Brickley, Coles, and Jarrell (1997) indicate no performance benefit from the separation of the role of CEO and Chairperson.

Among the first to provide non-U.S. evidence were Kaplan and Minton (1994) who find that outside director appointments, which usually follow poor performance or earnings losses, lead to positive stock price reactions in Japanese firms. Dahya, McConnell, and

Travlos (2002) measure the effects of the introduction of the U.K. Code of Best Practice. They find that the resultant increase in CEO turnover was due to the increased proportion of outsiders on the board, rather than the separation of the roles of CEO and Chairperson.

In contrast, Kang and Shivdasani (1995) report no significant relation between outsiders on the board and CEO turnover sensitivity to performance. Additionally, for the U.K., Franks, Maya, and Renneboog (2001) find that outsider-dominated boards hinder CEO turnover in poorly performing firms, while Vafeas and Theodorou (1998) fail to find any significant relation between whether the CEO is also the Chairperson and firm performance.

In one of the few studies of governance of small-cap firms, Eisenberg et al. (1998) show that if there is a role for the board of directors in helping mitigate agency problems it should be with a small board – larger boards are negatively related to firm performance. They do not, however, look at the composition of boards – e.g. the extent of board independence. Another small-cap study, by Ang et al. (2000), examines agency costs in small firms under various ownership and management structures. They find that agency costs (as measured by efficiency ratios) are higher when the firm is outsider-managed (as opposed to owner-managed), and increase when the manager's ownership decreases. They also find that as shares become more widely held, agency costs increase and that bank monitoring reduces agency costs. However, neither of these studies considers the interdependence of governance mechanisms and firm performance.

Incentive Contracts for Managers

The board of directors is responsible for determining the level and structure of CEO compensation. A wealth of research exists on the determinants of executive compensation, which in turn is ostensibly set to mitigate agency problems.

Early studies attempted to separate the effects of firm size (managerialist view) and performance (neoclassical view) as determinants of compensations.[7] Over time, researchers have focused increasingly on the pay-performance relation. Murphy (1985) documents a strong and positive relationship between shareholders' realised returns and CEO compensation. Similarly Gerhart and Milovich (1990), show that the level of performance-dependent pay in the total compensation package has a positive effect on future firm performance. More recently, Mishra and Nielsen (2000) find a positive relation between pay-performance sensitivity and firm accounting performance in a simultaneous equations framework.

Murphy (1999) provides a comprehensive review of the U.S. evidence on executive compensation. Two broad conclusions reached from this review are that the performance-dependency of CEO compensation has increased over time and that this increase has been largely due to the increased use of stock options in CEOs' pay packages.

Other variables proposed as determinants of executive compensation include board control (Boyd; 1994), the level of investment opportunities (Baber, Janakiraman, and Kang (1996), Elloumi and Gueyié (2001)), disclosure regulations (Craighead, Magnan, and Thorne (2004)), and CEO duality (Conyon and Leech (1994)).

Several international studies that address the control issues and performance effects associated with executive compensation have appeared in recent years. Conyon and Murphy (2000) compare the use of performance-contingent pay in the U.S. and the U.K., and conclude that the greater use of share options explains the greater sensitivity to performance U.S. managers face than U.K. managers. Bryan, Nash and Patel (2002) compare the use of equity in compensation contracts for 43 countries. They conclude that the differences are largely explained by differences in debt markets and shareholder protection levels. In Canada, Wyatt's (2003) study of firm performance in relation to bonus payments to executives find that companies that pay bonuses generally outperform those firms that did not.

Conversely, Brunello, Graziano, and Parigi (2001) find that Italian firm managers face low proportions of incentive pay and a low sensitivity of so-called incentive pay to firm performance. This is deemed to be a consequence of the mitigation of agency costs given the ownership structure of Italian firms, the unreliability of stock returns as a measure of performance, and that accounting-based performance measures are highly prone to manipulation, due to very weak shareholder protection. Overall however, the international evidence supports recent U.S. findings, that pay-for-performance is an effective and highly utilised means of control of management behaviour.

The majority of this work has examined only large cap corporations - the evidence on small caps is somewhat scarce. Carr (1997) examines the determinants of executive compensation in 200 small U.S. firms, and finds that sales, profits and risk are important in determining compensation of CEOs of smaller firms, and that board independence has no significant influence on the relationship between pay and performance. Ueng (2000)

compares determinants of compensation in large and small firms and finds that whereas large firms' CEOs' influence over the board is a significant factor, size is the most important determinant of pay in small firms. This suggests that organisational outcomes are less important in terms of CEO pay in small cap firms.

Ownership Structure and Shareholder Rights

Further to boards of directors and incentive contracts, a firm's ownership structure can play an important role in corporate governance. Opposing hypotheses exist about the effect on performance of insider ownership or the influence of significant owners. Equity ownership can align interests and result in better performance or it may entrench management and incur the resultant costs. Accordingly, the empirical research on insider ownership is mixed.

Partch (1987), and Jarrell and Poulsen (1988) look at the effects of a dual class voting structure for common stocks. Partch finds no evidence for U.S. firms that current shareholders are adversely affected by the creation of limited voting stocks. In contrast, Jarrell and Poulsen (1988) find significant negative abnormal stock price returns for firm's announcing dual class recapitalizations.

Stulz (1988) examines managerial voting rights and firm value. He finds that when the proportion of managerial voting rights is large (small) shareholders' wealth decreases (increases) when management increases its share of voting rights. Similarly, Morck, Shleifer, and Vishny (1988) and McConnell and Servaes (1990) find a nonlinear relationship between insider ownership and Tobin's Q, indicating that at low levels, ownership aligns interests but at high levels of ownership managers become entrenched. Ang et al. (2000) measure agency costs in 1,708 U.S. small-cap corporations under

different ownership structures and find that agency costs are lower the higher the managers' share, indicating that in small firms, larger manager ownership acts to align interests rather than entrench managers.

Much of the international research has concluded a similar non-linear relationship. For example, Short and Keasey (1999) for the U.K. and Miguel, Pindado, and de la Torre (2001) for Spain, find that entrenchment effects only appear at higher levels of ownership.

The motivation of outside blockholders to monitor CEO behaviour may be sufficient to overcome the free-rider problem and be an effective control mechanism. Holderness (2003) reviews the U.S. evidence on the link between blockholders and firm performance and concludes that the relation may be negative or positive but never very substantial.

The international evidence is equally varied and results appear to depend on the *type* of shareholder. Gorton and Schmid (2000) find a positive relationship between block ownership and performance while Claessens, Djankov, Fan, and Lang (1998) find that in East Asia, corporate ownership is negatively related to performance while government ownership has the opposite effect. Further, several studies have failed to find any evidence of blockholdings being an effective governance mechanism (e.g. Kaplan(1994); Gibson (2003)).

External Governance Mechanisms

Legal Protection

Shleifer and Vishny (1997) argue that the effectiveness of control mechanisms will be moderated by the legal climate of the country they operate in. Jensen (1993) recognises a

country's legal system as a valid corporate governance mechanism but argues it is too crude to effectively manage governance issues. Denis and McConnell (2003) highlight the flaw with single country studies in that they are generally unable to identify any effect legal systems may have on corporate governance.

In examining worldwide differences in shareholder protection, La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000), describe how most countries' legal systems derive from relatively few legal "families". Former English colonies, such as the U.S., Canada, Australia and New Zealand, use the Common law code, while France and those countries conquered by Napoleon use the French Civil law tradition. La Porta et al. show that Common law countries have the strongest levels of outside investor protection while Civil law countries have the weakest. This outside investor protection includes both shareholders and creditors. The authors also present evidence that shows that in general, countries with poor investor protection tend have more concentrated ownership than firms in countries with better investor protection.

Canada faces a particular difference to otherwise similar markets, such as the U.S., in that the province of Quebec follows the Civil Law under a codified system similar to France, while the rest of Canada uses the Common Law (like the U.K.). Additionally, Attig and Gadhoum (2003) show that Quebec-headquartered firms have greater ownership and control concentration, more family and government control and more multiple class shares. The firms in our sample are listed on the TSE and are therefore subject to the Ontario Securities Commission's regulations. However, Quebec based firms, unlike those of other provinces, are subject to further legal restrictions: under Bill 101 (The Charter of the French language) and its successor Bill 22 (The Official Languages Act), companies

in Quebec must comply with specific language requirements, specifically that all French is the sole official language of the province (for fiscal reporting) and that written communications for all corporations in Quebec must be in French. These restrictions would necessitate translation costs that would not be incurred by firms headquartered in other provinces.

. Canadian firms form the largest group of foreign firms cross-listed on U.S. stock exchanges, and would be subject to the reporting rules of the Sarbanes Oxley Act. Coffee (1999) argues that cross-listing in the U.S. thus enhances investor protection via the stricter governance rules and increased monitoring by the media and investment community.

The direct relation between investor protection and firm performance has been demonstrated in a later paper (La Porta et al. (2002)) where the authors show that firms in common law countries, where investor protection is stronger, have higher Tobin's Q ratios. Moreover, Gul and Qiu (2002) find that lower levels of information asymmetry, or agency problems, as measured by investors' emphasis placed on current versus future earnings, are associated with stronger legal protection. Pagano and Volpin (2005) show that the proportionality of the voting system (as opposed to majoritarian structure) is significantly negatively correlated with shareholder protection in a panel of 45 countries.

Leverage

The firm's leverage is decided ex ante by the firm. However, as Agrawal and Knoeber (1996) note, debt relies on [external] capital markets to evaluate managers' performance. Creditors should have the same motivation to protect their investment and thereby closely monitor management and act to discipline those who perform poorly. In addition, the

control rights afforded to them in the event of default affords them governance power. Jensen (1986) posits a beneficial role for leverage as a control device. Chirinko and Schaller (2004) in their univariate analyses show a negative, although not significant effect for debt in reducing governance problems in the 1970's-80's for their sample of Canadian firms.

Market for Corporate Control

As reviewed by Holmstron and Kaplan (2001), the extant literature suggests that capital markets in the U.S. perform a significant role in governance: firms that do not perform well are likely to be takeover targets, and managers of such firms are more likely to be dismissed. However, the benefits of takeovers typically accrue to the shareholders of acquired firms as opposed to bidder firms. Agrawal and Knoeber (1996), however, show that the probability that a firm will be acquired as such (measured as an industry specific variable for the each firm) does not significantly affect the firm's performance, when simultaneity between governance mechanisms and firm performance is accounted for.

Denis and McConnell (2003) in their survey of studies of the U.K, New Zealand, Germany, the Netherlands, and Israel, suggest that takeover activity does not serve as a significant governance mechanism in other parts of the world. Whether the market for corporate control serves to align interests of managers and shareholders remains an open question. Regarding evidence for Canada, in a recent study of Canadian market for corporate control, Andre, Kooli, and L'Her (2004) study the long-term performance of 267 Canadian mergers and acquisitions that occur between 1980 and 2000. Similar to findings from other countries, their results suggest that Canadian acquirers significantly underperform over a longer horizon (three-year) post-event period.

Literature Summary

Overall, the vast majority of corporate governance research has focused on large-cap stocks. First Banz (1981) then Reinganum (1981) identified the "small cap anomaly" i.e. that small cap stocks consistently earn higher rates of return than larger stocks. The differential performance of small-caps continues to generate significant interest (see e.g. Dimson and Marsh (1999), and Eun, Huang,and Lai (2003)). As small cap stocks are presumably more closely held, we might expect to find that these types of firms are less prone to agency problems.. The few studies that do examine small firms show that this is not necessarily the case. For example, Eisenberg et al. show that board size of small-cap firms is negatively related to firm performance, which they argue shows that "problems in communication and coordination can extend to smaller boards and firms" (1998, p.53).

The bulk of existing research also ignores the potential simultaneity between agency control mechanisms and between these mechanisms and firm performance. Core, Guay and Larcker (2003) note that simultaneous system estimation is essential for addressing the incentive pay - performance relationship. Agrawal and Knoeber (1996) find that the relationships between various mechanisms and performance found through OLS regressions disappear – excepting board independence - in a simultaneous equations framework, which they conclude indicates optimal allocation of control mechanisms. For example, using OLS, leverage is found to have a negative effect on performance (Tobin's Q). Using 2SLS, the coefficient on leverage is found to be positive, though not significant. Mishra and Nielsen (2000) also use simultaneous equations to examine the

relationships between performance, board independence and pay-sensitivity. Weber and Dudney (2003) extend Chung and Pruitt (1996) to look at the joint relationship between CEO ownership, performance (as measured by Tobin's Q) and CEO compensation. Further examples include Ugurlu (2000), Chen, Guo, and Mande (2003) and Brick, Palia, and Wang (2005).

To recap, the theory points to two broad categories of control mechanisms: internal and external. The evidence supporting this theory has varied between the two categories, the individual mechanisms, and between countries and firm size. The evidence on small capitalisation firms, however, has been very limited and many questions concerning corporate governance in such firms are left unanswered. By using a recent data sample of Canadian small-cap firms, this paper attempts to reconcile the apparent lack of small-cap research in the agency field with the recent advances in the literature of large-caps, while providing further insight into the Canadian governance-performance relationship. We utilise a comprehensive database compiled from a wide range of sources to analyse four major governance mechanisms and their link to firm performance. We discuss these four mechanisms' relationships in greater detail below.

II. Empirical Approach – Model Specification

Our approach is to consider the performance-governance mechanism interaction for small-cap firms in Canada in a simultaneous equation perspective, similar to Agrawal and Knoeber (1996), Chung and Pruit (1996), Mishra and Nielsen (2000), Ugurlu (2000), Weber and Dudney (2003) Chen et al. (2003), and Brick et al. (2005). From this

perspective, we view the control mechanisms as *potential substitutes*, and *jointly determined* with the firm's performance.

A. Variable selection

Our model consists of five endogenous variables, which comprise four control mechanisms, and a firm performance measure. The control mechanisms include: Degree of Board Independence (BIND), Leverage (DBVAL), CEO Ownership (OWN), and the extent of CEO Pay-Performance Sensitivity (PAY). The firm performance measure used is Tobin's Q (TOBINQ).

In selecting the exogenous variables to identify the equations of the system, we have in general selected regressors that are consistent with theoretical governance models, and which have been addressed in single equation formulations for the U.S. as well as for developed markets outside of the U.S. In addition to providing new evidence of governance issues for small-cap firms outside of the U.S., an additional contribution of our approach is to examine the robustness of results found using simultaneous equation formulations for the U.S. to another developed market.

B. Model Development

Board Independence Equation (BIND)

Fama and Jensen (1983) identify boards of directors as being of primary importance in controlling agency problems. They propose independent boards as a significant factor in

monitoring CEO behaviour. Many consider directors who are also employed by the firm to be ineffective at monitoring management because maintaining their own employment takes precedent over questioning their superiors' actions. This belief that outside board members are better monitors seems supported by the fact that outsiders dominate the majority of boards. Dalton and Kesner (1987), for example, find that 69.7% of U.S. firms' and 63.6% of U.K. firms' board members are "outsiders."

Following Fama and Jensen (1983) and Mishra and Nielsen (2000), we treat board independence as a governance mechanism.[8] Mishra and Nielsen (2000) and Ghosh and Sirmans (2003) utilise two measures of board independence: the percentage of outside directors (BINDb) and the tenure of directors relative to CEO's (BINDa). We also use these two measures in this study.

CEO ownership is expected to decrease the level of board independence. This "shareholders-voting hypothesis" states that as CEOs' share increases, so too will their bargaining power in the selection of board members. This hypothesis therefore predicts a negative relationship between CEO ownership and the proportion of outsiders on the board. An alternative explanation, the "substitution hypothesis" suggests that greater CEO ownership leads to better alignment of shareholder and CEO interests, resulting in a diminished requirement for the monitoring of outside board members. This hypothesis predicts the same relationship as the shareholder-voting hypothesis. However, in considering outside board members as substitutions for alternative external control mechanisms, it is important to note that these alternate explanations predict opposite relationships between, for example, outside directors and the level of debt. Throughout our study, we view *each* control mechanism as a potential substitute.

The relative power of the CEO over the other board members will be affected by the size of the board and whether or not the CEO is also the Chairperson of the board. Ghosh and Sirmans (2003) also find some evidence that the CEO also being the Chairperson of the board further reduces the proportion of outsiders on the board. When the CEO serves the dual role, her power to influence the directors elected to the board is increased, consequently allowing her to choose directors who are less likely to be efficient monitors, i.e. insiders. The pressures applied by the CEO of a small cap firm will probably more easily sway a smaller board. We therefore expect to find that the larger the board of directors and if the CEO does not have the dual role of being Chair, the more independent the board will be (as measured by either the proportion of insiders/outsiders or the relative tenure). Similarly the more shareholders rights are protected, as represented by the existence of only one class of shares, the more likely that outsiders or directors who were on the board before the CEO's election as a Director will dominate the board. We should therefore find a positive relationship between our shareholder rights variable and the measures of board independence.

Those studies that examine the determinants of board composition, whilst taking into account the endogeneity, have had little success in finding a relationship between firm size, industry, or risk and board composition (see for example Agrawal and Knoeber(1996), Ugurlu (2000), and Brick et al. (2005)). We include them as control variables nonetheless, with no *a priori* expectations.

To summarise, the Board Independence (BIND) equation is:

-	+	-	+	?

BIND = f (CEO ownership, board size, CEO duality, shareholder rights, firm size,

? ?

volatility, industry)

The Leverage Equation

Increased debt use reduces the moral hazard problem and provides monitoring of management through the private institutions who supply credit. As such, it should be an effective governance mechanism.

Agrawal and Knoeber (1996) find that an increased proportion of *outsiders* on the board of directors leads to increased use of debt. This implies that the internal monitoring of the board is complemented by the external mechanism of monitoring by lenders. On the other hand, Ugurlu (2000) finds that bank monitoring and outsider board monitoring are substitutes, in that as the proportion of *insiders* on the Board increases, the reliance on lenders' monitoring also increases. As explained above, we consider all four mechanisms to be internally determined, substitute governance mechanisms, and as such expect a negative relation between board independence (BIND) and leverage (DBVAL). Equally, shareholder rights (SHRRTS) should also have an inverse relation with leverage.

John and John (1993) argue that as strict alignment of compensation with shareholder returns is only optimal for all-equity firms, firms with risky debt should utilise a lower proportion of performance-dependent compensation in the pay mix. This negative relation between the leverage ratio and pay sensitivity supports our contention that these mechanisms are substitutes rather than complements. Garvey (1997) and Brick et al. (2005) find support for this prediction.[9]

The capital structure decision will be affected by the firm's performance and volatility of that performance. The more risky a firm's stock value, the less debt will be accessible or affordable; as such we expect an inverse relation between risk (RISK) and leverage. To the extent that debt financing decisions are based on past information, we used a one-year lagged Tobin's Q for the performance in this equation. According to the pecking-order hypothesis, firms prefer internal to external financing. We would therefore expect a negative relationship between the firm's lagged performance (TOBINLAG) and the leverage ratio.

Cross-listing in the U.S. has been suggested to increase access to more developed capital markets (Doidge, Karolyi, and Stulz (2004)). The fact that U.S. capital markets are deeper and more liquid than Canadian capital markets means that firms who cross-list on U.S. stock exchanges are able to raise debt at lower cost. We therefore expect to find a positive relation between cross-listing and leverage.

Agrawal and Knoeber (1996) argue that larger firms face lower potential bankruptcy costs and that the relation between size and the leverage ratio should be positive, and their evidence supports this. Similarly, the studies by Ugurlu (2000) and Brick et al. (2005) concur with this result. Equally, we expect to find a negative relationship between risk and debt, given that debt becomes more expensive the riskier the firm appears. We also include the industry variable to account for any differences in capital structure decisions between resource and non-resource firms.

The leverage equation (DBVAL) is: - -

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DBVAL = f (board independence, pay-performance sensitivity, lagged performance,

- + + - ?

shareholder rights, cross-listing, firm size, volatility, industry)

CEO Ownership Equation

We consider ownership structure to be endogenously determined, as with Demsetz and Lehn (1985) and Agrawal and Knoeber (1996). By owning shares in the firm she works for, a CEO is reducing the level of diversification of her portfolio. To this extent, it is reasonable to assume that the greater the level of control the CEO feels she has over that undiversified portion, the more willing she will be to keep it. We would therefore expect that the less independent the Board (BIND = 0) the greater the level of CEO ownership.

Extending this hypothesis that a CEO's perceived power will determine her ownership, we should also find that when the CEO is also the Chairperson (DUAL = 1) and when shareholder rights are weaker (SHRRTS = 0), ownership will be greater.

CEOs' wealth constraints and risk aversion could affect their level of ownership, which we measure by the size of the firm. The greater the value of the firm, the less likely the CEO is to be willing to hold large fractions of the firm's equity. We therefore expect a negative relationship between size (ASSET) and CEO ownership. Similarly, the volatility of the firm's monthly stock returns should affect the risk aversion of the CEO. The greater the volatility, the less willing the CEO should be to hold an undiversified portfolio of his firm's stock. Consistent with Chung and Pruitt (1996) we also include an industry dummy variable to account for industry effects.

Given that cross-listing in the U.S. is expected to increase investor protection, the proposal that ownership concentration and legal shareholder protection are substitutes (La Porta et al. (1997) Denis and McConnell (2003)) implies a negative relation between

cross-listing and CEO ownership. Burkart and Panunzi (2004) argue that this is only the case if legal protection and monitoring are complements. Following Doidge et al. (2004), we assume that this is the case as listing in the U.S. increases legal protection due to the mandatory governance regulations and increases monitoring by media and the investment community.

To summarise, the CEO Ownership Equation (OWN) is:

$$OWN = f\ (\underset{-}{\textit{board independence}},\ \underset{+}{\textit{CEO duality}},\ \underset{-}{\textit{shareholder rights}},\ \underset{-}{\textit{cross-listing}},\ \underset{-}{\textit{firm size}},\ \underset{?}{\textit{volatility}},\ \textit{industry})$$

Pay-related Incentives Equation

Several authors have suggested incentive compensation schemes as a means to join managers and owners (see, for example, Jensen and Meckling, 1976; Lambert and Larker, 1985). When a CEO's earned income is a function of firm performance, she will be concerned with making profit-maximising decisions, thereby acting in the shareholders interests.

An important work in this field is that of Jensen and Murphy (1990), who measure pay-performance sensitivities, *b*, where *b* is estimated as:

$$\Delta\ (\textit{CEO compensation}) = a + b\,\Delta\ (\textit{shareholder wealth})$$

The change in shareholder wealth is calculated from the inflation-adjusted rate of return on common stock realised in the current year multiplied by the previous year's year-end

firm value. Following several authors (e.g. Mishra and Nielsen (2000)) we utilise Jensen and Murphy Pay-performance sensitivities as the dependent variable in our equation.

As explained above, John and John (1993) posit a negative relationship between debt and pay-performance sensitivity, which is supported by Garvey (1997) and Brick et al. (2005). We should therefore expect to find an inverse relation between leverage and pay-performance sensitivity.

Hermalin and Weisbach (1991) question whether board composition and incentive contracts are complements or substitutes. Boyd (1994) finds that the ratio of insiders on the board is inversely related to compensation. The explanation is to the extent that inside board members believe they are being evaluated by the outside Board members they do not want to be seen as "siding" with the CEO. In addition this relationship supports the contention that when a board is more independent, the need for performance pay is reduced.[10] We expect to find an inverse relation between both BINDa and BINDb and PAY. The presence of a more independent board reduces the necessity for CEO pay to be heavily based on performance.

La Porta et al. (1998) demonstrated the importance of legal protection as a governance mechanism and spawned a growing body of literature on the subject. The authors posit that the legal origins of a country are determinants of the level of protection offered to shareholders and are therefore a vital factor in determining corporate governance is that country. They provide substantial evidence to support this hypothesis, showing that vast differences exist and that these differences are highly correlated with the ownership and market structure differences between countries. As explained above, these differences may also be present between Quebec and the rest of Canada because the legal origins of

Quebec differ from those of the rest of Canada. We therefore include a dummy variable equal to one when the firm is headquartered in Quebec. We might expect that the overall effect on a firms' pay-sensitivity of being headquartered in Québec may be negative due to reduced shareholder protection afforded by the Quebec Civil Code. However, this may be overshadowed by the requirements that TSX-listed stocks meet Ontario Securities regulations may mean there are no significant differences based on province. The predicted relation between variables QUEBEC and PAY is therefore either negative or zero.

Craighead et al. (2004) provide evidence that increased shareholder protection leads to greater pay-performance sensitivity. The authors examine the pay-sensitivity of Canadian CEOs' compensation pre- and post- the mandated disclosure laws implemented by the TSE. They find that pay-sensitivity increases when firms are obligated to disclose their compensation policies, especially in widely held firms. As a measure of shareholder protection, we thus expect to find a positive relationship between our shareholder-rights variable SHRRTS (which equals one when only single class shares exist) to have a positive effect on pay-sensitivity.

Many studies show that the size of the firm tends to have a positive relationship with the absolute level of CEO compensation.[11] They do not, however, address the relationship between firm size and pay-performance sensitivity *per se*. Schaefer (1998) finds pay-performance sensitivities to be inversely proportional to the square root of firm size. Murphy (1999) illustrates the relationship between firm size and pay-performance sensitivity graphically, showing that the relationship is inverse. Mishra and Nielsen (2000) and Brick et al. (2005), using simultaneous equations systems, also find this

result. Murphy (1999) explains that this relationship is logical because CEOs of large firms can only reasonably own a small fraction of the company through stock and options, given that they are risk-averse and wealth constrained. So whilst the expected relation between firm size and total compensation is positive, we expect to find a negative relationship between firm size (ASSET) and pay-performance sensitivity.

Aggarwal and Chamwick (1999) state that the principal-agent model proposes a trade-off between the CEO's effort and the risk they bear, and that pay-performance sensitivity will be decreasing as the variance of the firm's performance is increasing. They therefore test whether CEOs of firms with higher risk have lower pay-performance sensitivity. Following their results, we expect to find that PAY is an inverse function of stock return volatility (RISK).

Murphy (1999), using S&P firms from 1992 to 1996 across various industries, shows that between 7% and 36% of CEO compensation is in the form of share options. This figure varies widely between industries and time. Given the dependence of PAY on share option grants, PAY will be dependent on the industry he or she works in. Murphy shows that mining and manufacturing firms tend to have relatively lower levels of non-incentive compensation so we might reasonably expect to find that natural resource firms (IND=1) also depend more heavily on performance-contingent pay than non-resource industries.

We specify our Pay Performance Sensitivity Equation (PAY) as:

- - -/0 + - -

PAY = f (debt, board independence, Québec firm, shareholder rights, firm size, volatility,

+

industry)

Firm Performance Equation

The final endogenous variable in our system is the firm's market performance, measured by Tobin's Q (TOBINQ).

The level to which CEOs fulfil their principals' objectives is demonstrated by firm performance. This performance is thus determined by the various control mechanisms that are intended to elicit desirable behaviour and decision-making in CEOs, along with various other factors, identified in previous studies to be of significant importance.

Whether performance-based pay encourages profit-maximising behaviour in CEOs of small caps remains an open question. The assumed relationship is positive: the more a CEO's income is based on the firm's performance, the more he or she will endeavour to maximise that performance and therefore her own income. Mishra and Neilsen (2000) find that pay incentives have a significantly positive effect on performance in a 2SLS regression when using relative board tenure as the measure of board independence.

An increase in the debt ratio should indicate an increase in the level of monitoring by creditors, and therefore an expected increase in firm performance. Jensen (1986) and Chirinko and Schaller (2004) posit that debt also reduces free cash flow, which executive are likely to squander.[13] These latter authors do find a reduction in governance problems when there is high debt, but the results are not highly significant. The monitoring effect of debt may be outweighed by the increased default risk implied by higher leverage.

Similarly, the more independent the board of directors (higher BIND), the greater the expected level of CEO monitoring and therefore the better the firm performance should be.

The relationship between CEO ownership and firm performance is ambiguous. At lower levels, ownership is expected to increase the alignment between shareholders' and managers' interests but at higher levels, managers become entrenched and their power impedes their success as a manager. Ang et al. (2000) find that in U.S. small cap corporations CEO ownership reduces agency costs. However, Morck, Shleifer and Vishny (1988) find that the entrenchment effects of executive ownership outweigh the alignment benefits at a threshold of 5% for U.S. firms. This is in contrast to the U.K. for which Short and Keasey (1999) find an entrenchment threshold of 12%. The authors explain that this is due to the better coordination of monitoring in the U.K; due largely to the lesser ability of U.K. CEO's to mount anti-takeover defences. Given the extent of dual class structures in Canada (39% of our sample have dual class shares), Canadian CEO's are much more able to mount takeover defences than the U.K. and we could consequently expect to find an entrenchment threshold closer to that observed in the U.S. The mean ownership level for CEO's in our sample is 8.5% and thus we would expect to find that the CEO's in our sample are entrenched and that increasing ownership will be detrimental to performance.

Board size is widely believed to be an important factor in determining the effectiveness of corporate governance (Pearce and Zahra, 1992; Jensen, 1993). Lipton and Lorsch (1992) advise that boards should be no larger than eight people, as larger boards are less likely to function efficiently and are easier for the CEO to control. Alternately, Singh

and Harianto (1989) suggest that a larger board might disperse and therefore reduce CEO dominance. More recently, Golden and Zajac (2001) and Bonn, Yoshikawa, and Phan (2004) argue that these opposing arguments can be reconciled. They propose that very large boards are ineffective due to a lack of cohesiveness and problems with coordination, while very small boards have less expertise, and thus predict an inverted U-shaped relation. Eisenberg et al. (1998) measure the effect of board size on firm performance in small and midsize Finnish firms. They find a significantly negative relation, showing that smaller boards in smaller firms lead to better performance. We therefore expect to also find an inverse relation.

Studies that examine the effect of CEO duality on performance generally support the proposal that a dual CEO/chairperson is detrimental to firm performance. Rechner and Dalton (1991) find that firms that have two individuals performing each role consistently outperform those who have a separate chairperson and CEO. Controlling for firm size, Pi and Timme (1993) achieve similar results. Brickley et al. (1997) find that the costs outweigh the benefits of CEO duality more for larger firms than small firms. Given this somewhat ambiguous evidence we posit a negative relation between DUAL and TOBINQ.

We also examine the relationships between Quebec versus rest-of Canada firms and performance. Given the different legal origins of Quebec and the rest of Canada and the work of La Porta et al. (1999) showing that legal origins help determine the level of investor protection in a country, we might expect to find that firms headquartered in Quebec, where the French Civil Code offers weaker protection, may have poorer performance. Alternatively, we may find that the fact that all TSX-listed stocks are

required to meet Ontario Securities regulations may mean there are no significant differences based on province. Similarly we investigate the effect of dual class structures, expecting increased shareholder rights (SHRRTS) to improve performance.

Various studies have provided evidence that cross-listing in the U.S. increases firm value (Doidge et al (2004), King and Segal (2003)). This has been attributed to increased secondary market turnover, reduced cost of capital, increased shareholder base, and increased visibility. King and Segal conclude that Canadian firms cross-listed in the U.S. demonstrate higher valuations than Canadian-only exchange listed stocks due to increased shareholder protection and following this finding we expect to find a positive relation between cross-listing (LISTING) and Tobin's Q.

The performance equation is:

$$\begin{array}{ccccc} & + & & + \; - & \\ TOBINQ = f(\text{pay-performance sensitivity, debt, CEO ownership, board independence,} & & & & \\ & - \quad - & -/0 & + & + \\ \text{board size, CEO duality, Quebec, shareholder rights, cross-listing)} & & & & \end{array}$$

III. Description of the Data

The data in this study were we compiled in a unique database for the companies in the TSX/S&P Small-Cap Index over the years 1997 to 2004. This database includes financial, governance and compensation data that were collected from a wide range of sources. Financial data were obtained from the Reuters, Datastream and Financial Post databases, while the information about CEO compensation and governance variables were collected from individual firm proxy statements. A description of the data sources

for the variables is provided in Appendix 1. After eliminating any observations that were incomplete we were left with a sample of 94 companies, listed in Appendix 2, with a total of 470 observations.

We utilise two variables for board independence. The first, BINDa, is the tenure of directors relative to the CEO, or percentage of directors elected to the board before the CEO. The alternative measure, BINDb, is the proportion of outsiders on the board of directors, excluding the CEO. DBVAL, the leverage ratio, is equal to total long-term debt divided by total assets. CEO ownership, OWN, is calculated as the number of shares owned by the CEO divided the total number of shares outstanding at the fiscal year-end. As mentioned above, we utilise Jensen-Murphy pay sensitivities, PAY, to measure the use of incentive contracts. We tested our model using both just salary plus bonus and with total compensation (i.e. including option grants) but our results were almost identical, so we report only those using total compensation. We use the Black-Scholes method for calculating the value of option grants.[13] The PAY variable is computed as the slope coefficient of the regression of the change in CEO total compensation (salary plus bonus plus the Black-Scholes value of options grants) on the change in shareholder wealth for each firm. The change in shareholder wealth is calculated from the inflation-adjusted rate of return on common stock realised in the current year multiplied by the previous year's year-end firm value. The performance variable, TOBINQ is estimated as (market value of common stock + book value of preferred stock + book value of long-term debt) / (book value of total assets).[14] Our exogenous variables include board size, BSIZE, firm size, ASSET, measured as total assets divided by one million, RISK, which is the firm's one month stock price volatility,

the one-year lagged Tobin's Q, TOBINLAG, and several dummy variables. DUAL is a dummy variable equal to 1 if the CEO is also the Chairperson, and 0 otherwise. IND is a dummy variable equal to 1 for resource corporations (i.e. metals, mining, oil, gas), and 0 otherwise. QUEBEC equals 1 when the firm is Quebec-headquartered and 0 for firms headquartered in the rest of Canada. SHRRTS equals 0 when the firm has dual or multiple class shares outstanding and 1 otherwise. LISTING is a dummy variable equal to 1 when the firm is also listed on a U.S. stock exchange and 0 otherwise.

<INSERT TABLE I HERE>

Descriptive statistics for the sample are shown in Table I. Firms in the sample encompass a very wide range of asset sizes: from about $2 million (First Calgary Petroleum) to $18.6 Billion (Laurentian Bank of Canada). These firms are still considered small caps, however as when we examine the market capitalisations we find that, for example the market cap of the Laurentian Bank of Canada, which has the largest assets in the sample, represents only about 4% of its total assets. Shareholders equity will typically represent a smaller proportion of banking firms' total assets.[15] About 31% of the firms are in the mining and resource sectors. Approximately 37% of firms in the sample have dual class/multiple voting rights structures and about 35% of the firms in our sample are also listed on U.S. stock exchanges. Quebec based firms account for about 19% of the sample. In 35% of the firms, the CEO is also the Chairperson of the board. Excluding the CEO, firms make extensive use of outsiders on their boards of directors, with over 90% of non-CEO board members being outsiders. Hence it is clear that these sample firms do qualify as TSE Best Practices firms insofar as their utilisation of

outsiders on the boards. The median board size for the firms is 8, although there is considerable range in the sample (from 3 to 20 members).

<INSERT TABLE II HERE>

Table II provides the simple correlation matrix of the variables of the model. One observation is that the two measures of board independence, which have been widely used in the literature (the tenure of the directors relative to the CEO vs. the proportion of outsiders on the boards (excluding the CEO) is low quite low. This may reflect the high representation of outsiders on the boards in the sample overall, and the relatively small variation of this variable. The high negative correlation between board size and Tobin's Q suggests that smaller boards are more conducive to performance than larger boards. The negative correlation between the Quebec dummy variable and Tobin's Q appears to support the La Porta et al (2002) contention that civil law as opposed to common law domains are detrimental to shareholder rights and in turn to company performance. The negative correlation of CEO ownership with Tobin's Q also provides some support for the management entrenchment hypothesis, with owner-managers' private benefits that are in excess of the cash flow returns expected from their direct stockholdings in the companies. The positive correlation between shareholder rights and performance is as expected, indicating that dual or multiple class share structures are detrimental to firm performance. We also note a high positive correlation between Tobin's Q and cross-listing, which supports our proposal that cross-listing will increase firm performance. However, we also find a high negative correlation between cross-listing and leverage, which is contrary to expectations. With the exception of debt with CEO ownership and

board independence, all of the pairwise correlations between the control mechanisms are negative, suggesting that they are substitutes, as expected.

IV. Results

A. OLS

Table III provides the OLS estimates of the equations of the model. We find that the determinants of board independence are largely as theory would predict. We find that when the CEO is the Chairperson, board independence will be lower. This implies that a CEO/Chair has the power to influence the selection of directors to ensure they are employed by the firm or elected after the CEO became a director, and therefore presumed to be less effective monitors. Interestingly we do note some differences between results according to the measure of board independence utilised. When considering the percentage of outsiders, we find that larger boards will be more outsider-dominated. This follows our predictions that the CEO will have relatively less power over a larger board. When using board directors' relative tenure, BINDa, CEO ownership is found to reduce the independence of the board but this significance disappears when we use the proportion of insiders, BINDb. An interesting finding is the coefficient for the shareholder rights variable. As expected, more shareholder rights lead to a higher proportion of outsiders on the board, but a reduction in the tenure of board members relative to the CEO. This seems to highlight a focus on outsider directors being a

preferred method of gaining board independence to having long-standing directors with proven track records, who preceded the CEO.

<INSERT TABLE III HERE>

In the debt ratio equation, we find that the results largely concur with the hypothesised results, whichever measure of board independence utilised. We find that the more sensitive to performance pay is, the better the previous year's performance, the smaller the company and the greater the volatility of the firms stock, the less debt the firm will take on. The PAY relationship confirms our hypothesis that debt and pay sensitivity are substitute mechanisms, consistent with John and John (1993). The inverse relation between lagged performance and leverage shows that firms that performed well in the previous year have improved their internal financial condition and can therefore rely less on external capital markets. Larger firms' having higher leverage ratios reflects the lower bankruptcy costs faced and the inverse relation between risk and leverage demonstrates that bondholders don't like risky debt. We confirm our hypothesis that cross-listing provides greater access to capital markets and hence increases leverage. We also find that resource firms utilise debt less and that over time debt use has decreased. We do not, however, find any significant relation between board independence and the use of debt.

Similarly, many of the results for the CEO ownership equation are as we predicted. For both definitions of BIND, we found that CEO duality leads to greater share ownership, lending support to the hypothesis that the more power the CEO has, the more willing he or she will be to hold a large share of the firm's stock. Additionally, we found that when shareholders rights are weaker, the CEO increases her share. This seems to show that CEO's do not see full alignment between the rights of shareholders and their own rights.

It also suggests that CEO's further entrench themselves to protect their power and stock position by mounting takeover defences. In this way, holding a large share of the company may seem less risky to the CEO because he or she has protected their role as CEO, using dual class shares. As expected, we find an inverse relation between risk and ownership, showing that CEO's are willing to reduce their diversification benefits by holding company stock in their portfolios but they become less willing when the firm's risk increases. The coefficient for LISTING is negative and significant, which, following La Porta (1997) and Burkart and Panunzi (2004) implies that shareholder protection and ownership concentration are substitutes and that legal protection and monitoring are complements. We also find that when more of the board are pre-CEO members, the CEO owns a larger share of the company. This may be a hint as to the characteristics of firms where both the CEO and other board members are heavily invested in the firm, either in time or stock holdings.

The results for the pay-sensitivity equation were somewhat disappointing. The only consistent result was that resource firms base compensation more on performance than non-resource firms, as expected. When using BINDa, however, we confirmed our hypothesis that board independence and pay-for-performance are substitute mechanisms: i.e. more independent boards lead to CEO pay being less based on performance. We did not find any significant relationship between pay sensitivity and the debt ratio, firm size, risk, or the level of shareholder protection.

The results of the performance equation regression were mixed. We found that less independent boards lead to better firm performance, and found no significant relation between pay-performance sensitivity and performance. The negative relation between

leverage and performance indicates the risk of debt impedes performance, rather than bank monitoring improving performance. Contrary to the findings of Ang et al. (2000), we note an inverse relation between CEO ownership and performance, which would indicate that entrenchment rather than interests alignment is occurring in Canadian small caps, although this result is not statistically significant.

In accordance with Eisenberg et al. (1998), we find an inverse relation between board size and performance, although the coefficient is only weakly significant when using BINDa. The authors state that this shows that problems of communication and coordination can still be found in smaller corporations. This result disappeared, however, when taking simultaneity into account. We did not find that shareholder rights, having headquarters in Quebec, or CEO duality have any significant effect on performance. However, we do ccorroborate the findings of authors such as King and Segal (2003), who find a positive effect on firm value from cross-listing.

B. Simultaneous Equations

As discussed, many researchers have examined agency issues using simple regression techniques that ignore the simultaneously determined nature of the various control mechanisms and performance. In neglecting this aspect of the variables, the results are rendered unreliable or even meaningless because the coefficients derived are inefficient. To determine whether there is a simultaneity bias in the OLS regression results, we performed Hausman (1978) tests, the results of which are reported in Table IV. Most of the control mechanisms were found to be endogenous along with the performance Tobin's Q measure, justifying simultaneous equation estimation. In a few cases, where simultaneous equation bias was not found and the variables were not significant in OLS,

the variables were excluded from the 2SLS estimation. Variables deemed exogenous in the Hausman (1978) were treated as such in the 2SLS results.

<INSERT TABLE IV HERE>

We report the 2SLS results in Table V. The findings for the board independence equation tend to agree with those found in the OLS regressions. We did find, however, that the significance of the CEO duality coefficient disappeared, suggesting that the relationship found in the OLS results was a consequence of simultaneous equation bias. We also find that the effect of shareholder rights on outside board membership disappears but the negative impact on board tenure remains. Whereas risk was found to be a significant determinant of leverage in the OLS regressions, it ceases to have explanatory power in the endogenous treatment of leverage. Pay-performance sensitivity, lagged performance, and firm size are the remaining significant determinants in the complete model. Overall, the results for the level of CEO ownership equation concur with the OLS findings. Only relative board tenure loses explanatory power for CEO ownership.

<INSERT TABLE V HERE>

In accordance with the OLS results, the 2SLS results show that mining and resource firms tend to provide more performance based pay structures. In other words these firms tend to have compensation packages for their CEO's that are non-salary related.

The negative relationships between governance mechanisms found in our study support our first main hypothesis that the mechanisms are substitutes: where one particular mechanism may be used less, an alternative will compensate.

However, based on the 2SLS findings for the Tobin's Q equation, we cannot conclude that Canadian small-cap firms are deploying control mechanisms optimally, as was found by Agrawal and Knoeber (1996) for U.S. firms. Canadian small-cap firms appear to overutilise debt as a control mechanism. Given that small-cap firms face higher potential bankruptcy costs, this deviation from the findings of Chirinko and Schaller (2004), who identified a negative but insignificant relation in large-cap corporations, is unsurprising. The level of board independence, however, does appear to be optimal. Contrary to our predictions, when using outside board members as the measure of board independence, we find that Quebec based firms actually outperformed firms from the rest of Canada. We do not find any significant discount to performance for firms with dual or multiple voting class shares structures. It is interesting to note that unlike the OLS estimates, which were consistent with the results of the OLS estimates of Eisenberg et al. (1998) for U.S. small caps, board size has a significantly *positive* effect on performance in 2SLS for Canadian small-caps. In accordance with the OLS results, cross-listing has a significantly positive effect on performance (when using board tenure as the board independence measure).

C. Robustness Tests

For robustness, following McConnell and Servaes (1990), we exclude financial firms from our sample and perform all tests again. The rationale for this is given by Agrawal and Knoeber who state that the "definition of assets for financial firms causes their [Tobin's] Q to be systematically different from that for other firms" (1996, p.389). Of the 94 companies in our original sample, 4 are financial firms. Thus, excluding these firms leaves us with a sample of 90 companies and 446 observations. In Table VI we

show simple statistics for the adjusted sample, the majority of which are largely unchanged. Notably however, the maximum and mean total assets decreased from 18.5 billion and 0.9 billion respectively to 6 billion and 0.7 billion. In addition, the maximum leverage ratio decreased from 0.85 to 0.65. The simple correlations are not qualitatively altered and as such we do not report them.

<INSERT TABLE VI HERE>

The results for the OLS regressions are given in Table VII. These are broadly the same as for the original sample. In the board independence equation the coefficients on both ASSET and RISK become significant when using relative board tenure. The results also show that the explanatory power of stock volatility for leverage is only significant when financial firms are considered. In turn, leverage becomes a significant determinant of pay-sensitivity. In the performance equation, CEO ownership ceases to be an important factor.

<INSERT TABLE VII HERE>

As previously, we tested for simultaneous equation biases using Hausman tests, which are reported in Table VIII. In accordance with our prior findings, the majority of the control mechanisms are found to be interdependent and endogenously determined with performance. Again, any variables found to be exogenous were treated as such in the 2SLS regressions unless they were found to be insignificant in the OLS, in which case they were excluded from 2SLS.

<INSERT TABLE VIII HERE>

Table IX provides the results of the 2SLS regressions. These results do not differ greatly from our previous findings, however there are a few notable changes. When financial firms are removed the support for John and John's (1993) contention of an inverse relation between pay-sensitivity and leverage disappears. In the CEO ownership equation, excluding financial firms increases the significance of both board independence measures. Simultaneously, when financial firms are excluded, we find evidence that Canadian small-cap firms are overutilising pay-for-performance. The positive effect of QUEBEC disappears when removing financial firms from the sample.

<INSERT TABLE IX HERE>

V. Conclusions

Most of the literature on governance-performance linkage to date has focused on large cap companies, or companies headquartered in the U.S. A few studies to date have appeared on the governance characteristics of small-cap corporations. Our paper serves to extend the international evidence to Canada, which should be a useful testing ground relative to the U.S., due to differences in the regulatory environment, the legal environment, and the greater prevalence of dual or multiple class voting structures for shares.

Our findings show some similarities although some striking differences with results on the interactions between control mechanisms and performance found for the U.S. firms. Similarly to U.S. studies, our results show that simultaneity exists between various governance mechanisms and firm performance. We also find evidence to support the hypothesis that alternative governance mechanisms are substitutes.

In regard to the interactions between control mechanisms, we find that CEO ownership and shareholder rights are shown to determine board independence. CEO ownership in turn is shown to depend on the extent of shareholder rights and whether the CEO is also chairperson of the board. Relative board tenure is also found be an important determinant of pay-performance sensitivity. When excluding financial firms, board independence also has significant explanatory power on CEO ownership. Our results also demonstrate the importance of the definition of board independence.

Unlike Agrawal and Knoeber (1996), we do find a significant impact of certain governance mechanisms on performance when taking into account the endogeneity of the variables. In particular, Canadian small-cap firms appear to overutilise debt as a control mechanism. We find evidence that Quebec based firms actually outperformed firms from the rest of Canada, but this is only significant when using outsiders on the board as the board independence measure and including financial firms. We do not find any significant discount to performance for firms with dual or multiple voting class share structures, but we do note a premium for firms cross-listed on a U.S. exchange.

Our results provide some interesting insights into the determination of various governance mechanisms and confirm that Canadian small cap firms do not optimally determine the level of these control mechanisms. In the future we will extend this study to consider the effects of the externally determined market for corporate control and further investigate the impact of ownership structure, including family ownership and the effect of external blockholders.

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Footnotes

1. As La Porta et al. (1999) demonstrate, these observations hold for both large capitalisation and medium capitalisation Canadian companies in their sample. In terms of the S&P/TSX, their $500 million threshold for a medium size company would actually put such companies in the S&P TSX Small Cap category.

2. Following the publication U.K.'s Cadbury Committee report, officially the Toronto Stock Exchange formed the Committee on Corporate Governance in Canada (the Dey Committee). After a year of deliberations, in 1994, this committee presented 14 best practice guidelines for corporate boards. Among other things, the guidelines called for a majority of independent directors and for separating the roles of chairman and chief executive officer (CEO). These guidelines are voluntary. Nevertheless companies listed on the TSX are required to report annually whether they are adhering to them, and if not, why not.

3. In their analyses, however, La Porta et al (2000) treat Canada as a uniform common law country. Quebec based firms that are listed on the TSE are subject to both common law and civil law provisions. In addition, unlike firms from other provinces listed on the TSE, they are subject to the restrictions of commerce represented by Bill 101 and its successor Bill 22, which require that businesses be conducted in the French language.

4. Doidge (2004) provides evidence that the voting premium for dually listed stocks is lower, arguing that this reflects the decrease in the private benefits of control for cross-listed shares.

5. The number of stocks listed on the TSX (from the TSX-CFMRC database), when taking into account only the most actively trades stocks when a company has multiple classifications has increased by about 20% over the period 1985-2004. We used the S&P/TSX relative capitalisation thresholds to backdate an index of qualifying small caps stocks for Canada to 1986 (since the TSE Small Cap Index only extends to 1999), the number of small-caps has increased by 43% from 1985 to 2004 over this period.

6. The Toronto Stock Exchange's Small Cap Index is a subset of the S&P/TSX Composite Index, and consists of 101 companies as of September 2005. The Composite Index also includes the sixty stocks of its Large Cap Index, and fifty-two companies of its Mid-Cap Index.

7. For examples of studies examining firm size as a determinant of compensation, see Baumol (1958), McGuire, Chui and Elbing (1962), Fith, Tam and Tang (1999); for the neoclassical approach, see Lewellen and Huntsman (1970), Lambart and Larcker (1987), Gerhart and Milkovich (1990), Jensen and Murphy (1990), and Yermack (1995).

8. The effectiveness of board independence as a governance mechanism is not consistently agreed upon in the literature. Mace (1986) and Vancil (1987) argue that

shareholders are generally subject to free-rider effects and will not play an important role in electing outside directors. These authors therefore question the independence of outside directors because of the important role CEOs can consequently play in their appointment. Rosenstein and Wyatt (1990) examine the wealth effects of appointments of outside directors by management and find that even though most firms' boards are outsider dominated, firm value still increases after a management appointed outside director. Ryan and Wiggins (2004) further dispute the contention that CEOs compromise the independence of outside directors by finding that more outsiders on the board result in compensation being more equity (and therefore performance) based. Providing further evidence in support of outside directors, Guercio et al. (2003) find that the expense ratios for investment companies are lower where there is a larger proportion of outside directors, which they argue implies greater board effectiveness. We thus consider the proportion of outside directors to be an important measure of board independence and governance control.

9. Brick et al (2005) find that leverage has a negative impact on the pay-sensitivity of executive compensation, using a simultaneous equations framework.

10. Mishra and Nielsen (2000), using a simultaneous equations framework, find a positive relation between the percentage of outside directors and pay-performance sensitivity. This is explained by the CEO's ability to write his own cheque being impeded by a more independent board who will require good performance for better compensation. Overall, Hermalin and Weisbach (2003) surmise the US evidence on outsiders on the board as showing that more outsiders are generally associated with compensation being more dependent on performance. We consider these mechanisms as substitutes and therefore expect to find an inverse relation.

11. Authors such as McGuire, Chui and Elbing (1962), Chung and Pruitt (1996), and Weber and Dudney (2003) argue that firm size represents a proxy of a job's complexity and therefore the larger the firm, the more the CEO should be compensated. They also posit that managers of large firms have more power through the large firms' greater ability to earn monopoly profits and are therefore more able to allocate more generous compensation to themselves. Chung and Pruitt also present the arguments of Calvo and Wellisz (1979) of a "multiplicative productivity effect" whereby the larger the firm, the greater the number of levels of hierarchy and accordingly pay levels. The authors argue that the most able executives will therefore be attracted to the larger firms due to the higher compensation available in these firms.

12. Several other authors have suggested debt as an effective control mechanism. In addition to reducing the free cash flow available for CEO's to squander and forcing firms into external capital markets that will provide monitoring, debt increases the likelihood of a CEO losing control over a corporation if he or she allows that firm to go into financial distress (see, for example, Grossman and Hart, 1982; Harris and Raviv, 1990; and Aghion and Bolton, 1992).

13. The Black-Scholes model calculates the price of an option, C, trading at price, S, with an exercise price, X, volatility, σ, constant interest rate, r, and time to maturity, T, as:

$$C = SN(d_1) - Xe^{-rT}N(d_2)$$

Where N is the cumulative normal distribution, $d_1 = [ln(S/X) + (r + \sigma^2/2)T] / [\sigma\sqrt{T}]$ and $d_2 = d_1 - \sigma\sqrt{T}$.

14. The lack of data available for Canadian small-cap corporations necessitates the use of a simplified calculation of Tobin's Q. However, Chung and Pruitt (1994) find high correlations between alternative proxies of Tobin's Q, including the variant that we use. Alternate estimates require data that would diminish our sample significantly and possibly lead to sample selection bias.

15. As a robustness check, we later eliminate these financial firms.

Table I

Sample Statistics

In Table I we report descriptive statistics for the sample. The variables are defined as follows: CEO ownership, OWN, is calculated as the number of shares owned by the CEO divided the total number of shares outstanding at the fiscal year-end. PAY is Jensen-Murphy pay sensitivities, calculated as *b*, where *b* is calculated from: Δ *(total CEO compensation)* = *a* + *b* Δ *(annual stock return).* The performance variable, TOBINQ is estimated as (market value of common stock + book value of preferred stock + book value of long-term debt) / (book value of total assets). BSIZE is the number of board members. DUAL is a dummy variable equal to 1 if the CEO is also the Chairperson, and 0 otherwise. SHRRTS equals 0 when the firm has dual or multiple class shares outstanding and 1 otherwise. LISTING is a dummy variable equal to 1 if the firm is also listed on a U.S. stock exchange and 0 otherwise. QUEBEC equals 1 when the firm is Quebec-headquartered and 0 for firms headquartered in the rest of Canada. ASSET is total assets divided by one million. RISK is the firm's one-month stock price volatility. IND is a dummy variable equal to 1 for resource corporations (i.e. metals, mining, oil, gas), and 0 otherwise. TOBINLAG, the one-year lagged Tobin's Q. We utilise two variables for board independence. BINDa is the tenure of directors relative to the CEO, or percentage of directors elected to the board before the CEO. BINDb is the proportion of outsiders on the board of directors, excluding the CEO. DBVAL, the leverage ratio, is equal to total long-term debt divided by total assets. MARKETCAP is the market capitalisation of the firm, in millions of dollars.

	Mean	*Median*	*Maximum*	*Minimum*	*Std. Dev.*
BINDA	23.22	0	100	0	32.81
BINDB	91.11	100	100	0	14.08
DBVAL	0.183	0.156	0.849	0	0.183
OWN	8.74	1.02	70.20	0	17.46
PAY	0.0021	0.0001	0.1111	-0.0381	0.0160
TOBINQ	1.66	1.07	10.04	0.02	1.55
BSIZE	8.74	8	20	3	2.64
DUAL	0.351	0	1	0	0.478
QUEBEC	0.191	0	1	0	0.394
ASSET	979.86	456.70	18595.62	2.20	2015.03
SHRRTS	0.626	1	1	0	0.485
LISTED	0.353	0	1	0	0.478
RISK	15.09	12.60	59.37	2.60	9.42
IND	0.313	0	1	0	0.464
MARKETCAP	559	396	3400	3.50	578
Total Observations	470				

Table II

Correlation Matrix

Table II provides the Pearson correlation matrix between the main variables of the model. The variables are defined as:

CEO ownership, OWN, is calculated as the number of shares owned by the CEO divided by the total number of shares outstanding at the fiscal year-end. PAY is Jensen-Murphy pay sensitivities, calculated as *b*, where *b* is calculated from: Δ *(total CEO compensation)* = *a* + *b* Δ *(annual stock return).* The performance variable, TOBINQ is estimated as (market value of common stock + book value of preferred stock + book value of long-term debt) / (book value of total assets). BSIZE is the number of board members. DUAL is a dummy variable equal to 1 if the CEO is also the Chairperson, and 0 otherwise. SHRRTS equals 0 when the firm has dual or multiple class shares outstanding and 1 otherwise. LISTING is a dummy variable equal to 1 if the firm is also listed on a U.S. stock exchange and 0 otherwise. QUEBEC equals 1 when the firm is Quebec-headquartered and 0 for firms headquartered in the rest of Canada. ASSET is total assets divided by one million. RISK is the firm's one-month stock price volatility. IND is a dummy variable equal to 1 for resource corporations (i.e. metals, mining, oil, gas), and 0 otherwise. TOBINLAG, the one-year lagged Tobin's Q.

We utilise two variables for board independence. BINDa, is the tenure of directors relative to the CEO, or percentage of directors elected to the board before the CEO. BINDb is the proportion of outsiders on the board of directors, excluding the CEO. DBVAL, the leverage ratio, is equal to total long-term debt divided by total assets.

	BINDa	*BINDb*	*DBVAL*	*OWN*	*PAY*	*TOBINQ*	*BSIZE*	*DUAL*	*QUEBEC*	*ASSET*	*SHRRTS*	*LISTED*	*RISK*	*IND*
BINDa	1													
BINDb	0.197	1												
DBVAL	0.020	0.092	1											
OWN	-0.334	-0.060	0.089	1										
PAY	-0.072	-0.027	-0.119	-0.099	1									
TOBINQ	-0.063	-0.109	-0.365	-0.110	0.031	1								
BSIZE	0.112	0.187	0.517	0.038	-0.120	-0.283	1							
DUAL	-0.400	-0.130	-0.071	0.418	0.055	0.013	-0.170	1						
QUEBEC	-0.225	-0.102	0.233	0.203	-0.066	-0.114	0.242	0.175	1					
ASSET	0.086	0.126	0.562	-0.003	-0.051	-0.218	0.513	-0.103	0.233	1				
SHRRTS	-0.066	0.105	-0.083	-0.123	-0.007	0.064	-0.164	-0.020	-0.015	-0.180	1			
LISTED	-0.042	-0.095	-0.198	-0.096	0.126	0.245	-0.260	0.165	-0.032	-0.227	-0.228	1		
RISK	0.052	-0.075	-0.297	-0.151	0.066	0.280	-0.325	0.074	-0.170	-0.283	-0.029	0.472	1	
IND	0.006	-0.169	-0.303	-0.185	0.157	0.137	-0.401	-0.025	-0.235	-0.259	-0.009	0.356	0.349	1
YEARSMP	-0.040	-0.034	-0.076	-0.010	0.025	0.130	0.034	-0.096	0.052	0.072	0.064	-0.005	-0.130	-0.007

Table III

Ordinary Least Squares Regression Results

	Dependent Variable									
Independent Variables	*Board Independence*		*Debt/Value*		*CEO Ownership*		*Pay*		*Performance*	
	BINDa	*BINDb*	*BINDa*	*BINDb*	*BINDa*	*BINDb*	*BINDa*	*BINDb*	*BINDa*	*BINDb*
Constant	2469.395	1065.247	24.718***	24.807***	-404.536	-657.761	-0.288	-0.334	-194.832**	-197.052**
	(0.136)	(0.166)	(0.002)	(0.002)	(0.632)	(0.446)	(0.750)	(0.714)	(0.014)	(0.013)
BIND			-0.00020	-0.00031	-0.10452***	-0.01911	-0.00004*	0.00000	-0.00380*	-0.00711
			(0.311)	(0.509)	(0.000)	(0.712)	(0.071)	(0.965)	(0.093)	(0.140)
DBVAL							-0.00829	-0.00826	-2.23801***	-2.22117***
							(0.103)	(0.105)	(0.000)	(0.000)
OWN	-0.39641***	-0.02072							-0.00618	-0.00463
	(0.000)	(0.617)							(0.159)	(0.281)
PAY			-0.74000*	-0.71156*					-4.70177	-4.11885
			(0.070)	(0.081)					(0.256)	(0.318)
BSIZE	0.60280	0.67286**							-0.05078*	-0.04660
	(0.355)	(0.027)							(0.100)	(0.137)
DUAL	-21.6247***	-2.9437**			13.0444***	15.8938***			-0.1107	-0.0549
	(0.000)	(0.050)			(0.000)	(0.000)			(0.500)	(0.730)
TOBINLAG			-0.03003***	-0.02997***						
			(0.000)	(0.000)						
QUEBEC							-0.00184	-0.00095	-0.12296	-0.10932
							(0.364)	(0.633)	(0.494)	(0.542)
LISTING			0.0313*	0.0326**	-5.0274***	-4.8849***			0.590***	0.594***
			(0.060)	(0.050)	(0.005)	(0.007)			(0.000)	(0.000)
SHRRTS	-5.37866*	3.89651***	0.02136	0.02340	-6.39226***	-5.89160***	-0.00038	-0.00026	0.15175	0.20362
	(0.066)	(0.004)	(0.135)	(0.104)	(0.000)	(0.000)	(0.805)	(0.868)	(0.294)	(0.162)
ASSET	0.000450	0.000385	0.000044***	0.000044***	-0.000590	-0.000674*	0.000000	0.000000		
	(0.575)	(0.302)	(0.000)	(0.000)	(0.116)	(0.080)	(0.369)	(0.496)		
RISK	0.2466	0.0339	-0.0021**	-0.0021***	-0.1558*	-0.1935**	0.0000	0.0000		
	(0.129)	(0.654)	(0.012)	(0.009)	(0.076)	(0.030)	(0.902)	(0.980)		
IND	-2.82018	-3.59911**	-0.05974***	-0.06155***	-4.3462***	-4.28903**	0.00447**	0.00457**		
	(0.401)	(0.021)	(0.000)	(0.000)	(0.009)	(0.013)	(0.011)	(0.011)		
YEAR	-1.21953	-0.49025	-0.01224***	-0.01228***	0.21048	0.33632	0.00015	0.00017	0.09858**	0.09991**
	(0.140)	(0.202)	(0.002)	(0.002)	(0.210)	(0.436)	(0.747)	(0.711)	(0.013)	(0.012)
Adjusted R^2	0.202	0.063	0.424	0.423	0.272	0.240	0.022	0.015	0.197	0.178
p (F-Stat)	0.000	0.000	0.000	0.000	0.000	0.000	0.018	0.057	0.000	0.000

Table III provides OLS estimates of the governance mechanisms and performance equations of the model:

$BIND_t = a_{10} + \beta_{13}OWN_t + \beta_{16}BSIZE_t + \beta_{17}DUAL_t + \beta_{1.11}SHRRTS_t + \beta_{1.12}ASSET_t + \beta_{1.13}RISK_t + \beta_{1.14}IND_t + \beta_{15}YEAR_t + \varepsilon_1$

$DBVAL_t = a_{20} + \beta_{21}BIND_t + \beta_{24}PAY_t + \beta_{28}TOBINLAG_{t1} + \beta_{2.10}LISTING_t + \beta_{2.11}SHRRTS_t + \beta_{2,12}ASSET_t + \beta_{2.13}RISK_t + \beta_{2.14}IND_t + \beta_{2.15}YEAR_t + \varepsilon_2$

$OWN_t = a_{30} + \beta_{31}BIND_t + \beta_{37}DUAL_t + \beta_{3.10}LISTING_t + \beta_{3.11}SHRRTS_t + \beta_{3.12}ASSET_t + \beta_{3.13}RISK_t + \beta_{3.14}IND_t + \beta_{3.15}YEAR_t + \varepsilon_3$

$PAY_t = a_{40} + \beta_{41}BIND_t + \beta_{42}DBVAL_t + \beta_{49}QUEBEC_t + \beta_{4.11}SHRRTS_t + \beta_{4.12}ASSET_t + \beta_{4.13}RISK_t + \beta_{4.14}IND_t + \beta_{4.15}YEAR_t + \varepsilon_4$

$TOBINQ_t = a_{50} + \beta_{51}BIND_t + \beta_{52}DBVAL_t + \beta_{53}OWN_t + \beta_{54}PAY_t + \beta_{56}BSIZE_t + \beta_{57}DUAL_t + \beta_{59}QUEBEC_t + \beta_{5.10}LISTING_t + \beta_{5.11}SHRRTS_t + \beta_{5.15}YEAR_t + \varepsilon_5$

P-values are given under each coefficient - * indicates significance at 10% level, ** significance at 5% level, and *** significance at 1% level.

We run regressions for each equation using both measures of board independence (BINDa and BINDb), which are reported in alternate columns. BINDa is the tenure of directors relative to the CEO, or percentage of directors elected to the board before the CEO. BINDb is the proportion of outsiders on the board of directors, excluding the CEO. DBVAL, the leverage ratio, is equal to total long-term debt divided by total assets. CEO ownership, OWN, is calculated as the number of shares owned by the CEO divided the total number of shares outstanding at the fiscal year-end. PAY is Jensen-Murphy pay sensitivities, calculated as *b*, where *b* is calculated from: Δ *(total CEO compensation) = a + b* Δ *(annual stock return).* The performance variable, TOBINQ is estimated as (market value of common stock + book value of preferred stock + book value of long-term debt) / (book value of total assets). BSIZE is the number of board members. DUAL is a dummy variable equal to 1 if the CEO is also the Chairperson, and 0 otherwise. SHRRTS equals 0 when the firm has dual or multiple class shares outstanding and 1 otherwise. LISTING is a dummy variable equal to 1 if the firm is also listed on a U.S. stock exchange and 0 otherwise. QUEBEC equals 1 when the firm is Quebec-headquartered and 0 for firms headquartered in the rest of Canada. ASSET is total assets divided by one million. RISK is the firm's one-month stock price volatility. IND is a dummy variable equal to 1 for resource corporations (i.e. metals, mining, oil, gas), and 0 otherwise. TOBINLAG, the one-year lagged Tobin's Q.

Table IV
Hausman (1978) Tests of Endogeneity

This table reports the Hausman tests for endogeneity of the control mechanisms and company performance. They are two stage tests. For 2 variables, X and Y, in the first stage we regress the suspect endogenous X variable on its determinants. The residual vector of this regression is then used as an independent variable in the equation for Y. If the coefficient on the residual variable is significant (at 5%) in the second stage regression, then simultaneous equation estimation is validated. In the table below we report the pairwise tests, along with the estimated residual coefficient of the model.

		Residual Coefficient	*Std Error*	*T-Statistic*	*Significance*
A: OWN in the BIND equation	*BINDa*	9.56735	0.00000	2.485E+10	0.00000
B: PAY in DBVAL equation		79.08092	2.39496	33.01976	0.00000
C: BIND in the DBVAL equation		-0.00047	0.00050	-0.95543	0.33986
D: DBVAL in the PAY equation		0.08721	0.01616	5.39593	0.00000
E: BIND in the PAY equation		-0.00003	0.00006	-0.54818	0.58383
F: PAY in the TOBINQ equation		61.54981	37.93786	1.62238	0.10541
G: DBVAL in the TOBINQ equation		4.49405	0.77108	5.82825	0.00000
H: BIND in the TOBINQ equation		-0.09038	0.02620	-3.44962	0.00061
I: OWN in the TOBINQ equation		0.01902	0.02779	0.68424	0.49417
J: BIND in the OWN equation		2.37737	0.02246	105.83850	0.00000
A: OWN in the BIND equation	*BINDb*	52.33908	0.00000	1.531E+09	0.00000
B: PAY in DBVAL equation		96.57644	1.92025	50.29372	0.00000
C: BIND in the DBVAL equation		-0.01026	0.00279	-3.67981	0.00026
D: DBVAL in the PAY equation		0.08649	0.01627	5.31413	0.00000
E: BIND in the PAY equation		0.00035	0.00033	1.06006	0.28967
F: PAY in the TOBINQ equation		75.65260	38.69584	1.95506	0.05118
G: DBVAL in the TOBINQ equation		4.46096	0.77412	5.76264	0.00000
H: BIND in the TOBINQ equation		-0.08400	0.04025	-2.08666	0.03747
I: OWN in the TOBINQ equation		0.02111	0.02535	0.83258	0.40552
J: BIND in the OWN equation		1.71249	0.48678	3.51801	0.00048

The variables are defined as follows: CEO ownership, OWN, is calculated as the number of shares owned by the CEO divided the total number of shares outstanding at the fiscal year-end. PAY is Jensen-Murphy pay sensitivities, calculated as *b*, where *b* is calculated from: Δ *(total CEO compensation)* = *a* + *b* Δ *(annual stock return).* The performance variable, TOBINQ is estimated as (market value of common stock + book value of preferred stock + book value of long-term debt) / (book value of total assets). BINDa is the tenure of directors relative to the CEO, or percentage of directors elected to the board before the CEO. BINDb is the proportion of outsiders on the board of directors, excluding the CEO. DBVAL, the leverage ratio, is equal to total long-term debt divided by total assets.

Table V

Two- Stage Least Squares Results

	Dependent Variable									
Independent Variables	*Board Independence*		*Debt/Value*		*CEO Ownership*		*Pay*		*Performance*	
	BINDa	*BINDb*	*BINDa*	*BINDb*	*BINDa*	*BINDb*	*BINDa*	*BINDb*	*BINDa*	*BINDb*
Constant	2143.46	790.42	15.872	14.922	-51.574	-197.020	-0.291	-0.265	-137.702	-149.403
	(0.228)	(0.396)	(0.445)	(0.466)	(0.956)	(0.839)	(0.765)	(0.786)	(0.239)	(0.284)
BIND				0.00146	-0.23839**	-0.41288	-0.00004*		0.02018	0.10825
				(0.776)	(0.049)	(0.132)	(0.071)		(0.466)	(0.113)
DBVAL							-0.0082	-0.0107	-7.4352***	-9.095***
							(0.534)	(0.424)	(0.000)	(0.000)
PAY			-21.27*	-20.47*						
			(0.087)	(0.098)						
OWN	-1.096**	-0.610**								
	(0.043)	(0.032)								
BSIZE	0.706	0.760**							0.091*	0.03196
	(0.312)	(0.038)							(0.072)	(0.683)
DUAL	-10.847	6.144			9.299**	14.355***			0.363	0.0686
	(0.223)	(0.188)			(0.013)	(0.000)			(0.611)	(0.802)
TOBINLAG			-0.027**	-0.027**						
			(0.014)	(0.016)						
QUEBEC							-0.0018	-0.0009	0.5191	0.86005*
							(0.374)	(0.673)	(0.308)	(0.099)
LISTING			0.0944*	0.0909	-5.182***	-4.435**			0.429**	0.397
			(0.09435)	(0.1053)	(0.0052)	(0.0234)			(0.032)	(0.121)
ASSET	0.00000	0.00001	0.00004***	0.00004***	-0.00046	-0.00038	0.00000	0.00000		
	(0.997)	(0.986)	(0.000)	(0.000)	(0.252)	(0.411)	(0.564)	(0.557)		
SHRRTS	-8.6885**	1.1057	0.0296	0.0233	-6.9385***	-4.3619**	-0.0004	-0.0003	0.2382	-0.29722
	(0.030)	(0.598)	(0.421)	(0.578)	(0.000)	(0.026)	(0.805)	(0.867)	(0.234)	(0.434)
RISK	0.0513	-0.1308	-0.0029	-0.0029	-0.1076	-0.1952**	0.0000	0.0000		
	(0.822)	(0.274)	(0.179)	(0.168)	(0.283)	(0.039)	(0.905)	(0.970)		
IND	-6.3204	-6.5505***	0.0337	0.0366	-4.5355***	-6.1572***	0.0045**	0.0045**		
	(0.157)	(0.005)	(0.626)	(0.590)	(0.009)	(0.006)	(0.015)	(0.016)		
YEAR	-1.0527	-0.3495	-0.0078	-0.0074	0.0361	0.1239	0.0001	0.0001	0.0694	0.071182
	(0.236)	(0.453)	(0.451)	(0.466)	(0.938)	(0.796)	(0.762)	(0.784)	(0.234)	(0.303)
Adjusted R^2	0.095	-0.349	-2.782	-2.561	0.219	0.144	0.022	0.017	-0.300	-1.312
p (F-Stat)	0.000	0.000	0.000	0.000	0.000	0.000	0.040	0.068	0.000	0.000

Table V provides Two-Stage Least Squares estimates of the governance mechanisms and performance equations of the model:

$$BIND_t = a_{10} + \beta_{13}OWN_t + \beta_{16}BSIZE_t + \beta_{17}DUAL_t + \beta_{1.11}SHRRTS_t + \beta_{1.12}ASSET_t + \beta_{1.13}RISK_t + \beta_{1.14}IND_t + \beta_{15}YEAR_t + \varepsilon_1$$

$DBVAL_t = a_{20} + \beta_{24}PAY_t + \beta_{28}TOBINLAG_{t1} + \beta_{2.10}LISTING_t + \beta_{2.11}SHRRTS_t + \beta_{2,12}ASSET_t + \beta_{2.13}RISK_t + \beta_{2.14}IND_t + \beta_{2.15}YEAR_t + \varepsilon_2$

$DBVAL_t = a_{20} + \beta_{21}BINDb_t + \beta_{24}PAY_t + \beta_{28}TOBINLAG_{t1} + \beta_{2.10}LISTING_t + \beta_{2.11}SHRRTS_t + \beta_{2,12}ASSET_t + \beta_{2.13}RISK_t + \beta_{2.14}IND_t + \beta_{2.15}YEAR_t + \varepsilon_2$

$OWN_t = a_{30} + \beta_{31}BIND_t + \beta_{37}DUAL_t + \beta_{3.10}LISTING_t + \beta_{3.11}SHRRTS_t + \beta_{3.12}ASSET_t + \beta_{3.13}RISK_t + \beta_{3.14}IND_t + \beta_{3.15}YEAR_t + \varepsilon_3$

$PAY_t = a_{40} + \beta_{41}BINDa_t + \beta_{42}DBVAL_t + \beta_{49}QUEBEC_t + \beta_{4.11}SHRRTS_t + \beta_{4.12}ASSET_t + \beta_{4.13}RISK_t + \beta_{4.14}IND_t + \beta_{4.15}YEAR_t + \varepsilon_4$

$PAY_t = a_{40} + \beta_{42}DBVAL_t + \beta_{49}QUEBEC_t + \beta_{4.11}SHRRTS_t + \beta_{4.12}ASSET_t + \beta_{4.13}RISK_t + \beta_{4.14}IND_t + \beta_{4.15}YEAR_t + \varepsilon_4$

$TOBINQ_t = a_{50} + \beta_{51}BIND_t + \beta_{52}DBVAL_t + \beta_{56}BSIZE_t + \beta_{57}DUAL_t + \beta_{59}QUEBEC_t + \beta_{5.10}LISTING_t + \beta_{5.11}SHRRTS_t + \beta_{5.15}YEAR_t + \varepsilon_5$

P-values are given under each coefficient - * indicates significance at 10% level, ** significance at 5% level, and *** significance at 1% level.

We estimate the model using both measures of board independence (BINDa and BINDb), which are reported in alternate columns. BINDa is the tenure of directors relative to the CEO, or percentage of directors elected to the board before the CEO. BINDb is the proportion of outsiders on the board of directors, excluding the CEO. DBVAL, the leverage ratio, is equal to total long-term debt divided by total assets. CEO ownership, OWN, is calculated as the number of shares owned by the CEO divided the total number of shares outstanding at the fiscal year-end. PAY is Jensen-Murphy pay sensitivities, calculated as *b*, where *b* is calculated from: Δ *(total CEO compensation)* = *a* + *b* Δ *(annual stock return).* The performance variable, TOBINQ is estimated as (market value of common stock + book value of preferred stock + book value of long-term debt) / (book value of total assets). BSIZE is the number of board members. DUAL is a dummy variable equal to 1 if the CEO is also the Chairperson, and 0 otherwise. SHRRTS equals 0 when the firm has dual or multiple class shares outstanding and 1 otherwise. LISTING is a dummy variable equal to 1 if the firm is also listed on a U.S. stock exchange and 0 otherwise. QUEBEC equals 1 when the firm is Quebec-headquartered and 0 for firms headquartered in the rest of Canada. ASSET is total assets divided by one million. RISK is the firm's one-month stock price volatility. IND is a dummy variable equal to 1 for resource corporations (i.e. metals, mining, oil, gas), and 0 otherwise. TOBINLAG, the one-year lagged Tobin's Q.

Table VI
Sample Statistics with Financial Firms Excluded

In Table VI we report descriptive statistics for the sample with financial firms removed. The variables are defined as follows: CEO ownership, OWN, is calculated as the number of shares owned by the CEO divided the total number of shares outstanding at the fiscal year-end. PAY is Jensen-Murphy pay sensitivities, calculated as *b*, where *b* is calculated from: Δ *(total CEO compensation)* = *a* + *b* Δ *(annual stock return).* The performance variable, TOBINQ is estimated as (market value of common stock + book value of preferred stock + book value of long-term debt) / (book value of total assets). BSIZE is the number of board members. DUAL is a dummy variable equal to 1 if the CEO is also the Chairperson, and 0 otherwise. SHRRTS equals 0 when the firm has dual or multiple class shares outstanding and 1 otherwise. LISTING is a dummy variable equal to 1 if the firm is also listed on a U.S. stock exchange and 0 otherwise. QUEBEC equals 1 when the firm is Quebec-headquartered and 0 for firms headquartered in the rest of Canada. ASSET is total assets divided by one million. RISK is the firm's one-month stock price volatility. IND is a dummy variable equal to 1 for resource corporations (i.e. metals, mining, oil, gas), and 0 otherwise. TOBINLAG, the one-year lagged Tobin's Q. We utilise two variables for board independence. BINDa is the tenure of directors relative to the CEO, or percentage of directors elected to the board before the CEO. BINDb is the proportion of outsiders on the board of directors, excluding the CEO. DBVAL, the leverage ratio, is equal to total long-term debt divided by total assets. MARKETCAP is the market capitalisation of the firm, in millions of dollars.

	Mean	Median	Maximum	Minimum	Std. Dev.
BINDA	23.21	0	100	0	33.05
BINDB	90.68	100	100	0	14.31
DBVAL	0.165	0.145	0.648	0	0.153
OWN	8.27	1.02	70.20	0	17.02
PAY	0.0021	0.0001	0.1111	-0.0381	0.0164
TOBIN	1.71	1.13	10.04	0.02	1.57
BSIZE	8.59	8	20	3	2.56
DUAL	0.365	0	1	0	0.482
QUEBEC	0.188	0	1	0	0.391
ASSET	732.15	427.27	6070.50	2.20	941.72
SHRRTS	0.632	1	1	0	0.483
LISTED	0.372	0	1	0	0.484
RISK	15.49	13.13	59.37	2.60	9.48
INDUS	0.330	0	1	0	0.471
MARKETCAP	566	399	3400	3.5	590
Total Observations	446				

Table VII
Ordinary Least Squares Regression Results with Financial Firms Excluded

	Dependent Variable									
Independent Variables	*Board Independence*		*Debt/Value*		*CEO Ownership*		*Pay*		*Performance*	
	BINDa	*BINDb*	*BINDa*	*BINDb*	*BINDa*	*BINDb*	*BINDa*	*BINDb*	*BINDa*	*BINDb*
Constant	2447.998	1080.981	20.453***	20.418***	-678.892	-860.165	-0.361	-0.421	-188.50**1	-193.996**
	(0.153)	(0.182)	(0.004)	(0.004)	(0.425)	(0.319)	(0.704)	(0.659)	(0.022)	(0.019)
BIND			0.000***	0.000	-0.088***	-0.043	0.001*	0.000	-0.005**	-0.007
			(0.005)	(0.285)	(0.000)	(0.400)	(0.080)	(0.921)	(0.022)	(0.1428)
DBVAL							-0.011*	-0.011*	-3.271***	-3.211***
							(0.064)	(0.084)	(0.000)	(0.000)
PAY			-0.744**	-0.683*					-4.877	-4.192
			(0.038)	(0.058)					(0.243)	(0.316)
OWN	-0.351***	-0.042							-0.003	-0.001
	(0.000)	(0.344)							(0.581)	(0.834)
BSIZE	-0.262	0.705**							-0.046	-0.043
	(0.715)	(0.038)							(0.145)	(0.178)
DUAL	-23.309***	-2.292			13.823***	16.166***			-0.187	-0.091
	(0.000)	(0.146)			(0.000)	(0.000)			(0.268)	(0.577)
TOBINLAG			-0.026***	-0.026***						
			(0.000)	(0.000)						
QUEBEC							-0.001	-0.001	-0.171	-0.138
							(0.507)	(0.784)	(0.360)	(0.457)
LISTING			0.03161**	0.03501**	-3.871**	-3.698**			0.574***	0.585***
			(0.0306)	(0.0173)	(0.0282)	(0.039)			(0.000)	(0.000)
ASSET	0.0039**	0.0004	0.0001***	0.0001***	0.0004	0.0001	0.0000	0.0000		
	(0.047)	(0.704)	(0.000)	(0.000)	(0.679)	(0.888)	(0.667)	(0.818)		
SHRRTS	-5.6131*	3.9111***	0.0089	0.0133	-4.6309***	-4.0427***	-0.0011	-0.0009	0.1484	0.2140
	(0.061)	(0.006)	(0.487)	(0.306)	(0.003)	(0.010)	(0.514)	(0.593)	(0.319)	(0.155)
RISK	0.2916*	0.0418	-0.0012	-0.0014*	-0.1219	-0.1557*	0.0000	0.0000		
	(0.081)	(0.595)	(0.106)	(0.059)	(0.164)	(0.078)	(0.914)	(0.986)		
IND	-2.4848	-3.4423**	-0.0425***	-0.0456***	-3.3789**	-3.5077**	0.0045**	0.0046**		
	(0.468)	(0.034)	(0.003)	(0.002)	(0.044)	(0.041)	(0.016)	(0.016)		
YEAR	-1.2064	-0.4984	-0.0101**	-0.0101***	0.3455	0.4367	0.0002	0.0002	0.0955**	0.0984**
	(0.159)	(0.218)	(0.031)	(0.005)	(0.417)	(0.312)	(0.701)	(0.656)	(0.020)	(0.017)
Adjusted R^2	0.203	0.052	0.372	0.362	0.266	0.243	0.025	0.018	0.199	0.193
p (F-Stat)	0.000	0.000	0.000	0.000	0.000	0.000	0.015	0.044	0.000	0.000

Table VII provides OLS estimates of the governance mechanisms and performance equations of the model:

$BIND_t = a_{10} + \beta_{13}OWN_t + \beta_{16}BSIZE_t + \beta_{17}DUAL_t + \beta_{1.11}SHRRTS_t + \beta_{1.12}ASSET_t + \beta_{1.13}RISK_t + \beta_{1.14}IND_t + \beta_{15}YEAR_t + \varepsilon_1$

$DBVAL_t = a_{20} + \beta_{21}BIND_t + \beta_{24}PAY_t + \beta_{28}TOBINLAG_{t1} + \beta_{2.10}LISTING_t + \beta_{2.11}SHRRTS_t + \beta_{2,12}ASSET_t + \beta_{2.13}RISK_t + \beta_{2.14}IND_t + \beta_{2.15}YEAR_t + \varepsilon_2$

$OWN_t = a_{30} + \beta_{31}BIND_t + \beta_{37}DUAL_t + \beta_{3.10}LISTING_t + \beta_{3.11}SHRRTS_t + \beta_{3.12}ASSET_t + \beta_{3.13}RISK_t + \beta_{3.14}IND_t + \beta_{3.15}YEAR_t + \varepsilon_3$

$PAY_t = a_{40} + \beta_{41}BIND_t + \beta_{42}DBVAL_t + \beta_{49}QUEBEC_t + \beta_{4.11}SHRRTS_t + \beta_{4.12}ASSET_t + \beta_{4.13}RISK_t + \beta_{4.14}IND_t + \beta_{4.15}YEAR_t + \varepsilon_4$

$TOBINQ_t = a_{50} + \beta_{51}BIND_t + \beta_{52}DBVAL_t + \beta_{53}OWN_t + \beta_{54}PAY_t + \beta_{56}BSIZE_t + \beta_{57}DUAL_t + \beta_{59}QUEBEC_t + \beta_{5.10}LISTING_t + \beta_{5.11}SHRRTS_t + \beta_{5.15}YEAR_t + \varepsilon_5$

P-values are given under each coefficient - * indicates significance at 10% level, ** significance at 5% level, and *** significance at 1% level.

We run regressions for each equation using both measures of board independence (BINDa and BINDb), which are reported in alternate columns. BINDa is the tenure of directors relative to the CEO, or percentage of directors elected to the board before the CEO. BINDb is the proportion of outsiders on the board of directors, excluding the CEO. DBVAL, the leverage ratio, is equal to total long-term debt divided by total assets. CEO ownership, OWN, is calculated as the number of shares owned by the CEO divided the total number of shares outstanding at the fiscal year-end. PAY is Jensen-Murphy pay sensitivities, calculated as *b*, where *b* is calculated from: Δ *(total CEO compensation) = a + b* Δ *(annual stock return).* The performance variable, TOBINQ is estimated as (market value of common stock + book value of preferred stock + book value of long-term debt) / (book value of total assets). BSIZE is the number of board members. DUAL is a dummy variable equal to 1 if the CEO is also the Chairperson, and 0 otherwise. SHRRTS equals 0 when the firm has dual or multiple class shares outstanding and 1 otherwise. LISTING is a dummy variable equal to 1 if the firm is also listed on a U.S. stock exchange and 0 otherwise. QUEBEC equals 1 when the firm is Quebec-headquartered and 0 for firms headquartered in the rest of Canada. ASSET is total assets divided by one million. RISK is the firm's one-month stock price volatility. IND is a dummy variable equal to 1 for resource corporations (i.e. metals, mining, oil, gas), and 0 otherwise. TOBINLAG, the one-year lagged Tobin's Q.

Table VIII
Hausman (1978) Tests of Endogeneity with Financial Firms Excluded

Table VIII reports the Hausman tests for endogeneity of the control mechanisms and company performance. These are two stage tests. For 2 variables, X and Y, in the first stage we regress the suspect endogenous X variable on its determinants. The residual vector of this regression is then used as an independent variable in the equation for Y. If the coefficient on the residual variable is significant (at 5%) in the second stage regression, then simultaneous equation estimation is validated. In the table below we report the pairwise tests, along with the estimated residual coefficient of the model.

		Residual Coefficient	*Std Error*	*T-Stat*	*Signif*
A: OWN in the BIND equation	*BINDa*	11.39788	0.00000	3.729E+10	0.00000
B: PAY in DBVAL equation		68.61268	1.34441	51.03563	0.00000
C: BIND in the DBVAL equation		-0.00022472	0.00044	-0.50757	0.61201
D: DBVAL in the PAY equation		0.11699	0.01880	6.22155	0.00000
E: BIND in the PAY equation		-0.00002	0.00006	-0.26389	0.79199
F: PAY in the TOBINQ equation		132.22157	41.31910	3.20001	0.00148
G: DBVAL in the TOBINQ equation		7.93416	0.97467	8.14037	0.00000
H: BIND in the TOBINQ equation		-0.02084	0.01918	-1.08690	0.27768
I: OWN in the TOBINQ equation		-0.00015	0.03741	-0.00401	0.99680
J: BIND in the OWN equation		2.76241	0.01293	213.71289	0.00000
A: OWN in the BIND equation	*BINDb*	23.49003	0.00000	5.614E+09	0.00000
B: PAY in DBVAL equation		81.34079	0.96843	83.99246	0.00000
C: BIND in the DBVAL equation		-0.00515303	0.00256	-2.01340	0.04469
D: DBVAL in the PAY equation		0.11310	0.01919	5.89235	0.00000
E: BIND in the PAY equation		0.00025	0.00034	0.73246	0.46428
F: PAY in the TOBINQ equation		136.30221	41.50796	3.28376	0.00111
G: DBVAL in the TOBINQ equation		7.92673	0.97180	8.15673	0.00000
H: BIND in the TOBINQ equation		-0.08472	0.04399	-1.92562	0.05480
I: OWN in the TOBINQ equation		-0.00130	0.03474	-0.03745	0.97014
J: BIND in the OWN equation		3.74161	0.44233	8.45886	0.00000

The variables are defined as follows: CEO ownership, OWN, is calculated as the number of shares owned by the CEO divided the total number of shares outstanding at the fiscal year-end. PAY is Jensen-Murphy pay sensitivities, calculated as *b*, where *b* is calculated from: Δ *(total CEO compensation)* = *a* + *b* Δ *(annual stock return).* The performance variable, TOBINQ is estimated as (market value of common stock + book value of preferred stock + book value of long-term debt) / (book value of total assets). BINDa is the tenure of directors relative to the CEO, or percentage of directors elected to the board before the CEO. BINDb is the proportion of outsiders on the board of directors, excluding the CEO. DBVAL, the leverage ratio, is equal to total long-term debt divided by total assets.

Table IX

Two- Stage Least Squares Results with Financial Firms Excluded

	Dependent Variable									
Independent Variables	*Board Independence*		*Debt/Value*		*CEO Ownership*		*Pay*		*Performance*	
	BINDa	*BINDb*	*BINDa*	*BINDb*	*BINDa*	*BINDb*	*BINDa*	*BINDb*	*BINDa*	*BINDb*
Constant	1602.00	537.30	9.973	13.557	-1.136	-167.079	-0.436	-0.454	-94.742	-109.831
	(0.427)	(0.608)	(0.652)	(0.459)	(0.999)	(0.873)	(0.674)	(0.662)	(0.576)	(0.505)
BIND			-0.00113*	-0.00244	-0.34375**	-0.62118**	-0.00004*		-0.0119**	
			(0.0976)	(0.594)	(0.011)	(0.036)	(0.092)		(0.021)	
DBVAL							-0.0085	-0.0096	-11.89***	-12.284***
							(0.628)	(0.599)	(0.000)	(0.000)
PAY			-21.61	-17.10					-134.44*	-124.024
			(0.129)	(0.118)					(0.0946)	(0.103)
OWN	-1.478**	-0.767**								
	(0.014)	(0.014)								
BSIZE	-0.181	0.757*							0.114	0.119
	(0.827)	(0.079)							(0.165)	(0.135)
DUAL	-5.437	9.193*			6.527	14.038***			-0.100	0.188
	(0.589)	(0.079)			(0.119)	(0.000)			(0.747)	(0.533)
TOBINLAG			-0.023**	-0.024**						
			(0.047)	(0.014)						
QUEBEC							-0.0016	-0.0006	-0.1546	0.078
							(0.500)	(0.796)	(0.718)	(0.840)
LISTING			0.08879	0.0850*	-4.1966**	-2.8671			0.850**	0.802**
			(0.1278)	(0.0807)	(0.0359)	(0.1685)			(0.033)	(0.035)
ASSET	0.00421*	0.00054	0.00006***	0.00006***	0.00121	0.00094	0.00000	0.00000		
	(0.065)	(0.649)	(0.004)	(0.001)	(0.257)	(0.384)	(0.885)	(0.923)		
SHRRTS	-9.2496**	1.5742	0.0027	0.0194	-5.8325***	-1.6452	-0.0010	-0.0009	-0.0044	0.0479
	(0.019)	(0.440)	(0.943)	(0.595)	(0.002)	(0.445)	(0.526)	(0.587)	(0.988)	(0.862)
RISK	0.0439	-0.1173	-0.0017	-0.0019	-0.0210	-0.1454	0.0000	0.0000		
	(0.849)	(0.328)	(0.447)	(0.286)	(0.851)	(0.149)	(0.888)	(0.973)		
IND	-6.8993	-6.2793***	0.0553	0.0223	-3.5303*	-5.9633***	0.0046**	0.0046**		
	(0.131)	(0.008)	(0.481)	(0.710)	(0.063)	(0.010)	(0.016)	(0.015)		
YEAR	-0.7789	-0.2237	-0.0049	-0.0066	0.0104	0.1160	0.0002	0.0002	0.0488	0.0562
	(0.440)	(0.669)	(0.659)	(0.470)	(0.984)	(0.823)	(0.671)	(0.660)	(0.565)	(0.496)
Adjusted R^2	-0.054	-0.516	-4.552	-2.733	0.063	0.016	0.024	0.020	-1.986	-1.806
p (F-Stat)	0.000	0.001	0.000	0.000	0.000	0.000	0.045	0.067	0.000	0.000

Table IX provides Two-Stage Least Squares estimates of the governance mechanisms and performance equations of the model:

$$BIND_t = a_{10} + \beta_{13}OWN_t + \beta_{16}BSIZE_t + \beta_{17}DUAL_t + \beta_{1.11}SHRRTS_t + \beta_{1.12}ASSET_t + \beta_{1.13}RISK_t + \beta_{1.14}IND_t + \beta_{15}YEAR_t + \varepsilon_1$$

$DBVAL_t = a_{20} + \beta_{21}BIND_t + \beta_{24}PAY_t + \beta_{28}TOBINLAG_{t1} + \beta_{2.10}LISTING_t + \beta_{2.11}SHRRTS_t + \beta_{2,12}ASSET_t + \beta_{2.13}RISK_t + \beta_{2.14}IND_t + \beta_{2.15}YEAR_t + \varepsilon_2$

$OWN_t = a_{30} + \beta_{31}BIND_t + \beta_{37}DUAL_t + \beta_{3.10}LISTING_t + \beta_{3.11}SHRRTS_t + \beta_{3.12}ASSET_t + \beta_{3.13}RISK_t + \beta_{3.14}IND_t + \beta_{3.15}YEAR_t + \varepsilon_3$

$PAY_t = a_{40} + \beta_{41}BINDa_t + \beta_{42}DBVAL_t + \beta_{49}QUEBEC_t + \beta_{4.11}SHRRTS_t + \beta_{4.12}ASSET_t + \beta_{4.13}RISK_t + \beta_{4.14}IND_t + \beta_{4.15}YEAR_t + \varepsilon_4$

$PAY_t = a_{40} + \beta_{42}DBVAL_t + \beta_{49}QUEBEC_t + \beta_{4.11}SHRRTS_t + \beta_{4.12}ASSET_t + \beta_{4.13}RISK_t + \beta_{4.14}IND_t + \beta_{4.15}YEAR_t + \varepsilon_4$

$TOBINQ_t = a_{50} + \beta_{51}BINDa_t + \beta_{52}DBVAL_t + \beta_{54}PAY_t + \beta_{56}BSIZE_t + \beta_{57}DUAL_t + \beta_{59}QUEBEC_t + \beta_{5.10}LISTING_t + \beta_{5.11}SHRRTS_t + \beta_{5.15}YEAR_t + \varepsilon_5$

$TOBINQ_t = a_{50} + \beta_{52}DBVAL_t + \beta_{54}PAY_t + \beta_{56}BSIZE_t + \beta_{57}DUAL_t + \beta_{59}QUEBEC_t + \beta_{5.10}LISTING_t + \beta_{5.11}SHRRTS_t + \beta_{5.15}YEAR_t + \varepsilon_5$

P-values are given under each coefficient - * indicates significance at 10% level, ** significance at 5% level, and *** significance at 1% level.
We estimate the model using both measures of board independence (BINDa and BINDb), which are reported in alternate columns. BINDa is the tenure of directors relative to the CEO, or percentage of directors elected to the board before the CEO. BINDb is the proportion of outsiders on the board of directors, excluding the CEO. DBVAL, the leverage ratio, is equal to total long-term debt divided by total assets. CEO ownership, OWN, is calculated as the number of shares owned by the CEO divided the total number of shares outstanding at the fiscal year-end. PAY is Jensen-Murphy pay sensitivities, calculated as *b*, where *b* is calculated from: Δ *(total CEO compensation)* $= a + b\ \Delta$ *(annual stock return).* The performance variable, TOBINQ is estimated as (market value of common stock + book value of preferred stock + book value of long-term debt) / (book value of total assets). BSIZE is the number of board members. DUAL is a dummy variable equal to 1 if the CEO is also the Chairperson, and 0 otherwise. SHRRTS equals 0 when the firm has dual or multiple class shares outstanding and 1 otherwise. LISTING is a dummy variable equal to 1 if the firm is also listed on a U.S. stock exchange and 0 otherwise. QUEBEC equals 1 when the firm is Quebec-headquartered and 0 for firms headquartered in the rest of Canada. ASSET is total assets divided by one million. RISK is the firm's one-month stock price volatility. IND is a dummy variable equal to 1 for resource corporations (i.e. metals, mining, oil, gas), and 0 otherwise. TOBINLAG, the one-year lagged Tobin's Q.

Appendix 1 - Definition and Source of Variables

	Definition	*Source*
BINDa	Relative tenure of directors to the CEO: the percentage of the rest of the board elected before the CEO	Proxy statements (Sedar)
BINDb	Proportion of outsiders on the board: the percentage of the board (excluding the CEO) employed by the firm	Proxy statements (Sedar)
DBVAL	Total Long-term debt / Total Assets	Reuters
PAY	Jensen-Murphy Pay-performance sensitivity	Compensation data: proxy statements (Sedar) Variables for calculating option values: datastream, and Bank of Canada
TOBIN	Tobin's Q	Reuters,Bloomberg
OWN	Percentage of the firm's outstanding shares owned by the CEO at the fiscal year end	Proxy statements (Sedar) & Financial Post
BSIZE	Total number of board members	Proxy statements (Sedar)
DUAL	CEO duality: dummy variable equal to 1 if the CEO is also the Chairperson, and 0 otherwise	Proxy statements (Sedar)
SHRRTS	Shareholder rights: dummy variable equal to 0 if the firm has multiple class shares, and 1 otherwise	Proxy statements (Sedar)
LISTING	Cross-listing: dummy variable equal to 1 if the firm is also listed on a U.S. stock exchange, and 0 otherwise	TSX Review
QUEBEC	Quebec headquartered firms: dummy variable equal to 1 if the firm is headquartered in Quebec, and 0 otherwise	Proxy statements (Sedar)
ASSET	Firm Size: Total Assets / 1,000,000	Reuters
RISK	Monthly stock price volatility	Datastream
IND	Industry: dummy variable equal to 1 for resource corporations (i.e. metals, mining, oil, gas), and 0 otherwise	Financial Post
YEAR	Fiscal year for all variables reported	Proxy statements (Sedar)

Appendix 2 - List of Companies in the Sample

1	Aastra Technologyies Limited	33	FNX Mining Company Inc.	65	Patheon Inc.
2	Aber Diamond Corporation	34	Fortis Inc.	66	Rio Narcea Gold Mines, Ltd.
3	Aeterna Zentaris Inc.	35	Gabriel Resources Ltd.	67	RONA inc.
4	Agricore United	36	Gammon Lake Resources Inc.	68	Rothmans Inc
5	Algoma Steel Inc.	37	Geac Computer Corporation Limited	69	Russel Metals Inc.
6	Alimentation Couche-Tard Inc.	38	Gennum Corporation	70	Saputo Inc.
7	Alliance Atlantis Communications Inc.	39	Gildan Activewear Inc.	71	ShawCor Ltd.
8	Angiotech Pharmaceuticals, Inc.	40	Golden Star Resources Ltd.	72	ShawCor Ltd.
9	Aur Resources Inc.	41	GSI Group Inc.	73	Sierra Wireless, Inc.
10	Bema Gold Corporation	42	Home Capital Group Inc.*	74	Sino-Forest Corporation
11	BlackRock Ventures Inc	43	Husky Injection Molding Systems Ltd.	75	St. Lawrence Cement Group Inc.
12	Cambior Inc.	44	ID Biomedical Corporation	76	Stratos Global Corporation
13	Canadian Utilities Limited	45	Inmet Mining Corporation	77	Tesco Corporation
14	Canadian Western Bank*	46	International Forest Products Limited	78	The Forzani Group Ltd.
15	Canfor Corporation	47	Intertape Polymer Group Inc.	79	TLC Vision Corporation
16	Canico Resource Corp.	48	Ivanhoe Energy Inc.	80	Toromont Industries Ltd.
17	Cascades Inc.	49	Ivanhoe Mines Ltd.	81	Transat A.T. inc.
18	CCL Industries Inc.	50	Laurentian Bank of Canada*	82	Transcontinental Inc.
19	CFM Corporation	51	Linamar Corporation	83	Trican Well Service Ltd.
20	CHC Helicopter Corporation	52	LionOre Mining International Ltd.	84	TSX Group Inc.
21	Cinram International Inc.	53	MacDonald, Dettwiler and Associates Ltd.	85	Tundra Semiconductor Corporation
22	Cogeco Cable Inc.	54	Maple Leaf Foods Inc.	86	TVA Group Inc.
23	Crystallex International Corporation	55	Martinrea International Inc.	87	Van Houtte Inc.
24	Dorel Industries Inc.	56	Mega Bloks Inc.	88	Vasogen Inc.
25	Dundee Corporation*	57	Minefinders Corporation Ltd	89	Vincor International Inc.
26	Eldorado Gold Corporation	58	Neurochem Inc.	90	West Fraser Timber Co. Ltd.
27	Empire Company Limited	59	Nevsun Resources Ltd.	91	Western Silver Corporation
28	Enerflex Systems Ltd.	60	Niko Resources Ltd.	92	Wheaton River Mineral Ltd.
29	Extendicare Inc.	61	Northgate Minerals Corporation	93	Zarlink Semiconductor Inc.
30	First Calgary Petroleums Ltd.	62	NovaGold Resources Inc.	94	ZENON Environmental Inc.
31	First Quantum Minerals Ltd	63	Pan American Silver Corp.		
32	Firstservice Corporation	64	Paramount Resources Ltd.		

* Financial firms excluded from the sample in robustness tests