The Impact of the 1995 TSE *Corporate Governance Guidelines* on the Performance of Canadian Companies: A Simultaneous Equation Approach

Christine Panasian

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ABSTRACT

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This study is aimed at testing the impact of the 1995 *Corporate Governance Guidelines* adopted by the TSE on the performance of Canadian firms. This is accomplished by modeling the joint determination of three alternative internal agency control mechanisms: board composition, ownership structure and debt, together with firm performance in a simultaneous equation framework employing three-stage least-squares methodology. We find that the balance of forces has shifted in the post guidelines period to an increasing monitoring role attributed to boards of directors as both their composition and size become significant determinants of firm performance (as measured by Tobin's Q).

Furthermore, the test performed on a 5-year pooled sample, three years from the pre-guidelines period and two years from the post-guidelines period, shows that the proposals in the *Corporate Governance Guidelines* adopted by the TSE in 1995 had a positive impact on the performance of these firms. Incorporating a dummy variable in the board composition equation that takes on a value of one after the adoption of the guidelines and zero before, the results from a 3SLS system confirm that the adoption in 1995 of the *Corporate Governance Guidelines* is associated with an increase in outside

representation on the boards. An interaction variable between the above mentioned dummy and the percentage of outsiders in the firm performance equation confirms that TSE regulation prompted a rise in outsiders on boards, which consequently led to a significant improvement in their role as corporate monitors.

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I. INTRODUCTION

Following the momentum created in 1993 by the Cadbury Committee in Great Britain and the Treadway report in United States, The Toronto Stock Exchange (TSE) nominated a committee under the leadership of Peter Dey to assess the corporate governance practices of Canadian Corporations. The committee proposed a set of 14 guidelines for improved corporate governance that was entirely voluntary for Canadian corporations. Two years later, in May 1995, the TSE adopted the Dey Committee recommendations as a listing requirement, where companies had to specify, either in the annual report or in the proxy statement, their specific corporate governance practices with reference to each of the guidelines, and, where company practices differed from the specified guidelines, an explanation of the differences was required. The three major recommendations of the report pertain to the composition of the board of directors, where a majority of unrelated directors is required, the independence of the board of directors from management by assigning the functions of Chair of the Board and Chief Executive Officer to two separate individuals, and the reduction of the board size to a number of directors which facilitates more effective decision-making. The rest of the report addresses the issues of appointing, orienting and training the board members with emphasis on the importance of board independence and its ability to function autonomously of management.

The motivation of the TSE governance principles, similar to those of the Cadbury Committee's Code of Best Practices (UK), was to promote strong and viable

corporations, and to assist the competitive position of Canadian companies in local and international markets by strengthening governance practices.

> 'We believe that effective corporate governance will, in the long run improve corporate performance and benefit shareholders. Improved corporate performance is not only in the best interests of shareholders, but also serves the public interest generally' (*Dey Report*, Dec.1994, p.2).

At the same time, TSE guidelines are not mandatory rules. Thus, TSE acknowledges that a "one size fits all" approach to governance practices cannot be efficient as many forces interact to determine the optimal level of operation for a corporation. The only requirement of the TSE is that companies disclose the actual governance practices and how they relate to the guidelines, and, in cases where the company's system differs from any of the specified guidelines an explanation is required. We focus the attention of this study on two key recommendations of the Dey committee: composition of the boards of directors and independence of board from management. With respect to the first issue, composition of the board, the guidelines specify that the board should be constituted with a majority of unrelated directors. An "unrelated director", is defined by the TSE guidelines as *"a director who is independent of management and is free from any interest and any business or any other relationship which could, or could reasonably be perceived to materially interfere with the director's ability to act with a view to the best interests of the corporation, other than interests and relationships arising from shareholdings"*.

The second issue of major interest is the independence of the board of directors from management. This is undertaken in the guidelines by the requirement that the positions of Chair of the Board and Chief Executive Officer be held by separate individuals.

The rationale behind these recommendations is that a board composed of more independent directors is better at performing the important monitoring function assigned to the board. Similarly, a board having a Chair who is not at the same time the company's CEO is expected to be more effective in supervising the actions of management and pursue the best interests of shareholders. These arguments are very much in line with the recent trends toward greater board independence: the Cadbury Committee in U.K. had similar recommendations in their Code of Best Practice, CalPERS[1] recommends a "substantial majority" of independent directors in U.S. boards[2] and the Australian Investment and Financial Services Association proposed that "The board of directors of a listed company should be constituted with a majority of individuals who qualify as independent directors" (IFSA 1999)[3]. Conventional wisdom dictates that a more independent board will perform a better function of management oversight, which in turn will result in shareholder wealth maximization. Furthermore, a very large number of empirical studies[4] in this field assume a direct relationship between board composition and firm performance.

This study brings additional evidence on the role and monitoring efficacy of the corporate boards of directors and their characteristics, by analyzing the impact of the TSE recommendations of 1995 on the performance of public Canadian companies. The main focus of the study is to evaluate the impact of the 1995 TSE *Corporate Governance*

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[1] CalPERS – California Public Employees' Retirement System, institutional investor, regarded as a leader in shareholder activism.

[2] See Adam Bryant, *CalPERS Draws a Blueprint for its Concept of an Ideal Board*, N.Y. TIMES, June 17, 1997(D5).

[3] See Lawrence J. and G. Stapledon, Is *Board Composition Important? A Study of Listed Australian Companies*, Working Paper, University of Melbourne.

[4] See Rosenstein and Wyat (1997), Barnhart and Rosenstein (1998), Weir and Lang (2002), Dahya, McConnell and Travlos (2002).

Committee Report, which marked a new era of increased attention to the responsibilities of Canadian boards as monitors of managerial initiatives.

This paper extends the related literature by using a new data set of the Canadian market and thus, re-examines this issue in an international context. As a number of more recent empirical papers suggest, the joint determination of the various alternative mechanisms leads to misspecification of single equation regression models relating board composition to firm performance and other control mechanisms. While a greater percentage of outside board members may result in improved corporate performance, it is also possible that more profitable firms may appoint more outside board members for political or other reasons (Agrawal and Knoeber, 1996). Similarly, all else being equal, the presence of a large-block equity-holder will have a positive impact on the market value of the firm, (Shleifer and Vishny, 1986) and at the same time, large institutional shareholders' main selection criteria for investment targets is based on performance measures of these targets. Jensen and Meckling (1976) and Jensen (1986) argue that increasing the use of debt reduces the agency costs of external equity, which leads to increase of shareholder wealth, while the "pecking order" theory (Myers and Majluf, 1984) posits that more profitable firms will decrease their demand for debt as more internal funds are available for financing investment. To control for these joint determination issues we specify a simultaneous-equation approach (three stage least squares, 3SLS) intended to capture the direction of causality between governance variables and performance. The key corporate governance mechanisms: board composition, ownership structure and debt, together with firm performance (measured by Tobin's Q) are endogenous variables. Thus, our system consists of four equations with

four endogenous variables. The model also includes several variables intended to capture the effects of alternative corporate governance mechanisms, like market for corporate control (proxied by industrial classification of the sample firms) and other control variables intended to control for differences among sample firms (size, profitability, etc.). The empirical test uses a cross-sectional time-series sample of 1272 firm-years of data.

The results show that before the adoption of the *Corporate Governance guidelines* in 1995, the percentage of outside directors on Canadian boards was not a significant determinant of performance and ownership structure was found to have a non-linear relation to firm performance. The negative coefficient of the ownership concentration variable in the board composition equation shows that these two mechanisms are complementary, meaning that increasing the use of one decreases the dependence on the other. When the same model is applied to the data after the adoption of the guidelines we find that the percentage of board outsiders becomes a significant determinant of performance, showing a positive coefficient. The curvilinear relationship of ownership structure with performance is also present in the post-guidelines years. Further, we find that outside board representation increased in the years following the adoption of the *Corporate Governance Guidelines*. Moreover, we document a positive coefficient for the interaction variable between outside board proportion and a dummy variable introduced to capture the time period following the adoption of the *Corporate Governance guidelines* in 1995. This latter finding implies that the sensitivity of firm performance to outside board representation increased following the governance regulations adopted by the TSE.

The remainder of the paper is organized as follows. Section II provides the theoretical foundations of the agency theory and the role of the board of directors. Section III provides a detailed literature review. In section IV the corporate governance in the Canadian context is described while section V presents a description of the sample selection and its characteristics (descriptive statistics). Section VI describes the methodology. Section VII presents the results and their interpretation. Section VIII provides a summary and concludes the study.

II. THEORETICAL FOUNDATIONS

The prevalent form of North-American corporate enterprise is the limited liability public corporation which has led to the growth of a widely dispersed form of corporate ownership, where a large number of individual investors own the voting shares of the company. Although ownership concentration of Canadian firms is higher than that in the US[5], the same general system applies and the same issues arising from it are applicable.

This paper addresses the peculiarities of the Canadian market and tries to point out where specific differences between the two countries might influence the balance of corporate governance mechanisms in mitigating agency costs. The diffused form of ownership has some distinct advantages. In particular, relatively small investments can be made in a number of corporations, so the individual investor can achieve the benefits of diversification, while with limited liability, the investor can lose no more than what he paid for the equity stock of the corporation. Moreover, the liquidity of the markets ensures that corporate equity can be readily bought and sold in the marketplace with very low transaction costs. But there are a number of agency costs associated with diffused ownership and these arise from the separation of ownership and control. As managers are themselves utility maximizers, they have an incentive to increase their own wealth by consuming perquisites, to the detriment of the wealth of shareholders. Since the cost of monitoring for individual atomistic shareholders is high relative to the benefits, these conflicts of interests generate costs to the owners. The way these costs are controlled is the subject matter of corporate governance. Thus, the main reason for the existence of corporate governance mechanisms is the reduction of the agency costs created by the

[5] See Mork K. Randall and Stangeland A. David, 1996 "On the Mercantilist Objective of Canadian State-Owned Enterprises", *Canadian Journal of Economics*, April, p.249-255.

divergence of interests between shareholders and managers. The corporate governance mechanisms can be divided into two categories: internal mechanisms, the use of which is decided by the firm's internal decision makers and over which the firm itself has control, and external mechanisms imposed by the market, which are not controllable from within the organization, but are determined by outside parties. External monitoring activities that help align manager's interests with the shareholders are the managerial labor market, market for corporate control and the product and factor markets. The alternative internal mechanisms of control most often used in the corporate finance literature are the composition and role of the board of directors, insider ownership, ownership structure[6] of the firm, debt and dividend policies. Because the TSE listing requirements adopted in 1995 concern mainly the role and efficiency of the boards, this paper examines primarily their role and its interaction with the other two major internal mechanisms: debt and ownership structure, in a simultaneous equation framework.

The Board of Directors

The board of directors is an essential part of the corporate governance structure as they provide the link between the owners, who provide the capital, and managers, who use the capital to create value. It can be said that the strength, and even endurance, of a corporation depends to a great extent on the effectiveness of its board of directors.

Legally, directors are charged with two duties: duty of loyalty and duty of care. *Duty of loyalty* entails that directors must prove unyielding loyalty to the company's shareholders. The *duty of care* refers to the fact that directors must exercise due diligence

[6] It can be argued that ownership structure is an external mechanism, as the corporation has no influence on who buys their shares. But ultimately, when shareholders of a publicly held corporation agree to a secondary distribution, they are, in effect, deciding to alter the ownership structure of their firms. (Demsets, 2001).

in all decisions they make, meaning that they have to uncover as much information as possible to the issue at hand and to be able to show that they considered all reasonable alternatives when reaching a decision[7]. Thus, according to both theoretical and legal definitions, the board's main reason for existence is to oversee management actions, to select the executives that do the best job and to fire the ones that not.

The board's effectiveness in performing this central supervisory role is assumed to be strongly dependent on its composition. In general, boards include directors that are executives of the company as well as directors from outside the company. The strength of the board in performing its functions is thought to be largely dependent on the optimal mix of insiders and outsiders. Outsiders contribute expertise and objectivity, while insiders provide valuable information about the firm's activities (Byrd and Hickman, 1992).

Since inside board members are top officers in the corporation, it is conceivable that their capacity to monitor managerial decisions may be compromised. A conflict of interest arises in the role of insiders as their fundamental duty to monitor management is challenged by their dual role as management and as monitors of management. It can be easily argued that their objectivity is seriously hampered. Therefore, the recent shift in North America towards more independent board members has solid theoretical foundations since a strong, independent board should enhance the oversight role of monitoring management activities with direct consequences on shareholder's wealth. Surprisingly though, available empirical evidence does not support entirely this hypothesis, as results are mixed. A detailed literature review of this issue will be discussed later in section III.

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[7] See Robert A. G. Monks and Nell Minow, *"Corporate Governance"* (2000)

Another characteristic of the board of directors that has been analyzed in relation to the performance of the board is its size. Although the board's ability for monitoring increases as more directors are added to the board, the incremental gain can be offset by the loss in communication and cohesiveness of the board (Yermack, 1996).

Stock ownership by the board can also potentially be an important variable in the analysis of board characteristics on performance, as more stock ownership by the board aligns more closely their interests with those of the shareholders. Presumably, the extent of directors' role in disciplining officers is positively related to their equity stakes in the firm (Morck, Shleifer and Vishny, 1988).

Ownership Structure

The structure of ownership concentration of the firm is often seen as another potentially powerful mechanism for controlling agency problems. This became clearer in the late 80's as the decline in takeover activity and rise in institutional holdings accentuated the role and importance of shareholder activism in disciplining management and realigning their interests with those of the shareholders, as noted extensively in the U.S. studies. Therefore, a higher concentration of ownership, as the one present in the Canadian market with many equity block holders and institutional investors, could be a substitute mechanism of control for the board and thus, would have a decreasing effect on the role of the board. Shleifer and Vishny (1986) predict that, all else being equal, the presence of a large-block equity holder will have a positive impact on the market value of the firm, by increasing asset utilization efficiency. It is interesting to see if the substitution effect between the two mechanisms is observed empirically by looking at Canadian data and comparing it to results of U.S. studies.

Debt

The capital structure of the firm can also be a potential substitute agency-cost controlling mechanism. Jensen and Meckling (1976) argue that increasing the use of debt reduces the agency costs of external equity. They prove that using debt reduces the need for external equity and thus, reduces the extent of management-stockholder conflicts. Furthermore, Jensen (1986) suggests that debt bonds managers to pay out future cash flow in the form of fixed payments, and in doing so, reduces agency costs by reducing the cash flow available for spending at the discretion of managers. He also states that the potential loss of control through bankruptcy and reorganization associated with increased leverage make debt a powerful and effective monitoring mechanism. Additionally, the presence of debt results in external monitoring by bondholders, other lenders, investment bankers and bond rating services. Moyer, Chatfield and Sisneros (1989) found that the use of financial leverage is associated with fewer analysts following a firm, indicating substitutability between alternative monitoring mechanisms.

III. LITERATURE REVIEW

The role of boards of directors has been the subject of significant research in the financial and economic literature. Although having a board is one of the legal requirements of incorporation, the main reason for the existence of the boards is to help solve agency problems inherent in managing a public corporation where the ownership and control are concentrated in different hands. An exact formal structural model by which boards control these agency problems does not exist yet in the economic theory. This theoretical vacuum has been filled by numerous empirical studies, which assume that firm value depends on the quality of monitoring and decision making by the boards. In particular, board characteristics such as composition and size, are important determinants of its performance. We will review in this section the major studies in this area and analyze their findings in the context of the agency theory.

The most prevalent strand of research in this literature relates the characteristics of the boards (e.g. composition, size) to the performance of the firm as measured by stock returns, ROA, ROE, or Tobin's Q. The most widely debated question regarding boards is if having more outside directors on the board is associated with better firm performance. A number of papers have addressed this question by examining the contemporaneous correlation between measures of corporate performance and the proportion of outside directors on the board.

Hermalin and Weisbach (1991) analyze the differences in firm performance caused by board composition and ownership structure. By using average Tobin's Q to

measure performance as an independent variable in a simple linear regression they fail to find any significant relationship between percentage of outsiders on the board and performance. However, they argue that there should not be a relation between board composition and performance cross-sectionally, in equilibrium, if the boards are optimally weighted between insiders and outsiders. Conversely, they find a strong relationship between ownership structure and performance measures. Similarly, MacAvoy et. al. (1983), and Bhagat and Black (2000) both report insignificant relations between accounting performance measures and the fraction of outside directors on the board.

Baysinger and Butler (1985) find weak evidence that firms with a higher percentage of outsiders on the board in 1970 had a higher industry-adjusted return on equity in 1980. In contrast, Yermack (1996) reports a negative relationship between the proportion of outside directors and Tobin's Q. Weir, Lang and McKnight (2002) analyzed the impact of the Cadbury Committee's Code of Best Practice on U.K. firms in relation to some corporate governance recommendations. They find that the presence of non-executive independent directors on the board had a positive (significant at the 5% level) influence on performance, measured by the Q ratio.

More evidence in this area has been brought by a different approach that measures the impact on firm value of changes in board composition. Rosenstein and Wyatt (1990) examine the stock price reaction on the announcement of an addition of an outside director. Their finding shows that on average, there is a statistically significant increase of 0.2% of the stock price on the announcement of outsider appointments.

A number of studies seek to analyze the indirect relationship between board composition and some discrete board tasks such as CEO turnover, executive compensation, responding to hostile takeovers, etc. Weisbach (1988) finds that performance measures are more highly correlated with CEO turnover for firms in which outsiders dominate the board than for firms in which insiders dominate. Thus, he concludes that outsider dominated boards increase firm value through their CEO changes. In a similar study Dahya et. al. (2001) empirically investigate the relationship between top management turnover and corporate performance for a sample of 460 U.K. firms before and after the issuance of the Cadbury Report. They determine that the relationship between corporate performance and top management turnover is statistically significant both before and after the adoption of the Cadbury recommendations, and that the poorer the performance, the higher the turnover. Moreover, their study found that this relationship is significantly stronger following the adoption of the committee's recommendations. These results support the argument that the Cadbury recommendations have improved the board oversight in the United Kingdom.

Byrd and Hickman (1992) examine the association between the characteristics of the boards of directors of bidding firms and the shareholder wealth effects of tender offer bids. They document that less negative returns to shareholders are associated with boards in which the majority of directors are independent. Therefore, they conclude that their evidence is consistent with the claim that independent boards of directors benefit shareholders. Shivdasani (1993) examines the characteristics of the board of directors and the ownership structure of the firms that receive hostile takeover bids, in search of evidence on the nature of their failure. Those findings indicate that both board of

directors characteristics and ownership structure are significant determinants of the probability that a firm is a target of hostile takeover attempts. This is consistent with the view that hostile takeovers provide discipline when internal governance mechanisms, such as the effectiveness of the board of directors, fail to control the non-value-maximizing behavior of management. The evidence brought by Shivdasani's paper complements the analysis by Morck, Shleifer and Vishny (1989) who find that firms in healthy industries that under-perform their industry counterparts are more likely to have an internally generated CEO turnover, thus, proving that boards are responsive to poor performance.

Given the inconclusive results of the empirical literature on the effectiveness of outside directors on the board, it is surprising to see the advocacy of independent boards still present in recent developments of corporate governance requirements around the world. Corporate boards are increasingly being dominated by independent outside directors, fact reaffirmed in the New Proposed Corporate Governance Requirements for NYSE and NASDAQ in June, 2002. These proposals, which are part of a national move to reform the way corporations are governed, in the wake of Enron and other highly publicized business problems, are mainly intended to enhance the role of corporate boards in general, and of the outside board members in particular. In connection with these NYSE and NASDAQ initiatives, TSE seeks to undertake in Canada a second phase of corporate governance reforms that adopts measures in Canada similar to the provisions

of the Sarbanes-Oxley Act[8] of 2002, recommended changes in NYSE listing standards and pending SEC proposals.

The size of the board of directors is another board characteristic that has generated interest in the governance literature and it has produced clearer results. Jensen (1993) suggested that large boards can be less effective than small boards, as larger boards exhibit less cohesion, resulting in increasing agency problems. Yermack (1996) tests this notion empirically and finds a significantly negative relationship between board size and Tobin's Q. His result implies that reducing the board size may reduce the level of agency costs and improve corporate governance of a firm.

A number of more recent empirical papers have recognized that performance and governance mechanisms are jointly determined and have used simultaneous equations modeling, such as two and three-stage least squares to model the relationships between firm valuation and corporate governance variables. Agrawal and Knoeber (1996) consider a set of seven control mechanisms that are expected to mitigate agency problems: the use of debt, the labor market for managers, the market for corporate control, insider shareholdings, institutional shareholdings, block holdings and the use of independent board members. By designing a simultaneous equation model to assess the joint determination of these mechanisms they surprisingly find that more outsiders on the board *negatively* affect performance. A possible explanation given by the authors is that outsiders are added on boards for political reasons and they reduce performance directly or proxy for the underlying political constraints that led to their board memberships. Barnhart and Rosenstein (1998) examine firm performance, managerial ownership and

[8] Sarbanes-Oxley Act of 2002 is a major reform package mandating changes Congress has imposed on the business world and has a primary purpose protecting investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws.

board composition within a three-equation simultaneous system and also find that the percentage of outsiders on the board is negatively related to performance, but in general their specification lends support to the hypothesis that managerial ownership, board composition and performance are jointly determined. Another study that endogenizes ownership structure and executive compensation in analyzing its effect on corporate value is by Chung and Pruitt (1996). Their results show that Tobin's Q and CEO ownership are strongly positively related and also executive compensation exhibits a strong and positive correlation with Tobin's Q.

IV. CORPORATE GOVERNANCE IN THE CANADIAN CPNTEXT

Overall, the empirical evidence relating corporate performance with governance mechanisms, and especially with the composition of the boards of directors, is so far mixed and un-conclusive. This is in part due to the complicated dynamics having to do with the endogeneity of the boards and of other governance mechanisms and in part to the lack of theoretical background in the area. This study presents additional evidence from the Canadian market by integrating the simultaneous nature of board composition, ownership structure, debt and performance into an empirical investigation.

It is important to note that due to Canada's close proximity and its strong trading ties with the US, its economy is often compared with that of the United States. Although in general market and economic conditions are very similar in the two countries, there are significant differences between the Canadian and the US economy, which have an important impact on the corporate governance structure of these countries. First, there is the obvious difference in size and second the less diversified nature of the Canadian economy compared to the one in the US. Furthermore, the ownership structure of the Canadian firms is markedly different than the comparatively well-studied US companies.

The nature of corporate ownership in Canada has changed significantly over the past decade with the replacement of the retail investor by the institutional investor as the major player in Canadian equity markets.[9] With respect to size, both the assets and equity ownership of institutional investors have increased significantly over the past several decades. In 1990, institutional shareholders owned 37.2% of all Canadian-based

[9] J.G. MacIntosh, "The Role of Institutional and Retail Investors in Canadian Capital Markets", (1993), 32 *Osgoode Hall* L.J. 371.

corporations of the Toronto Stock Exchange.[10] By far the majority of institutional equity was held by trusteed pension plans, which represent 21.9% of the TSE300 in 1990.[11] These represent significant increases over historical asset and equity levels in years dating back to 1961.[12]

Total dollar value of assets and shares for Canadian institutional investors: [13] are presented in Table 1.

Unlike individual shareholders, institutional investors are intermediaries investing assets on behalf of beneficiaries. In a trust context, institutional investors must comply with fiduciary duties of prudence and loyalty, which require that investment decisions be made in the best interest of the beneficiaries.[14] Alternatively, institutional investors act as agents on behalf of the collective interest of the *real* owners of capital. The result is that the agency model and differentiation of interests between management and owners becomes more complex as owners are replaced by agents representing their collective interests in the market.[15] These unique characteristics of the institutional investor as fiduciary and investor in a broad cross-section of the Canadian economy could imply a diminished role for monitoring by the board of directors, assuming that ownership concentration is an effective substitute for independent board monitoring. This is the

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[10] TSE Review, December 2001; Statistics Canada *ibid.* The TSE is represented here as a proxy for the Canadian market.
[11] OECD - "Recent Trends: Institutional Investor Statistics" (September 2001) 80 Financial Market Trends, 46.
[12] Gil Yaron, "Canadian Institutional Shareholder Activism in an Era of Global Deregulation" 2002, *www.share.ca.*
[13] These figures do not include investments through various pooled and indexed funds, which are significant given that many plans use indexation as strategy. See MacIntosh (1993), supra note 7 at p.443.
[14] These fiduciary duties have evolved, albeit slowly overtime and continue to respond to changes in investment practices. See Gil Yaron, "The Responsible Pension Trustee: Re-Interpreting the Principles of Prudence and Loyalty in the Context of Socially Responsible Institutional Investing" (June 2001) 20 (4), *Estates, Trusts & Pensions*,J.305.
[15]James P. Hawley & Andrew T. Williams, "The Rise of Fiduciary Capitalism" (Phyladelphia: University of Pennsylvania Press, 2000)

finding of Dalton and Kesner (1987)[16], who observe that for Japan, ownership concentration, especially for banks, tends to be high. Specifically, they find that the proportion of outside directors in Japan is lower than in the U.S. and UK where ownership concentration is considerably lower. All this analysis suggests that the particular external and internal corporate governance environment of the firm may influence board structure and firm performance.

Another interesting feature of the Canadian economy that has possible impact on the corporate governance structure of this country is the weaker Canadian takeover market compared to the one in the US. This is due mainly to the more concentrated ownership structure of the Canadian market, which inhibits takeover attempts. As the takeover market is the principal external agency control mechanism, a feeble corporate control market enhances the role of the internal mechanisms aimed at reducing agency costs. Therefore, given the interdependence of the internal and external corporate control mechanisms the relatively weaker activity in the market for corporate control in Canada has the potential to alter the use and effect of the other internal control mechanisms.

Finally, Canada offers a unique opportunity to study the effects of a major corporate governance reform, offered by the governance and disclosure requirements that were adopted in 1995 by the Toronto Stock Exchange. In the late 80's and early 90's Canada witnessed the failure of a number of major financial institutions. These failures contributed to a wide-ranging, vigorous but disorganized debate on the quality of governance in Canada. After the international impact of the Cadbury Committee in the UK, Peter Dey, then Chairman of the Ontario Securities Commission felt that it was

[16] Dalton, D.R., I.F. Kesner, 1987, Composition and CEO Duality in Boards of Directors: An International Perspective, *Journal of International Business Studies* 18, 33-42.

timely to do a similar review in Canada. With financial support form the TSE the steering committee was formed, submissions were solicited, and hearings were held across Canada, leading to the report in 1994 written by Mr. Dey, that was called The Dey Report. The report established standards of corporate governance for Canadian Corporations.

V. SAMPLE AND DATA DESCRIPTION

Since this study focuses on the impact of the 1995 TSE *Corporate Governance Guidelines* the initial data set for the study consists of firms in the 1995 TSE300 index. The index is comprised of the 300 largest Canadian companies listed on the exchange. The same set of companies was followed from 1993 through 1997 inclusive, regardless of wether they were part of the index or not in the years prior to or following 1995. In 1995 the total market value of the TSE300 index was $401.7 billions, which represented approximately 45% of the Canadian market value at that time. For each of the 300 companies, data on board of director variables (composition, size, CEO/Chair of the board duality, share ownership by the board) and ownership structure variables such as percentage of stock owned collectively by the stockholders with 10 percent of more of the total firm equity, were collected from the companies' proxy statements. Proxy statements from 1993 to 1996 inclusively were available in the Toronto Public Library on microfiche, and from 1997 in SEDAR (the System for Electronic Document Analysis and Retrieval). The resulting sample is composed of a total of 274 firms with data on board composition and ownership variables available for each of the 5 years. Next, for all the firms in the sample, accounting variables were obtained from the COMPUSTAT database. The resulting sample of companies with data available for analysis was 268 in 1993, 269 in 1994, 254 in 1995, 241 in 1996 and 240 in 1997, for a total of 1272 firm-year observations. Though our sample is biased towards larger Canadian companies, given that the TSE300 index represented approximately 50 percent of the Canadian economy in 1995, we consider it a representative sample of publicly traded firms in

Canada. There is no new listing bias as companies that were part of the index in 1995 had to be in existence two years before. They were included in the sample even if they were not part of the index in previous years. The sample may suffer from a survivorship bias in 1996 and 1997, as companies that were either acquired, merged or went bankrupt are not included in the sample after 1995.

The directors were classified, as suggested in the guidelines, either as related or unrelated. The definition of an "unrelated" director as given by the Dey Committee was carefully applied to each director in the sample. The Dey committee defines an "unrelated" director *"a director who is independent of management and is free from any interest and any business or any other relationship which could, or could reasonably be perceived to materially interfere with the director's ability to act with a view to the best interests of the corporation, other than interests and relationships arising from shareholdings"*.

Thus, for this study, unrelated board membership is calculated as the number of unrelated directors as a percentage of all directors on the board. Data from another variable gathered from proxy statements is outside blockholdings, which is defined as the percentage of shares held by owners of 10 percent or more of the equity (the disclosure requirements in Canada are for the holders of 10 percent or more of the total common shares of the company). Board size is simply the total number of directors comprising the board. Director's shareholdings, as reported in the proxy statements, include all shares owned by the directors and their immediate family members, either officers of the firm, affiliated directors or independent.

Table 2 exhibits an overview of the board composition variables for each of the years analyzed. The proportion of outside directors ranges from 0% to 88.82%, with a mean of 49.12% in 1993, while in 1997 it ranges from 18% to 100% with a mean of 66.42%. Thus, it can be seen that the mean number of unrelated directors on Canadian boards increased from 1993 to 1997, possibly as a result of the adoption of the *Corporate Governance Guidelines.*

A difference in means test shows that the mean number of unrelated directors in 1997 is significantly larger than the mean in 1993 (t-statistic = -11.77, Wilcoxon Z = 6.40) (See **Table 5**).

Table 3 presents data on all board of directors' variables of the sample: board size, percentage of unrelated directors, percentage ownership by the directors and the ownership structure represented by the total percentage ownership held by shareholders of 10 percent for the two years, 1993 and 1997, with their respective descriptive statistics.

The average board size was 10.9 members of the board in 1993 and 10.6 in 1997 indicating no major changes in this variable over the years. Furthermore, the average board size seems to be similar to that reported for the US. Shivdasani and Yermak (1999) report a median board size of 11 for a random sample of 341 US firms.

When directors are divided into two classes related and unrelated, as per the Dey report, we find that the average proportion of unrelated directors on sample firms' boards increased substantially from 49.12% in 1993 to 66.42% in 1997. Directors on average held 12.69% of their firm's common stock, ranging from 0 to 97.5% in 1993. The percentage decreased slightly to 11.77% in 1997, with a very similar range 0 to 97.56%. With respect to ownership structure, the mean proportion of equity held by shareholders

with at least 10 percent equity stake was 35.03% in 1993 and that decreased to 33.41% in 1997.

A first simple analysis of the data shows that the proportion of unrelated directors on Canadian corporate boards increased gradually, from 43.09% in 1993 to 66.42% in 1997. As one of the main requirements of the 1995 TSE Guidelines was a majority of unrelated directors on the boards, it can be assumed that the observed trend in the percentage of independent directors for the period analyzed was reflecting the Guidelines' recommendations. We will try to determine in this study if the actual changes in board composition are reflected in the performance of the firms.

Table 4 presents the summary statistics of accounting variables of the sample firms for 1993 (panel A), which is two years before the adoption of the guidelines and 1997 (panel B), which is two years after the adoption of the guidelines. The average firm had assets totaling $4656.17 million in 1993 (median $688.06 million) and $8421.45 million (median $1349.85 million) in 1997. Average Tobin's Q[17] in the 1993 sample was 1.5 (median 0.97) while it was 1.19 (median 0.93) in 1997. The mean (median) proportion of long term debt to total assets was 0.21 (0.18) in 1993 and 0.24 (0.23) in 1997. The average firm in the sample had a ratio of capital expenditures to total assets of 0.10 (median 0.05) in 1993 while that ratio decreased slightly to 0.09 (median 0.06) in 1997. Return on assets varies from a mean of 1.82% (median 2.76%) in 1993 to 2.11% (median 3.07%) in 1997.

Table 5 presents the results of difference in means and medians tests performed between 1993 and 1997 and **Table 6** presents similar data for block ownership and

[17] Average Tobin's Q is calculated as: [MVE+PS+ (CL-CA)+LTD]/TA; see p.33 for description of variables.

accounting variables. The percentage of unrelated directors increased over the sample period, from an average of 49.12% in 1993 to 66.42% in 1997, and these values are statistically different from each other at conventional significance levels (p-value <.0001). Board size, ownership by the directors and CEO duality data do not show statistically different values between the two years. Total assets exhibit a significant increase in 1997, even after adjusting for inflation using the Consumer Price Index, as shown by the median and the Wilcoxon tests (p-value <.0001). Similarly, the mean values for intangibles and debt increased significantly from 1993 to 1997 (see Table 6). Tobin's Q had a mean value of 1.12 in 1993 and this value decreased significantly to 0.90 as shown by the Wilcoxon test (p-value=0.0437). The lower profitability ratios for Canadian companies (as measured by Tobin's Q) in 1997 can be a result of the stock market decline in 1997 as a result of the Asian crisis.

VI. EMPIRICAL METHODOLOGY

Hypotheses

The literature on agency theory proposes several corporate governance mechanisms that can reduce the agency costs associated with the separation of ownership and control specific to a market economy (Jensen and Meckling, 1976). The purpose of these mechanisms is to align shareholders' and managers' interests, and thereby reduce the inefficiencies which destroy shareholder wealth. In general, governance mechanisms are divided into two categories: internal and external. The main external mechanism is the market for corporate control, which acts as a mechanism of last resort (Jensen, 1986). The probability of replacement following an acquisition provides a direct incentive for management to perform in the best interest of the shareholders. More recent empirical papers have focused the attention on the importance of the internal governance mechanisms and their relation to performance. The board of directors takes up the central role among the internal governance mechanisms as its oversight role is the primary means for shareholders to exercise control over management. It is evident that an efficient board has the possibility of increasing shareholders wealth by limiting the self-serving behavior of managers. Conversely, when the board is ineffective in performing its functions, agency costs are high and this reflects directly on the performance of the firm. The general view in empirical studies is that the board's effectiveness is closely linked with its independence. This reflects the common view expressed by corporate governance organizations around the world that a more independent board is a better monitor of management. A better oversight by the board of

directors means less agency costs that should reflect in more return to shareholders, specifically, better performance. Therefore, the above discussion leads us to expect a positive relationship between the percentage of outside directors on the board and performance.

But, as we saw in the literature review section, empirical studies so far have failed to determine with a high degree of definitiveness the relationship between the characteristics of the board, especially its composition, and firm performance. One reason for these mixed empirical results is the potential simultaneity of the two variables-composition of the board and performance. Hermalin and Weisback (1988), in their study of the determinants of board composition find that changes in board composition are influenced by firm performance. Specifically, when firms perform poorly, they tend to remove insiders from the board and add outsiders. An explanation of these findings draws directly from the agency theory, poor performance is an indication of weak management and thus of the need of increased monitoring. For shareholders, the board of directors is a first line of defense against the self-serving behavior of management that leads to decrease in their wealth. Faced with poor performance, they respond by adding more outsiders to the board to monitor management as they are not able to do it directly. Such considerations could suggest a negative relation between the number of outsiders on the board and performance in a OLS specification trying to relate the composition of the board to firm performance, even though low performance causes increased board independence rather than vice versa. Therefore, the direction of causality between board composition and company performance is a very important question that has not been

entirely resolved by studies exploring cross-sectional variation in performance using an OLS methodology.

Ownership structure is another agency control mechanism that has received considerable attention in the literature. Grossman and Hart (1980) and Shleifer and Vishny (1986) develop theoretical models that predict that the presence of a large-block equityholder unaffiliated with management will have a positive effect on the market value of a firm. Consistent with this argument, Mikkelson and Ruback (1985) and Barclay and Holderness (1990) report positive excess returns around the announcement date when outsiders acquire large equity positions. Hermalin and Weisbach (1991) attempt to measure differences in firm performance caused by board composition and ownership structure and their main conclusion is that there is a strong relationship between ownership structure and performance. Moreover, the institutional shareholder activism literature of recent years has explored empirically the role of institutional shareholders as a mechanism to control agency problems. Their results so far indicate that ownership concentration behaves as a substitute in corporate governance and that a positive relation is expected between the percentage ownership held in total by the owners of 10% of more of the firm and firm performance. As the Canadian economy has tighter concentrated corporate ownership than the U.S. economy, we expect that the role of block ownership concentration to play an important role in the corporate governance structure of Canadian firms. Pound (1988) considered the relation between corporate value and institutional ownership and proposed three hypotheses:

(i) *efficient monitoring hypothesis,* which predicts a positive relation between institutional ownership and corporate value as institutional investors have

greater expertise and can monitor management at lower costs than small atomistic shareholders;

(ii) *the conflict of interest hypothesis,* which states that institutional investors are coerced into voting their shares with management because of other profitable business relations with the firm and

(iii) *the strategic-alignment hypothesis,* which suggests that institutional investors and managers find it mutually advantageous to cooperate.

Similar to the discussion on board composition, there is the possibility that ownership structure and corporate performance are jointly determined. If we refer again to the institutional activism literature we find that their results show that the selection of investment targets by large institutional shareholders is based mainly on the performance measures of these targets. These decisions are an affirmation of the belief that risks, opportunities and managerial shirking are in some degree controllable by owners for the maximization of their own profits. Demsetz and Lehn (1985) examine this possibility in their paper. They use three measures of instability: firm specific risk, as measured by the standard error of estimate calculated from fitting the "market model", the standard deviation of monthly stock market rates of return and the standard deviation of annual accounting profits, and find that all three are significantly and positively related to ownership concentration. This implies that the instability in the firm's environment, which is correlated with the profit potential of the firm, is an important *determinant* of the ownership structure of that firm. Therefore, we hypothesize that there is a simultaneous relationship between ownership structure of a firm and firm performance.

The third mechanism of corporate control analyzed in this study is the debt policy. Capital structure of a firm is considered an important potential substitute monitoring mechanism as agency costs of external equity are reduced by increasing the use of leverage (Jensen and Meckling, 1976). Jensen (1986) further suggests that the contractual obligations associated with debt reduce management discretionary control over the free cash flow and thus lessen the scope for management-stockholder conflicts. Myers and Majluf (1984) analyze the relation of profitability of a firm to its debt policy by describing a modified "pecking order" theory that suggests that more profitable firms will decrease their demand for debt as more internal funds will be available for financing investment[18]. Accordingly, they predict an inverse relationship is expected between the level of debt of a firm and its performance. Grossman and Hart (1982) claim that debt forces management to consume fewer perks and become more efficient in order to diminish the probability of bankruptcy and their reputation consequences. A very extensive review of the modern theory of capital structure performed by Harris and Raviv (1991) concludes that the evidence is consistent with the assumption that debt is an important mechanism of mitigating agency conflicts. Thus, agency theory proposes a positive relation between debt and firm value, as higher levels of debt limit the agency conflicts between shareholders and managers and consequently an increase in the wealth of the shareholders. Again, the direction of causality is not completely clear as more profitable firms will decrease their demand for debt and at the same time it is expected

[18] The "Pecking Order Theory" was proposed in 1961 by Donaldson and suggests that firms prefer raising capital first from retained earnings, second from debt and third from issuing new equity. Myers (1984) and Myers and Majluf (1984) revised this theory and proposed a modified version of the pecking order theory by suggesting that informational asymmetries and bankruptcy costs also influence a firm's capital structure choice.

that firms with increased leverage will exhibit higher profitability as a result of the reduction in agency costs.

Model Description

Based on the above considerations, this study presents an integrated examination of the factors affecting board composition, ownership structure, debt policy and firm value by incorporating explicitly the simultaneity of the processes determining these variables into an empirical model. The three agency control mechanisms that we analyze can be used alternatively to align managers and shareholders interests. Thus, one can be used instead of another with the result that increasing the use of one mechanism does not necessarily lead to increased firm value. When one specific mechanism is used more, another may be used less resulting in an equally good performance. This possible interdependence among the alternative governance mechanisms makes the regressions relating the use of any single mechanism and firm performance difficult to interpret as the relationships may be spurious (Agrawal and Knoeber, 1996). In the Canadian context, even though the 1995 *Statement of Corporate Governance Practices* set the standards for acceptable governance practices of Canadian firms, they are not mandatory, and thus the relationship between governance mechanisms and performance can be endogenous, as firms have a degree of autonomy in selecting their appropriate combination of internal mechanisms. Instead of assuming that the three corporate governance mechanisms – board composition, ownership structure and debt level – affect the level of performance of the firm in a unidirectional way, this analysis endogenizes board composition, ownership structure and debt in analyzing their effect on firm performance in a system of

simultaneous equations. The joint determination of these variables suggests that ordinary least squares analysis is no longer satisfactory as it will produce biased coefficient estimates.

The simultaneous equations model is estimated using a three-stage least-squares (3-SLS) system. The primary hypothesis is that each of the four corporate variables of interest in this study – Tobin's Q (as a measure of firm value), composition of the board (proxied by the percentage of outside directors on the board), ownership structure and debt - is a function of the other three variables and several other control variables. Specifically, the reduced form of the model is:

$$Q = f_1(UNREL, OWN, OWN2, DEBT, BSIZE, CEODUAL, DIROWN, SIZE, CAPEX, SIC)$$
$$UNREL = f_2(Q, OWN, OWN2, DEBT, BSIZE, CEODUAL, DIROWN, SIZE, CAPEX, SIC)$$
$$OWN = f_3(Q, UNREL, DEBT, SIZE, CAPEX, PROF, SIC)$$
$$DEBT = f_4(Q, UNREL, OWN, OWN2, ROA, INTANG, SIZE, SIC)$$

The system has:

4 endogenous variables: Q, UNREL, OWN, DEBT, and

12 exogenous variables: BSIZE, CEODUAL, DIROWN, CAPEX, ROA, PROF, INTANG, SIZE, PRIM, MANU, INFO, FINA, where the variables are defined as follows:

Q = Approximate Tobin's Q = [MVE + PS + (CL - CA) +LTD]/TA;

UNREL = percentage of unrelated directors on the board;

OWN = Ownership concentration, percentage of equity held by shareholders with at least 10 percent equity stake;

OWN^2 = The square of OWN variable, introduced to capture any possible non-linear relationship between ownership structure and all other endogenous variables,

DEBT = Long term debt divided by the book value of total assets;

BSIZE = Log of the total number of directors on the board;

CEODUAL = Dummy variable that takes the value one when the CEO is also the Chair of the board, and zero otherwise;

DIROWN = Proportion of equity held by the board of directors, including top officers which are members of the board;

SIZE = Log of the book value of total assets;

CAPEX = Capital expenditures scaled by total assets;

ROA = Return on assets;

PROF = Profitability defined as operating income over sales;

INTANG = Intangibles, ratio of intangibles to total assets;

SIC = Industrial classification SIC codes. The total sample is divided into 5 industry groups based on the 2-digit SIC code: PRIM (primary industries), MANU (manufacturing), INFO (information technology and telecommunications), FINA (financial industry) and SERV (services), and introduced the first four as dummy variables, and the last one SERV is captured by the intercept parameter estimate.

Thus, we have a simultaneous equation system with four endogenous variables and twelve exogenous variables. Since we are interested in determininge the equilibrium among the joint dependent variables in terms of all exogenous variables and the disturbances, the system is a complete system of equations[19].

[19] Completeness of the model requires that the number of equations equal the number of endogenous equations (in this study four).

Tobin's Q Equation

Tobin's Q is an important variable used extensively in many financial empirical papers. Defined as the ratio of the market value of a firm to the replacement cost of its assets, Tobin's Q has been employed to explain a number of diverse corporate phenomena, such as the relationship between managerial equity ownership and firm value (McConnell and Servaes, 1990 and Mork Shleifer and Vishny, 1998) and the relationship between managerial performance and tender offer gains (Lang, Stultz, and Walking, 1989). Given the computational difficulties and extensive data requirements for calculating the theoretical Q as developed by James Tobin and improved upon by Lindenberg and Ross (1981), most of the researchers use in their calculations the approximate Tobin's Q formula developed by Chung and Pruitt (1994). They showed that *at least* 96.6 percent of the variability in the theoretical Q is explained by the approximate Q. Therefore, this study uses the approximate Tobin's Q in its calculations, which is defined as:

Approximate Q = (MVE + PS + DEBT)/TA,

where MVE is the product of a firm's share price and the number of common shares outstanding, PS is the liquidating value of the firm's preferred stock, DEBT is the value of the firm's short-term liabilities net of its short-term assets, plus the book value of the firm's long-term debt, and TA is the book value of the total assets of the firm.

Given this definition of the Tobin's Q, it is expected that Q values will be high for firms with valuable intangible assets in addition to physical capital, such as monopoly power (Lindenberg and Ross, 1981), goodwill or good managers. Tobin's Q is used intensively as a measure of firm performance and Hermalin and Weisback (1991) state

that "a divergence of Q from one represents the assets not included in the denominator of Q, such as the value of the internal organization or the value of the expected agency costs. A Q above one indicates that the market views the firm's internal organization as exceptionally good or the expected agency costs as particularly small".

The other three endogenous variables of the system are used as explanatory variables in the Q equation as they are mechanism of controlling the agency problems, and thus, affect the value of the firm performance. As a more independent board is assumed to be a better monitor of management, we expect a positive relation between the proportion of unrelated directors (UNREL) and Q. Similarly, as the use of debt reduces managements' discretionary control over the free cash flow and, thus, lessens the scope for management-stockholder conflicts, we expect a positive relation between DEBT and Q. Regarding the impact of OWN on Tobin's Q ratio we have two possible outcomes (a) increasing levels of OWN can have a positive impact on Q if OWN is an indication of the incentive of large shareholders to monitor management. Grossman and Hart (1980) and Shleifer and Vishny (1986) have proposed theoretical models that show that shareholder wealth increases when large blocks of equity are acquired by outside shareholders. (b) The OWN variable can have an inverse relation to Q if the block holders are not mainly institutional owners but individuals that are also insiders of the company. In that case, the entrenchment hypothesis predicts a negative effect of insider ownership on performance, as the high ownership stake in the firm insulates management from the discipline of the market. As the ownership structure literature provides evidence of a non-monotonic relation between ownership structure and performance, a squared term, OWN^2 is introduced in the Q equation to capture this non-linear relationship.

The next three endogenous variables included in the equation are the other board variables; board size, Chair/CEO duality and stock ownership by the board, all of which are variables that impact the role of the board as monitor of management. Board size refers to the total number of directors on the board. As Yermack (1995) reports in his empirical investigation of the performance effect of board size on a sample of 792 companies over eight years (1984-1991), limiting the size of the board, may improve efficiency. These findings suggest that reducing board size may improve corporate governance. Thus, a negative sign is expected for the coefficient of BSIZE in the Q equation. Chair/CEO duality is a dummy variable that takes on a value of one if the position of CEO and Chairman of the Board of Directors is occupied by the same person, and zero otherwise. In the same study, Yermack finds that the presence of a non executive chairman improves firm valuation. The reason behind it is that an insider Chairman is less likely to be an efficient monitor of the management as his own interests are aligned more to the ones of management than to the shareholders'. Therefore, we expect a negative sign for the coefficient of CEODUAL dummy variable in the Q equation. Stock ownership by the board (DIROWN) is another important variable that represents an alternative control mechanism. It is increasingly recognized that directors should be compensated in a manner that aligns them with the shareholders in order to improve their efficiency. This follows directly from the agency theory: the more stock management owns, the stronger their motivation to work to raise the value of the firm's stock. We hypothesize a positive relation between ownership by the directors and the Q ratio.

We also include several control variables in the Q equation. The SIZE variable is defined as the log of the book value of total assets of the firm and is included to control for differences in profitability due to firm size. Fama and French (1992) document that stock performance is negatively related to size, thus we expect a negative sign for our SIZE variable.

CAPEX is another variable introduced in the Q equation to control for future growth, as many theorists, including Myers (1977) and Smith and Watts (1992) argue that firm value depends on future investment opportunities. A positive relation between CAPEX and Q is expected.

Finally, in order to account for the external market forces that affect firm performance, like the market for corporate control, we include a set of 5 dummy variables that account for the five major industry groups based on 2-digit SIC codes: primary industries (PRIM), manufacturing industries (MANU), information technology and telecommunications (INFO), financial industries (FINA) and services (SERV). The SERV group is left out and the four dummies for the other groups are added in every equation of the system. As we do not include any external mechanism of corporate governance in our simultaneous determination, these dummy variables are introduced to control for the external market forces, especially the market for corporate control at each industry level. We assume that the corporate control pressure are more or less constant within one industry group, and thus, by controlling for it, the remaining levels of agency costs are the undertaking of the internal corporate governance mechanisms.

In summary, the expected signs for the specific variables used in the Q equation are as follows:

$$Q = a_0 + a_1 \overset{+}{UNREL} + a_2 \overset{?}{OWN} + a_3 \overset{+}{DEBT} + a_4 \overset{?}{OWN2} + a_5 \overset{-}{BSIZE} + a_6 \overset{-}{CEODUAL} +$$

$$a_7 \overset{+}{DIROWN} + a_8 \overset{+}{CAPEX} + a_9 \overset{-}{SIZE} + a_{10} \overset{?}{PRIM} + a_{11} \overset{?}{MANU} + a_{12} \overset{?}{INFO} + a_{13} \overset{?}{FINA} + e$$

Board Composition Equation

The UNREL endogenous variable is defined as the percentage of outsiders on the board of directors. The definition of unrelated directors used in this study follows the specification of the *Guidelines of Corporate Governance Practices* adopted by TSE in 1995. As this study analyzes cross-sectionally the relations between the differing internal corporate governance mechanisms before and after the adoption of the Guidelines (1993 and 1997), we apply the definition of unrelated directors proposed in 1995 to classify the directors in the 1993 sample by their description and specifics provided in the annual proxy statements. For the 1997 sample, as the Guidelines were adopted, proxy statements were required to include a separate statement that specifically mentioned the classification of each director as related or unrelated and thus, that stated classification was used. The other three endogenous variables are used as explanatory variables in this equation.

Firm performance has a potential influence on the composition of the board, as Hermalin and Weisback (1991) find that poorly performing firms tend to remove insiders and add more outsiders on the board. This would suggest a negative coefficient for the Q variable in the board composition equation. As both DEBT and OWN are substitute

mechanisms to the board composition that control agency problems, an increase in any of them should reduce the need for unrelated directors, therefore a negative relation for each of these is expected. The size of the board (BSIZE) is used in the board composition equation as there is evidence that the average fraction of outside directors increases gradually with board size (Yermack, 1995). A positive coefficient for board size is expected in the board composition equation. The CEO/Chair duality is also included to test if the CEO who assumes the dual role is unlikely to be critical of management's performance. DIROWN, the proportion of equity beneficially owned by the board members, including related and unrelated board members, is assumed to have an inverse relation to proportion of unrelated directors, as they are less likely to hold large stakes of the company's stock.

Finally, size and the industry dummies are added to the equation as controls for firm size and specific industry corporate governance forces. Expected signs for the variables of the UNREL equations are:

$$UNREL = a_0 + a_1 \overset{+}{Q} + a_2 \overset{-}{OWN} + a_3 \overset{-}{DEBT} + a_4 \overset{+}{BSIZE} + a_5 \overset{-}{CEODUAL} + a_6 \overset{-}{DIROWN} +$$

$$a_7 \overset{-}{SIZE} + a_8 \overset{?}{PRIM} + a_9 \overset{?}{MANU} + a_{10} \overset{?}{INFO} + a_{11} \overset{?}{FINA} + e$$

Ownership Concentration Equation

The ownership structure variable is defined as the percentage of equity held by owners of 10 percent or more of the company's stock. As it is an endogenous variable, simultaneity dictates that the other three endogenous variables should be included as explanatory variables in its determination. As we have seen before, the sign of the

relation between OWN and Q is not clear as it depends on the type of block owners predominant in the sample. UNREL and DEBT are expected to have negative coefficients as they act as substitutes.

Drawing from the work of Berle and Means[20] (1932), if diffuseness in control allows managers to serve their needs to the detriment of the owners, then more concentrated ownership, by aligning managers' interests to the interests of the shareholders, should yield higher profits. Thus, we expect the sign of the profitability variable (PROF), calculated as operating income over sales, to be positive in the ownership equation. Capital expenditure is a control variable in this equation along with size and industrial SIC code classification, all three exogenous variables for our system. Expected signs for the coefficients in the OWN equations are:

$$OWN = a_0 + a_1 \overset{?}{Q} + a_2 \overset{-}{UNREL} + a_3 \overset{-}{DEBT} + a_4 \overset{+}{SIZE} + a_5 \overset{+}{CAPEX} + a_6 \overset{+}{PROF} +$$

$$a_7 \overset{?}{PRIM} + a_8 \overset{?}{MANU} + a_9 \overset{?}{INFO} + a_{10} \overset{?}{FINA} + e)$$

Debt Equation

Debt is the last endogenous variable of the system and is defined as the ratio of the book-value of long term debt to the market value of equity. The regressors included in its estimation are first the other three jointly determined mechanisms of corporate control: Q, UNREL, and OWN, and then a series of other exogenous variables as control mechanisms to account for other differences that affect capital structure of the firms.

[20] Berle, Adolf and Means, Gardiner, 1932, The Modern Corporation and Private Property. New York: Macmilan.

Myers and Majluf (1984) relate profitability to debt policy through a modified "pecking order" hypothesis, which suggests that more profitable firms will decrease their demand for debt, as more internal funds will be available to finance investment. Therefore we include ROA (return on assets) in the debt equation as an explanatory variable and we expect it to have a negative correlation with the debt level. Titman and Wessels (1988) argue that the type of assets owned by a firm in some way affects its capital structure choice. Moreover, Jensen and Mecking (1976), and Myers (1977) suggest that stockholders of leveraged firms have an incentive to invest sub-optimally to expropriate wealth from the firm's bondholders. This incentive may induce a positive relation between debt ratios and the capacity of firms to collateralize their debt. If the debt can be collateralized, the borrower is restricted to use the funds on a specified project. To control for this possibility, this study includes the ratio of intangible assets to total assets (INTANG).[21] As a number of authors have suggested, the leverage ratios may be related to firm size, as direct bankruptcy costs appear to constitute a larger proportion of a firm's value. We add the SIZE variable in our specification as well as the industry classification variables. Expected signs of the coefficients of the DEBT equation are as follows:

$$DEBT = a_0 \overset{+}{Q} + a_1 \bar{UNREL} + a_2 \bar{OWN} + a_3 \bar{ROA} + a_4 \bar{INTANG} + a_5 \overset{+}{SIZE} + a_6 \overset{?}{PRIM} + a_7 \overset{?}{MANU}$$

$$a_8 \overset{?}{INFO} + a_9 \overset{?}{FINA} + e)$$

[21] Long and Malitz (1985) argue that firms devoting a large proportion of funds to intangible investments, would experience higher agency costs of debt caused by the under-investment and the wealth transfer problems.

VII. EMPIRICAL RESULTS AND INTERPRETATION

We analyze the cross-sectional data at two points in time; 1993 (two years before the adoption of the recommendations of the Dey Report) and 1997 (two years after adoption). We believe that by examining the simultaneous relationships between the different governance mechanisms of Canadian companies and their relation to firm performance before and after the regulatory changes we will be able to capture the impact that these regulations had on the governance structure of the Canadian economy. Tables 7 and 8 present estimates of the regression models for 1993 and 1997 respectively. Table 12 presents the results using data for all the 5 years (1993 to 1997), pooled. The impact of the *Corporate Governance Guidelines* on the sensitivity of firm performance to board composition is captured by introducing an interaction term (G*UNREL) between proportion of independent directors (UNREL) and a dummy variable (GUIDE) that takes on the value of one for 1996 and 1997, and zero for 1993, 1994 and 1995.

Three Stage Least Squares Results for 1993

Table 7 presents the results of the three-stage least squares (3SLS) estimation for the sample of 268 TSE firms with all data available in 1993. The system weighted R-square is 49.62 percent with a Mean Square Error of 1.01.

Q Equation

The only significant variables in this equation are the squared ownership term (OWN^2) and the firm size (SIZE). The non-linear ownership term is negative and significant at one percent level (t = -9.71). This is consistent with the evidence in Morck, Shleifer, and Vishny (1988) and McConnell and Servaes (1990) who document a non-

monotonic relationship between ownership structure and firm performance. Moreover, this finding is very interesting in the Canadian context as the ownership structure here is more concentrated than in the U.S. and possibly, it is the main governance mechanism than controls agency conflicts. The size of the firm seems to have a positive effect on the performance of the firm and it is significant at the ten percent level (t = 1.77). This is consistent with the size effect that has been well documented for the U.S. firms and it seems to be present in Canada too. The relationship for Canadian firms is negative while in U.S. it has been usually positive. Surprisingly, none of the other control mechanism shows significance in our specification. These results are, however, consistent with findings for U.S. firms by Agrawal and Knoeber (1996) who observe that the typical agency mechanisms are not significant in the firm performance equation estimated within a simultaneous equations framework. Agrawal and Knoeber (1996) and Demsetz (1983) argue that the lack of significance for these variables in a cross-section specification can simply arise from firms' optimizing these mechanisms to maximize firm value given their specific characteristics; thus, in equilibrium, given a well specified model, there might be no systematic relation between these variables. Though the coefficient of board size (BSIZE) is negative, consistent with previous papers, suggesting that larger boards are less efficient than smaller ones, it is not statistically significant. Similarly, while the coefficient of debt is negative, confirming the substitution effect between these two control mechanisms, it is not statistically significant. Contrary to expectations, the coefficient for ROA shows a negative association to Q, though it is not significant. CEO duality and ownership by the directors of the firm both exhibit a positive relationship

with Q consistent with the alignment of interests hypothesis, but being insignificant, not much can be concluded about these relationships for Canadian firms.

Board Composition Equation

The estimates of this equation confirm the findings of previous studies (see Agrawal and Knoeber-1996) that the agency control mechanisms are selected so as to optimize firm value given the firms' individual characteristics. We observe a lack of significance for most variables. The non-linear relation of ownership structure with the board composition is consistent with previous findings. The coefficient of OWN^2 is negative and highly significant (t = -23.21). Ownership by the directors has a negative influence on board independence suggesting that boards that hold a higher percentage of the firms' stock are less likely to bring more independent members to the board, as they become more entrenched. The positive sign of the board size variable, even though not significant, reinforce the findings by Yermack (1998) that the average fraction of outside directors increases gradually with board size. Chair/CEO duality exhibits a positive but insignificant relationship with board composition.

Ownership Equation

Firm performance, as measured by Tobin's Q, is not a significant determinant of ownership structure. The negative sign, however, suggests that individuals that are also insiders of the firm predominate over institutions as block holders in Canada. This is consistent with the entrenchment hypothesis that predicts a negative relation of ownership concentration with performance, as higher ownership insulates management from the market discipline. In a similar manner, the percentage of unrelated directors has an inverse relationship with block ownership, significant at 1 percent level (t-value= -

3.84), which suggests that firms with more independent boards have a lower percentage of block equity holders. If block holders are potentially insiders, then we can infer that independent boards have a role in controlling management from becoming entrenched. No other variables are significant determinants of the ownership structure of the firms.

Debt Equation

The estimates of this equation reveal that firm performance and board composition do not have a significant effect on the debt level of a firm. The negative sign on the coefficient of percentage of outsiders on the board, however, is in line with the inverse relation hypothesized by the substitution effect. Block ownership is also not significant in determining debt levels. The fact that most of these variables are not significant in determining the capital structure of the firm can be interpreted again as most mechanisms are at their optimum levels and a cross-sectional analysis that controls for all possible factors that determine leverage ratios across firms does not show them as significant. The non-monotonic influence of ownership structure is evident in the debt equation again, as the coefficient of the squared ownership term is negative and significant at five percent level (t-value = -2.51). As hypothesized, size is an important factor in determining the debt level. Bankruptcy costs become a smaller percentage of the assets of the firm, as size increases. Thus, bankruptcy risks become less relevant and higher leverage can be used. Finally, the coefficient for ROA is significant at the one percent level (t-value=-3.23), and its negative sign confirms the hypothesis that more profitable firms decrease their demand for debt, as posited by the pecking order theory.

Three Stage Least Squares Results for 1997

The objective of this study is to examine the impact on governance structures of Canadian companies after the adoption of the Dey Report recommendations that were issued in 1995. The cross-sectional analysis is repeated with data for 1997, which is two years after the recommendations became effective. This second cross sectional analysis should shed more light on the changes the Canadian firms went through and how the balance of forces shifted during this period. As noted previously, since the three mechanisms analyzed are jointly determined, simple OLS specifications would be inadequate since they do not allow for a substitution among the different mechanisms.

The results of the model estimated for 1997 are presented in **Table 8**. The system weighted R-square is 27.31 percent with a Mean Square Error of 4.91.

Q Equation

The major difference that is observed for the 1997 results is that the percentage of unrelated directors becomes a significant positive determinant of firm performance with a t-value of 2.02. This confirms the expectations of the TSE, as expressed in the Guidelines that increasing the percentage of independent directors on the boards of Canadian companies would lead to an increase of the oversight role of the board. This, in turn, should result in better performance. Moreover, the size of the board has a strong negative impact on performance and is significant at the one percent level (t-value = -4.22). This is consistent with the hypothesis that larger boards suffer from poor communication and decision-making associated with larger groups and with Yermack's (1996) findings who argues that limiting the size of the board may improve efficiency.

These findings confirm that in 1997, two years after the adoption of the TSE Guidelines for better Corporate Governance practices, boards became important players in monitoring management as both their size and composition are significant determinants of firm performance. The CEO/Chair duality, though in our results it is not significant, appears in the Q equation with a negative sign, which is consistent with the belief that the separation of the two functions increases board independence. Share ownership by the directors (DIROWN) is also not significant in determining performance, but its sign is positive as expected by the alignment of interest hypothesis. Though block ownership is not significant, OWN^2 term is, with a t-value of 2.85, confirming that the non-linear relationship of ownership with performance is maintained in 1997. Furthermore debt level has a negative coefficient that is significant at the five percent level (t-value=-2.32), implying that firms with lower levels of debt have higher profitability as stated by the pecking order theory. The size of the firm is significant at one percent (t-value = 3.64) confirming again that a size effect is present in Canadian firms. ROA is not significant, but its sign is positive, as expected.

Board Composition Equation

The board composition equation reveals that Q is not an important determinant of the percentage of outsiders on the board as hypothesized and it shows that the relationship runs from UNREL to Q and not the other way around. A possible explanation for this is that the adoption of the TSE guidelines increased the market awareness about the role of the board in improving performance. Thus, companies that complied and increased their percentage of unrelated board members were better valued by the market. Directors' ownership has a negative and insignificant coefficient in this

equation. The ownership squared term is again very significant with a t-value of -5.97. Firm size and board size are both insignificant (t-value = -0.86 for firm size and t = 0.84 for board size) suggesting that they are not important determinants of board composition.

Ownership Equation

Tobin's Q is significant and negative in the ownership equation (t-value=-1.95), similar to the findings from 1993, suggesting that a high concentration of individual investors, possibly insiders, that become entrenched reduce the profitability of the firms. The negative and significant coefficient on the percentage of outsiders on the board (t-value=-2.65) is consistent with their role as alternative substitute mechanisms of control of agency conflicts. Debt has a significantly positive influence on ownership structure with a t-value of 2.89. Even though debt and ownership structure are alternate mechanisms for corporate control, as Agrawal and Knoeber (1996) argue, an inverse relationship between them is not the only possibility. Positive relations might also exist. In this case it appears that a higher concentration of block owners facilitates a higher leverage ratio for the firm. Size, profitability and capital expenditure are not significant determinants of ownership structure.

Debt Equation

Q has a positive and significant influence on the debt level, which might reflect the fact that more profitable firms have more access to the debt market and find it easier to raise debt. As we saw in the previous equation, percentage of outsiders on the board is positively related to the debt level even though it is an alternate corporate governance mechanism. This positive and significant relationship (t-value = 2.00) suggests that the discipline imposed by lender monitoring is more effective when it is coupled with greater

internal monitoring by the board of directors. Apart from the ownership squared term which has a significantly positive influence on debt, all the other variables, OWN, SIZE, ROA and INTANG, are not significant, possibly because their levels are chosen optimally given the specific environment for the capital structure of each firm.

Similar tests were performed for the years 1994, 1995 and 1996 and results are presented in Tables 10, 100 and 12. The results support our hypothesis that the Corporate Governance Guidelines induced changes in the governance of Canadian corporations, specifically the role and importance of boards as corporate monitors increased gradually after 1995.

Three Stage Least Squares Results of the Pooled Sample for the Five Years

Finally, a third specification of our model is applied to the pooled sample for the five years 1993 to 1997. We do this in order to measure the direct impact of the TSE Guidelines on to board composition and also its impact on the sensitivity of firm performance to outside representation on the board. We introduce a dummy variable called GUIDE in the board composition equation, which takes the value of one if the year is 1996 and 1997 (after the Guidelines would have been adopted), and zero if the year is 1993, 1994 and 1995 (before the adoption of the Guidelines). In the firm performance equation we add an interaction term between the variable GUIDE and variable UNREL, called G*UNREL, which is included to capture the impact of the adoption of the Guidelines on the performance of Canadian companies. We are not concerned with the signs and significance of the other coefficients from the pooled system results.

The results of the 3 Stage Least Squares system are presented in **Table 9.** The total pooled sample consists of 1272 firm-year observations. The system weighted R-

square is 18.54 percent with a Mean Square Error of 34.31. We focus our discussion in these equations only on the variables of interest GUIDE and G*UNREL. As observed from the data description in section IV, **Table 4**, we notice in the board composition equation that the percentage of unrelated board members on Canadian boards increased following the adoption of the *Corporate Governance Guidelines* in 1995. The coefficient of GUIDE in the board equation is positive and significant at one percent, with a t-value of 19.90. Moreover, in the Q equation it is noted that the coefficient of the interaction variable G*UNREL is positive and extremely significant (t-value of 47.90) which confirms that the TSE Listing Requirements adopted in 1995 increased significantly the sensitivity of firm performance to the percentage of outsiders on the boards.

VIII. SUMMARY AND CONCLUSIONS

The agency theory specifies that there are alternative mechanisms that can be used to control the agency problems between managers and shareholders. We have analyzed in this study three main internal mechanisms, board composition, ownership structure and debt and their impact on firm performance. Since the empirical findings of the corporate governance literature documents strong evidence that firm performance is a determinant in each of the three selected control mechanisms, firm performance is introduced in this study as an endogenous variable. To study the simultaneity of the processes of corporate governance in the Canadian context, we constructed a sample of large Canadian firms that was analyzed at two different points in time: 1993, two years before the adoption of the TSE Guidelines and 1997, two years after adoption. Using this data set we estimated a simultaneous equations system, with four equations, each having as a dependent variable one of the four potential endogenous variables, and as explanatory variables the other three endogenous variables and a series of control variables. The results of the study, obtained via three-stage least-squares (3SLS) estimation, support the implications of the agency theory and also of the joint determination of these mechanisms. Specifically, for the tests performed cross-sectionally on a sample of 1993 firms, two years before the guidelines, only the ownership structure had a negative influence on firm performance and, proving the simultaneity of the two variables, firm performance showed a negative effect on the ownership structure of the firms. In a similar manner, board composition and firm performance seem to be interdependent, each having a negative influence on each other. The most noticeable changes in the 1997 results pertain to board characteristic variables, specifically percentage of independent directors and

board size. Both variables become significant determinants of firm performance after the adoption of the guidelines. Composition of the board has a positive impact confirming the increased role of independent board members as monitors, while board size has a negative impact, confirming the lack of cohesion in a large board. These findings are very important because they confirm that as the *Corporate Governance Guidelines* became listing requirements, that complied firms exhibited increased performance (as measured by Tobin'S Q), compared to the firms that chose not to comply. This finding can be explained first by the fact that boards became important players in monitoring management, thus helping in reducing agency problems, and second by the increased market awareness on the role of the boards in the post-guidelines period. An examination of the determinants of board composition (UNREL equation), we observe that firm performance is positively related to board composition, reflecting the joint determination of these variables. However, its insignificance shows that after the guidelines, the causality went from board composition to performance rather than vice-versa. Moreover, there is support for the propositions that debt and ownership, and debt and board composition, are jointly determined and their positive relation suggests that the discipline imposed by lender monitoring is most effective when coupled with greater monitoring by either large outside block holders or by outside members of the board (similar to the finding of Agrawal and Knoeber, 1996).

Finally, the test performed on a large sample constructed by pooling data from the five years, pre-and post guidelines, shows that *Corporate Governance Guidelines* adopted by the TSE in 1995 had a positive impact on the performance of these firms. Explicitly, we incorporate a dummy variable in the board composition equation, taking

the value of one after the guidelines (years 1996 and 1997) and zero before their adoption (1993, 1994 and 1995). Results of the same 3SLS system confirm that the adoption of the *Corporate Governance Guidelines* in 1995 is associated with an increase in outside representation on the boards (t-value = 19.90). Viewed in conjunction with the interaction term in the firm performance equation, it appears that the TSE regulation prompted a material rise in the number of outsiders on the Canadian boards, which consequently led to a significant improvement in their role as corporate monitors.

TABLES

Table 1

Total Dollar Value of Assets and Shares for Canadian Institutional Investors

Year	2000	1990	1980	1970	1961
Total Assets ($M)	2,862,398	1,292,933	484,768	111,486	42,007
Total Shares ($M)	357,408	104,301	32,698	10.339	3,268
Shares as % of total assets	12.49%	8.07%	6.75%	9.27%	7.78%

Total assets values are in nominal terms.

Table 2

Percentage of Unrelated Directors[a] on the Board - Descriptive Statistics

Sample sizes are 268, 269, 254, 241 and 240 for 1993, 1994 1995, 1996 and 1997 respectively.

	Average	Standard Deviation	Median	Minimum	Maximum
1993	49.12	15.52	50.00	16.67	88.88
1994	51.82	15.89	56.58	0	100
1995	57.75	15.64	60	11.11	100
1996	62.34	16.25	63.63	18.18	100
1997	66.42	16.25	70.00	0	91.66

[a] Directors are identified according to affiliations listed in the proxy statements. Unrelated directors have no affiliation with the firm or their managers other than their directorship, as identified by the Dey Report

Table 3

Board of Directors Variables -Comparison between 1993 and 1997

Sample sizes are 268 and 240 for 1993 and 1997 respectively.

	Average		St. Dev.		Median		Min		Max	
	1993	1997	1993	1997	1993	1997	1993	1997	1993	1997
Board Size	10.9	10.6	4.69	3.77	10	10	4	4	37	28
%Unrel [a]	49.12	66.42	15.52	16.2	50.0	70.0	16.67	0	88.8	91.66
Director Shares	12.69	11.76	22.01	22.7	1.57	1.21	0	0	97.5	97.56
OwnStr. [b]	35.03	33.41	29.58	31.4	31.87	26.28	0	0	99.8	100

[a] Directors are identified according to affiliations listed in the proxy statements. Unrelated directors have no affiliation with the firm or their managers other than their directorship, as identified by the Dey Report.

[b] Ownership structure variable is defined as the total percentage of shares of the company held by shareholders with 10 percent or more equity stake.

Table 4

Descriptive Statistics of Accounting Variables for the Sample Firms

Panel A. 1993

Sample size is 268.

Variable	Average	St.Deviation	Minimum	Median	Maximum
Total assets ($millions) [a]	4656.17	17798.43	13.39	688.06	164941
Tobin's Q	1.12	0.95	-0.71	1.01	5.74
Cap.Expenditures/TA	0.10	0.14	0	0.05	0.97
ROA	1.82	9.78	-89.23	2.76	26.98
Intangibles/TA	0.04	0.10	0	0	0.70
Profitability(Op Inc/Sales)	0.07	1.16	-12.68	0.14	0.98
Debt (Total Debt/TA)	0.21	0.18	0	0.18	0.80

Source: OECD, "Recent Trends: Institutional Investor Statistics" (September 2001), 80 *Financial Market Trends* at 46.

Panel B.1997

Sample size is 240.

Variable	Average	St.Deviation	Minimum	Median	Maximum
Total assets ($millions) [a]	8421.45	31046.92	34.7	1349.85	244774
Tobin's Q	0.90	0.61	-0.23	0.92	2.93
Cap.Expenditures/TA	0.09	0.10	0	0.06	0.50
ROA	2.11	8.92	-76.67	3.07	26.62
Intangibles/TA	0.05	0.11	0	0.002	0.59
Profitability(Op Inc/Sales)	-0.22	5.01	-76.61	0.13	2.60
Debt (Total Debt/TA)	0.24	0.19	0	0.23	0.95

[a] Total Assets of the sample firms represent current assets plus net property, plant, and equipment plus other non-current assets (including intangible assets, deferred items and investments and advances) at year end.

Table 5

Differences in Means and Medians Tests between 1993 and 1997 Samples

Board of Directors Variables

(p-values in parenthesis).

Sample sizes are 268 and 240 for 1993 and 1997 respectively.

	1993 (N=269)	1997 (N=241)	t-test (Pooled/ Satterwhite [a])	Wilcoxon Test	Median Test
Board Size					
Mean	10.9	10.6	0.50 (0.6181)		
Median	10.0	10.0		0.3540 (0.7234)	-0.4491 (0.6534)
Percentage of Unrelated Directors					
Mean	0.4912	0.6642	**-11.77 (<.0001)**		
Median	0.5	0.70		**6.4431 (<.0001)**	**5.5313 (<.0001)**
CEO Duality					
Mean	0.4037	0.425	-0.48 (0.6294)		
Median	0.00	0.00		0.4828 (0.6292)	0.4832 (0.6290)
Directors Ownership					
Mean	12.69	11.76	0.36 (0.7205)		
Median	1.57	1.21		-0.5703 (0.5684)	-0.6699 (0.5030)

[a] Equality of variances tests (pooled or Satterwhite) were selected using the Folded F method

Table 6

Differences in Means and Medians tests between 1993 and 1997 samples

Accounting and Ownership Variables

(p-values in parenthesis) Sample sizes are 268 and 240 for 1993 and 1997 respectively.

	1993 (N=269)	1997 (N=241)	t-test (Pooled/Satterwhite)	Wilcoxon Test	Median Test
Block ownership [a]					
Mean	0.3503	0.3341	0.57 (0.5698)		
Median	0.3204	0.2628		-0.7249 (0.4685)	-1.0259 (0.3049)
Total Assets [b]					
Mean	4694.848	7967.51	-1.53 (0.1272)		
Median	679.586	1277.10		**4.8512 (<.0001)**	**3.6031 (0.0003)**
Capital Expenditures					
Mean	0.1014	0.0973	0.37 (0.7124)		
Median	0.0533	0.0652		**1.9231 (0.0545)**	**2.1384 (0.0325)**
ROA					
Mean	1.8057	0.4156	1.20 (0.2316)		
Median	2.7590	2.9690		0.0580 (0.9537)	0.5764 (0.5643)
Intangibles					
Mean	83.4521	245.2150	**-2.57 (0.0105)**		
Median	0.00	2.0845		**2.9770 (0.0029)**	**2.2989 (0.0215)**
Tobin's Q					
Mean	1.12	0.90	**2.45 (0.0150)**		
Median	1.01	0.92		**-2.0920 (0.0364)**	-0.5847 (0.5588)
Profitability					
Mean	0.0730	-0.2227	0.89 (0.3748)		
Median	0.1350	0.1300	0.89 (0.3748)	-0.4063 (0.6846)	-0.3578 (0.7205)
Debt					
Mean	0.2108	0.2376	-1.64 (0.1026)		
Median	0.1814	0.2274		1.5704 (0.1163)	**1.8227 (0.0683)**

[a] Block ownership structure variable is defined as the total percentage of shares of the company held by shareholders with 10 percent or more equity stake.

[b] Total Assets for the 1997 sample were adjusted for inflation using the Consumer Price Index[22]

[22] CPI Source: Statistics Canada, CANSIM II, table 326-0002 and Catalogue numbers 62-001-XPB and 62-010-XIB.

Table 7

1993 Coefficient Estimates of Three-Stage Least-Squares (3SLS) model.

(t-values in parenthesis)

	Q Equation	Unrel. Equation	Own Equation	Debt Equation
Intercept	6.5281	0.4912	1.1546***	0.0739
	(0.51)	(1.78)	(5.14)	(0.29)
Q	-	0.0220	-0.0364	0.0081
		(-0.58)	(-1.16)	(0.39)
UNREL	-0.5767		-1.6051***	-0.2441
	(-0.02)	-	(-3.84)	(-0.57)
OWN	-10.6090	0.2583		0.0252
	(-0.81)	(0.39)	-	(0.14)
OWN^2	-14.0857***	-0.7430***		-0.1231**
	(-9.71)	(-23.21)	-	(-2.51)
DEBT	-30.9094	0.0728	-0.1811	
	(-1.35)	(0.18)	(-0.53)	-
BSIZE	-0.4779	0.0021		
	(-0.99)	(0.24)	-	
CEODUAL	0.5822	0.0068		-
	(0.51)	(0.33)	-	
DIROWN	7.0018	-0.1030		
	(0.94)	(-0.35)	-	-
SIZE	4.2712*	0.0459	0.0828*	0.1078***
	(1.77)	(0.74)	(1.47)	(2.87)
CAPEX			-0.0806	
	-	-	(-0.50)	-
ROA	-0.12019		0.0034	
	(-1.12)	-	(0.18)	-
PROF				-0.0038***
	-	-	-	(-3.23)
INTANG				-0.00002
	-	-	-	(-0.58)
PRIM	-2.9491	-0.0454	-0.1893**	-0.0562
	(-1.23)	(-0.49)	(-2.15)	(-0.95)
MANU	1.5267	0.0280	0.0261	-0.0109
	(0.70)	(0.39)	(0.31)	(-0.21)
INFO	4.9428	0.0697	0.1101	0.0607
	(1.60)	(0.63)	(1.32)	(1.13)
FINA	-0.2702	0.0455	0.0195	-0.0805
	(-0.13)	(0.69)	(0.20)	(-1.42)
System Weighted MSE			1.0040	
Degrees of Freedom			978	
System Weighted R-Square			0.4962	
N			268	

* Significant at 0.01 level; ** significant at 0.05 level; *** significant at 0.10 level

The sample consists of 269 TSE 300 index firms in 1993.

The table presents results of the 3SLS system for 1993 data, where variables are defined as follows: Q = [MVE + PS + (CL - CA) +LTD]/TA; UNREL = percentage of unrelated directors on the board; OWN = Ownership concentration, percentage of equity held by shareholders with at least 10 percent equity stake; OWN^2 = The square of OWN variable, introduced to capture any possible non-linear relationship between

ownership structure and all other endogenous variables, DEBT = Long term debt divided by the book value of total assets;
BSIZE = Log of the total number of directors on the board; CEODUAL = Dummy variable that takes the value one when the CEO is also the Chair of the board, and zero otherwise; DIROWN = Proportion of equity held by the board of directors, including top officers which are members of the board; SIZE = Log of the book value of total assets;
CAPEX = Capital expenditures scaled by total assets; PROF = Profitability defined as operating income over sales; INTANG = Intangibles, ratio of intangibles to total assets;
SIC = Industrial classification SIC codes. The total sample is divided into 5 industry groups based on the 2-digit SIC code: PRIM (primary industries), MANU (manufacturing), INFO (information technology and telecommunications), FINA (financial industry) and SERV (services), and introduced the first four as dummy variables, and the last one SERV is captured by the intercept parameter estimate.

Table 8

1997 Coefficient Estimates of Three-Stage Least-Squares (3SLS)

(t-values in parenthesis)

	Q Equation	Unrel. Equation	Own Equation	Debt Equation
Intercept	-2.4232	0.5116	1.7830***	-0.6342**
	(-1.21)	(1.57)	(3.11)	(-2.02)
Q		0.0426	-0.2290*	0.0988*
	-	(0.23)	(-1.95)	(1.84)
UNREL	6.9590**		-2.0109***	0.8466**
	(2.02)	-	(-2.65)	(2.00)
OWN	0.9846	-0.0329		0.0108
	(0.34)	(-0.07)	-	(0.08)
OWN^2	1.0068***	-0.3751***		0.3706***
	(2.85)	(-5.97)	-	(18.59)
DEBT	-6.5326**	1.0892*	2.9528***	
	(-2.32)	(1.71)	(2.89)	-
BSIZE	-0.2331***	0.0214		
	(-4.22)	(0.84)	-	-
CEODUAL	-0.1342	0.0158		
	(-0.78)	(0.38)	-	-
DIROWN	1.2037	0.0925		
	(0.61)	(-0.25)	-	-
SIZE	0.9317***	-0.1059	-0.1394	0.0284
	(3.64)	(-0.86)	(-1.27)	(0.85)
CAPEX			-0.3071	-
	-	-	(-0.44)	
ROA	0.0035		0.0005	
	(0.69)	-	(0.13)	-
PROF				0.00016
	-	-	-	(0.49)
IINTANG				0.00008
	-	-	-	(0.86)
PRIM	-0.5047	0.0153	-0.21161	0.0733
	(-1.27)	(0.12)	(-1.25)	(1.08)
MANU	-0.7583	0.0605	-0.0669	0.0222
	(-1.40)	(0.43)	(-0.37)	(0.34)
INFO	-0.6011	0.0443	-0.1233	0.0301
	(-0.80)	(0.30)	(-0.61)	(0.44)
FINA	-0.6376	0.0793	0.1341	-0.0411
	(-1.45)	(0.69)	(0.66)	(-0.56)
System Weighted MSE			4.9062	
Degrees of Freedom			902	
System Weighted R-Square			0.2731	
N			241	

* Significant at 0.01 level; ** significant at 0.05 level; *** significant at 0.10 level

The sample consists of 241 TSE 300 index firms in 1997.

The table presents results of the 3SLS system for 1997 data, where variables are defined as follows: Q = [MVE + PS + (CL - CA) +LTD]/TA; UNREL = percentage of unrelated directors on the board; OWN = Ownership concentration, percentage of equity held by shareholders with at least 10 percent equity stake; OWN^2 = The square of OWN variable, introduced to capture any possible non-linear relationship between

ownership structure and all other endogenous variables, DEBT = Long term debt divided by the book value of total assets;
BSIZE = Log of the total number of directors on the board; CEODUAL = Dummy variable that takes the value one when the CEO is also the Chair of the board, and zero otherwise; DIROWN = Proportion of equity held by the board of directors, including top officers which are members of the board; SIZE = Log of the book value of total assets;
CAPEX = Capital expenditures scaled by total assets; PROF = Profitability defined as operating income over sales; INTANG = Intangibles, ratio of intangibles to total assets;
SIC = Industrial classification SIC codes. The total sample is divided into 5 industry groups based on the 2-digit SIC code: PRIM (primary industries), MANU (manufacturing), INFO (information technology and telecommunications), FINA (financial industry) and SERV (services), and introduced the first four as dummy variables, and the last one SERV is captured by the intercept parameter estimate.

Table 9

1994 Coefficient Estimates of Three-Stage Least-Squares (3SLS)

(t-values in parenthesis)

	Q Equation	Unrel. Equation	Own Equation	Debt Equation
Intercept	4.3072*	0.3842	4.7070***	0.1190
	(1.73)	(0.53)	(0.70)	(0.93)
Q		-0.0699	-0.5925	0.0421*
	-	(-0.24)	(-0.44)	(1.76)
UNREL	-9.8148		-17.2086	0.3599
	(-1.11)	-	(-1.28)	(1.54)
OWN	0.0352**	0.0074**		-0.0077***
	(2.20)	(2.45)	-	(-6.24)
OWN^2	-0.00005**	-0.00001***		0.00001***
	(2.20)	(-2.63)	-	(7.61)
DEBT	6.3685*	0.5294	33.2252***	
	(1.88)	(0.85)	(2.93)	-
BSIZE	-0.7869	-0.0244		
	(-0.90)	(-0.05)	-	-
CEODUAL	-0.6497	-0.0557		
	(-1.21)	(-0.73)	-	-
DIROWN	-1.0045	-0.1115		
	(-0.61)	(-0.60)	-	-
SIZE	1.2872***	0.1044	-1.5565	-0.0123
	(2.68)	(0.39)	(-0.89)	(-0.37)
CAPEX			-1.3062	-
	-	-	(-0.25)	
ROA	0.0208		3.2920***	
	(0.98)	-	(41.56)	-
PROF				-0.0081***
	-	-	-	(-4.30)
INTANG				0.1227
	-	-	-	(1.13)
PRIM	-0.2687	-0.0244	3.8494	-0.1102**
	(-0.40)	(-0.30)	(1.18)	(-2.01)
MANU	-1.1291	-0.1044	1.2186	-0.0162
	(-1.27)	(-0.61)	(0.40)	(-0.28)
INFO	-0.9052	-0.0894	-1.6308	0.0381
	(-1.11)	(-0.77)	(-0.54)	(0.68)
FINA	0.1137	-0.0126	6.5340**	-0.1165*
	(0.15)	(-0.08)	(1.98)	(-1.90)
System Weighted MSE			111.6969	
Degrees of Freedom			994	
System Weighted R-Square			0.2190	
N			269	

* Significant at 0.01 level; ** significant at 0.05 level; *** significant at 0.10 level

The sample consists of 269 TSE 300 index firms in 1994.

The table presents results of the 3SLS system for 1994 data, where variables are defined as follows: Q = [MVE + PS + (CL - CA) +LTD]/TA; UNREL = percentage of unrelated directors on the board; OWN = Ownership concentration, percentage of equity held by shareholders with at least 10 percent equity stake; OWN^2 = The square of OWN variable, introduced to capture any possible non-linear relationship between

ownership structure and all other endogenous variables, DEBT = Long term debt divided by the book value of total assets;
BSIZE = Log of the total number of directors on the board; CEODUAL = Dummy variable that takes the value one when the CEO is also the Chair of the board, and zero otherwise; DIROWN = Proportion of equity held by the board of directors, including top officers which are members of the board; SIZE = Log of the book value of total assets;
CAPEX = Capital expenditures scaled by total assets; PROF = Profitability defined as operating income over sales; INTANG = Intangibles, ratio of intangibles to total assets;
SIC = Industrial classification SIC codes. The total sample is divided into 5 industry groups based on the 2-digit SIC code: PRIM (primary industries), MANU (manufacturing), INFO (information technology and telecommunications), FINA (financial industry) and SERV (services), and introduced the first four as dummy variables, and the last one SERV is captured by the intercept parameter estimate.

Table 10

1995 Coefficient Estimates of Three-Stage Least-Squares (3SLS)

(t-values in parenthesis)

	Q Equation	Unrel. Equation	Own Equation	Debt Equation
Intercept	1.0907	0.1769	1.7932***	63.3758*
	(0.19)	(0.31)	(3.41)	(1.88)
Q		0.0535	-0.0606	-52.7734*
	-	(0.48)	(-0.83)	(-1.73)
UNREL	7.1970		-2.1844***	-96.0215*
	(0.63)	-	(-2.72)	(-1.88)
OWN	-2.6589	0.5361		-10.2253
	(-0.21)	(0.31)	-	(-0.72)
OWN^2	-4.4423***	-0.1851***		-28.6643***
	(-4.06)	(-2.71)	-	(-7.50)
DEBT	-0.0135	0.0002	0.2443	
	(-1.34)	(0.21)	(1.53)	-
BSIZE	-2.6538	0.1938		
	(-1.49)	(1.46)	-	-
CEODUAL	0.3679	-0.0155		
	(0.61)	(-0.43)	-	-
DIROWN	3.6475	-0.3302		
	(0.56)	(-0.36)	-	-
SIZE	1.1687**	-0.0566	0.0499	7.2287*
	(1.97)	(-0.45)	(0.49)	(1.69)
CAPEX			-1.4064	-
	-	-	(-1.55)	
ROA	-0.0204		0.0027	
	(-0.41)	-	(0.05)	-
PROF				-3.3131
	-	-	-	(0.49)
INTANG				-0.0167
	-	-	-	(-0.69)
PRIM	-0.8739	0.0164	-0.2114	-15.7823*
	(-0.37)	(0.05)	(-0.98)	(-1.73)
MANU	0.2742	-0.0490	-0.0669	-8.1784
	(0.19)	(-0.61)	(-0.48)	(-1.19)
INFO	0.7713	-0.0628	-0.1233	-4.0989
	(0.48)	(-0.63)	(-0.26)	(-0.65)
FINA	0.0283	-0.0174	0.1341	-4.7255
	(0.02)	(-0.14)	(-0.69)	(-0.77)
System Weighted MSE			1.0625	
Degrees of Freedom			938	
System Weighted R-Square			0.2688	
N			254	

* Significant at 0.01 level; ** significant at 0.05 level; *** significant at 0.10 level

The sample consists of 254 TSE 300 index firms in 1995.

The table presents results of the 3SLS system for 1995 data, where variables are defined as follows: Q = [MVE + PS + (CL - CA) +LTD]/TA; UNREL = percentage of unrelated directors on the board; OWN = Ownership concentration, percentage of equity held by shareholders with at least 10 percent equity stake;

OWN^2 = The square of OWN variable, introduced to capture any possible non-linear relationship between ownership structure and all other endogenous variables, DEBT = Long term debt divided by the book value of total assets;
BSIZE = Log of the total number of directors on the board; CEODUAL = Dummy variable that takes the value one when the CEO is also the Chair of the board, and zero otherwise; DIROWN = Proportion of equity held by the board of directors, including top officers which are members of the board; SIZE = Log of the book value of total assets;
CAPEX = Capital expenditures scaled by total assets; PROF = Profitability defined as operating income over sales; INTANG = Intangibles, ratio of intangibles to total assets;
SIC = Industrial classification SIC codes. The total sample is divided into 5 industry groups based on the 2-digit SIC code: PRIM (primary industries), MANU (manufacturing), INFO (information technology and telecommunications), FINA (financial industry) and SERV (services), and introduced the first four as dummy variables, and the last one SERV is captured by the intercept parameter estimate.

Table 11

1996 Coefficient Estimates of Three-Stage Least-Squares (3SLS)

(t-values in parenthesis)

	Q Equation	Unrel. Equation	Own Equation	Debt Equation
Intercept	5.4764	0.4299*	1.4048***	-0.6390**
	(1.16)	(1.93)	(3.98)	(-1.98)
Q		-0.0026	-0.0350	0.0216*
	-	(-0.08)	(-0.77)	(0.81)
UNREL	0.4020		-2.4362***	1.3446***
	(0.06)	-	(-3.90)	(2.64)
OWN	-8.3607	0.0642		0.0690
	(-1.03)	(0.16)	-	(0.53)
OWN^2	-5.4474***	-0.3959***		0.5544***
	(-5.46)	(-8.83)	-	(19.07)
DEBT	7.0074	0.4689***	1.5237***	
	(1.46)	(2.61)	(3.31)	-
BSIZE	-2.0701**	0.0456		
	(-2.01)	(0.68)	-	-
CEODUAL	-0.0522	-0.0073		
	(-0.11)	(-0.34)	-	-
DIROWN	6.1511	-0.0445		
	(1.58)	(-0.22)	-	-
SIZE	0.5462	0.0159	0.0538	-0.0370
	(0.86)	(-0.68)	(0.88)	(-0.88)
CAPEX			-0.0797	-
	-	-	(-0.30)	
ROA	0.2124		0.0015	
	(0.69)	-	(0.09)	-
PROF				-0.0010
	-	-	-	(-0.41)
INATANG				7.777E-6
	-	-	-	(0.55)
PRIM	-1.9178	-0.0459	-0.2243*	0.0795
	(-1.05)	(-0.52)	(-1.78)	(0.95)
MANU	0.2488	0.0111	-0.0111	-0.0220
	(0.22)	(0.22)	(0.09)	(-0.32)
INFO	1.1132	0.0036	-0.0138	-0.0064
	(0.88)	(0.06)	(-0.11)	(-0.09)
FINA	1.4292	0.0477	0.1754	-0.1174
	(1.04)	(0.76)	(1.29)	(-1.54)
System Weighted MSE			3.0988	
Degrees of Freedom			882	
System Weighted R-Square			0.4624	
N			241	

* Significant at 0.01 level; ** significant at 0.05 level; *** significant at 0.10 level

The sample consists of 241 TSE 300 index firms in 1996.

The table presents results of the 3SLS system for 1993 data, where variables are defined as follows: Q = [MVE + PS + (CL - CA) +LTD]/TA; UNREL = percentage of unrelated directors on the board; OWN = Ownership concentration, percentage of equity held by shareholders with at least 10 percent equity stake; OWN^2 = The square of OWN variable, introduced to capture any possible non-linear relationship between

ownership structure and all other endogenous variables, DEBT = Long term debt divided by the book value of total assets;
BSIZE = Log of the total number of directors on the board; CEODUAL = Dummy variable that takes the value one when the CEO is also the Chair of the board, and zero otherwise; DIROWN = Proportion of equity held by the board of directors, including top officers which are members of the board; SIZE = Log of the book value of total assets;
CAPEX = Capital expenditures scaled by total assets; PROF = Profitability defined as operating income over sales; INTANG = Intangibles, ratio of intangibles to total assets;
SIC = Industrial classification SIC codes. The total sample is divided into 5 industry groups based on the 2-digit SIC code: PRIM (primary industries), MANU (manufacturing), INFO (information technology and telecommunications), FINA (financial industry) and SERV (services), and introduced the first four as dummy variables, and the last one SERV is captured by the intercept parameter estimate.

Table 12

Coefficient Estimates of Three-Stage Least-Squares (3SLS) for the Pooled Sample

	Q Equation	Unrel. Equation	Own Equation	Debt Equation
Intercept	1.8102***	0.2914*	-1.2092	0.0319
	(0.25)	(1.82)	(-0.78)	(0.12)
Q	-	0.0044	0.6977	0.0652
		(0.09)	(1.45)	(0.82)
UNREL	1.3678	-	-0.7756	-0.1101
	(0.06)		(-1.16)	(-0.62)
G*UNREL	0.1512***	-	-	-
	(7.92)			
OWN	0.2424	0.2358	-	0.0679
	(0.10)	(1.51)		(0.88)
OWN^2	1.5094***	-0.2086***	-	-0.0291
	(48.73)	(-10.72)		(-1.25)
DEBT	-2.3747	0.1360	1.5994*	-
	(-0.78)	(1.43)	(1.95)	
BSIZE	-0.0140	0.0864***	-	-
	(-0.01)	(4.09)		
CEODUAL	-0.0072*	-0.0218**	-	-
	(-0.01)	(-2.33)		
DIROWN	0.0049	-0.1966**	-	-
	(0.00)	(-2.48)		
SIZE	-0.1854*	0.0122	0.1190*	0.0367**
	(-0.67)	(1.24)	(1.65)	(2.37)
CAPEX			-1.0237*	-
	-	-	(-1.83)	
ROA	1.5415*	-	0.0024	-
	(1.90)		(0.30)	
PROF	-	-	-	-1.0122***
				(-6.01)
INATANG	-	-	-	0.1923***
				(3.02)
PRIM	-0.0023	-0.0212	-0.0445	-0.0689**
	(-0.00)	(-0.80)	(-0.34)	(-2.48)
MANU	-0.3170	-0.0399*	0.1975	-0.0299
	(-0.28)	(-1.70)	(1.21)	(-1.04)
INFO	-0.3481	-0.0290	0.1986	0.0353
	(-0.35)	(-1.07)	(1.52)	(1.25)
FINA	-0.4901	-0.0238	0.3326	-0.1329***
	(-0.68)	(-0.78)	(1.39)	(-4.10)
GUIDE	-	0.0283***	-	-
		(3.44)		
System Weighted MSE			7.9170	
Degrees of Freedom			4716	
System Weighted R-Square			0.2273	
N			1272	

* Significant at 0.01 level; ** significant at 0.05 level; *** significant at 0.10 level

The sample consists of 268 firms in 1993, 269 in 1994, 253 in 1995, 240 in 1996, and 239 in 1997, for a total of 1272 observations (t-values in parenthesis). The table presents results of the 3SLS system for

pooled data, where variables are defined as follows: Q = [MVE + PS + (CL - CA) +LTD]/TA; UNREL = percentage of unrelated directors on the board; OWN = Ownership concentration, percentage of equity held by shareholders with at least 10 percent equity stake; OWN^2 = The square of OWN variable, introduced to capture any possible non-linear relationship between ownership structure and all other endogenous variables, DEBT = Long term debt divided by the book value of total assets; BSIZE = Log of the total number of directors on the board; CEODUAL = Dummy variable that takes the value one when the CEO is also the Chair of the board, and zero otherwise; DIROWN = Proportion of equity held by the board of directors, including top officers which are members of the board; SIZE = Log of the book value of total assets; CAPEX = Capital expenditures scaled by total assets; PROF = Profitability defined as operating income over sales; INTANG = Intangibles, ratio of intangibles to total assets;
SIC = Industrial classification SIC codes. The total sample is divided into 5 industry groups based on the 2-digit SIC code: PRIM (primary industries), MANU (manufacturing), INFO (information technology and telecommunications), FINA (financial industry) and SERV (services), and introduced the first four as dummy variables, and the last one SERV is captured by the intercept parameter estimate.

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