

## CORPORATE GOVERNANCE AND FIRM VALUE: EVIDENCE FROM CANADIAN CAPITAL MARKETS

Parveen P. Gupta\*, Duane B. Kennedy\*\*, Samuel C. Weaver\*\*\*

### Abstract

The Globe and Mail's Report on Business annually publishes governance rankings for more than 200 companies represented in the TSX/S&P index. There are four sub-categories that comprise the composite scores: board composition; board and CEO compensation; shareholder rights; and board governance disclosure. The purpose of this paper is to examine the association between the composite or sub-category corporate governance scores and various measures of firm value. We test for this association using data for 2002 through 2005 on the Report on Business rankings and various financial and market measures. Overall, our study does not find an association between the composite or sub-category corporate governance scores and the various measures of firm value.

**Keywords:** Corporate Governance, Corporate Valuation, Corporate Performance, Information Content

\*Department of Accounting, Lehigh University

\*\*Corresponding author. School of Accounting and Finance, University of Waterloo, Waterloo, Ontario, Canada, N2L 3G1, phone 519-888-4752, fax 519-888-7562, email [dkennedy@uwaterloo.ca](mailto:dkennedy@uwaterloo.ca)

\*\*\*Department of Finance, Lehigh University

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### I. Introduction

Recent financial scandals, in U.S., Canada and Europe, involving massive earnings restatements, excessive CEO compensation, backdating of stock options, and breakdown of the most basic of the corporate governance mechanisms have thrust "corporate governance" to the forefront in the global capital markets as never before. In U.S., the Sarbanes-Oxley Act of 2002, which aims to curb some of the most blatant abuses resulting from poor corporate governance, was enacted into law in the shortest possible time in the country's modern legislative history. In Canada, the Ontario Securities Commission's proposed Multilateral Instrument No. 52-109 "Certification of Disclosure in Issuers' Annual and Interim Filings" aims to strengthen internal controls over a company's financial reporting systems. Similarly, in United Kingdom, which follows a "comply or explain" approach to corporate governance, the Turnbull Guidance (which sets out best practices for internal control for U.K.-based companies) is currently under review for possible alignment with Sections 302 and 404 of the Sarbanes-Oxley Act. Other countries with developed securities markets in Europe and Australasia are also debating similar corporate governance measures and reforms. The purpose of these international legislative

initiatives is to enhance accountability and financial transparency in global capital markets which is based on the presumption that good corporate governance produces better firm performance.

As required by various state and federal laws, at least in the U.S., managers have always disclosed the corporate governance mechanisms and processes that their firms have put in place to protect shareholder interests. It has been up to investors and analysts to collect and dissect these disclosures to form an overall opinion about the state of corporate governance at a company. However, this requires considerable effort which has led to the development of a number of governance indexes published by a variety of information intermediaries. For example in the U.S., Standard & Poor's develops and privately distributes such ratings<sup>27</sup> for companies in S&P 400, S&P 500, S&P 600 and Russell 3000 indexes; the Institutional Shareholder Service (ISS), the leading proxy advisory firm, now rates more than 7,500 U.S. and international corporations on a number of proprietary dimensions and markets its corporate governance quotient (CGQ) to institutional shareholders; and GovernanceMetrics International (GMI), a privately-

<sup>27</sup> We use the terms ratings, rankings, and scores interchangeably to describe the product from these information services.

held firm based in New York City, has developed corporate governance scores for more than 1,600 companies in its data base from over 600 different proprietary governance variables. Similarly, in Europe, Deminor Corporate Governance ratings are published for companies included in the FTSE Eurotop 300 index. None of these composite governance ratings are available directly to the capital markets as these information providers sell the ratings to client firms as well as to institutional and individual investors. In Canada, the Report on Business, published by the Globe and Mail newspaper, annually publishes governance scores for the companies represented on the TSX/S&P index. Thus these ratings are unique because they are publicly available at no cost whereas other governance ratings are proprietary.

The purpose of this research study is to determine whether the governance scores published by the Report on Business are value relevant. We examine the governance scores published for 2002 through 2005 for the 200 to 270 companies represented on Canada's TSX/S&P index to determine whether firms with overall *higher* corporate governance scores have greater value than firms with overall *lower* corporate governance scores? This study extends prior research on Canadian firms by looking at a four year time series of governance scores and by considering all firms covered by the Report on Business. We extend prior international research by examining the value relevance of governance scores which are publicly available.

The remainder of the paper is organized as follows: Section II discusses prior research and develops hypotheses. Section III presents a description of the Report on Business data-set and study's research design. Section IV presents empirical results and discusses findings and Section V concludes the paper with a discussion of its limitations and potential for future research in this area.

## II. Prior Research and Hypotheses Development

The majority of the empirical<sup>28</sup> research prior to 2000 focused on understanding the relationship of specific corporate governance variables to firm performance. Significant among these variables are: ownership concentration (owner-controlled firms versus manager-controlled firms, presence of a dominant shareholder versus controlling blockholders), market for corporate control (mergers, acquisitions and hostile takeovers), monitoring of managers via managerial compensation (salary, bonus, stock options or other equity based) and board composition (presence of outside or independent directors). According to Maher and Andersson (1999), the

results of these studies vary from country-to-country and are mixed at best. However, in recent years researchers have begun to explore whether corporate governance as a whole, either viewed as multiple rating factors or as measured by a composite score<sup>29</sup>, is related to firm value.

The incomplete revelation hypothesis (Bloomfield, 2002) concludes that "statistics that are more costly to extract from public data are less completely revealed by market prices" (p. 235). The data underlying governance scores are publicly available in various corporate disclosures but it is costly for investors to convert these disclosures into useful statistics for investment decisions. We observe that a variety of information intermediaries produce governance scores from the publicly available disclosures and investors perceive that the governance scores are sufficiently valuable that they are willing to pay the fees charged by these intermediaries for the governance scores. Many researchers have examined the relationship between governance scores and firm value. It is important to note that such research is simultaneously testing the relationship between governance and firm value and the validity of the score to measure governance.

One of the earliest U.S. research studies exploring the relationship between composite governance scores and firm value was conducted by Standard & Poor's (Patel and Dallas, 2002). The study collected data from the annual reports, 10-Ks, and proxy filings of 460 of the S&P 500 companies, on 98 possible attributes, broadly classified into three major categories (i.e., ownership structure and investor rights, financial transparency and information disclosure, and board and management structure and process). The study concluded that companies can lower their cost of equity capital by providing higher transparency and disclosure to the capital markets. To understand whether the transparency and disclosure rankings had any information content around the disclosure date, Cheng, Collins and Huang (forthcoming) investigated association between these ratings and abnormal returns and earnings response coefficients. They did not find a significant association between the transparency and disclosure rankings and abnormal returns. They did find a significant negative response when firms have large differences between the disclosures in the annual report and the more comprehensive disclosures in the 10-Ks and proxy filings. This indicates that the markets view selective disclosures in the annual reports as poor disclosure practice. These findings provide preliminary evidence that the aggregation of

<sup>28</sup> For a comprehensive review of this topic, see Maher and Andersson (1999).

<sup>29</sup> Although, there are several issues (e.g., what individual corporate governance variables should be included in such ratings? Should all the variables be weighted equally? What data correctly "proxy" for the underlying intent of the variable?) that surround the construction of these indices, their use by market participants is on the rise.

publicly disclosed governance information into an index form has little information content or value relevance.

Gompers, Ishii, and Metrick (2003) constructed a governance index to proxy for the level of shareholder rights at about 1,500 large firms traded on U.S. exchanges during the 1990s. Their G-index is constructed from factors in the Investor Responsibility Research Center database. This index focuses on corporate governance provisions related to takeover defenses. Based on this proprietary index, the study classified the sample firms into two distinct portfolios, firms with the *strongest shareholder rights* and firms with the *weakest shareholder rights*. The authors back-tested an investment strategy consisting of purchasing firms with the strongest shareholder rights and selling firms with the weakest shareholder rights and they found that such an investment strategy would have earned abnormal returns of 8.5 percent per year. The authors also found a strong relationship between corporate governance and firm value as measured by Tobin's Q.

Core, Guay and Rusticus (2006) were troubled by these findings. According to them, "a puzzling feature of the [Gompers et al, (2003)] paper is that the authors find persistent stock market underperformance for firms with weak shareholder rights, but they do not find significant underperformance in firm operating performance, which they measure with accounting return on equity" (p. 1). Using analysts forecast errors and earnings announcement returns, Core, Guay and Rusticus concluded that weak governance *does not* cause poor stock returns but also note that stock return differentials reverse in subsequent periods.

Following the Gompers, Ishii, and Metrick (2003) approach, Bauer, Gunster, and Otten (2004) constructed "good governance portfolios" (defined as the 20% of the companies with highest corporate governance ratings) and "bad governance portfolios" (20% of the companies with lowest corporate governance ratings) using the Deminor corporate governance ratings for companies included in the FTSE Eurotop 300 index. Given the zero investment strategy, the study found positive correlation between firm valuation, measured by Tobin's Q, and corporate governance scores. However, the authors found that the relationship weakened substantially after adjusting for country differences. Contrary to Gompers, Ishii, and Metrick, this study found a negative relationship between governance standards and earnings based performance ratios.

Brown and Caylor (2006) used a set of 51 factors from the Institutional Shareholder Services database to construct an alternative governance index (Gov-Score). They examined the relationship between the Gov-Score index and firm value, measured by Tobin's Q, using data from 2002. Brown and Caylor showed that their Gov-Score index had a stronger association with firm valuation than the G-index developed by Gompers, Ishii, and Metrick (2003).

They then used a series of multivariate methods to show that a subset consisting of seven factors drive the relationship between Gov-Score and firm value.

The corporate governance quotient produced by Institutional Shareholder Services combines 61 variables across eight categories of corporate governance topics.<sup>30</sup> The ranking measures the quality of a firm's corporate governance relative to other firms in the same industry. Epps and Cereola (forthcoming) examined the relationship between the corporate governance quotient and operating performance, measured by return on assets and return on equity, for the years 2002 through 2004. The association between the corporate governance quotient and operating performance was generally not significant.

Aggarwal et al. (2007) used Institutional Shareholder Services data for 2005 to compare the governance of foreign firms to the governance of similar U.S. firms. They found that foreign firms generally had worse governance than comparable U.S. firms. They examined the relationship between governance and firm value, measured by Tobin's Q, and found that the gap in governance between the foreign firm and comparable U.S. firm was strongly related to firm value.

Although the preceding studies generally establish a positive association between corporate governance measures and firm value, these studies construct their own corporate governance indices and then test whether good governance is associated with stock returns or higher firm value. It is important to note that the corporate governance ratings in these studies are not publicly available; instead, they are based on private data developed by intermediaries such as the Investor Responsibility Research Center or Institutional Shareholder Services from publicly available information.

The Report on Business, published by the Globe & Mail, calculates governance scores, including a composite index, for companies traded on the Toronto Stock Exchange that are part of Canada's benchmark S&P/TSX index and makes the scores publicly available. Four prior studies examined the relationship between the Report on Business scores and stock values. Foerster and Huen (2004) used the 2002 rankings to examine the relationship between the governance scores and excess stock returns calculated over a number of different time periods. They found a significant positive association in the two day window around release of the governance scores although the R<sup>2</sup> was quite small. Klein, Shapiro and Young (2005) used the 2002 rankings to examine the impact of ownership concentration on the relationship between the governance scores and firm value. They found a significant relationship between firm value, measured by Tobin's Q, and the scores for the sub-categories but the relationship was not significant for the overall

<sup>30</sup> The corporate governance quotient is available to institutional investors but is not publicly available.

score. Wheeler and Davies (2006) examined the relationship between the governance scores and changes in market capitalization. They considered the sixty firms with the largest market capitalization (TSX60) and governance scores during the period from 2002 to 2004. Wheeler and Davies did not find a significant relationship between the Report on Business governance scores and shifts in market capitalization. Adjaoud, Zeghal and Andaleeb (2007) used the 2002 rankings to examine the relationship between firm performance and the governance scores. They found that the relationship generally was not significant between the scores and accounting-based measures of performance (such as ROI, ROE, EPS, and market-to-book) while the relationship between the scores and measures of value created (such as market value added and economic value added) was generally significant.

Our study extends the existing research in a number of dimensions. We extend the research on foreign data by examining whether there is an association between publicly available governance scores and firm value. We extend the Canadian research by examining a four-year time series of data to determine whether there is an ongoing association between the publicly disclosed corporate governance scores and firm value. We measure firm value along three dimensions: relative market valuation as measured by Tobin's Q and market-to-book ratio, financial performance as measured by return on assets, and market reaction as measured by the 11-day and 2-day reaction around the publication date of the governance scores. Since many firms included in the study are cross-listed on U.S. stock exchanges as well, we also explore whether cross-listing matters while explaining association between corporate governance scores and firm value. Consequently, at the macro-level we test following null hypotheses:

$H_0$  There is no relationship between the Report on Business composite corporate governance ratings and firm value.

$H_0$  There is no relationship between the components of the Report on Business composite corporate governance ratings and firm value

### III. Data Description and Research Design

#### (i) Data Description

Our study utilizes data on corporate governance scores, and related stock price and financial statement data for companies included in Canada's benchmark S&P/TSX composite index. The corporate governance scores are prepared by the Globe & Mail's Report on Business and are designed to rate boards of directors on a variety of criteria. The criteria are derived from corporate governance guidelines and recommendations by major institutional investors,

industry associations and academics.<sup>31</sup> The scores are published each year in the Report on Business and made available on the newspaper's website.<sup>32</sup> The number of companies reviewed were:<sup>33</sup>

Year	Publication Date	Companies	
		Total	Common
2002	October 7, 2002	270	158
2003	September 22, 2003	207	158
2004	October 12, 2004	218	158
2005	October 17, 2005	209	158

We focused on the companies that are common to all four years leading to a sample consisting of 158 companies with four years of time series data on corporate governance scores. We examine the sensitivity of the results by replicating the analysis using all companies available in each year.

The data to develop the composite governance scores are collected by the Report on Business from proxy circulars filed by Canadian companies to the Ontario Securities Commission. There are four sub-categories that comprise the composite scores: board composition, board and CEO compensation, shareholder rights, and board governance related disclosures. The maximum composite score that a company can achieve is 100 points. Out of the total 100 possible points, during 2002, a company could score a maximum of 40 points on the board composition dimension, 23 points on the board and CEO compensation dimension, 22 points on the shareholder rights dimension and 15 points on the disclosure of board related structure and process dimension. During the ensuing three years, the newspaper made some adjustments to each of the

<sup>31</sup> To examine the validity of the criteria, we compared them to the governance factors from the Institutional Shareholder Services used in the Brown and Caylor (2006), Aggarwal et al. (2007), and Epps and Cereola (forthcoming) articles. Approximately two-thirds of the Report on Business criteria were consistent with ISS factors.

<sup>32</sup> See the Board Games links at <http://www.theglobeandmail.com/v5/content/features.html>

<sup>33</sup> There are two reasons for different number of companies being reported across years. One reason is the restructuring of the index that took place from May 2002 to December 2002. The TSX 300 was renamed on May 1, 2002 to the S&P/TSX composite index. The index went through a transition that was designed to reduce the number of constituent companies because the bottom 100 companies were too small, collectively representing only two percent of the index. The second reason is the cut-off date of the Report on Business study, which affects the number of proxy circulars available to the Report on Business reporters who compile this data. The Report on Business excludes companies that are in bankruptcy protection.

three sub-categories except the board composition dimension, which remained at the 40 point level.<sup>34</sup>

### (ii) **Research Design**

Firm value is the dependent variable and composite as well as sub-category governance scores are the independent variables in our overall research design. We measure firm value through three separate sets of metrics: (1) relative market valuation as measured by Tobin's Q and market-to-book ratio, (2) firm's operating performance as measured by its return on assets, and (3) market reaction as measured by the 11-day stock returns and 2-day stock returns around the publication date of the Report on Business rankings.

Tobin's Q has been used as a measure of firm value in a variety of corporate governance studies including Gompers, Ishii and Metrick (2003), Brown and Caylor (2006), and Aggarwal et al. (2007). Based on the definition provided by Gompers, Ishii and Metrick, we obtained book value data from Compustat and market value data from the Canadian Financial Markets Research Centre (CFMRC) to calculate Tobin's Q. Specifically, Tobin's Q is defined as ((total assets + market value of common stock - book value of common stock - deferred taxes) / total assets). As a sensitivity check, we use market-to-book ratio as an alternative measure of firm value. Both Tobin's Q and the market-to-book metrics measure firm value based on book vis-à-vis market-based measures. For our research study, the measures are highly positively correlated (greater than 0.85 in each year).

After analyzing the corporate governance scores and the measures of firm value through univariate statistical measures, three econometric regression models are developed. The three regressions are estimated using companies common to all four years (2002-2005) for which data on the variables are available from COMPUSTAT.

#### Econometric Model 1

The first regression model examines Tobin's Q and market-to-book ratio against the governance scores and selected control variables. We consider both the composite governance scores as well as the scores for the four sub-categories (board composition, board and CEO compensation, shareholder rights, and board governance related disclosures) as prior research has shown that the relationship can vary across the sub-categories. The following two equations capture the overall governance score regressions:

$$\text{Tobin's Q} = \alpha + \beta \text{ Composite Governance Score} + \gamma \ln(\text{Sales}) + \delta \text{ Return on Assets} + \zeta \text{ Cross-listing status} + \varepsilon \quad (1)$$

$$\text{Market-to-book ratio} = \alpha + \beta \text{ Composite Governance Score} + \gamma \ln(\text{Sales}) + \delta \text{ Return on Assets} + \zeta \text{ Cross-listing status} + \varepsilon \quad (2)$$

where Tobin's Q was calculated using the market value of common stock at the end of the appropriate month<sup>35</sup> and book values at the most recent fiscal year end on or before the month in which the scores were released. The following two equations show the category score regressions:

$$\text{Tobin's Q} = \alpha + \sum \beta \text{ Category Score} + \gamma \ln(\text{Sales}) + \delta \text{ Return on Assets} + \zeta \text{ Cross-listing status} + \varepsilon \quad (3)$$

$$\text{Market-to-book ratio} = \alpha + \sum \beta \text{ Category Score} + \gamma \ln(\text{Sales}) + \delta \text{ Return on Assets} + \zeta \text{ Cross-listing status} + \varepsilon \quad (4)$$

#### Econometric Model 2

The second regression model regresses return on assets against the composite governance scores as well as each of the four categories. The following two equations respectively capture each of the regressions: Return on Assets =  $\alpha + \beta$  Composite Governance Score +  $\gamma \ln(\text{Book-to-Market}) + \delta \ln(\text{Sales}) + \zeta$  Cross-listing status +  $\varepsilon$  (5)

$$\text{Return on Assets} = \alpha + \sum \beta \text{ Category Score} + \gamma \ln(\text{Book-to-Market}) + \delta \ln(\text{Sales}) + \zeta \text{ Cross-listing status} + \varepsilon \quad (6)$$

#### Econometric Model 3

The third regression model tests whether there is a stock market reaction around the announcement date of the Report on Business rankings. We investigated only the short-window stock returns as measured by the two-day and eleven-day "event" period. The cross-sectional analysis at the firm level over a four year time period is based on the following equations:

$$R_{it} = \alpha + \beta \text{ Governance Score} + \gamma \ln(\text{Sales}) + \delta \text{ Cross-listing Status} + \varepsilon \quad (7)$$

$$R_{it} = \alpha + \sum \beta \text{ Category Scores} + \gamma \ln(\text{Sales}) + \delta \text{ Cross-listing Status} + \varepsilon \quad (8)$$

where  $R_{it}$  is the aggregate excess return over period  $t$  of individual firm  $i$  for each of the four years. Excess returns were calculated by subtracting the Canadian Financial Markets Research Centre (CFMRC) equally-weighted market index for the appropriate period.

The size of the firm (as measured by total sales as a proxy) and cross-listing status are added as control variables in all models. Prior research has consistently shown that firm size can affect firm value, return on assets, and stock returns. Cross-listing status is an indicator variable with value one when a firm is cross-listed on a U.S. stock exchange. This control variable is used because cross-listed firms face additional regulations. Return on assets is

<sup>34</sup> The first note in Table 1 details the maximum score for each sub-category over the four-year time period. The "board and CEO compensation" and "board related structure and process" sub-categories declined respectively by 4 and 2 points while the "shareholder rights" sub-category picked up an additional 6 points in the overall composite scores and rankings.

<sup>35</sup> The reason to choose month-end market value of the common stock was due to the timing of the release of the corporate governance scores on varying dates as noted above.

added to equations (1) through (4) to control for the impact of profitability on firm value. Book-to-market is added to equations (5) and (6) to control for the impact on returns of the difference between market and book value.

#### IV. Findings and Discussion

##### Sample Demographics

In Table 1, we present descriptive statistics for our sample companies for each year for which the Report on Business ratings were released to the Canadian capital markets.

#### INSERT TABLE 1 ABOUT HERE

A Canadian company can achieve a composite score from 0 to 100 in the annual Report on Business corporate governance survey. A review of Table 1, Panel A reveals that the mean composite governance scores increased by approximately 13 points from 2002 to 2005, the standard deviation declined by approximately 2 points, and the range of scores declined by 10 points.<sup>36</sup> This indicates that both the absolute and relative variation in the composite governance scores is declining. Panel B examines the scores of the governance components. The maximum scores of the components vary over time making comparison difficult. As a result, we present both the raw scores and standardized scores, calculated by dividing the raw scores by the maximum possible value for the component. Both the mean raw score and standardized score for Board Composition increases over time as the maximum score is unchanged. The raw value for the Board and CEO Compensation category stays approximately the same but the standardized score increases by 13%. The mean raw value for Shareholder Rights increases but the standardized score declines by 7%. The mean value for the Board Governance Related Disclosures increased both in terms of raw value and especially the standardized value.

Overall, the data presented in the Table 1 Panels A and B suggests that some structural shifts are occurring in the corporate governance structure and processes within Canadian companies as measured by the Report on Business survey. However, what is not clear is whether these changes are driven by the firms' desire to improve their reported ratings in the media or these changes are genuinely intended to improve the overall state of corporate governance in these companies.

In order to better understand this phenomenon, we divided our sample into cross-listed versus not cross-listed firms. A large number of Canadian

companies are cross-listed on U.S. stock exchanges. We expect the cross-listed firms to score higher in total as well as on each of the four sub categories because the passage of the Sarbanes-Oxley Act in July 2002 mandated many corporate governance reforms for all U.S. listed companies. Additionally, during the same period, the New York Stock Exchange (NYSE) and NASDAQ stock exchange substantially revised their listing standards for all public companies raising capital in the U.S. equity markets. Consistent with our expectations, the findings presented in Table 1 Panel C clearly indicate that for each year, cross-listed companies demonstrate higher overall corporate governance scores than the non-cross-listed companies. The differences in scores are statistically significant at a p-value of 0.05

We find less consistency when we analyze our sample by cross-listings at the component level. The scores for the Board Composition category are different at p-value of 0.05 for three of the four years which indicates that cross-listed firms (1) have higher proportion of independent directors on their boards with lesser number of them in director interlocks, (2) tend to conduct more executive sessions, and (3) regularly conduct overall board and director performance evaluations. The results for the Board Governance Disclosure category show strong differences in two years and no differences in the other two years. The Board and CEO Compensation category has weak differences in three years. The scores are similar for Shareholder Rights for all years. To understand why this might be the case, we reviewed the measurement metrics used by the Report on Business to compute scores for each one of the four categories. A review of these metrics suggests to us that for firms to score higher on the Board and CEO Compensation category or the Shareholder Rights category, they need to make more substantive changes in their governance structure and processes than the other two categories. As a rational market participant, believing that Canadians pay attention to the Report on Business ratings, the firms may have chosen the path of least resistance to raise their ratings by instituting changes in less challenging categories.

Table 2 provides univariate statistics and Spearman correlation coefficients for pooled data across the four years for the governance score and the firm value measures. The sample size varies from 620 to 632 observations due to missing values for some variables in Compustat. The Sales variable is highly skewed so the natural log transformation will be used in the regressions.

#### INSERT TABLE 2 ABOUT HERE

Table 2 Panel B shows a significant positive correlation between the overall corporate governance score and firm size as measured by sales meaning that larger firms have higher composite corporate governance scores. The governance score also shows a weak negative correlation with Tobin's Q and a

<sup>36</sup> Review of the governance scores indicates that there is only one score which appears to be an outlier. In 2003, Investors Group had a score of 34 and the next lowest score was 39. In all other cases (top and bottom), the most extreme score was close to the next most extreme.

positive correlation with the 2-day stock return. Interestingly, Tobin's Q and the market-to-book ratios are significantly negatively correlated with total sales, implying that larger firms, comparatively, have a lower market capitalization relative to book values. Since empirical proxies for Tobin's Q can be poor (Erickson and Whited, 2006), we also used market-to-book ratio as another measure of the market valuation of a firm. Both Tobin's Q and the market-to-book ratio are strongly correlated with return on assets. Next, we present and discuss our results and findings for each of the hypotheses presented earlier.

### ***Hypothesis Tests***

The first hypothesis explores the association between the Report on Business composite corporate governance scores and three broad measures of firm value: (1) market valuation measures as measured by Tobin's Q and market-to-book ratio (see Table 3), (2) operating performance as measured by accounting return on assets (see Table 4), and (3) market reaction measures as measured by 2-day and 11-day stock returns around the "event" date (see Table 5).

Table 3 presents results that examine the association of the governance score and Tobin's Q or the market-to-book ratio. The results using the composite governance score are presented in the first and third columns while the second and fourth columns present results using the four components of the governance score.<sup>37</sup> A pooled cross-sectional, time-series, fixed effects model is used.<sup>38</sup> The coefficients for the cross-sectional and time-series effects are not shown.

### **INSERT TABLE 3 ABOUT HERE**

A review of the results presented in the first and third columns of Table 3 indicate that after controlling for firm size (as measured by sales), profitability (return on assets), and cross-listing status, neither Tobin's Q nor the market-to-book ratio are related to the composite governance scores as reported by Report on Business. The second and fourth columns show that the coefficient for the Board and CEO Compensation score is significant for both models; at the 0.05 level for the market-to-book ratio and at the 0.10 level for Tobin's Q. The coefficients for the other three categories are not significant. These results are inconsistent with the hypothesis that higher corporate governance scores should be associated with higher market valuation because good governance practices by a firm should lead to lower cost of capital and higher overall return for shareholders.

<sup>37</sup> The scores for the four categories were standardized to have the same maximum value each year so that the data could be pooled across years. Standardization was done by dividing the actual score for the company in the category by the maximum value for the year.

<sup>38</sup> The random effects model was tested and rejected.

As a sensitivity check, we replicated the regressions on the separate years using the common sample of 158 observations.<sup>39</sup> The composite governance score variable was not significant in any individual year for either the Tobin's Q regression or the market-to-book ratio regression. Examination of the annual individual components shows that the Board Composition score had a significant negative value (e.g., the higher the Board Composition score, the lower Tobin's Q or the market-to-book ratio) for both dependent variables for 2002 and 2004 as well as a significant negative value in 2005 for Tobin's Q. This significant negative coefficient is consistent with the results found by Klein, Shapiro, and Young (2005) for 2002. The Board and CEO Compensation score had a significant positive value for 2004 for both dependent variables and in 2003 for the market-to-book model. The control variables for size ( $\ln(\text{sales})$ ) and profitability (return on assets) were significant in almost all cases with cross-listing status significant in 2004.

Our next analysis focuses on operations by using return on assets as the performance measure. Table 4 presents the results for both the composite score and using the four individual categories. A pooled cross-section, time-series, fixed effects model was used as the random effects model was rejected.

### **INSERT TABLE 4 ABOUT HERE**

We find a significant positive association between the composite corporate governance score and the firm's return on assets. When the composite score is divided into the four components, the Shareholder Rights score is significantly associated with return on assets. We replicated the analysis on the four separate years as a sensitivity check. The composite governance score was not significant in any of the four years. When the composite score is divided into the four components, the results are inconsistent. The Board Governance Disclosure score had a significant negative value (at  $p = 0.01$ ) in 2003, the Shareholder Rights score was significantly positive ( $p = 0.05$ ) in 2002, and the Board and CEO Compensation score was significantly negative ( $p = 0.10$ ) in 2004. These results suggest that there is limited association between either the composite corporate governance score or the component corporate governance scores and a firm's operating performance.

Table 5 examines the market reaction to release of the corporate governance scores by the Report on Business. Panel A presents the results using a window of 11 days around the article date and Panel B presents results using a window of two days. The results for both the random effects and fixed effects models are presented because the random effects model was only rejected in one case (11-day stock returns using the component governance scores).

### **INSERT TABLE 5 ABOUT HERE**

<sup>39</sup> The results of the sensitivity check on the individual years are not tabulated in order to save space.

We do not find a significant relationship between the corporate governance scores and market reaction as measured by the 2-day window or 11-day window. This result is not surprising since the underlying governance attributes are observable. In an efficient market, we would expect the governance information to be incorporated into share price so we would not expect a market reaction to the event of the Report on Business releasing their governance scores. We replicated the analysis using the individual years as a sensitivity check. The results were quite weak with one significant coefficient for the composite governance score across the eight regressions (a negative coefficient for the 11-day window in 2003)<sup>40</sup> and three significant coefficients among the four components across the eight regressions. As an additional sensitivity analysis, we examined the association between the stock returns (i.e., 2-day and 11-day windows) and the change in composite governance score between successive years (i.e., change in score from 2002 to 2003). The results are presented in Panel C and we do not find a significant relationship between the change in governance score and the stock returns. We replicated the analysis using the individual years and the coefficient for change in governance score was not significant in any of the six regressions.

#### ***Robustness Tests***

Since the majority of our findings indicate that the Report on Business Corporate Governance scores are not associated with firm value, we ran sensitivity analysis to ensure that our findings are robust. These results and discussion are presented in the following sections.

#### ***A. Impact of Quartile-based Portfolios***

Given that we analyze a common sample of firms, across a four-year time period, it is possible that the linearity assumption of regression analysis may hide differences in the firm value between firms with the highest governance scores and firms with the lowest governance scores. To test for this, we sub-divided our sample, for each year, into quartiles.<sup>41</sup> We treated each quartile as a separate portfolio and computed mean and median scores for each of the firm valuation variables. The results from this analysis are presented in Table 6. The final column of each of these the panels present the chi-square statistics for the

Kruskal-Wallis test of differences for the means across the four portfolios.

#### ***INSERT TABLE 6 ABOUT HERE***

There are no strong patterns among the mean or median values across the four portfolios for any of the measures of value in any of the four years. There are significant differences across portfolios for three combinations of variable and year but again there is no pattern (i.e., Tobin's Q in 2002 and 11-day Stock Return in 2003 and 2005).

#### ***B. Potential for Survivorship Bias when working with the Sample of Firms Common to all Four Years***

We chose to emphasize our analysis based on the pooled cross-sectional, time-series sample. This resulted in using a common sample consisting of the 158 companies which appeared on the Report on Business list in all four years. Thus, we may be introducing a survivorship bias in our sample because we eliminate firms that have ceased to exist or have been acquired by other companies due to their poor performance (which may possibly be due to poor corporate governance). To examine the sensitivity of our results to the survivorship basis, we re-ran the analysis on a pooled basis using the maximum number of observations available in each year.<sup>42</sup> Considering the descriptive statistics in Table 1, the governance scores, both composite and components, were generally lower in the full sample compared to the common sample. Similarly, the valuation measures in Table 2 were generally lower for the full sample compared to the common sample and the dispersion, as measured by the standard deviation and quartile values, was generally higher for the full sample. We compared the pooled results in Tables 3, 4, and 5 and the results were generally consistent between the full sample and the common sample. We did not see any consistent pattern of association emerge which would make us reconsider our earlier conclusions.

#### ***C. Cross-listing Effect***

We controlled for the effect of firms being cross-listed in the U.S. by adding an indicator variable to the regressions in Tables 3, 4, and 5. It is possible that the governance processes for cross-listed firms are fundamentally different from the processes for firms that are traded only in Canada. To test for this effect, we divided the sample into separate sub-samples for cross-listed firms and non-cross-listed firms and then re-ran the pooled analyses in Tables 3, 4, and 5. In most regressions, it was appropriate to use the random effects model rather than the fixed effects model. In Table 3, the coefficient for the Board and CEO Compensation score was significant only in the market-to-book ratio regression in the non-cross-listed sub-sample. In Table 4, the composite governance score was not significant for either sub-sample. Similarly, the Shareholder Rights score was not

<sup>40</sup> This result is inconsistent with Foerster and Huen (2004) who examined the excess returns in 2002 and found a significant positive coefficient for the 2-day window. A possible explanation is that Foerster and Huen considered all 270 firms in 2002 whereas we examined the 158 firms that are common across the four years.

<sup>41</sup> This method is similar to Adjaoud, Zeghal and Andaleeb (2007) who divided their sample into three equal groups and then compared values for their performance variables between the third with highest governance scores ("best boards") and the third with lowest governance scores ("lowest boards").

<sup>42</sup> The results are not presented in tables in the interests of brevity. They are available from the authors upon request.



significant for either sub-sample although the Board Governance Disclosure score was weakly significant for the non-cross-listed sub-sample. In Panel A of Table 5, the Board and CEO Compensation score was not significant for either sub-sample although the Board Governance Disclosure score was weakly significant for the non-cross-listed sub-sample. In Panel B, the composite governance score was significant at the 5% level in the non-cross-listed sub-sample.

## V. Conclusions and Future Research

Taken together, our research study does not find consistently strong association between the composite corporate governance scores as published annually by the Report on Business and various measures of firm value. When we examine the same association at the sub-category level, we find that some sub-categories emerge as significant but again on an inconsistent basis. Overall, the results are not robust across time and across various measures of firm value. These findings indicate to us that within Canadian capital markets, the Report on Business corporate governance rankings are not associated with firm value of the firm, accounting measures of firm performance and market reaction to these annual disclosures.

This paper extends the existing Canadian research by examining corporate governance over a four year period. The majority of the existing studies use the 2002 Report on Business governance scores to examine the association with firm value, firm performance or market reaction. Wheeler and Davies (2006) examine the association between governance scores and market capitalization using data from 2002, 2003, and 2004 but restrict their analysis to the sixty largest firms whereas our study examines all firms covered by the Report on Business. This paper extends the existing research on U.S. and other markets by using publicly available governance scores.

We conclude with a discussion of caveats and directions for future research. It is possible that the governance scores developed by the Report on Business do not adequately capture the true state of overall corporate governance of our sample firms. There is no doubt that there is considerable publicity in Canada around these rankings but that does not ensure that they are the best measure of effective governance. All of the studies summarized in Section II suffer from the same problem because there is no assurance that the governance scores from the Investor Responsibility Research Center or the Institutional Shareholder Services effectively measure governance quality. Although our study examined four years of time series data, it is possible that corporate governance is manifested in the market value of a firm over a much longer period of time especially when the years 2001 and 2002 were years of corporate scandal revelation in the United States as well as Canada, and the year 2003 was a year of

recession in the United States. It is possible that these extraneous events may be confounding some of the association that may be present in our sample firms. We suggest that it would be useful to extend research on the Canadian market by examining a longer time series and focusing on the governance of firms that enter or leave the Report on Business database.

## References

1. Adjaoud, F., Zeghal, D., and Andaleeb, S. (2007), "The Effect of Board's Quality on Performance: A Study of Canadian Firms." *Corporate Governance: An International Review*, Vol. 15 No. 4, pp. 623-635.
2. Aggarwal, R., Erel, I., Stulz, R., and Williamson, R. (2007), "Do U.S. Firms Have the Best Corporate Governance? A Cross-Country Examination of the Relation between Corporate Governance and Shareholder Wealth." Finance Working Paper #145/2007 of the European Corporate Governance Institute.
3. Bauer, R., Gunster, N., and Otten, R. (2004), "Empirical Evidence on Corporate Governance in Europe: The Effect on Stock Returns, Firm Value and Performance." *Journal of Asset Management*, Vol. 5, August, pp. 91-104.
4. Bloomfield, R.J. (2002), "The 'Incomplete Revelation Hypothesis' and Financial Reporting." *Accounting Horizons*, Vol. 16, No. 3, pp. 233-243.
5. Brown, L.D. and Caylor, M.L. (2006), "Corporate Governance and Firm Valuation." *Journal of Accounting and Public Policy*, Vol. 25 No. 4, pp. 409-434.
6. Cheng, C.S.A., Collins, D., and Huang, H. (Forthcoming), "The Market Response to the Standard & Poors Transparency & Disclosure Rankings." *Corporate Ownership & Control*
7. Core, J.E., Guay, W.R., and Rusticus, T.O. (2006), "Does Weak Governance Cause Weak Stock Returns? An Examination of Firm Operating Performance and Investors' Expectations." *The Journal of Finance*, Vol. 61 No. 2, pp. 655-687.
8. Epps, R.W. and Cereola, S.J.. (2008), "Do Institutional Shareholder Services (ISS) Corporate Governance Ratings Reflect a Company's Operating Performance?" *Critical Perspectives on Accounting*, Vol. 19 No. 8, pp. 1135-1148.
9. Erickson, T. and Whited, T.M. (2006), "On the Accuracy of Different Measures of q." *Financial Management*, Vol. 35 No. 3, pp. 5-33.
10. Foerster, S.R. and Huen, B.C. (2004), "Does Corporate Governance Matter to Canadian Investors?" *Canadian Investment Review*, Fall, pp. 19-25.
11. Gompers, P., Ishii, J., and Metrick, A. (2003), "Corporate Governance and Equity Prices." *The Quarterly Journal of Economics*, Vol. 118, February, pp. 107-155.
12. Klein, P., Shapiro, D., and Young, J. (2005), "Corporate Governance, Family Ownership and Firm Value: The Canadian Evidence." *Corporate Governance: An International Review*, Vol. 13 No. 6, pp. 769-784.
13. Maher, M. and Andersson, T. (1999), "Corporate Governance: Effects on Firm Performance and Economic Growth." Organization for Economic Co-operation and Development.

14. Patel, S.A. and Dallas, G. (2002), ‘Transparency and Disclosure: Overview of Methodology and Study Results-United States.’ Standard & Poors.  
 Evidence from Toronto Stock Exchange Listings 2002-2005.” In Been, S. and Dunphy, D. (2006), *Corporate Governance and Sustainability: Challenges for Theory and Practice*. London: Routledge.
15. Wheeler, D. and Davies, R. (2006), “Why Corporate Governance Rankings Do Not Predict Future Value:

**Table 1.** Governance Scores

Panel A: Overall Governance Score (N = 158 companies)

	2002	2003	2004	2005
Mean	62.49	67.61	72.39	75.47
Std Dev	15.10	14.01	13.66	12.62
<i>Quartile ranges:</i>				
Minimum	36	34	38	47
Q1	50	57	63	67
Median	61	67	73	75.5
Q3	75	78	84	85
Maximum	96	94	95	97

Panel B: Score Components (N = 158 companies)

	2002	2003	2004	2005	Change 2002 to 2005
Mean values for raw score components					
Board Composition	25.32	26.84	29.70	30.60	5.28
Board and CEO Compensation	12.94	13.42	12.63	13.26	0.32
Shareholder Rights	17.33	17.15	19.68	20.09	2.76
Board Governance Related Disclosures	6.73	10.18	10.36	11.52	4.79
Standardized mean values					
Board Composition	63.30%	67.10%	74.25%	76.50%	13.20%
Board and CEO Compensation	56.26%	63.90%	66.47%	69.79%	13.53%
Shareholder Rights	78.77%	71.46%	70.29%	71.75%	-7.02%
Board Governance Related Disclosures	44.87%	67.87%	79.69%	88.62%	43.75%

Panel C: Conditional on cross-listing status

	2002		2003		2004		2005	
	Not cross-listed	Cross-listed	Not cross-listed	Cross-listed	Not cross-listed	Cross-listed	Not cross-listed	Cross-listed
Mean for overall governance score	59.63	65.35**	65.11	69.88**	69.86	74.61**	72.92	77.67**
<i>Means for score components:</i>								
Board Composition	23.28	27.28***	24.85	28.64***	28.50	30.75	29.14	31.86**
Board and CEO Compensation	12.36	13.51	12.80	13.99*	12.01	13.18**	12.67	13.76*
Shareholder Rights	17.66	17.01	17.47	16.86	19.18	20.13	19.90	20.26
Board Governance Related Disclosures	5.88	7.54***	9.93	10.40	10.16	10.54	11.21	11.79***
Number of observations	79	79	75	83	74	84	73	85

Notes:

- The maximum score for each component is:

	2002	2003	2004	2005
Board Composition	40	40	40	40
Board and CEO Compensation	23	21	19	19
Shareholder Rights	22	24	28	28
Board Governance related Disclosures	15	15	13	13
Total	100	100	100	100

- The sample consists 158 companies for which the Report on Business reported governance scores in 2002, 2003, 2004, and 2005.
- Standardized mean values were calculated by dividing the mean value for the component and year by the maximum value.
- Cross-listing status for 2002 (2003) [2004] {2005} is obtained from *TSX Review* for October 2002 (September 2003) [October 2004] {November 2005}.
- Differences in mean scores between the non-cross-listed and cross-listed samples are tested using the Wilcoxon test with one-tailed probabilities:

\* significant at 0.10, \*\* significant at 0.05, \*\*\* significant at 0.01

**Table 2.** Descriptive Statistics

Panel A: Univariate statistics

	Mean	Std Dev	Minimum	Q1	Median	Q3	Maximum	N
Governance score	69.49	14.69	34	59	70	81	97	632
Tobin's Q	1.72	1.41	0.44	1.06	1.33	1.93	21.42	631
Market-to-book ratio	2.66	2.15	0.20	1.46	2.13	3.21	26.19	631
Sales	4,821.37	6,688.59	0.00	652.02	1,954.75	5,423.50	32,047.00	620
Return on assets	3.32	6.83	-37.44	0.84	3.35	6.08	39.45	632
11-day stock return	-0.0083	0.0727	-0.7070	-0.0448	-0.0065	0.0329	0.2665	632
2-day stock return	-0.0022	0.0326	-0.1491	-0.0201	-0.0017	0.0177	0.1236	632

Panel B: Spearman correlations

	Tobin's Q	Market-to-book ratio	Sales	Return on assets	11-day stock return	2-day stock return
Governance score	-0.068*	0.022	0.288***	0.009	0.030	0.093**
Tobin's Q		0.880***	-0.349***	0.454***	0.058	-0.019
Market-to-book ratio			-0.110***	0.341***	0.101**	0.018
Sales				-0.033	0.040	0.114***
Return on assets					0.055	0.019
11-day stock return						0.495***

Notes:

- The sample consists of 158 companies for which the Report on Business reported governance scores in 2002, 2003, 2004, and 2005. The scores were published on October 7, 2002, September 22, 2003, October 12, 2004, and October 17, 2005.
- Tobin's Q for 2002 (2003) [2004] {2005} was calculated using the market value of common stock at the end of October 2002 (September 2003) [October 2004] {October 2005} from CFMRC and book values at the most recent fiscal year end on or before October 2002 (September 2003) [October 2004] {October 2005} from Compustat.
- The market-to-book ratio for 2002 (2003) [2004] {2005} was calculated using the market value of common stock at the end of October 2002 (September 2003) [October 2004] {October 2005} from CFMRC divided by common equity at the most recent fiscal year end on or before October 2002 (September 2003) [October 2004] {October 2005} from Compustat.
- Sales and return on assets for 2002 (2003) [2004] {2005} are the values at the most recent fiscal year end on or before October 2002 (September 2003) [October 2004] {October 2005}. Sales are measured in millions of Canadian dollars.
- Stock returns are obtained from the CFMRC database and are adjusted for the CFMRC equally-weighted market index.
- \* significant at 0.10, \*\* significant at 0.05, \*\*\* significant at 0.01

**Table 3.** Market Valuation and Governance Scores

Tobin's Q =  $\alpha + \beta$  Governance Score +  $\gamma$  ln(Sales) +  $\delta$  Return on Assets +  $\zeta$  Cross-listing status +  $\varepsilon$   
 Market-to-book ratio =  $\alpha + \beta$  Governance Score +  $\gamma$  ln(Sales) +  $\delta$  Return on Assets +  $\zeta$  Cross-listing status +  $\varepsilon$

	Tobin's Q		Market-to-book ratio	
	Composite Governance Score	Component Governance Scores	Composite Governance Score	Component Governance Scores
Intercept	2.875*** (3.43)	2.880*** (3.38)	3.966*** (3.10)	4.054*** (3.13)
Governance score	0.008 (1.12)		0.009 (0.84)	
Board Composition score		0.005 (0.44)		0.006 (0.36)
Board and CEO Compensation score		0.035* (1.90)		0.061** (2.20)
Shareholder Rights score		-0.012 (-0.66)		-0.033 (-1.19)
Board Governance Disclosure score		0.007 (0.36)		-0.001 (-0.03)
Ln (sales)	-0.131* (-1.89)	-0.125* (-1.78)	-0.104 (-0.98)	-0.092 (-0.87)
Return on assets	0.004 (0.39)	0.005 (0.42)	-0.009 (-0.51)	-0.008 (-0.48)
Cross-listing status	0.316 (0.77)	0.382 (0.87)	-0.907 (-1.45)	-0.581 (-0.87)
R <sup>2</sup>	0.65	0.65	0.66	0.66

**Notes:**

- A pooled cross-sectional, time-series, fixed effects model is used. The coefficients for the cross-sectional and time-series effects are not shown.
- The sample and variables are described in the notes to Tables 1 and 2.
- \* significant at 0.10, \*\* significant at 0.05, \*\*\* significant at 0.01; t-statistics are shown in parentheses below the coefficient estimates

**Table 4.** Operating Performance and Governance Scores

Return on Assets =  $\alpha + \beta$  Governance Score +  $\gamma$  ln(Book-to-Market) +  $\delta$  ln(Sales) +  $\zeta$  Cross-listing status +  $\varepsilon$

	Composite Governance Score	Component Governance Scores
Intercept	-4.480 (-1.25)	-4.707 (-1.29)
Governance score	0.061** (2.03)	
Board Composition score		0.010 (0.19)
Board and CEO Compensation score		0.069 (0.89)
Shareholder Rights score		0.155** (2.05)
Board Governance Disclosure score		0.071 (0.81)
Ln (Book-to-market)	-0.834 (-1.51)	-0.802 (-1.44)
Ln (sales)	0.604** (2.07)	0.643** (2.19)
Cross-listing status	0.946 (0.55)	1.086 (0.59)
R <sup>2</sup>	0.73	0.72

**Notes:**

- A pooled cross-sectional, time-series, fixed effects model is used. The coefficients for the cross-sectional and time-series effects are not shown.
- The sample and variables are described in the notes to Tables 1 and 2.
- The book-to-market ratio is calculated as the inverse of the market-to-book ratio.

- \* significant at 0.10, \*\* significant at 0.05, \*\*\* significant at 0.01; t-statistics are shown in parentheses below the coefficient estimates

**Table 5.** Market Reaction and Governance Scores

$$R_{it} = \alpha + \beta \text{ Governance Score} + \gamma \ln(\text{Sales}) + \delta \text{ Cross-listing Status} + \varepsilon$$

Panel A: 11-day Stock Return

	Composite Governance Score		Component Governance Scores	
	Random effects	Fixed effects	Random effects	Fixed effects
Intercept	-0.020 (-0.95)	0.005 (0.09)	-0.019 (-0.91)	0.007 (0.12)
Governance score	0.000 (0.16)	0.000 (0.52)		
Board Composition score			-0.000 (-0.91)	-0.000 (-0.07)
Board and CEO Compensation score			0.000 (0.49)	-0.002* (-1.71)
Shareholder Rights score			0.000 (0.03)	0.002 (1.22)
Board Governance Disclosure score			0.001 (0.95)	0.002 (1.48)
Ln (sales)	0.001 (0.62)	0.002 (0.31)	0.000 (0.26)	0.001 (0.19)
Cross-listing status	0.003 (0.48)	-0.009 (-0.32)	0.003 (0.51)	-0.021 (-0.67)
R <sup>2</sup>	0.001	0.34	0.004	0.34
Hausman Test for Random Effects (m value)	0.47		11.39*	

Panel B: 2-day Stock Return

	Composite Governance Score		Component Governance Scores	
	Random effects	Fixed effects	Random effects	Fixed effects
Intercept	-0.029*** (-3.47)	0.007 (0.24)	-0.029*** (-3.47)	0.012 (0.44)
Governance score	0.000 (1.41)	0.000 (0.25)		
Board Composition score			0.000 (1.18)	0.000 (0.28)
Board and CEO Compensation score			-0.000 (-0.05)	-0.001 (-1.29)
Shareholder Rights score			-0.000 (-1.06)	-0.000 (-0.15)
Board Governance Disclosure score			0.001 (1.56)	0.001 (1.01)
Ln (sales)	0.002*** (3.13)	0.001 (0.46)	0.002*** (3.14)	0.001 (0.33)
Cross-listing status	0.000 (0.08)	0.004 (0.29)	-0.000 (-0.12)	0.009 (0.61)
R <sup>2</sup>	0.02	0.31	0.03	0.32
Hausman Test for Random Effects (m value)	0.59		4.30	

Panel C: Change in Composite Governance Score

	11-day Stock Return		2-day Stock Return	
	Random effects	Fixed effects	Random effects	Fixed effects
Intercept	0.001 (0.03)	0.063 (1.26)	-0.009 (-1.17)	0.017 (0.85)
Change in governance score	0.000 (0.03)	-0.000 (-0.09)	0.000 (0.37)	-0.000 (-0.17)
Ln (sales)	-0.002 (-0.98)	-0.009 (-1.40)	0.001 (1.03)	-0.002 (-0.78)
Cross-listing status	-0.004 (-0.59)	-0.089** (-1.98)	0.000 (0.11)	-0.018 (-1.01)
R <sup>2</sup>	0.003	0.43	0.003	0.42
Hausman Test for Random Effects (m value)	4.92		3.54	

Notes:

- A pooled cross-sectional, time-series model is used. The Hausman test is used to test the appropriateness of the random effects specification. The coefficients for the cross-sectional and time-series effects in the fixed effects models are not shown.

- The sample and variables are described in the notes to Tables 1 and 2.
- \* significant at 0.10, \*\* significant at 0.05, \*\*\* significant at 0.01; t-statistics are shown in parentheses below the coefficient estimates

**Table 6. Quartile-based Portfolio Results**

Panel A: Portfolios based on 2002 governance scores

	1 (low)	2	3	4 (high)	Test
Tobin's Q	1.487 (1.152) [0.925]	1.767 (1.256) [1.207]	2.044 (1.484) [1.710]	1.226 (1.097) [0.383]	8.092** (0.044)
Market-to-book ratio	2.580 (1.880) [2.991]	2.358 (1.717) [1.736]	3.273 (2.216) [2.636]	1.909 (1.713) [0.931]	5.933 (0.115)
Return on assets	2.885 (3.181) [5.423]	0.555 (3.072) [10.748]	5.881 (4.034) [7.410]	2.939 (2.526) [4.011]	5.794 (0.122)
11-day Stock Return	-0.006 (0.007) [0.069]	0.013 (-0.005) [0.100]	0.020 (0.010) [0.079]	0.026 (0.034) [0.075]	3.138 (0.371)
2-day Stock Return	-0.010 (-0.007) [0.047]	-0.003 (0.000) [0.044]	0.004 (0.013) [0.041]	0.008 (0.016) [0.055]	3.932 (0.269)
Number of observations	41	39	41	37	

Panel B: Portfolios based on 2003 governance scores

	1 (low)	2	3	4 (high)	Test
Tobin's Q	2.071 (1.439) [2.139]	1.781 (1.258) [1.177]	2.033 (1.344) [3.284]	1.253 (1.145) [0.340]	4.907 (0.179)
Market-to-book ratio	2.993 (1.960) [2.738]	2.667 (1.828) [1.950]	2.895 (1.867) [4.093]	2.071 (1.901) [0.993]	0.656 (0.884)
Return on assets	3.211 (3.157) [6.925]	1.269 (2.784) [8.779]	2.626 (3.421) [6.272]	3.325 (2.665) [3.738]	0.971 (0.808)
11-day Stock Return	-0.022 (-0.024) [0.055]	-0.037 (-0.041) [0.067]	-0.029 (-0.025) [0.056]	-0.068 (-0.052) [0.049]	15.635*** (0.001)
2-day Stock Return	-0.015 (-0.015) [0.025]	-0.014 (-0.012) [0.029]	-0.009 (-0.008) [0.018]	-0.012 (-0.008) [0.016]	3.667 (0.300)
Number of observations	41	40	38	39	

Panel C: Portfolios based on 2004 governance scores

	1 (low)	2	3	4 (high)	Test
Tobin's Q	1.873 (1.384) [1.362]	1.911 (1.500) [1.108]	1.556 (1.291) [0.685]	1.430 (1.334) [0.494]	4.662 (0.198)
Market-to-book ratio	2.803 (2.073) [1.991]	2.757 (2.307) [1.512]	2.416 (2.296) [1.475]	2.616 (2.332) [1.267]	2.109 (0.550)
Return on assets	2.593 (2.730) [7.506]	4.294 (4.204) [4.880]	3.262 (2.579) [5.974]	3.914 (3.291) [4.024]	3.386 (0.336)
11-day Stock Return	-0.005 (-0.010) [0.058]	-0.023 (-0.015) [0.066]	-0.017 (-0.016) [0.059]	-0.003 (-0.002) [0.044]	2.395 (0.495)
2-day Stock Return	0.002 (0.005) [0.033]	0.002 (0.011) [0.034]	-0.006 (-0.004) [0.030]	0.009 (0.013) [0.027]	5.955 (0.114)
Number of observations	44	39	40	35	

Panel D: Portfolios based on 2005 governance scores

	1 (low)	2	3	4 (high)	Test
Tobin's Q	1.976 (1.385) [1.403]	1.679 (1.423) [0.827]	1.716 (1.305) [1.052]	1.445 (1.329) [0.494]	1.497 (0.683)
Market-to-book ratio	2.764 (2.387) [1.921]	2.775 (2.328) [2.005]	2.724 (2.219) [2.166]	2.841 (2.499) [1.582]	1.551 (0.671)
Return on assets	5.376 (5.335) [7.613]	2.832 (3.573) [6.692]	4.072 (4.600) [8.297]	4.213 (3.933) [5.590]	1.733 (0.630)
11-day Stock Return	0.014 (0.011) [0.050]	-0.012 (0.005) [0.065]	-0.009 (0.009) [0.122]	0.025 (0.026) [0.046]	8.261** (0.041)
2-day Stock Return	0.009 (0.014) [0.025]	0.002 (0.003) [0.022]	0.004 (0.005) [0.017]	-0.001 (-0.001) [0.020]	4.837 (0.184)
Number of observations	39	40	40	39	

Notes:

- The sample was divided into four quartiles using the governance scores for the year. Portfolio 1 (4) contains firms with the lowest (highest) governance scores.
- Mean (median) values [standard deviations] are shown in the second to fifth columns. The final column, labeled Test, contains the Chi-Square statistic (p-value) for the Kruskal-Wallis test of differences for the means across the quartiles.
- The sample and variables are described in the notes to Tables 1 and 2
- \* significant at 0.10, \*\* significant at 0.05, \*\*\* significant at 0.01