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Do better governed firms make more informative disclosures? Canadian evidence

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Do Better-Governed Firms Make More Informative Disclosures? Canadian Evidence.

Abstract

We investigate the link between the informativeness of corporate disclosures and firms' corporate governance structures. Using a Canadian sample of firms rated in the November 2004 Board Shareholder Confidence Index, we examine whether corporate governance is a significant influence on the frequency of a firm's disclosures, on analyst behaviour and on the timeliness of price discovery. We find Canadian firms with better governance structures release more documents to the stock market. These firms also attract a larger following of analysts, and their share prices integrate value-relevant information more rapidly. Overall our results confirm other evidence suggesting corporate governance can play a significant role in determining the efficiency of a country's equity market.

Keywords: Corporate governance quality; Disclosure frequency; Analysts' forecasts; Price discovery; Timeliness

JEL Classification: G30; G38; M40.

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Introduction

Corporate governance is an important factor influencing the integrity of a firm's activities and how it operates. How a firm is governed could have an impact on a firm's transparency and performance, as well as demonstrating accountability to shareholders. Investors' and regulators' concerns over possible corporate failures in recent times have fuelled a global demand for good corporate governance, and codes of practice for what constitutes good governance have been issued in many countries. Yet, there is still no consensus on the importance of corporate governance in influencing firms' actions.

We provide further insight into the relationship between a firm's corporate governance quality (CGQ) and the informativeness of disclosures to the market in Canada. Seven indicators of "informativeness" are used: (1) the frequency of disclosures to the market, (2) bias in analysts' earnings forecasts, (3) accuracy of forecasts, (4) disagreement in forecasts, (5) the number of analysts following the firm, (6) how rapidly value relevant information is integrated into share prices and (7) the size of analysts' forecast revisions. Our measure of CGQ is the Board Shareholder Confidence Index (BSCI) developed by Clarkson Center for Business Ethics and Board Effectiveness. This measure reflects on the board's independence, ownership and board practices, and several other factors.

The evidence presented in this paper confirms that corporate governance is important. Canadian firms with better governance structures release more documents to the share market. These firms also attract a larger following of analysts. Furthermore, their share prices integrate value-relevant information more rapidly. We do not find that analysts' forecasts are more accurate, but they do achieve greater consensus in their forecasts for better-governed firms. As for the size of analysts' forecast revisions, our results are inconclusive.

We contribute to the existing literature in corporate governance in several ways. First, we examine the link between CGQ and the informativeness of disclosures to the market in Canada. Second, we investigate analyst forecast properties and whether CGQ impacts on analysts' forecasting ability and analyst

following. Third, we provide further support for the view that CGQ is an important factor influencing firm transparency and disclosure.

The next section discusses related literature and the Canadian experience. This is followed by sections describing the research method and data, and our findings. The final section concludes the paper.

Related Studies

The Importance of Corporate Governance

Many studies have examined the impact of corporate governance. For a sample of 2,106 US firms, Larcker *et al.* (2005) examined 39 measures of corporate governance, reducing them to 14 factors using principal components analysis. They concluded (p. 4) that corporate governance has "some ability to explain managerial decisions and firm performance and valuation." Using the G-index to measure CGQ, Gompers *et al.* (2003) concluded better corporate governance was associated with superior stock returns during the 1990s.[1] Firms with strong managerial rights were found to have "significantly higher returns, were valued more highly and had better operating performance", indicating the value of corporate governance (Gompers *et al.* 2003: 108). Core *et al.* (2006) investigated the results of Gompers *et al.* to determine if the market is surprised by the performance of firms with poor governance. Their results suggest this is not the case. They found analysts understand the implications of weak governance and adjust their forecasts accordingly, concluding that the results in Gompers *et al.* were probably sample-specific. Cremers and Nair (2005) found long term positive abnormal returns and profitability are associated with how well internal and external governance mechanisms complement each other. In particular, blockholding has an impact on stock returns, but only when firms are vulnerable to takeover. Therefore, CGQ as reflected in the G-index is only part of the governance story.

Brown and Caylor (2004) found a positive relationship between CGQ (as indicated by Gov-score) and four measures of firm performance (return on equity, net profit margin, dividend yield and share repurchases) but not for a fifth measure, sales growth. When the G-Index was used to measure corporate governance, there was a positive relationship only between sales growth and CGQ.[2] They attributed the

difference between their and other researchers' results to the differing focus of their measure of CGQ, as the G-index primarily focuses on anti-takeover measures.

CGQ may also impact on the disclosure level and the quality of firm disclosures. Beekes and Brown (2006) provided evidence of a positive association between the quantity of disclosure and CGQ for a sample of Australian firms. Firms with higher CGQ release more information, and the content of their disclosures also appears to be reflected on a timelier basis in share prices. Ajinkya *et al.* (2005) found greater board independence and institutional ownership have a positive effect on the likelihood and frequency of management earnings forecasts. If there is greater information disclosure, more institutional investors and analysts may be attracted to the firm (Lang and Lundholm, 1996; Botosan, 1997; Healy *et al.*, 1999).

The quantity of disclosure has been found to be positively related to analysts' earnings forecast accuracy and negatively related to dispersion in forecasts (Hope, 2003; Vanstraelen *et al.*, 2003). In addition, the quality of these disclosures is important for the precision of forecasts (Byard and Shaw, 2003). However, consensus in analyst forecasts may decline around earnings announcements as this provides analysts with incentives to generate their own information (Barron *et al.* 2002; Barron *et al.*, 2005). Lang and Lundholm (1996) showed that firms with more informative disclosure policies have less dispersed analyst forecasts and lower volatility in forecast revisions. Prior research also suggests a link between analyst forecasts and CGQ. Byard *et al.* (2006) concluded CGQ is positively associated with analyst forecast accuracy. Firms with higher CGQ were also found to have a larger analyst following, but less consensus in forecasts (Beekes and Brown, 2006). Note however, when comparing these studies that forecast accuracy differs across countries due to differing corporate structures, accounting practices and the adequacy of information disclosure (Brown *et al.*, 2005).

Prior Evidence for Canada

Dutta and Jog (2004) found no evidence to suggest a link between CGQ and a firm's share market performance (as measured by returns, after controlling for industry and the market to book ratio). A relationship did exist for an accounting performance measure (the industry adjusted return on assets) but it was negative; i.e., higher CGQ was associated with poorer performance. Wheeler and Davies (2006)

found little evidence to suggest CGQ is linked to changes in firm value for the largest Canadian firms on TSX. However, for a sub-sample of firms which increased their CGQ ranking during their sample period, they found a significant positive association with long-term changes in market capitalization. Klein *et al.* (2005) found evidence of a positive link between firm valuation (as measured by Tobin's Q) and overall CGQ. However, when certain components of the CGQ measure were investigated separately, a positive relation was found for compensation, shareholder rights and disclosure, and a negative relation for board composition. Further analysis implied this negative relation for board composition was driven by family-controlled firms, where a lack of board independence might not be detrimental.

We provide evidence on the importance of CGQ for firm disclosure and transparency in Canada. We predict that firms with higher CGQ are more forthcoming and balanced in their disclosures and are as a consequence priced more efficiently in the market, i.e., in a timelier fashion. "Timeliness" in our paper refers to the speed with which value relevant information is incorporated into share prices. If disclosures are more informative for firms with better CGQ, following Lang and Lundholm (1996), we expect firms with higher CGQ to have greater analyst following, less biased and more accurate forecasts, with greater consensus amongst analysts, and less volatility in forecast revisions. Beekes and Brown (2006) however found firms with better CGQ were associated with lower consensus amongst analysts and our paper will shed additional light on this issue.

Corporate Governance and Disclosure in Canada

In the early 1990s the Toronto Stock Exchange (TSX) commissioned a report into the corporate governance practices of Canadian firms. The outcome of this - the 'Dey' report - provided the basis for the current guidelines on good practice (Chartered Accountants of Canada, 2001). Since 1995, companies have been required to disclose their compliance and explain any non-compliance with the guidelines (TSX, 2004b).[3] However, a joint report sponsored by the TSX and Institute of Directors in 1999 concluded that standards of corporate governance were still inadequate in many companies. The response to this was the formation of a joint committee comprising the TSX, Canadian Institute of Chartered Accountants and the Canadian Venture Exchange, known as the Saucier committee. The Saucier committee's final report in 2001 proposed changes to corporate governance guidelines

which included a re-emphasis on the importance of independent directors and board committee composition (Ontario Securities Commission, 2004).

In 2003, the Ontario Securities Commission (OSC) and Canadian Securities Administrators (CSA) began reviewing corporate governance. Draft instruments and policies were issued covering certification of financial statements, audit committees and internal control, to bring Canada more in line with Sarbanes-Oxley in the USA (Gray, 2005). In January 2004, the OSC proposed policies relating to corporate governance and associated disclosures: National Policies 58-101 Disclosure of Corporate Governance and Policy 58-201 Corporate Governance Guidelines. Issues such as board independence, board mandate, director's appointment, remuneration and education are the focal points of this policy which came into effect from 30 June 2005 (OSC, 2005). All issuers in Canada (whether listed or not) must explain how their corporate governance practices fit with the guidance.

Timely disclosure of information is a requirement of listing and in addition to the guidance provided in National Policy 51-201 *Disclosure Standards*, the TSX also has a policy statement on the timeliness of firms' disclosures (TSX, 2004a). The statement envisages a setting where "everyone investing in securities has equal access to information that may affect their investment decisions" (p. 1) and "material announcements are factual and balanced." Therefore "unfavorable news must be disclosed just as promptly and completely as favorable news" (p. 5). Our study specifically investigates whether firms with better CGQ are more forthcoming and balanced in their disclosures.

Data and Method

Our paper addresses the following research questions: Are firms with better CGQ more transparent in disclosures? If so, is this reflected in the speed of price discovery and in analysts' forecasts? To address these questions, we examine whether firms with better CGQ disclose more information and how quickly their share prices reflect value-relevant information. In addition, we examine whether, for better-governed firms, analyst following is greater, forecasts are less biased and more accurate, there is greater consensus amongst analysts, and changes in analysts' forecasts are smaller.

Sample

Our primary sample comprises firms covered by the November 2004 Board Shareholder Confidence Index Report (BSCI), produced by the Clarkson Center for Business Ethics and Board Effectiveness. The report contains ratings for 216 Canadian firms listed in the S&P/TSX composite index.

For inclusion in the frequency of disclosure (document count) and timeliness models, there must be data availability of documents released over the period 2000-2005, and daily share prices and market index data from Datastream. The records of all company disclosures for sample companies from 1 January 2000 to mid-2005 were collected from the System for Electronic Document Analysis and Retrieval (SEDAR).[4] Mandatory corporate filings in the form of press releases, annual reports and financial statements are released via SEDAR. Therefore this could imply price sensitivity, as determined by Canadian securities authorities.[5] The release dates for annual earnings (i.e. date of the fourth quarter announcement) were sourced from press releases on SEDAR. Missing (unidentified) dates were retrieved from Bloomberg. The final sample for the document count and timeliness models is 694 observations.[6]

For inclusion in the analyst models, there must be I/B/E/S annual Earnings per Share (EPS) forecasts for the period 2002-2005, and at least 2 analysts contributing their forecasts to I/B/E/S for a horizon of between 1 and 23 months. Data for market values are sourced from Datastream, industry classifications are as reported on SEDAR and reclassified according to Global Industry Classification Standards. Firms traded on the option market are sourced from the Montreal Exchange website. The final sample is 4,726 observations for the analyst models.[7]

Measuring Corporate Governance Quality (CGQ)

We use the November 2004 BSCI report to measure CGQ. The factors included in the BSCI are director independence (Measure 1), stock ownership (Measure 2), meeting structure (Measure 3), board systems evaluation process (Measure 4) and board decision output (Measure 5), (Clarkson Centre for Business Ethics and Board Effectiveness, 2004b). For details, see the Appendix.

Each company is ranked in the report from AAA+ (highest) to C (lowest) on each factor, whereby AAA+ represents highest-quality corporate governance structures and C represents the other extreme. An overall grade (Measure 6) is given

by aggregating the grades obtained for the five factors evaluated separately. Grades for Measure 6 ranged from AAA+ to C. We transformed the letter grade to a numeric scoring system for data analysis, with 6 corresponding to AAA+ and 1 to C. We use the overall measure as our measure of CGQ in the main analysis and examine the individual components in robustness testing.[8]

Frequency of Disclosure

The model used to investigate the frequency of disclosure is:

$$Log\ Doc\ Count_{it} = \beta_0 + \beta_1 Size_{it} + \beta_2 Good\ News_{it} + \beta_3 CGQ_{it} \quad (1)$$

where:

Log Doc Count: This is the natural log of the number of documents released by the company over the 250 trading days ending 10 trading days after the company's fourth quarter earnings report.

Size: Firm size, proxied by the natural log of the firm's market value of equity.

Good news: Dummy variable which takes the value of one when the company's share price outperforms the market over the 250 trading day period, and zero otherwise.

CGQ: Company's ranking in BSCI re-scaled to range from 1-6, where companies with higher scores are reported to have higher quality corporate governance structures

We control for firm size and good news, since larger firms report more frequently than their smaller counterparts and firms with good news may be more likely to release information (Dye, 2001). We expect firms with better CGQ make more frequent disclosures.

Timeliness

We use the metric developed by Beekes and Brown (2006) to examine timeliness at the entity level. The metric, M^c, traces the share price over 250 trading days (about a calendar year) ending 10 trading days after the release of the firm's earnings for the year. Specifically, timeliness, M^c is defined as:

$$M^c = \left(\sum_{t=-249}^{t=0} \left| \ln(P_0) - \ln(P_t) \right| \right) / 250$$

where P_t is the daily market adjusted share price and day 0 is 10 TSX trading days after the announcement date on SEDAR.

Intuitively, if the price exactly tracked the market index from day -249 to day -1 and then fell on day 0 from P_{-249} to P_0, the speed of adjustment would be categorised as 'slow' and M^c would be close to the absolute value of the market adjusted return over the 250 days. On the other hand, if price closed at P_0 (market adjusted) on day -249 and exactly tracked the market index for the remaining 249 days, the speed of adjustment would be at its maximum and M^c would be zero. At the individual firm level the metric could be influenced by idiosyncratic share return volatility.[9] However, if indeed, as predicted, companies release more timely information when they have higher CGQ, the metric should capture this feature, insofar as it feeds into stock prices (Beekes and Brown, 2006).

The model used to investigate the timeliness of disclosures is:

$$Timeliness_{it} = \beta_0 + \beta_1 Size_{it} + \beta_2 Good\ News_{it} + \beta_3 CGQ_{it} \quad (2)$$

Variables are as previously defined.

Analyst earnings forecasts

Five multivariate regression models are estimated:

$$\text{Bias} = \beta_0^a + \beta_1^a \text{Following} + \beta_2^a \text{Disagreement} + \beta_3^a \text{Size} + \beta_4^a \text{PrevFE} + \beta_5^a \text{ABSPrevFE} + \beta_6^a \text{Volatility} + \beta_7^a \text{Resource} + \beta_8^a \text{Options} + \beta_9^a \text{Horizon} + \beta_{10}^a \text{CGQ} \quad (3a)$$

$$\text{Accuracy} = \beta_0^b + \beta_1^b \text{Following} + \beta_2^b \text{Disagreement} + \beta_3^b \text{Size} + \beta_4^b \text{PrevFE} + \beta_5^b \text{ABSPrevFE} + \beta_6^b \text{Volatility} + \beta_7^b \text{Resource} + \beta_8^b \text{Options} + \beta_9^b \text{Horizon} + \beta_{10}^b \text{CGQ} \quad (3b)$$

$$\text{Disagreement} = \beta_0^c + \beta_1^c \text{Following} + \beta_3^c \text{Size} + \beta_4^c \text{PrevFE} + \beta_5^c \text{ABSPrevFE} + \beta_6^c \text{Volatility} + \beta_7^c \text{Resource} + \beta_8^c \text{Options} + \beta_9^c \text{Horizon} + \beta_{10}^c \text{CGQ} \quad (3c)$$

$$\text{Following} = \beta_0^d + \beta_3^d \text{Size} + \beta_4^d \text{PrevFE} + \beta_5^d \text{ABSPrevFE} + \beta_6^d \text{Volatility} + \beta_7^d \text{Resource} + \beta_8^d \text{Options} + \beta_9^d \text{Horizon} + \beta_{10}^d \text{CGQ} \quad (3d)$$

$$\text{RevVolatility} = \beta_0^e + \beta_1^e \text{Following} + \beta_2^e \text{Disagreement} + \beta_3^e \text{Size} + \beta_4^e \text{PrevFE} + \beta_5^e \text{ABSPrevFE} + \beta_7^e \text{Resource} + \beta_8^e \text{Options} + \beta_{10}^e \text{CGQ} \quad (3e)$$

where:

Bias: Signed Forecast Error (FE). Forecast Error (FE) is defined as the mean forecast EPS less EPS as reported by I/B/E/S, deflated by the base share price (i.e. share price a year before the announcement month);

Accuracy: Absolute value of the FE, deflated by the base price;

Disagreement: Level of disagreement measured by the standard deviation across analysts' forecasts for that firm-month, deflated by the base price;

Following: Number of analysts contributing to the consensus forecast;

Size: Firm size. Proxied by the natural log of the firm's market value of equity a day before the I/B/E/S forecast cut-off date;

Prev FE: Last year's FE for the same firm and same forecast horizon, deflated by the previous year's base price;

ABSPrevFE: Absolute value of PrevFE, deflated by the previous year's base price;

Volatility: Volatility calculated from daily returns in the 60 trading days ended the day before the I/B/E/S forecast date,

Resource: Dummy variable coded 1 for firms in the natural resources industry, 0 otherwise;

Options: Dummy variable coded 1 for firms with exchange-traded options, 0 otherwise;

Horizon: Forecast horizon, measured by the number of days from the forecast date until the company makes its annual earnings announcement to the TSX;

Rev Volatility: Forecast Revision Volatility. The standard deviation of the month-to-month changes in the median forecast over the year leading up to the earnings release, deflated by the share price at the beginning of the fiscal year.

CGQ as previously defined.

Each model includes our measure of CGQ from BSCI. Models 3a to 3d are based upon Beekes and Brown (2006). Our Forecast Revision Volatility variable used in model 3e is based upon Lang and Lundholm (1996). Data requirements for model 3e result in a reduced sample of 311 observations in estimations for this model. We include explanatory variables for analyst following and disagreement in the bias, accuracy and revision volatility models, and analyst following in the disagreement model.[10] In our models we control for firm size as analysts tend to make more accurate forecasts and disagree less about the future earnings of larger companies. In addition, larger firms generally attract a greater analyst following (Bhushan, 1989). We control for the previous year's forecast error over the same forecast horizon and its absolute value, return volatility and the length of the forecast horizon. A dummy variable for firms in the resource sector is included as they have more stringent disclosure requirements and are an important industry for Canada. We also control for firms traded on the options market, which can provide more incentive for analysts to uncover news.

Results

Properties of the Sample

Descriptive statistics for the main variables are in Table 1 (frequency of disclosures and timeliness models) and Table 2 (analyst forecast models): correlations are reported in Table 3 (document count and timeliness models) and Table 4 (analyst models).

[Tables 1 - 4]

Companies in the sample released between 1 and 273 documents over the 250 trading days ended 10 days after the release of their earnings for the year (Table 1). Relative to the market index, more than half the sample cases were years of good news (61.7%). Timeliness ranges from 0.02 to 1.74, with an average of 0.20. Timeliness deflated ranges from 0.02 to 0.89. CGQ has an average of 2.84 and a median of 3, on a scale of 1 to 6.

Analyst forecasts were on average biased upwards relative to actual EPS, with the mean forecast error being about 0.7% of the base share price and the median forecast error about 0.2% (Table 2). The absolute value of the forecast error (Accuracy) was about 2.1% of price. On average 8.5 analysts contributed to the I/B/E/S consensus forecast. About 18% of the sample came from the resource sector and just under a third was traded on the options market. Daily volatility of share return ranged from less than 1% to 10.7%, with an average of about 2%. The mean CGQ rating is 3.

Table 3 shows the correlations for the frequency of disclosure and timeliness models. Due to the large number of pair-wise combinations of variables, our discussion is confined to salient pairs. The timeliness metrics are strongly correlated (r = 0.822); and CGQ is negatively correlated with timeliness and positively correlated with the disclosure frequency (Doc count and Log Doc Count), as expected. Firm size is positively correlated with disclosure frequency and negatively associated with timeliness.

Table 4 shows the correlations for the analyst models. The forecast error (bias) and its absolute value (accuracy) are correlated (r = 0.41). In addition, while CGQ is negatively correlated with bias and disagreement, it is positively correlated with accuracy and analyst following. Examination of the correlation matrix for the forecast revision volatility model based on a smaller sample (not tabulated) suggests CGQ is negatively related to revision volatility (rev volatility). The positive correlation between CGQ and forecast accuracy differs from our predictions and is investigated further with multivariate analysis.

The correlations between the analyst and control variables (Table 4) show that analyst following is positively associated with firm size (r = 0.53). Disagreement is positively associated with the previous year's forecast error (PrevFE) and its absolute value (ABSPrevFE), and with stock volatility, suggesting greater dispersion in forecasts when last year's forecasts were less accurate and when there is more uncertainty about stock prices. Firm size is negatively associated with bias and accuracy, indicating forecasting is more accurate for larger firms.

Results of Frequency of Disclosure and Timeliness models

Table 5 reports regression results for the frequency of disclosure and timeliness models, estimated by Ordinary Least Squares (OLS). All regressors are

normalised to have mean zero and standard deviation of one, to assist interpretation. White-adjusted *t*-statistics are reported in the table to control for heteroscedasticity.[11]

[Table 5]

As predicted, firms with better CGQ report on a more regular basis, as do larger firms. However the good news dummy variable is insignificant: firms do not typically release more documents when they have good news.

We also find support for our timeliness predictions. Recall, when value relevant information is incorporated into share prices more quickly, the timeliness metric is closer to zero. Our results show that value relevant information is priced more quickly for firms with better CGQ and for larger firms. The deflated timeliness model provides comparable results for firm size and CGQ, albeit of a smaller magnitude. The deflated metric also indicates good news is priced more quickly.

To acknowledge the possibility firms with higher CGQ are more balanced in their disclosure of bad and good news, an interaction term between CGQ and good news was added to the models. Our results (not tabulated) indicate no impact on the level of disclosure. However in the timeliness model both coefficients are significant: -0.04 for CGQ (*t*-statistic = -4.64) and 0.06 for the CGQ*Good news interaction (*t*-statistic = 2.55). Similar results are obtained when the deflated timeliness model is used. This is consistent with our expectations based upon the policy on timely disclosure issued by the TSX in June 2004 and suggests firms with better CGQ are more balanced in releasing news to the market, rather than accelerating or over-emphasising good news.

Results of Analyst Forecast Models

The five analyst models were estimated by OLS and the results are shown in Table 6. All regressors are normalised to have mean zero and standard deviation of one. White-adjusted *t*-statistics are reported in the table to control for heteroscedasticity. All regression coefficients presented in Table 6 have been multiplied by 100 to increase precision.

[Table 6]

Our earlier analysis suggests that firms with better CGQ have more informative disclosure policies. Inconsistent with our predictions, we find firms with higher CGQ are associated with greater bias (more "optimism") in analyst forecasts and lower forecast accuracy. Nevertheless, these firms are associated with greater analyst following suggesting that even with greater analyst following, analysts find it difficult to predict earnings for such firms. The results for the disagreement model are inconclusive using Ordinary Least Squares estimation methods. However using Seemingly Unrelated Regression techniques (see robustness section for details) we find that the disagreement amongst analysts is lower for firms with better CGQ. For the forecast revision model, the CGQ measure is unrelated to the volatility of forecast revisions, possibly due to the relatively small sample size for this particular model.

Our results for the influence of CGQ on bias and accuracy are contrary to expectations, although Indjejikan (1991) suggests better quality firm disclosure is associated with greater reliance on private information, which could impact on the accuracy of individual forecasts. Also as Clubb (2006) points out, for firms with a weak relationship between accounting and economic performance measures, where there is greater reliance on non-accounting measures for governance controls, it can be difficult for analysts to make accurate and consistent predictions.

On average, analyst forecasts over the sample period were biased upwards. Bias increases with analyst disagreement, firm size, the extent of bias in the previous year's forecast error, return volatility and forecast horizon. There is less bias for firms with greater analyst following, with a larger error in the previous year, for firms in the resource sector and for firms with options traded upon them.

The average forecast error amounts to 2.1% of share price. Forecast error increases with the number of analysts following the stock, the level of disagreement among the analysts, the absolute value of the prior year's FE, the forecast horizon and if the firm is from the resource sector. The findings relating to the number of analysts suggest analysts placed greater reliance upon their idiosyncratic information in making forecasts, resulting in lower forecast accuracy and greater disagreement. Despite increased disclosure requirements for the resource sector, the absolute value of the forecast error tends to be greater. This sector typically has more uncertain earnings making it more difficult to make accurate predictions. Firms traded on the options market and larger firms have smaller forecast errors.

Disagreement increases with analyst following, absolute value of prior forecast error, return volatility and forecast horizon, and it is greater for firms from the resource sector. Although unexpected, the greater disagreement when there is a greater following is likely attributable to differing interpretations of information between analysts. Even when presented with the same disclosures, analysts may weight or interpret the information differently, potentially resulting in greater divergence in beliefs (Barron *et al.* 2005). There is less disagreement for larger firms and firms with options traded upon them.

On average, 8.5 analysts tracked each company. Analyst following increases with firm size and with the size of the previous year's error, if the firm is from the resource sector and has exchange-traded options. Analyst following decreases with the extent of bias in last year's forecast and with the forecast horizon.

Finally, for our forecast revision volatility model, there is lower forecast revision volatility for firms with greater analyst following. Greater forecast volatility is associated with disagreement amongst analysts, the absolute value of prior year's forecast error and for firms from the resource sector. This suggests there is greater monthly variation in analysts' consensus forecasts for firms in the resource sector, possibly due to greater uncertainty of earnings in this sector. Our CGQ measure is not significantly related to the volatility of forecast revisions. However, the sample size for this model is relatively small (N= 311) and therefore this result should be interpreted with caution.

Robustness Tests

A number of tests were undertaken to investigate the robustness of the results in Tables 5 and 6. First, the document count and timeliness models were subject to (1) winsorising and (2) censoring the top and bottom 2.5% of cases in the tails of the distributions. The results (not tabulated) do not change inferences from previous analysis. Second, when stock return volatility is added to the regressors, CGQ retains its predicted sign and the explanatory power of the models is increased. Finally, when the sample period was restricted to 2003 – 2005 (N=420), the results were comparatively similar.

For the first four analyst models, first we investigated whether our results are sensitive to the length of forecast horizon.[12] We set the forecast horizon to a

maximum of 11 months and found CGQ is significant only in the accuracy and analyst following models. For these models the coefficient sign on our primary variable of interest, CGQ, is consistent with our previous analysis. Second, we investigated the use of alternative firm size proxies: (1) total assets, (2) total shareholders' equity and (3) sales turnover, all logged and sourced from COMPUSTAT. For the accuracy and disagreement models, CGQ is robust to all three alternative size proxies. In all cases for the bias model, a significant negative coefficient is found for CGQ suggesting lower bias for firms with higher CGQ. For the analyst following model CGQ is robust to all proxies, except for sales turnover, where the coefficient is negative. Our results therefore appear to be sensitive to the definition of size.[13]

Third, we investigated whether our results are sensitive to how we measure CGQ. In particular, we used: (1) five binary dummy variables to reflect CG=1, CG=3, CG=4, CG=5 and CG=6 (CG=2 is captured in the constant term); and (2) a single dummy variable (=0 if CG=1 or 2, and otherwise =1). In both cases the results are broadly consistent with the main results reported earlier.

In further analysis, we investigated the possibility that the error terms in the analyst models are heteroscedastic and cross-correlated, through Seemingly Unrelated Regression (SUR) regression techniques (Zellner, 1962). The results for the CGQ variable (coefficients are multiplied by 100 for precision) in each of the models are as follows: Bias (coeff=0.094 *p*-value=0.06), Accuracy (coeff=0.180 *p*-value <0.001) Disagreement (coeff=-0.124, *p*-value <0.001) Following (coeff=28.64, *p*-value <0.001). The sign of CGQ, our primary variable of interest, is unaffected when all four models are jointly estimated via SUR and is statistically significant at conventional levels except for forecast accuracy.[14] Finally, we employed a resampling technique to address potential bias in *t*-statistics due to the lack of strict independence in the analyst sample. The bias arises because we have multiple observations of metrics for the same firm-year. The results confirm the findings already reported.[15]

In summary, there is evidence to suggest our results for the document count and timeliness models are robust. For the analyst models, our results are relatively robust to the length of forecast horizon, measure of CGQ and analysis using alternative estimators.

Conclusions

We examined the influence of CGQ on the flow of information to the market for Canadian firms. Specifically, we examined whether CGQ has any bearing on the frequency of disclosures, analyst forecast bias, size of forecast revisions, forecast accuracy and disagreement, size of analyst following and timeliness of price discovery.

We found better-governed Canadian firms release more documents and that value-relevant information about them is integrated into share prices more rapidly. This supports the hypothesis that CGQ influences the level of disclosure and the timeliness of price discovery, confirming the results in Beekes and Brown (2006). We find no compelling evidence Canadian firms release more information when their news is good.

The results are mixed for the analyst forecast models. As expected, better CGQ is associated with less disagreement and greater analyst following. Findings with respect to forecast accuracy and bias are contrary to expectations, and suggest firms with better CGQ are associated with less accurate forecasts.

It therefore seems that CGQ does play a role in the efficient operation of capital markets. Clearly, if firms with better CGQ are seen to be more open and transparent in their disclosures, it could have major implications for investors and where they place their money.

ENDNOTES

[1] The G index (compiled from publications of the Investor Responsibility Research Center [IRRC]) measures the relative level of shareholder and managerial rights, i.e., the balance of power between shareholders and managers. A point is added to the G-index for every provision that restricts shareholder rights (increases managerial rights).

[2] Brown and Caylor (2004) constructed the Gov-Score, from Institutional Shareholder Services data, based upon US firms meeting minimal acceptable standards of corporate governance.

[3] See Section 474 of the Toronto Stock Exchange Company Manual for a list of the 14 Corporate Governance Guidelines.

[4] Filings of mandatory releases to SEDAR are made in accordance with National Instrument 13-101.

[5] Beekes and Brown (2006) focussed on documents classified by the Australian stock exchange as price sensitive. However, they reported their results were not sensitive to the inclusion of both price and non-price sensitive documents in their models.

[6] The 694 observations relate to the 216 firms covered by the BSCI. This is broken down across our sample period as follows: 2000: 5 firms, 2001: 132 firms, 2002: 137 firms, 2003: 147 firms, 2004: 151 firms, 2005: 122 firms.

[7] The 4,726 observations relate to the 216 firms covered by the BSCI. Firm coverage across our sample period in calendar years is as follows: 2002: 72 firms, 2003: 78 firms, 2004: 70 firms, 2005: 2 firms. We adopt a longer period for the document count and timeliness models because, as Beekes and Brown (2006) acknowledged, their timeliness measure is noisy and a longer time period yields more cases. If our sample period is restricted to 2003 – 2005, comparatively similar results are obtained as reported in the section on robustness testing.

[8] This measure does not capture differences in CGQ for firms which have changed their governance structures over our study period. However, CGQ change tends to be fairly 'lumpy'. To the extent firms changed their relative CGQ over our study period, our study is biased against rejecting the null hypothesis (of no relationship).

[9] To acknowledge this, we also include a measure of timeliness which is deflated by one plus the absolute rate of return on the share over the 250 trading-day period used to calculate the share's timeliness metric.

[10] We investigate potential relationships between our variables through the use of Seemingly Unrelated Regression techniques (see section on robustness testing).

[11] Bootstrapped *t*-statistics yield the same inferences.

[12] We do not conduct robustness tests for the forecast revision volatility model.

[13] However, the alternative size measures yield smaller and potentially biased sub-samples due to the requirement that the accounting variables be available on Compustat and have positive values. Sub-sample sizes are 3,107 for total assets, 3,084 for total shareholders' equity and 2,782 for sales turnover.

[14] In addition, we estimated this model using the SUR estimation method for the shorter horizon period of between 1 and 11 months. The results were consistent, except for the bias model, where CGQ was not statistically significant.

[15] Resampling is used to generate the empirical distribution of the regression coefficients under the null hypothesis that the observed dependent variable is unrelated to the R.H.S. variables. Details of the technique are available from the corresponding author.

REFERENCES

Ajinkya, B., Bhojraj, S. and Sengupta, P. (2005) The Association Between Outside Directors, Institutional Investors and the Properties of Management Earnings Forecasts, Journal of Accounting Research, 43, 3 (June), 343-376.

Barron, O. E., Byard, D. and Kim, O. (2002) Changes in Analysts' Information Around Earnings Announcements, The Accounting Review, 77, 4, 821-846.

Barron, O. E., Harris, D. G. and Stanford, M. (2005) Evidence that Investors Trade on Private Event-Period Information Around Earnings Announcements, The Accounting Review, 80, 2, 403-421.

Beekes, W. and Brown, P. (2006) Do Better-Governed Australian Firms Make More Informative Disclosures? Journal of Business Finance and Accounting, 33, 3&4, 422-450.

Bhushan, R. (1989) Firm Characteristics and Analyst Following, Journal of Accounting and Economics, 11, 2-3 (July), 255-274.

Botosan, C. (1997) Disclosure Level and the Cost of Equity Capital, The Accounting Review, 72, 3 (July), 323-349.

Brown, L. D. and Caylor, M. L. (2004) Corporate Governance and Firm Performance, Working Paper (Georgia State University).

Brown, P., How, J. C. Y. and Verhoeven, P. (2005) The Accuracy of Analysts' Dividend Forecasts around the World, Working Paper (University of Auckland).

Byard, D. Li, Y. and Weintrop, J. (2006) Corporate Governance and the Quality of Financial Analysts' Information, Journal of Accounting and Public Policy, 25, 609 - 625.

Byard, D. and Shaw, K. W. (2003) Corporate Disclosure Quality and Properties of Analysts' Information Environment, Journal of Accounting, Auditing and Finance, 18, 3, 355 - 378.

Chartered Accountants of Canada (2001) Beyond Compliance: Building a Governance Culture. Final Report Joint Committee on Corporate Governance, Toronto: Chartered Accountants of Canada, Toronto Stock Exchange and Canadian Venture Exchange.

Clarkson Centre For Business Ethics and Board Effectiveness (2004a) Board Shareholder Confidence Index, November. Toronto: Joseph L. Rotman School of Management.

Clarkson Centre for Business Ethics and Board Effectiveness (2004b) Board Shareholder Confidence Index. Glossary of Terms. Toronto: Joseph L. Rotman School of Management.

Clubb, C. (2006) Discussion of 'Do Better-Governed Firms Make More Informative Disclosures?' Journal of Business Finance and Accounting, 33, 3&4, 451-458.

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, Journal of Finance, 61, 2, 655-687.

Cremers, K. J. M. and Nair, V. B. (2005) Governance Mechanisms and Equity Prices, Journal of Finance, 60, 6, 2859-2894.

Dutta, S. and Jog, V. (2004) Corporate Performance, Performance and CEO Pay, Working Paper (Carleton University, available from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=507502).

Dye, R. A. (2001) An Evaluation of 'Essays on Disclosure' and the Disclosure Literature in Accounting, Journal of Accounting and Economics, 32, 1-3 (December), 181-235.

Gompers, P., Ishii, J. and A. Metrick (2003) Corporate Governance and Equity Prices, The Quarterly Journal of Economics, 118, 1 (February), 107-155.

Gray, T. (2005) Canadian Response to the U.S. Sarbanes-Oxley Act of 2002: New Directions for Corporate Governance, 4th October, Parliamentary Information and Research Service, http://www.parl.gc.ca/information/library/PRBpubs/prb0537-e.htm#15

Healy, P. M., Hutton, A. P. and Palepu, K. G. (1999) Stock Performance and Intermediation Changes Surrounding Sustained Increases in Disclosure, Contemporary Accounting Research, 16, 3 (Fall), 485-520.

Hope, O. K. (2003) Disclosure Practices, Enforcement of Accounting Standards and Analysts' Forecast Accuracy: An International Study, Journal of Accounting Research, 41, 2, 235-272.

Indjejikan, R. J. (1991) The Impact of Costly Information Interpretation on Firm Disclosure Decisions, Journal of Accounting Research, 29, 2 (Autumn), 277-301.

Klein, P., Shapiro, D. and Young, J. (2005) Corporate Governance, Family Ownership and Firm Value: Canadian Evidence, Corporate Governance: An International Review, 13, 6 (November), 769-784.

Lang, M. H. and Lundholm, R. J. (1996) Corporate Disclosure Policy and Analyst Behavior, The Accounting Review, 71, 4 (October), 467-492.

Larcker, D. F., Richardson, S. A. and Tuna, I. (2005) How Important Is Corporate Governance? Working Paper (University of Pennsylvania).

Ontario Securities Commission (2004) Request for Comment: Notice of Proposed Multilateral Policy 58-201 Effective Corporate Governance and Proposed Multilateral Instrument 58-101 Disclosure of Corporate Governance Practices http://www.osc.gov.on.ca/Regulation/Rulemaking/Current/Part5/pol_20040116_58-201_pro-pol-roc.jsp

Ontario Securities Commission (2005) Notice of Commission Approval. National Instrument 58-101 Disclosure of Corporate Governance Practices, National Policy 58-201 Corporate Governance Guidelines, and Amendments to Multilateral Instrument 52-110 Audit Committees, http://www.osc.gov.on.ca/Regulation/Rulemaking/Current/Part5/rule_20050415_58-101_not-gov-practices.jsp

Toronto Stock Exchange (2004a) Policy Statement on Timely Disclosure, June. Toronto: Toronto Stock Exchange http://www.tsx.com/en/pdf/PolicyStatementOnTimelyDisclosure.pdf

Toronto Stock Exchange (2004b) Toronto Stock Exchange Company Manual. Toronto: Toronto Stock Exchange.

Vanstraelen, A., Zarzeski, M. T. and Robb, S. W. G. (2003) Corporate Non-Financial Disclosure Practices and Financial Analyst Forecast Ability across Three European Countries, Journal of International Financial Management and Accounting, 14, 3 (Autumn), 249-278.

Wheeler, D. and Davies, R. (2006) Why Corporate Governance Rankings Do Not Predict Future Value: Evidence from Toronto Stock Exchange Listings 2002-2005, in Benn, S. and Dunphy, D. (eds.) Corporate Governance and Sustainability: Challenges for Theory and Practice. London: Routledge.

Zellner, A. (1962) An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias, Journal of the American Statistical Association, 57, 348 - 68.

APPENDIX
Clarkson Center for Business Ethics and Board Effectiveness: Board Shareholder Confidence Index

Each company rated on the Board Shareholder Confidence Index begins with 100 points. Deductions are made from this total score if the criteria below are not met by a company to provide an overall score (measure 6).

Measures & Corporate Governance Criteria which should be met	
INDIVIDUAL POTENTIAL	
1. Director Independence	- At least two-thirds of the Board of Directors should be independent of management
	- Not more than one interlocking board member
	- Not more than five S&P/TSX Board directorships for any board member
2. Stock Ownership	- Ratio of the average stock owned by a third of the board to the value of the directors' annual retainer should be greater than four.
GROUP POTENTIAL	
3. Meeting Structure	- Separation of the Chief Executive and Chairman positions
	- Full independence of the board committees (Audit and Compensation Committees)
	- Equal voting rights for shareholders
4. Evaluations	- Regular and formal evaluation process for the Board and individual directors
PAST PRACTICES	
5. Board decision output	- Options less than 10% of the value of the company's outstanding shares
	- Options to the CEO less than 5% of the value of the company's outstanding shares
	- No re-pricing of options when share price has suffered
	- CEO compensation increase to be less than 25% in a year when the share price has decreased by more than 25%

Source: Glossary of Terms (Clarkson Centre For Business Ethics and Board Effectiveness, 2004a).

Table 1

Descriptive Statistics for the Variables in the Frequency of Disclosures and Timeliness Models

Variables	Doc Count	Log Doc Count	Timeliness	Timeliness deflated	Size	Good news	Volatility	**CGQ**
Mean	65.578	4.059	0.203	0.134	7.259	0.617	0.026	**2.840**
Median	60	4.094	0.149	0.116	7.184	1	0.023	**3**
Maximum	273	5.610	1.737	0.893	11.870	1	0.111	**6**
Minimum	1	0	0.021	0.021	2.377	0	0.006	**1**
Std. Dev.	32.740	0.536	0.178	0.082	1.534	0.487	0.015	**1.351**

Variables used in these models are based on Beekes and Brown (2006). The sample (N=694) is constructed from the set of Canadian companies rated in the 2004 Clarkson Center for Business Ethics and Board Effectiveness Corporate Governance Report. Doc Count is the annual number of documents as retrieved from the SEDAR website from 2000-2005. Log Doc Count denotes the natural logarithm (log) of Doc Count. Timeliness is the timeliness metric, measured as the average daily absolute difference between the log of the market-adjusted share price that day and the log of market-adjusted share price 10 trading days after the release of the firm's EPS for the year. Timeliness deflated is the timeliness metric divided by one plus the absolute rate of return on the share over the 250 trading-day period used to calculate the share's timeliness metric. Size is proxied by the log of the firm's market value of equity as reported on the Datastream database 240 trading days before the release date. Good news is a dummy variable with a value of one if the market adjusted return over the 250 trading days ended 10 days after the release date is positive, and is zero otherwise. Volatility is calculated from daily log returns in the 60 trading days ending the day before we observe the first price for the timeliness metric. CGQ is Measure 6, which is the overall grade reported in the 2004 Clarkson Center for Business Ethics and Board Effectiveness Corporate Governance Report. The grade has been converted to a numeric score, with a higher grade corresponding to higher quality governance structures.

Table 2

Descriptive Statistics for the Variables in the Models Used To Explain Properties of Analysts' Forecasts of Annual EPS

Variables	Bias	Accuracy	Disagreement	Following	Rev Volatility	Size	Prev FE	ABS Prev FE	Volatility	Resource	Options	Horizon	**CGQ**
Mean	0.007	0.021	0.010	8.496	0.005	7.528	0.015	0.025	0.019	0.180	0.301	358.932	**3.043**
Median	0.002	0.009	0.005	8	0.003	7.394	0.002	0.009	0.017	0	0	356	**3**
Maximum	0.322	0.322	0.440	26	0.060	10.726	3.694	3.694	0.107	1	1	715	**6**
Minimum	-0.183	0	0	2	0.000	2.182	-0.180	0	0.005	0	0	12	**1**
Std. Dev.	0.035	0.030	0.016	3.983	0.007	1.411	0.074	0.071	0.010	0.385	0.459	199.466	**1.390**

Variables used in these models are based on Beekes and Brown (2006). The sample (N=4,726) is constructed from the set of Canadian companies with I/B/E/S annual EPS forecasts, from 2002-2005. The sample is restricted to cases where at least 2 analysts contributed to the forecasts on the summary file. The sample firms must also be rated in the November 2004 Clarkson Center for Business Ethics and Board Effectiveness Corporate Governance Report. Forecast Error (FE) is defined as the mean forecast EPS less actual EPS as reported by I/B/E/S, and is deflated by base price (stock price one day before the I/B/E/S cutoff date for forecasts made a year before the release date). Bias is the signed FE and accuracy is its absolute value. Disagreement is the standard deviation of analysts' forecasts for that firm month, deflated by base price. Following is the number of analysts contributing to the consensus forecast. Rev Volatility is Earnings forecast revision volatility measured as the standard deviation of the month-to-month changes in the median earnings forecasts over the year leading up to the earnings release, deflated by base price (this variable is based on a smaller sample, N=311). Size is proxied by the natural log of market value of equity as reported on Datastream database one day before the I/B/E/S forecast cut off date. Prev FE is the prior year's FE is for the same firm and for the same horizon, deflated by previous year's base price. ABSPrev FE is the absolute value of Prev FE, deflated by previous year's base price. Volatility is calculated from daily returns in the 60 trading days ended the day before the I/B/E/S forecast date. Resource is a dummy variable coded 1 for the resource sector, 0 otherwise. Options is a dummy variable coded 1 for firms with exchange traded options, 0 otherwise. Horizon is the forecast horizon measured as the number of days from the forecast date until the company releases its annual earnings to the TSX. CGQ is Measure 6, which is the overall grade reported in the 2004 Clarkson Center for Business Ethics and Board Effectiveness Corporate Governance Report. The grade has been converted to a numeric score, with a higher grade corresponding to higher quality corporate governance structures.

Table 3

Correlations (product moment) of Variables used in Frequency of Disclosures and Timeliness Models

Variables	Timeliness	Timeliness deflated	Doc Count	Log Doc Count	Size	Good News	Volatility
Timeliness deflated	0.822						
Doc Count	-0.033	-0.051					
Log Doc Count	-0.071	-0.104	0.897				
Size	-0.396	-0.315	0.287	0.247			
Good News	0.037	-0.127	-0.022	0.021	-0.057		
Volatility	0.458	0.435	-0.017	-0.038	-0.451	0.006	
CGQ	**-0.175**	**-0.189**	**0.076**	**0.124**	**0.132**	**0.043**	**-0.202**

Notes: N=694; see Table 1 for the definitions of the variables.

Table 4

Correlations (product moment) Among the Continuous Variables used in Models of Properties of Analysts' Forecasts

	Bias	Accuracy	Disagreement	Following	Size	PrevFE	ABSPrev FE	Volatility	Horizon
Accuracy	0.414								
Disagreement	0.199	0.469							
Following	-0.208	-0.042	-0.067						
Size	-0.140	-0.200	-0.259	0.532					
PrevFE	0.180	0.225	0.266	-0.120	-0.211				
ABSPrevFE	0.168	0.308	0.331	-0.089	-0.226	0.923			
Volatility	0.155	0.199	0.380	-0.237	-0.504	0.228	0.253		
Horizon	0.095	0.276	0.122	-0.143	-0.023	0.092	0.145	0.105	
CGQ	**-0.005**	**0.015**	**-0.083**	**0.072**	**0.035**	**-0.011**	**-0.038**	**-0.109**	**-0.012**

Notes: N= 4,726. See Table 2 for the definitions of the variables.

Table 5

Results of OLS Regression Estimates: For Frequency of Disclosures and Timeliness Models

	Log Doc Count			Timeliness			Timeliness deflated		
Variable	*Coefficient*	*t-stats*	*Prob.(t)*	*Coefficient*	*t-stats*	*Prob.(t)*	*Coefficient*	*t-stats*	*Prob.(t)*
Intercept	4.059	206.76	<0.001	0.203	32.89	<0.001	0.134	46.26	<0.001
Size	0.128	6.18	<0.001	-0.067	-7.65	<0.001	-0.025	-7.93	<0.001
Good news	0.015	0.72	0.472	0.004	0.56	0.579	-0.011	-3.52	<0.001
CGQ	**0.049**	**2.70**	**0.007**	**-0.022**	**-3.96**	**<0.001**	**-0.011**	**-4.30**	**<0.001**
Adjusted R^2	0.0675			0.1679			0.1356		
N	694			694			694		
F-stat.	17.72			47.62			37.231		
Prob. (F)	<0.001			<0.001			<0.001		

Note: See Table 1 for the definitions of the variables. All regressors are normalised with mean zero and standard deviation of one, so that the intercept is the mean of the dependent variable and each coefficient indicates the change in the dependent variable predicted for one standard deviation change in the regressor. White's heteroscedasticity adjustment is applied when calculating *t*-statistics and *t*-probability is for a two-tailed test.

Table 6

OLS Regression Estimates: Bias, Accuracy and Disagreement in Analysts' Forecasts, Number of Analysts Following the Share and Forecast Revision Volatility

	Bias			Accuracy			Disagreement			Following			Rev Volatility		
Variable	*Coefficient*	*t-stats*	*Prob.(t)*	*Coefficient*	*t-stats*	*Prob.(t)*	*Coefficient*	*t-stats*	*Prob.(t)*	*Coefficient*	*t-stats*	*Prob.(t)*	*Coefficient*	*t-stats*	*Prob.(t)*
Intercept	0.725	14.883	<0.001	2.064	58.049	<0.001	0.999	49.269	<0.001	849.556	195.979	<0.001	0.504	22.435	<0.001
Following	-0.465	-5.976	<0.001	0.111	1.896	0.058	0.053	1.902	0.057				-0.116	-2.568	0.011
Disagreement	0.580	2.603	0.009	1.073	3.867	<0.001							0.542	12.378	<0.001
Size	0.369	4.608	<0.001	-0.265	-3.875	<0.001	-0.132	-2.717	0.007	130.003	18.703	<0.001	0.017	0.342	0.733
PrevFE	0.459	2.066	0.039	-0.581	-4.082	<0.001	-0.262	-1.967	0.049	-40.827	-2.329	0.020	0.036	1.263	0.207
ABSPrevFE	-0.053	-0.180	0.858	0.925	3.540	<0.001	0.588	2.823	0.005	36.996	2.098	0.036	0.087	2.840	0.005
Volatility	0.238	3.328	0.001	-0.106	-1.701	0.089	0.439	6.529	<0.001	-0.613	-0.117	0.907			
Resource	-0.286	-3.740	<0.001	0.395	6.261	<0.001	0.222	6.384	<0.001	96.310	18.760	<0.001	0.042	1.823	0.069
Options	-0.389	-5.865	<0.001	-0.163	-3.795	<0.001	-0.038	-1.749	0.080	116.021	18.184	<0.001	0.008	0.380	0.705
Horizon	0.151	2.821	0.005	0.636	15.492	<0.001	0.093	3.326	0.001	-55.118	-12.583	<0.001			
CGQ	0.094	1.667	0.096	0.245	6.846	<0.001	-0.024	-1.338	0.181	22.062	5.047	<0.001	0.033	1.303	0.194
Adjusted R^2	0.106			0.322			0.237			0.440			0.687		
N	4,726			4,726			4,726			4,726			311		
F-stat	56.920			225.652			164.097			465.665			85.904		
Prob. (F)	<0.001			<0.001			<0.001			<0.001			<0.001		

Note: See Table 2 for the definitions of the variables. All regression coefficients have been multiplied by 100 to increase precision. All regressors are normalised with mean zero and standard deviation of one, so that the intercept is the mean of the dependent variable and each coefficient indicates the change in the dependent variable predicted for one standard deviation change in the regressor. White's heteroscedasticity adjustment is applied when calculating *t*-statistics and *t*-probability is for a two-tailed test.