THE INFLUENCE OF CORPORATE GOVERNANCE ON MANAGEMENT EARNINGS FORECAST BEHAVIOUR IN A LOW PRIVATE LITIGATION ENVIRONMENT

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The Influence of Corporate Governance on Management Earnings Forecast Behaviour in a Low Private Litigation Environment

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Abstract

We examine the influence of three external corporate governance mechanisms – continuous disclosure regulatory reform, analyst following and ownership concentration and one internal corporate governance mechanism – board structure, on the likelihood, frequency, horizon, precision and accuracy of management earnings forecasts in the low private litigation environment of New Zealand. Based on a sample of 1,082 management earnings forecasts issued by 125 firms listed on the New Zealand Exchange during the 1998-2007 financial reporting periods, we provide strong evidence that these four corporate governance mechanisms have a significant influence on management earnings forecast behaviour after effectively controlling for endogeneity, multicollinearity and self-selection bias problems. Specifically, firms monitored by effective corporate governance mechanisms were more inclined to pre-empt their earnings announcements with earnings forecasts (overall, non-routine and quantitative) and provide these earnings forecasts more frequently. These earnings forecasts issued by these firms were less optimistically biased. In addition, firms having more directors with accounting expertise on their boards and audit committees were more likely to provide earnings forecasts with longer horizon and smaller forecast error. Board size and the existence of a formally established audit committee are shown to have a positive impact on forecast error. A possible interpretation of our findings is that effective corporate governance mechanisms have been able to substitute for private enforcement alternative. Our findings should have important implications for the other low private litigation environments as well as for high private litigation environments such as the United States given the high economic and social costs that have been identified as being related to private litigation.

1 Introduction

Management earnings forecasts represent one of the key disclosure mechanisms through which management communicates their expectation of a firm's earnings to the capital markets prior to the release of mandatory earnings announcements. The important role played by management earnings forecasts in the efficient functioning of the capital markets, including reducing information asymmetry, lowering cost of capital and improving investor confidence, has motivated a great deal of research investigating the various aspects of management earnings forecasts.

Despite the rich literature on management earnings forecasts, there is much less theory and empirical evidence about how firms choose certain forecast characteristics over which management has the most control, than about why firms decide to issue earnings forecasts and the subsequent impact of this earnings forecast behaviour on the capital markets. Prior research studies examining the association between corporate governance and management earnings forecast behaviour tend to focus on specific aspects of corporate governance rather than a combined set of external and internal corporate governance mechanisms.

In addition, most research on management earnings forecasts is conducted in the high private litigation environment of the United States (the U.S.) where the private litigation risk is posited to be a primary determinant of management earnings forecast behaviour. The threat of private enforcement might act as substitute for corporate governance mechanisms as an effective tool to manage and supervise management activities including their earnings forecast behaviour (La-Porta et al., 2006). This means that the impact of corporate governance mechanisms on management earnings forecast

behaviour could be dependent on the effectiveness of the alternative mechanism of private enforcement. Therefore, a major challenge to researchers providing empirical evidence about the relative merits of various corporate governance mechanisms versus private enforcement is the difficulty associated with isolating the incremental impacts of corporate governance and private enforcement. This is especially the case in the U.S. where the strength of various external corporate governance mechanisms and private enforcement is high. It is possible that the incremental benefits of various corporate governance mechanisms could be stronger and/or more easily identifiable in a low private litigation environment.[1]

New Zealand has been characterised as a low private litigation environment with high litigation costs, heavy reliance on individual proof, low damage awards, prohibition on contingent fees and alternative funding together with an anti-litigious culture (Dunstan et al., 2011). Therefore, New Zealand provides a unique setting to study the impact of corporate governance on management earnings forecast behaviour in the absence of cost effective private enforcement alternatives.

We examine the influence of three external corporate governance mechanisms – continuous disclosure regulatory reform, analyst following and ownership concentration and one internal corporate governance mechanism – board structure, on the likelihood, frequency, horizon, precision and accuracy of management earnings forecasts using a sample of 1,082 management earnings forecasts issued by 125 firms listed on the New Zealand Exchange (NZX) during the 31 January 1998 to 31 December 2007 financial reporting periods. Our results provide strong evidence that the four corporate

[1] New Zealand is characterised by a mostly voluntary corporate governance framework. While the Securities Commission issued the principles and guidelines for corporate governance, it has no force of law.

governance mechanisms have a significant influence on management earnings forecast behaviour after effectively controlling for endogeneity, multicollinearity and self-selection bias problems. Specifically, firms monitored by effective corporate governance mechanisms were more inclined to pre-empt their earnings announcements with earnings forecasts (overall, non-routine and quantitative) and provide these earnings forecasts more frequently. The earnings forecasts issued by these firms were less optimistically biased. In addition, firms having more directors with accounting expertise on their boards and audit committees were more likely to provide earnings forecasts with longer horizon and smaller forecast error. Board size and the existence of a formally established audit committee are shown to have a positive impact on forecast error. A possible interpretation of our findings is that effective corporate governance mechanisms are able to be more beneficial in monitoring corporate behaviour in circumstances where private enforcement is not a cost effective alternative.

The remainder of our study is organised as follows. Section 2 summarises relevant corporate governance and management earnings forecast literature and describes the research hypotheses. An overview of the research design is provided in section 3. Section 4 presents the results and our study concludes in section 5.

2 Literature Review and Hypothesis Development

2.1 The Importance of Corporate Governance

Corporate governance is especially important to ameliorate those agency problems arising from the separation of ownership and control and where such problems cannot be satisfactorily contracted away due to significant uncertainty, information asymmetry

and contracting costs (Hart, 1995). Agency costs could be also mitigated by effective corporate governance mechanisms through enhanced corporate disclosure (Jensen and Meckling, 1976). In the broadest sense, corporate governance mechanisms could arise externally from: law/regulation, capital, control, labour and product markets, capital market information and analysis, the market for services, and private sources of external oversight. Alternatively, they could be internal mechanisms, for example: board of directors, managerial incentives, a firm's capital structure, bylaw and charter provisions, and internal control systems (Gillan, 2006). In the context of our study, there are three external mechanisms – continuous disclosure regulatory reform, analyst following and ownership concentration and one internal mechanism – board structure that are considered to be the most relevant.

Continuous Disclosure Regulatory Reform

In 2002, as part of a broad reform of securities regulation in New Zealand, the Securities Markets Act 1988 was amended to include statutory sanctions to support the NZX's continuous disclosure listing rules. The intention of this continuous disclosure reform in New Zealand was to create a fully informed environment where firms update the market with all material information on a timely basis (Securities Markets Amendment Act 2002, Section 19A).[2] Even though the effectiveness of this continuous disclosure regulatory reform has been challenged due to a lack of evidence of strong enforcement by either the NZX or the Securities Commission, several New Zealand research studies provide consistent empirical evidence supporting the effectiveness of

[2] The amended Act requires NZX-listed firms to disclose any material information to investors as they arise. Failure to comply with the amended Act, and/or orders made by the Securities Commission in relation to continuous disclosure, can lead to civil penalties of up to $300,000 and criminal penalties of up to $30,000.

this regulatory intervention. The information component of the bid-ask spread for less liquid stocks, the dispersion of analysts' earnings forecasts and the stock market reaction to earnings announcements and management earnings forecasts, all decreased in the post-reform period (Frijns et al., 2008; Dunstan et al., 2009; Huang et al., 2009). In addition, Huang et al. (2009) and Dunstan et al. (2011) found that firms increased the number of price-sensitive disclosures and earnings forecasts, which are more precise and accurate, to the capital market in the post-reform period.

Analyst Following

Analysts, employed by investment banks, brokerage houses and large institutional investors, are argued to perform a monitoring role, which reduces the opportunities available to managers to capture excessive pecuniary and non-pecuniary benefits from shareholders (Jensen and Meckling, 1976). Managers will be more likely to engage in opportunistic activities in the absence of such monitoring activities by analysts. Prior research provides evidence consistent with the monitoring role by analysts. Moyer et al. (1989) document that analysts' monitoring acted as an efficient device to reduce agency costs associated with the separation of ownership and control. Chung and Jo (1996) argue that the monitoring activities of analysts motivate managers, thus reducing agency costs. Additionally, Chan et al. (2008) show that firms which were followed by a greater number of analysts were more likely to issue earnings forecasts and inclined to forecast earnings more frequently.

Ownership Concentration

The theoretical debate on the benefits of concentrated ownership divides into two competing hypotheses: the efficient-monitoring and the opportunistic hypotheses. The

supporters of the efficient-monitoring hypothesis propose that large shareholders are better at monitoring managers' activities compared to small shareholders as they are able to absorb greater monitoring and takeover costs (Shleifer and Vishny, 1986), execute their vested fiduciary responsibilities with greater expertise (Pound, 1988), and acquire more precise signals of management efforts (Berle and Means, 1932; Huddart, 1993). According to the opportunistic hypothesis, large shareholders could exercise their absolute controlling rights in the firm, exerting a powerful influence on managers in order to maximise their own benefits at the cost of small shareholders (Makhija and Patton, 2004). Large shareholders and managers could also find it mutually advantageous to work together and this co-operation would reduce the ability of other shareholders to monitor managers' activities (Pound, 1988; Holmstrom and Tirole, 1993).

Prior research provides evidence for an increase (a decrease) in the benefits of concentrated ownership at a low (high) level of ownership concentration. For instance, Makhija and Patton (2004) find that the extent of voluntary disclosure is positively related to ownership concentration at a low level of ownership concentration but is negatively related to ownership concentration at a high level of ownership concentration. Navissi and Naiker (2006) report a non-linear relationship between institutional ownership and firm value by documenting a positive (negative) association with firm value at lower (higher) levels of ownership.

Board Structure

The board of directors are viewed as being "the lynchpin of corporate governance" (Gillan, 2006, p. 385). Fama and Jensen (1983) characterise the responsibilities of the

board of directors as being both the ratification of management decisions and the monitoring of management performance. It is posited that the monitoring role of the board of directors is dependent on the degree of independence, size, meeting frequency, and the degree of financial expertise of the board itself and its sub-committees (John and Senbet, 1998; Karamanou and Vafeas, 2005).

First, the separated appointment of a Chairman from a CEO and the greater proportion of non-executive directors on the board and its sub-committees are argued to enhance the monitoring performance of the board (Fama and Jensen, 1983). Ho and Wong (2001) find that firms which combined the roles of Chairman and CEO tended to withhold unfavourable information. The duality of the Chairman and CEO roles is also associated with lower levels of voluntary disclosure (Gul and Leung, 2004; Cheng and Courtenay, 2006). According to Chen and Jaggi (2000), firms with a higher percentage of non-executive directors on the board were more engaged and provided more comprehensive statutory disclosures. Firms with a higher level of board and audit committee independence were less likely to engage in earnings management (Klein, 2002).

Second, board size is argued to enhance board monitoring performance, as appointing more relevant directors to the board would enhance board knowledge and provide greater capacity to share the monitoring responsibilities (Song and Windram, 2004; Karamanou and Vafeas, 2005). However, larger boards are posited to be less flexible and less efficient due to higher coordination costs and less effective communication (John and Senbet, 1998; Coles et al., 2008). According to Bradbury et al. (2006), firms with a greater number of directors on the board tended to have high earnings quality.

However, Yermack (1996) documents a negative relationship between board size and firm value.

Third, board meeting frequency is argued to be indicative of the amount of time the board spends on monitoring management, thus enhancing the board monitoring performance (Vafeas, 1999). According to Vafeas (1999), the board of directors of firms which had experienced share price declines were inclined to meet more frequently and, as a result, operating performance improved in the following year. Carcello et al. (2002) document that greater board meeting frequency is associated with higher audit fees. Therefore, they conclude that board meetings complement auditor oversight. Additionally, Abbott et al. (2004) show that firms where the audit committee met at least four times per year were less likely to be required to restate their financial reports.

Lastly, the presence of directors with accounting or financial expertise on the board and audit committee is argued to enhance the board monitoring performance (Karamanou and Vafeas, 2005). According to Felo et al. (2003), firms with a higher percentage of directors with accounting or financial expertise on the audit committee tended to have higher financial reporting quality. Firms which had at least one financial expert on board were less likely to be required to restate earnings (Abbott et al., 2004). Interestingly, Defond et al. (2005) document that accounting expertise, not the overall financial expertise, is a determinant of the improvement of an audit committee's ability to ensure high financial reporting quality, especially for firms with a strong corporate governance structure. Therefore, the presence of an accounting expert on the board and the audit committee enhances board monitoring performance.

2.2 Corporate Governance and Management Earnings Forecast Behaviour

The management earnings forecast literature suggests that managers' decision to provide earnings forecasts can involve significant benefits as well as costs and managers will balance these benefits and costs when determining the optimal level of earnings forecast disclosure for their firms (Hirst et al., 2008). According to Trueman (1986), management earnings forecasts give investors a more favourable assessment of the managers' ability to anticipate economic changes and provide reliable production plans, thus translating into a higher firm market value. Management earnings forecasts could reduce the level of information asymmetry in the capital markets (Coller and Yohn, 1997). Frankel et al. (1995) suggest that firms' ability to assess the capital markets more frequently is enhanced by the issuance of management earnings forecasts. Management earnings forecasts could also assist firms to reduce litigation and reputation costs (Skinner, 1994, 1997; Field et al., 2005). In addition, management earnings forecasts could facilitate better clarity and investor understanding (Graham et al., 2005).

Other researchers have identified the costs associated with management earnings forecasts. The disclosure of earnings forecasts could increase proprietary, litigation and reputation costs (Francis et al., 1994; Bamber and Cheon, 1998; Baginski et al., 2004). Specifically, firms with high litigation risk were less likely to provide earnings forecasts (Francis et al., 1994). According to Wang (2007), firms with higher proprietary information costs reduced their public disclosures following the introduction of the Regulation Fair Disclosure 2000 (Reg FD).

La-Porta et al. (2006) propose that the strength of private litigation could be considered as an integral aspect of the investor protection environment. A jurisdiction which features a strong culture or private litigation could provide a natural monitoring

mechanism for shareholders to prevent management's opportunistic behaviour. The threat of private enforcement might act as a substitute to the corporate governance mechanisms as an effective tool to manage and supervise management activities. Tinaikar (2008) investigates the relationship between the proportion of outside directors and management earnings forecast behaviour across two legal regimes with unequal private litigation costs – the U.S. and Canada. His findings reveal that outside directors and private enforcement act as substitutes when determining management earnings forecast behaviour. Therefore, it is possible to argue that the incremental benefits of corporate governance mechanisms could be stronger and/or be more easily identifiable in an environment when low private litigation prevails.

In New Zealand, the effectiveness of private litigation taken by shareholders and others is impaired by a combination of high costs, an onerous burden of individual reliance proof, damages determined by judges rather than juries resulting in low damage awards, the prohibition on contingent fees and litigation funding together with an anti-litigious culture (Dunstan et al., 2011). Therefore, we contend that effective corporate governance mechanisms may play a more important role in determining behaviour in the low private litigation environment of New Zealand. Therefore, the hypotheses regarding to forecast likelihood and frequency are stated as follows:

Forecast Likelihood

> *H1: Firms that are monitored by more effective corporate governance mechanisms are more likely to issue management earnings forecasts (overall and non-routine).*

Forecast Frequency

H2: The frequency of management earnings forecasts (overall and non-routine) is higher for firms that are monitored by more effective corporate governance mechanisms.

Following the decision to release the earnings forecasts to the market, firms must then decide on the qualitative characteristics of the earnings forecasts they are reporting (King et al., 1990). Three key qualitative characteristics of management earnings forecasts are forecast horizon, precision and accuracy, which capture the timeliness, specificity and accuracy of the earnings forecasts, respectively (Hirst et al., 2008).

Prior research documents significant variation in earnings forecasts' characteristics across jurisdictions with different levels of private litigation risk. There is consistent evidence that firms from lower private litigation risk jurisdictions were more likely to provide timelier and more precise earnings forecasts (Baginski et al., 2002; Frost, 2004). While U.S. firms tended to provide more pessimistic earnings forecasts to pre-empt litigation risk (Skinner, 1994), Japanese firms consistently issued over-optimistic earnings forecasts as they faced no obvious legal sanctions (Kato et al., 2009).

An informative and credible management earnings forecast is expected to be timely, precise and accurate (smaller forecast error and less optimistically biased) (King et al., 1990; Tinaikar, 2008). In the low private litigation environment of New Zealand, it is argued that corporate governance as an alternative monitoring mechanism for monitoring managerial self-interest as manifested in the firms' earnings forecast policies could enhance the timeliness, precision and accuracy of management earnings forecasts. Therefore, the following hypotheses regarding forecast horizon, precision and accuracy are tested:

Forecast Horizon

H3: The horizon of management earnings forecasts is longer for firms that are monitored by more effective corporate governance mechanisms.

Forecast Precision

H4a: Firms that are monitored by more effective corporate governance mechanisms are more likely to issue quantitative (open-ended, range and point) management earnings forecasts.

H4b: The frequency of quantitative (open-ended, range and point) management earnings forecasts is higher for firms that are monitored by more effective corporate governance mechanisms.

H4c: The precision of management earnings forecasts is higher for firms that are monitored by more effective corporate governance mechanisms.

Forecast Accuracy

H5a: The error of management earnings forecasts is smaller for firms that are monitored by more effective corporate governance mechanisms.

H5b: The management earnings forecasts are less optimistically biased for firms that are monitored by more effective corporate governance mechanisms.

3 Research Design

3.1 Study Period and Sample

The selected study period is an eleven-year period encompassing all market announcements made by firms regarding the financial years ending between 31 January 1998 and 31 December 2007.[3] The final sample comprises 125 NZX-listed firms. These firms cover a total of 897 firm-years during which a total of 32,690 market announcements were issued. All 32,690 announcements were carefully read to identify announcements containing management earnings forecasts. Among these 32,690 market announcements, there are 1,082 announcements including management earnings forecasts. These 1,082 management earnings forecasts include both forecasts of half-yearly and annual earnings. Among these 897 firm-years, there are 265 firm-years where firms fully disclosed the level of independence, size, number of meetings and level of accounting expertise of boards of directors and audit committees. Among these 265 firm-years, the total of management earnings forecasts issued is 350. This sub-sample of 265 firm-years and 350 management earnings forecasts provides a basis for additional tests regarding the influence of various board structure indicators including the level of independence, size, number of meetings and level of accounting expertise of the boards of directors and audit committees on management earnings forecast behaviour. Details about this sample selection process are provided in Table 1.

[INSERT TABLE 1 HERE]

3.2 Data Sources

[3] The starting financial year ending on 31 January 1998 is chosen as it is the earliest financial year where the disclosure data are made available on the NZX database. The ending financial year ending on 31 December 2007 is selected to avoid any contamination that may arise from the further amendments to the continuous disclosure provisions under the Securities Markets Amendment Act 2002 which came into force on 29 February 2008. These amendments give the Securities Commission the power to seek pecuniary penalties and compensation from individual directors and officers involved in any continuous disclosure breaches. This decision to avoid the confounding impact of the further amendments to the Securities Markets Act 1988 is supported by the Securities Commission's recent launching of a case against Nuplex Industries Limited and its current and former directors for the breaches of continuous disclosure requirements.

The NZX listing status was extracted from the Events section of the NZX database as at 17 September 2008. The cross-listing status was taken directly from the NZX helpline services. The analyst following information was taken from the Forecasts section of the NZX database. All market announcements were extracted from the Announcements section of the NZX database. Data related to ownership concentration and board structure were carefully extracted from the annual reports which are provided in the Annual Reports section of the NZX database. Accounting and market-related data were obtained from either the NZX or Datastream database.

3.3 Classifications of Management Earnings Forecasts

The identified management earnings forecasts are classified according to their underlying event (routine or non-routine) associated with the announcements, news content (bad, neutral or good), horizon, precision (qualitative, open-ended, range or point) and accuracy (error and bias). Details about the classifications are provided in Figure 1.

[INSERT FIGURE 1 HERE]

3.4 Measures of Four Corporate Governance Mechanisms

Continuous Disclosure Regulatory Reform

The statutory-backed continuous disclosure reform came into effect from 1 December 2002 under the Securities Markets Amendment Act 2002. Therefore, 1 December 2002 is chosen as the cut-off between the pre-reform and post-reform periods. All firm-years with financial reporting dates ending before (after) 1 December 2002 are classified to be in the pre-reform (post-reform) period.

Analyst Following

In New Zealand, less than 50 percent of NZX-listed firms are followed by analysts (Dunstan et al., 2009). Therefore, whether or not a firm is followed by analysts is used as a proxy for the analyst following of this firm.

Ownership Concentration

The Herfindahl index is used to measure the level of ownership concentration and is calculated as follows.

$$\text{Herfindahl } (OWNCON) = \sum_{i=1}^{5} \left(\frac{\text{The total number of shares held by shareholder i}}{\text{The total number of shares outstanding}}\right)^2$$

A two-stage least squares is employed to address the concern about the endogenous relationship between ownership concentration and management earnings forecast behaviour[4] and to detect a one-way causal effect of ownership concentration on management earnings forecast behaviour. Shareholder intensity as measured by the ratio of the total number of shareholders to the total number of shares outstanding is chosen as an instrumental variable.[5]

Board Structure

The degree of independence, size, meeting frequency and the level of accounting expertise on the board of directors and its audit committee are considered as indicators

[4] Research studies on the relationship between ownership structure and management earnings forecasts encounter the common problem of endogeneity between these two measures (Healy et al., 1999; Bushee and Noe, 2000; Ajinkya et al., 2005).

[5] In the first stage, the Herfindahl index is regressed on shareholder intensity to obtain the fitted values. In the second stage, these fitted values replace the original Herfindahl index in the main models.

for board effectiveness. These board structure indicators are initially identified and measured as shown in Figure 2.

[INSERT FIGURE 2 HERE]

There is significant correlation among these board structure indicators (see Table 2); therefore, in order to avoid a multicollinearity problem and to capture the essence of board effectiveness as represented by these indicators, we employ exploratory principal component factor analysis (PCA).[6] The use of PCA reduces the large number of highly collinear board structure indicators into factors that retain most of the variance as in the original board structure indicators.

[INSERT TABLE 2 HERE]

Four board structure indicators, including *CEOCHAIR*, *BRDINDP*, *BRDSIZE* and *AC* are incorporated into the PCA for the full sample of 897 firm-years.[7] The initial PCA of these four indicators indentifies two interpretable factors, including *BRDINDP* (board independence) and *BRDSIZEAC* (board size and audit committee) (see Table 3, Panel A). Nine board structure indicators, including *CEOCHAIR*, *BRDINDP*, *BRDSIZE*, *BRDMEET*, *BRDACCEXP*, *ACINDP*, *ACSIZE*, *ACMEET* and *ACACCEXP* are incorporated into the PCA for the sub-sample of 265 firm-years.[8] As apparent from Table 3, Panel B, the initial PCA of these nine board structure indicators indentifies four interpretable board structure factors including *BRDAC_INDP* (board and audit

[6] This approach has been used by other corporate governance researchers (e.g. Larcker et al. (2007)).
[7] Across all 897 firm-years in the final sample, firms consistently disclosed only the level of independence and size of the board of directors and whether there existed a formally established audit committee in their annual reports.
[8] Among the final sample of 897 firm-years, there are 265 firm-years where firms fully disclosed the level of independence, size, meeting frequency and level of accounting expertise on both boards of directors and audit committees in their annual reports.

committee independence), *BRDAC_SIZE* (board and audit committee size), *BRDAC_MEET* (board and audit committee meeting) and *BRDAC_ACCEXP* (board and audit committee accounting expertise).

[INSERT TABLE 3 HERE]

According to Hermalin and Weisbach (2003), there are other factors which might impact both board structure and firm attributes; therefore, a spurious correlation could be observed between board structure and firm attributes. The firm attributes mentioned in Hermalin and Weisbach (2003) would include its management earnings forecast behaviour. Denis and Sarin (1999) document that the board structure is related to firm size and growth prospects. In order to address the concern about the expected spurious relationship between board structure and management earnings forecast behaviour and detect a one-way causal effect of board structure on management earnings forecast behaviour, a two-stage least squares method is utilised. The natural logarithm of the total assets and the natural logarithm of the market value of equity divided by the book value of equity are used as proxies for firm size and growth prospects, respectively.[9]

3.5 Hypothesis Testing Procedures

Probit, multinomial probit, ordered probit, Poisson and linear regression models are estimated to make inferences about the hypothesised relationships and to control for the

[9] In the first stage, each board structure factor identified in the above PCA is regressed on the two proxies for firm size and growth prospects and the residuals of each board structure factor were obtained. These residuals represent the unexplained portion of board structure factors which are not explained by the firm characteristics identified in the prior literature. In the second stage, the residuals of these board structure factors replace the original board structure factors in the models used to test the impact of board structure on the likelihood, frequency, horizon, precision and accuracy of management earnings forecasts. Specifically, for the full sample of 897 firm-years, the residuals *BRDINDPR* and *BRDSIZEACR* replace the original *BRDINDP* and *BRDSIZEAC* factors, respectively. For the sub-sample of 265 firm-years, the residuals *BRDAC_INDPR*, *BRDAC_SIZER*, *BRDAC_MEETR* and *BRDAC_ACCEXPR* replace the original *BRDAC_INDP*, *BRDAC_SIZE*, *BRDAC_MEET* and *BRDAC_ACCEXP* factors, respectively.

firm-specific attributes, forecast-specific characteristics and the self-selection bias. The model specifications for 897 firm-years and 1,082 management earnings forecasts are presented in Figure 3. Models 1, 2, 3, 4a-c and 5a-b are used to test H1, H2, H3, H4a-c and H5a-b.

[INSERT FIGURE 3 HERE]

The model specifications for 265 firm-years and 350 management earnings forecasts would be similar to those for 897 firm-years and 1,082 management earnings forecasts, except for the residuals of the two board structure factors – *BRDINDPR* and *BRDSIZEACR* being replaced with the residuals of four board structure factors – *BRDAC_INDPR*, *BRDAC_SIZER*, *BRDAC_MEETR* and *BRDAC_ACCEXPR*.

The definitions of the dependent and independent variables are presented in Figure 4.

[INSERT FIGURE 4 HERE]

Firm performance, firm size, cross-listing status and growth prospects are widely found to influence management earnings forecast behaviour (Hirst et al., 2008). Therefore, *ECSIGN*, *BAD*, *GOOD*, *ECHANGE*, *SIZE*, *CROSSLIST* and *MB* are included as control variables.

Prior research documents a potential trade-off between forecast horizon and forecast precision and accuracy (Hirst et al., 2008). As more of the financial reporting period elapses and less time remains before the release of mandatory earnings announcements, firms possess more information and are more certain about the eventual earnings outcome. Therefore, *HORIZON* is included in model 4c and *POINT* and *HORIZON* are included models 5a-b as control variables.

As there are a number of NZX-listed firms issuing multiple earnings forecasts during the financial year, Dunstan et al. (2011), which is the only New Zealand study on management earnings forecast behaviour to date, focus only on the first management earnings forecasts issued prior to the release of the mandatory earnings announcements for their forecast horizon testing. While the sole focus on the first management earnings forecasts in the forecast horizon testing could reveal how early the firms first update the capital markets with their expectations of earnings, this approach might have ignored a valuable sample of updated earnings forecasts with a higher level of precision and accuracy which could be more informative and relevant to the capital markets. Therefore, we include all management earnings forecasts in the forecast horizon testing, irrespective of whether the management earnings forecast is the first or an updated one. As an updated management earnings forecast always has a shorter horizon than the prior ones, *MEFORDER* is included in model 3 as a control variable.

It is also shown in Dunstan et al. (2011) that management earnings forecasts released through non-routine announcements tended to be more precise. Therefore, *NREVENT* is included in model 4c as a control variable.

In addition, forecast horizon, precision and accuracy can be observed only among the group of firms providing earnings forecasts. As proposed by Heckman (1979), there might be a self-selection bias inherent in testing the horizon, precision and accuracy of management earnings forecasts. Therefore, the Inverse Mills Ratio (*IMR*) is included in models 3, 4c and 5a-b as a control variable. Following Heckman's (1979), the *IMR* is

estimated based on model 1 – the probit model estimating the likelihood of firms issuing management earnings forecasts. The *IMR* estimate is calculated as follows.[10]

$$\mathrm{IMR}_{i,t} = \frac{\phi(\mathrm{E}(\mathrm{FORECAST1}_{i,t})}{\Phi(\mathrm{E}(\mathrm{FORECAST1}_{i,t})}$$

Prior to estimating the models, the skewness and kurtosis statistics for all the continuous variables are checked and extreme values are winsorised to preserve the characteristics of the original data while minimising the possible distortion of results by these extreme values. The maximum number of observations winsorised is low at the level of 5 percent of the sample observations.

4 Results

4.1 Descriptive Statistics

Table 4 describes the nature and extent of the sample firm-years and management earnings forecasts.

[INSERT TABLE 4 HERE]

Table 4, Panel A indicates that among the final sample of 897 firm-years, there are 511 firm-years (56.97%) of which earnings announcements were pre-empted by at least one management earnings forecast. Among these 511 pre-empted firm-years, there are 320 (35.67%) and 191 (21.29%) firm-years of which earnings announcements were pre-empted by only routine management earnings forecasts and by at least one non-routine management earnings forecast, respectively. 212 (23.63%) earnings announcements

[10] In this calculation of *IMR*, $\phi(.)$ denotes the standard normal probability density function and $\Phi(.)$ denotes the cumulative distribution function for a standard normal random variable.

were pre-empted by exclusively qualitative management earnings forecasts and 299 (33.33%) earnings announcements were pre-empted by at least one quantitative (open-ended, range and point) management earnings forecast. NZX-listed firms provided up to a total of 8 overall, 6 non-routine and 7 quantitative earnings forecasts.

Table 4, Panel B describes the horizon, precision and accuracy (error and bias) of 1,082 management earnings forecasts in the final sample. The mean and median of forecast horizon are 184 and 168 days, respectively which is far longer than those with an average forecast horizon of 71 days issued by U.S. firms and a little shorter than those with an average forecast horizon of 188 days issued by Canadian firms provided by Baginski et al. (2002). While the proportion of the qualitative management earnings forecasts stays at a high level of 46.21%, open-ended, range and point management earnings forecasts are only 12.29%, 13.77% and 27.73% of the total number of management earnings forecasts, respectively. The percentage of qualitative management earnings forecasts is far higher than those reported in the U.S. (11.2%) and Canada (11%) by Baginski et al. (2002). The mean and median of forecast error are 0.051 and 0.004, respectively and the mean and median for forecast bias are 0.034 and 0. The mean of forecast error and bias is much larger than the mean of U.S. forecast error (0.022) and forecast bias (0.018) documented by Ajinkya et al. (2005).

In addition, the descriptive statistics for the sub-sample of 265 firm-years and 350 management earnings forecasts show that the nature and extent are mostly similar to those reported for the full sample, except for a lower proportion of qualitative management earnings forecasts (33.14%), a higher percentage of range management

earnings forecasts (25.71%) and a lower mean of forecast error (0.017) and forecast bias (0.004).

The descriptive statistics for corporate governance indicators are provided in Table 5. Among 897 firm-years, 523 firm-years (58.31%) are related to the post-reform period and 410 firm-years (45.71%) are followed by analysts. The mean ownership concentration is 0.185 which is considered to be high according to Brown and Warren-Boulton (1988)'s concentration benchmark. There are 806 firm-years (89.86%) having separate CEO and Chairman and 790 firm-years (88.07%) with a formally established audit committee. The means for board independence and board size are 0.820 and 6.065, respectively.

Among the sub-sample of 265 firm-years, the percentages of firm-years in the post-reform period and followed by analysts are higher (71.32% and 66.42%, respectively). The mean ownership concentration is also higher at 0.206. The means for board meeting and board accounting expertise are 10.472 and 0.265, respectively. The means for audit committee independence, size, meeting and accounting expertise are 0.970, 3.472, 3.743 and 0.400, respectively.

[INSERT TABLE 5 HERE]

4.2 Multivariate Results

Predicted signs for the coefficients on independent variables are provided in Table 6.

[INSERT TABLE 6 HERE]

Tables 7 and 8 present the regression results for the full sample and sub-sample firm-years and management earnings forecasts.

[INSERT TABLES 7 AND 8 HERE]

Continuous Disclosure Regulatory Reform

The *REFORM* coefficient is positively significant in *FORECAST1*, *FORECAST2*, *FREQUENCY1*, *FREQUENCY2*, *FORECAST3*, *FREQUENCY3*, *PRECISION*, *ERROR* and *BIAS* models for the full sample (see Table 7). The enforcement of the continuous disclosure regulatory reform has significantly improved the likelihood of firms pre-empting their earnings announcements with earnings forecasts (overall and non-routine) and the frequency and precision of these earnings forecasts, thus supporting H1, H2 and H4a-c. Firms tended to provide forecasts with larger error and optimistically biased forecasts in the post-reform period; therefore H5a-b are not supported. However, there is no noticeable change in forecast error and earnings forecasts were pessimistically biased in the post-reform period for the sub-sample, which supports H5b (see Table 8).

The findings regarding forecast likelihood, frequency and precision are consistent with those reported by Dunstan et al. (2011). To some extent, these results are also consistent with the findings reported by Chan et al. (2007) that there is a significant increase in the level of non-routine bad news earnings forecasts issued by ASX-listed firms in the post-2000 period due to an increase in continuous disclosure enforcement in Australia. However, Dunstan et al. (2011) report a marginal decline in forecast horizon and a significant improvement in forecast error in the post-reform period.

Analyst Following

Table 7 presents positive and significant coefficient on *ANALYST* in *FORECAST1*, *FORECAST2*, *FREQUENCY1*, *FREQUENCY2*, *FORECAST3*, *FREQUENCY3*, *PRECISION*, *ERROR* and *BIAS* models for the full sample. Analysts play an important role in driving firms to pre-empt their earnings announcements with earnings forecasts (overall and non-routine) and to provide these earnings forecasts more frequently, supporting H1 and H2. Firms followed by analysts were more inclined to provide more precise earnings forecasts; therefore H4a-c were supported. However, these firms tended to provide earnings forecasts of larger error and with optimistic bias, which rejects H5a-b. However, among the sub-sample, firms followed by analysts were more inclined to provide pessimistically biased earnings forecasts (see Table 8).

These findings are consistent with those reported by Chan et al. (2007) (the likelihood and frequency of overall and non-routine earnings forecasts), by Tinaikar (2008) (forecast precision) and by Karamanou and Vafeas (2005) (forecast error and bias).

Ownership Concentration

The coefficient for H and H^2 is significantly positive and negative in *FORECAST1*, *FORECAST2*, *FREQUENCY1*, *FORECAST3*, *FREQUENCY3*, *PRECISION*, *ERROR* and *BIAS* models for the full sample (see Table 7). An increase in ownership concentration at a low (high) level of ownership concentration is associated with higher (lower) forecast likelihood (overall and non-routine), forecast frequency (overall) and forecast precision. Therefore, H1, H2 and H4a-c are supported. However, among the sub-sample, an increase in ownership concentration at a low (high) level of ownership concentration is related to lower (higher) forecast likelihood (non-routine) and forecast frequency (overall, non-routine and quantitative). Larger (smaller) forecast error and

optimistically (pessimistically) biased forecasts are associated with an increase in ownership concentration at a low (high) level of ownership concentration, which rejects H5a-b.

The reported impact of ownership concentration on the likelihood of firms issuing earnings forecasts (overall, non-routine and quantitative) supports the efficient-monitoring (opportunistic) hypothesis at a low (high) level of ownership concentration. To some extent, this evidence is consistent with other research studies on the impact of ownership concentration on voluntary disclosure (Makhija and Patton, 2004) and firm value (Navissi and Naiker, 2006). However, it is interesting to find that the efficient-monitoring (opportunistic) hypothesis is supported at a high (low) level of ownership concentration regarding the non-routine forecast likelihood, forecast frequency (overall, non-routine and quantitative) for the subsample and forecast error and bias for both the full sample and sub-sample).

Board Structure

Positive and significant coefficients on *BRDINDPR*, *BRDSIZEACR*, *BRDAC_INDPR*, *BRDAC_SIZER*, *BRDAC_MEETR* and *BRDAC_ACCEXPR* are reported in *FORECAST1*, *FORECAST2*, *FREQUENCY1*, *FREQUENCY2*, *HORIZON*, *FORECAST3*, *FREQUENCY3*, and *PRECISION* models, thus supporting H1, H2, H3 and H4a-c (see Tables 7 and 8). The coefficients on *BRDINDPR*, *BRDAC_INDPR* and *BRDAC_ACCEXPR* are significantly positive in *ERROR* model; therefore H5a is rejected. However, a marginal significant and negative coefficient of *BRDSIZEACR* in the *ERROR* model has provided support for H5a. The negative and significant

coefficients on *BRDSIZEACR*, *BRDAC_INDPR*, *BRDAC_SIZER*, *BRDAC_MEETR* and *BRDAC_ACCEXPR* in the *BIAS* model have supported H5b.

Three aspects of board structure namely, independence, size and meeting frequency are found to improve the likelihood that firms issued earnings forecasts (overall and non-routine), the frequency of these earnings forecasts (overall and non-routine), forecast precision and accuracy (smaller error and less optimistic bias). The level of accounting expertise on the board and the audit committee is positively related to the frequency that firms issued earnings forecasts (overall and non-routine), forecast horizon and accuracy (lack of optimistic bias). However, there is also evidence that firms with a higher level of accounting expertise on the board and the audit committee were more inclined to issue earnings forecasts of larger error.

These findings are mostly different from evidence reported in prior research. Specifically, Ajinkya et al. (2005) document no association between forecast precision and the proportion of outside directors in the U.S. setting. Karamanou and Vafeas (2005) show that in the U.S., more precise earnings forecasts were provided by firms with a lower percentage of outside directors on the board and a smaller audit committee. In Australia, the positive relationship between audit committee independence and the likelihood and frequency of firms issuing earnings forecasts is mainly driven by routine earnings forecasts over which management has a greater discretion (Chan et al., 2008).

Overall, it is apparent from the reported findings that firms monitored by effective corporate governance mechanisms were more inclined to pre-empt their earnings announcements with earnings forecasts (overall, non-routine and quantitative) and provide these earnings forecasts more frequently. The earnings forecasts issued by these

firms were less optimistically biased. Firms having more directors with accounting expertise on their boards and audit committees were more likely to provide timelier earnings forecasts. In addition, board size and the existence of a formally established audit committee are shown to have a positive impact on forecast error.

4.3 Sensitivity Analysis

A number of sensitivity tests are undertaken to ensure the robustness of the results to various conditions. The results of these tests are summarised in Table 9. Overall, the sensitivity analysis shows that the results reported in the main findings are robust to various alternative conditions.

[INSERT TABLE 9 HERE]

5 Conclusion

The objective of our study is to examine the influence of three external corporate governance mechanisms – continuous disclosure regulatory reform, analyst following and ownership concentration and one internal corporate governance mechanism – board structure, on the likelihood, frequency, horizon, precision and accuracy of management earnings forecasts in the low private litigation environment of New Zealand.

Based on a sample of 1,082 management earnings forecasts issued by 125 firms listed on the NZX during the 31 January 1998 to 31 December 2007 financial reporting periods, we provide strong evidence that four corporate governance mechanisms have a significant influence on management earnings forecast behaviour. Our findings prevail after effectively controlling for endogeneity, multicollinearity and self-selection bias problems. Firms monitored by effective corporate governance mechanisms were more

inclined to pre-empt their earnings announcements with earnings forecasts (overall, non-routine and quantitative) and provide these earnings forecasts more frequently. These earnings forecasts issued by these firms were less optimistically biased. In addition, firms having more directors with accounting expertise on their boards and audit committees were more likely to provide earnings forecasts with longer horizon and smaller forecast error. Board size and the existence of a formally established audit committee are shown to have a positive impact on forecast error. It is reasonable to conclude that in New Zealand a combination of external and internal corporate governance mechanisms has been able to effectively substitute for a private litigation alternative. Our findings should have important implications for the other low private litigation environments as well as for other high private litigation environments such as the U.S. given the high economic and social costs that have been identified as being related to private litigation.

Our study contributes to the literature in several ways. First, our study is the first study on management earnings forecasts in a low private litigation environment in general and in New Zealand in particular which comprehensively analyses the influence of a combined set of external and internal corporate governance mechanisms. Second, our findings provide strong evidence of the effectiveness of the monitoring role of these mechanisms and most of these findings are different from those reported in the prior literature. Third, we effectively combined the use of exploratory principal component analysis, two-stage least squares and controls for self-selection bias, which has not been previously combined in the prior management earnings forecast research. Our study also departs from all prior research studies of management earnings forecasts as it considers

analyst following as an important component of the external corporate governance monitoring system faced by firms rather than as a control variable.

However, our study does not provide direct evidence regarding the incremental benefits of these corporate governance mechanisms compared to the private enforcement alternative. Further research could directly compared the impact of a combined set of external and internal corporate governance mechanisms on management earnings forecast behaviour between two jurisdictions with unequal private litigation costs.

References

Abbott, L. J., S. Parker, and G. F. Peters 2004, Audit committee characteristics and restatements, *Auditing: A Journal of Practice and Theory*, Vol. 23, No. 1, March, pp. 69-87.

Ajinkya, B., S. Bhojraj, and P. Sengupta 2005, The association between outside directors, institutional Investors and the properties of management earnings forecasts, *Journal of Accounting Research*, Vol. 43, No. 3, June, pp. 343-376.

Baginski, S. P., J. M. Hassell, and M. D. Kimbrough 2002, The effect of legal environment on voluntary disclosure: Evidence from management earnings forecasts issued in U.S. and Canadian markets, *The Accounting Review*, Vol. 77, No. 1, January, pp. 25-50.

Baginski, S. P., J. M. Hassell, and M. D. Kimbrough 2004, Why do managers explain their earnings forecasts *Journal of Accounting Research*, Vol. 42, No. 1, March, pp. 1-29.

Bamber, L. S., and Y. S. Cheon 1998, Discretionary management earnings forecast disclosures: Antecedents and outcomes associated with forecast venue and forecast specificity choices, *Journal of Accounting Research*, Vol. 36, No. 2, Autumn, pp. 167-190.

Berle, A. A., and G. C. Means, 1932, *The modern corporation and private property*, MacMillan, New York.

Bradbury, M. E., Y. T. Mak, and S. M. Tan 2006, Board characteristics, audit committee characteristics and abnormal accruals, *Pacific Accounting Review*, Vol. 18, No. 2, pp. 47-68.

Brown, D. M., and F. R. Warren-Boulton 1988, Testing the structure competition relationship on cross-sectional firm data, *Discussion paper*, Economic Analysis Group, U.S. Department of Justice.

Bushee, B. J., and C. F. Noe 2000, Corporate disclosure practices, institutional investors, and stock return volatility, *Journal of Accounting Research*, Vol. 38, Supplement: Studies on accounting information and the economics of the firm, pp. 171-202.

Carcello, J. V., D. R. Hermanson, T. L. Neal, and R. A. Riley 2002, Board characteristics and audit fees, *Contemporary Accounting Research*, Vol. 19, No. 3, Fall, pp. 365-384.

Chan, H., R. Faff, Y. K. Ho, and A. Ramsay 2007, Management earnings forecasts in a continuous disclosure environment, *Pacific Accounting Review*, Vol. 19, No. 1, pp. 5-30.

Chan, H., R. Faff, P. Mather, and A. Ramsay 2008, The association between directors' independence, reputation and management earnings forecasts, *Working paper*, Department of Accounting and Finance, Monash University.

Chen, C. J. P., and B. Jaggi 2000, Association between independent non-executive directors, family control and financial disclosures in Hong Kong, *Journal of Accounting and Public Policy*, Vol. 19, pp. 285-310.

Cheng, E. C. M., and S. M. Courtenay 2006, Board composition, regulatory regime and voluntary disclosure, *The International Journal of Accounting*, Vol. 41, pp. 262-289.

Chung, K. H., and H. Jo 1996, The impact of security analysts' monitoring and marketing functions on the market value of firms, *Journal of Financial and Quantitative Analysis*, Vol. 31, No. 4, pp. 493-512.

Coles, J. L., N. D. Daniel, and L. Naveen 2008, Boards: Does one size fit all, *Journal of Financial Economics*, Vol. 87, pp. 329-356.

Coller, M., and T. L. Yohn 1997, Management forecasts and information asymmetry: An examination of bid-ask spreads, *Journal of Accounting Research*, Vol. 35, No. 2, Autumn, pp. 181-181.

Defond, M. L., R. N. Hann, and X. Hu 2005, Does the market value financial expertise on audit committees of board of directors, *Journal of Accounting Research*, Vol. 43, No. 2, pp. 153-193.

Denis, D. J., and A. Sarin 1999, Ownership and board structures in publicly traded corporations, *Journal of Financial Economics*, Vol. 52, pp. 187-223.

Dunstan, K., G. Gallery, and T. P. Truong 2009, The impact of disclosure reform and alternative sources of earnings-related information on the market reaction to firm-based earnings-related disclosures, *Working paper*, School of Accounting and Commercial Law, Victoria University of Wellington.

Dunstan, K., G. Gallery, and T. P. Truong 2011, Public regulatory reform and management earnings forecasts in a low private litigation environment, *Accounting and Finance*, Vol. 51, No. 2, pp. 437-465.

Fama, E. F., and M. C. Jensen 1983, Separation of ownership and control, *Journal of Law and Economics*, Vol. 26, No. 2, Corporations and private property: A conference sponsored by the Hoover Institution, pp. 301-325.

Felo, A. J., S. Krishnamurthy, and S. A. Solieri 2003, Audit committee characteristics and the perceived quality of financial reporting: An empirical analysis, *Working paper*, School of Management, Binghamton University.

Field, L., M. Lowry, and S. Shu 2005, Does disclosure deter or trigger litigation, *Journal of Accounting and Economics*, Vol. 39, pp. 487-507.

Francis, J., D. Philbrick, and K. Schipper 1994, Shareholder litigation and corporate disclosures, *Journal of Accounting Research*, Vol. 32, No. 2, Autumn, pp. 137-164.

Frankel, R., M. McNichols, and G. P. Wilson 1995, Discretionary disclosure and external financing, *The Accounting Review*, Vol. 70, No. 1, January, pp. 135-150.

Frijns, B., A. Gilbert, and A. Tourani-Rad 2008, Insider trading, regulation, and the components of the bid-ask spread, *The Journal of Financial Research*, No. 31, No. 3, pp. 225-246.

Frost, C. A. 2004, Characteristics and information value of corporate disclosures of forward looking information in global equity markets, *Working paper*, State University of New York at Buffalo.

Gillan, S. L. 2006, Recent development in corporate governance: An overview, *Journal of Corporate Finance*, Vol. 12, pp. 381-402.

Graham, J. R., C. R. Harvey, and S. Rajgopal 2005, The economic implications of corporate financial reporting, *Journal of Accounting and Economics*, Vol. 40, pp. 3-73.

Gul, F. A., and S. Leung 2004, Board leadership, outside directors' expertise and voluntary corporate disclosures, *Journal of Accounting and Public Policy*, Vol. 23, pp. 351-379.

Hart, O. 1995, Corporate governance: Some theory and implications, *The Economic Journal*, Vol. 105, No. 430, May, pp. 378-389.

Healy, P. M., A. P. Hutton, and K. G. Palepu 1999, Stock performance and intermediation changes surrounding sustained increases in disclosure, *Contemporary Accounting Research*, Vol. 16, No. 3, Fall, pp. 485-520.

Heckman, J. J. 1979, Sample selection bias as a specification error, *Econometrica*, Vol. 47, No. 1, January, pp. 153-161.

Hermalin, B. E., and M. S. Weisbach 2003, Boards of directors as an endogenously determined institution: A survey of the economic literature, *FRBNY Economic Policy Review*, April, pp. 7-26.

Hirst, E., L. Koonce, and S. Venkataraman 2008, Management earnings forecasts: A review and framework, *Accounting Horizons*, Vol. 22, No. 3, pp. 315-338.

Ho, S. S. M., and K. S. Wong 2001, A study of the relationship between corporate governance structures and the extent of voluntary disclosure, *Journal of International Accounting, Auditing & Taxation*, Vol. 10, pp. 139-156.

Holmstrom, B., and J. Tirole 1993, Market liquidity and performance monitoring, *The Journal of Political Economy*, Vol. 101, No. 4, August, pp. 678-709.

Huang, M., A. Marsden, and R. Poskitt 2009, The impact of disclosure reform on the NZX's financial information environment, *Pacific-Basin Finance Journal*, Vol. 17, pp. 460-478.

Huddart, S. 1993, The effect of a large shareholder on corporate value, *Management Science*, Vol. 39, No. 11, November, pp. 1407-1421.

Jensen, M. C., and W. H. Meckling 1976, Theory of the firm: Managerial behaviour, agency costs and ownership structure, *Journal of Financial Economics*, Vol. 3, pp. 305-360.

John, K., and L. W. Senbet 1998, Corporate governance and board effectiveness, *Journal of Banking and Finance*, Vol. 22, pp. 371-403.

Karamanou, I., and N. Vafeas 2005, The association between corporate boards, audit committees, and management earnings forecasts: An empirical analysis, *Journal of Accounting Research*, Vol. 43, No. 3, June, pp. 453-486.

Kato, K., D. J. Skinner, and M. Kunimura 2009, Management forecasts in Japan: An empirical study of forecasts that are effectively mandated, *The Accounting Review*, Vol. 84, No. 5, September, pp. 1575-1606.

King, R., G. Pownall, and G. Waymire 1990, Expectations adjustments via timely management forecasts: Review, synthesis, and suggestions for future research, *Journal of Accounting Literature*, Vol. 9, pp. 113-144.

Klein, A. 2002, Audit committee, board of director characteristics, and earnings management, *Journal of Accounting and Economics*, Vol. 33, pp. 375-400.

La-Porta, R., F. Lopez-de-Silanes, and A. Shleifer 2006, What works in securities laws, *The Journal of Finance*, Vol. 61, No. 1, pp. 1-32.

Larcker, D. F., S. A. Richardson, and I. Tuna 2007, Corporate governance, accounting outcomes and organisational performance, *The Accounting Review*, Vol. 82, No. 4, pp. 963-1008.

Makhija, A. K., and J. M. Patton 2004, The impact of firm ownership structure on voluntary disclosure: empirical evidence from Czech annual reports, *Journal of Business*, Vol. 77, No. 3, pp. 457-491.

Moyer, R. C., R. E. Chatfield, and P. M. Sisneros 1989, Security analyst monitoring activity: Agency costs and information demands, *The Journal of Financial and Quantitative Analysis*, Vol. 24, No. 4, December, pp. 503-512.

Navissi, F., and V. Naiker 2006, Institutional ownership and corporate value, *Managerial Finance*, Vol. 32, No. 3, pp. 247-256.

Pound, J. 1988, Proxy contests and the efficiency of shareholder oversight, *Journal of Financial Economics*, Vol. 20, pp. 237-265.

Shleifer, A., and R. W. Vishny 1986, Large shareholders and corporate control, *The Journal of Political Economy*, Vol. 94, No. 3, Part 1, June, pp. 461-488.

Skinner, D. J. 1994, Why firms voluntarily disclose bad news, *Journal of Accounting Research*, Vol. 32, No. 1, Spring, pp. 38-60.

Skinner, D. J. 1997, Earnings disclosures and stockholder lawsuits, *Journal of Accounting and Economics*, Vol. 23, pp. 249-282.

Song, J., and B. Windram 2004, Benchmarking audit committee effectiveness in financial reporting, *Internatinal Journal of Auditing*, Vol. 8, pp. 195-205.

Tinaikar, S. 2008, Outside directors, litigation environment and management earnings forecasts, *Working paper*, Fisher School of Accounting, University of Florida.

Trueman, B. 1986, Why do managers voluntarily release earnings forecasts, *Journal of Accounting and Economics*, Vol. 8, pp. 53-71.

Vafeas, N. 1999, Board meeting frequency and firm performance, *Journal of Financial Economics*, Vol. 53, pp. 113-142.

Wang, I. Y. 2007, Private earnings guidance and its implications for disclosure regulation, *The Accounting Review*, Vol. 82, No. 5, October, pp. 1299-1332.

Yermack, D. 1996, Higher market valuation of companies with a small board of directors, *Journal of Financial Economics*, Vol. 40, pp. 185-211.

Figure 1
Classifications of Management Earnings Forecasts

Forecast Event	
Routine	Forecast released through periodic announcements common to all firms as required under the NZX listing rules or in common practice, which include all mandatory periodic financial reports (e.g. quarterly, half-yearly, preliminary and annual reports) and other periodic releases associated with repetitive events (e.g. chairman's addresses at the Annual General Meeting and letters to shareholders).
Non-routine	Forecast released through all other announcements which are not classified as routine event announcements (e.g. earnings guidance and sales update, etc).
Forecast News Content	
Bad	Forecast news content indicates unfavourable earnings prospect relative to the previous earnings announcement or the most recent management earnings forecast.
Neutral	Forecast news content indicates no expected change in earnings relative to the previous earnings announcement or the most recent management earnings forecast.
Good	Forecast news content indicates favourable earnings prospect relative to the previous earnings announcement or the most recent management earnings forecast.
Forecast Horizon	The number of calendar days until financial year-end, regardless of whether the management earnings forecast is related to a half-yearly or annual period.
Forecast Precision	
Qualitative	Forecast where firm provides a general expression (non-numeric) expectation about its earnings performance (e.g. "we expect improved earnings performance this year").
Open-ended	Forecast where firm specifies a lower or an upper bound for the expected earnings performance (e.g. "we expect the net profit for this year will be greater than $1 million" or "we are certain that the net income for this year will be lower than $2 million").
Range	Forecast contains a numerical range of the firm's expected earnings performance (e.g. "the net profit for this year will be between $1 million and $2 million").
Point	Forecast indicates a single numerical figure about the firm's expected earnings performance (e.g. "we are confident that the net income for this year will be $1.5 million").
Forecast Accuracy	
Error	The absolute value of the difference between forecasted and actual earnings per share deflated by the share price at the beginning of the financial year.
Bias	The difference between forecasted and actual earnings per share deflated by the share price at the beginning of the financial year.

Figure 2
Board Structure Indicators

CEOCHAIR	A dichotomous variable taking the value of 1 for separate CEO and Chairman and 0 otherwise.
BRDINDP	The percentage of non-executive directors on the board.
BRDSIZE	The number of directors on the board.
BRDMEET	The number of board meetings held during the year.
BRDACCEXP	The percentage of directors with accounting expertise on the board.
AC	A dichotomous variable taking the value of 1 if the firm formally establishes an audit committee.
ACINDP	The percentage of non-executive directors on the audit committee.
ACSIZE	The number of directors on the audit committee.
ACMEET	The number of audit committee meetings held during the year.
ACACCEXP	The percentage of directors with accounting expertise on the audit committee.

Figure 3
Model Specifications

Model 1	$FORECAST1i,t = a0 + a1REFORMi,t + a2ANALYSTi,t + a3Hi,t + a4H2i,t + a5aBRDINDPRi,t + a5bBRDSIZEACRi,t + a6ECSIGNi,t + a7ECHANGEi,t + a8SIZEi,t + a9CROSSLISTi,t + a10MBi,t + \alpha i,t$ $FORECAST2i,t = b0 + b1REFORMi,t + b2ANALYSTi,t + b3Hi,t + b4H2i,t + b5aBRDINDPRi,t + b5bBRDSIZEACRi,t + b6ECSIGNi,t + b7ECHANGEi,t + b8SIZEi,t + b9CROSSLISTi,t + b10MBi,t + \beta i,t$
Model 2	$FREQUENCY1i,t = c0 + c1REFORMi,t + c2ANALYSTi,t + c3Hi,t + c4H2i,t + c5aBRDINDPRi,t + c5bBRDSIZEACRi,t + c6ECSIGNi,t + c7ECHANGEi,t + c8SIZEi,t + c9CROSSLISTi,t + c10MBi,t + \gamma i,t$ $FREQUENCY2i,t = d0 + d1REFORMi,t + d2ANALYSTi,t + d3Hi,t + d4H2i,t + d5aBRDINDPRi,t + d5bBRDSIZEACRi,t + d6ECSIGNi,t + d7ECHANGEi,t + d8SIZEi,t + d9CROSSLISTi,t + d10MBi,t + \delta i,t$
Model 3	$HORIZON_{i,t} = e_0 + e_1REFORM_{i,t} + e_2ANALYST_{i,t} + e_3H_{i,t} + e_4H^2_{i,t} + e_{5a}BRDINDPR_{i,t} + e_{5b}BRDSIZEACR_{i,t} + e_6BAD_{i,t} + e_7GOOD_{i,t} + e_8ECHANGE_{i,t} + e_9SIZE_{i,t} + e_{10}CROSSLIST_{i,t} + e_{11}MB_{i,t} + e_{12}MEFORDER_{i,t} + e_{13}IMR_{i,t} + \varepsilon_{i,t}$
Model 4a	$FORECAST3_{i,t} = f_0 + f_1REFORM_{i,t} + f_2ANALYST_{i,t} + f_3H_{i,t} + f_4H^2_{i,t} + f_{5a}BRDINDPR_{i,t} + f_{5b}BRDSIZEACR_{i,t} + f_6ECSIGN_{i,t} + f_7ECHANGE_{i,t} + f_8SIZE_{i,t} + f_9CROSSLIST_{i,t} + f_{10}MB_{i,t} + \zeta_{i,t}$
Model 4b	$FREQUENCY3_{i,t} = g_0 + g_1REFORM_{i,t} + g_2ANALYST_{i,t} + g_3H_{i,t} + g_4H^2_{i,t} + g_{5a}BRDINDPR_{i,t} + g_{5b}BRDSIZEACR_{i,t} + g_6ECSIGN_{i,t} + g_7ECHANGE_{i,t} + g_8SIZE_{i,t} + g_9CROSSLIST_{i,t} + g_{10}MB_{i,t} + \eta_{i,t}$
Model 4c	$PRECISION_{i,t} = h_0 + h_1REFORM_{i,t} + h_2ANALYST_{i,t} + h_3H_{i,t} + h_4H^2_{i,t} + h_{5a}BRDINDPR_{i,t} + h_{5b}BRDSIZEACR_{i,t} + h_6BAD_{i,t} + h_7GOOD_{i,t} + h_8ECHANGE_{i,t} + h_9SIZE_{i,t} + h_{10}CROSSLIST_{i,t} + h_{11}MB_{i,t} + h_{12}NREVENT_{i,t} + h_{13}HORIZON_{i,t} + h_{14}IRM_{i,t} + \theta_{i,t}$
Model 5a	$ERROR_{i,t} = i_0 + i_1REFORM_{i,t} + i_2ANALYST_{i,t} + i_3H_{i,t} + i_4H^2_{i,t} + i_{5a}BRDINDPR_{i,t} + i_{5b}BRDSIZEACR_{i,t} + i_6BAD_{i,t} + i_7GOOD_{i,t} + i_8ECHANGE_{i,t} + i_9SIZE_{i,t} + i_{10}CROSSLIST_{i,t} + i_{11}MB_{i,t} + i_{12}POINT_{i,t} + i_{13}HORIZON_{i,t} + i_{14}IRM_{i,t} + \iota_{i,t}$
Model 5b	$BIAS_{i,t} = j_0 + j_1REFORM_{i,t} + j_2ANALYST_{i,t} + j_3H_{i,t} + j_4H^2_{i,t} + j_{5a}BRDINDPR_{i,t} + j_{5b}BRDSIZEACR_{i,t} + j_6BAD_{i,t} + j_7GOOD_{i,t} + j_8ECHANGE_{i,t} + j_9SIZE_{i,t} + j_{10}CROSSLIST_{i,t} + j_{11}MB_{i,t} + j_{12}POINT_{i,t} + j_{13}HORIZON_{i,t} + j_{14}IRM_{i,t} + \kappa_{i,t}$

Figure 4
Definitions of Dependent and Independent Variables

Dependent Variables	
FORECAST1	A dichotomous variable taking the value of 1 if the current financial year's earnings announcement is pre-empted by at least one management earnings forecast and 0 otherwise.
FORECAST2	An ordinal variable taking the value of 2, 1 and 0 if the current financial year's earnings announcement is pre-empted by at least one non-routine management earnings forecast, solely routine management earnings forecasts and no management earnings forecasts, respectively.
FREQUENCY1	The number of management earnings forecasts released between the actual release dates of the mandatory earnings announcements for the prior and the current years.
FREQUENCY2	The number of non-routine management earnings forecasts released between the actual release dates of the mandatory earnings announcements for the prior and the current years.
HORIZON	The number of calendar days between the release date of the management earnings forecast and the corresponding financial reporting date.
FORECAST3	An ordinal variable taking the value of 2, 1 and 0 if the current financial year's earnings announcement is pre-empted by at least one quantitative (open-ended, range and point) management earnings forecast, solely qualitative management earnings forecasts and no management earnings forecasts, respectively.
FREQUENCY3	The number of quantitative (open-ended, range and point) management earnings forecasts released between the actual release dates of the mandatory earnings announcements for the prior and the current years.
PRECISION	An ordinal variable taking the value of 0, 1, 2 and 3 for qualitative, open-ended, range and point management earnings forecasts, respectively. *POINT* (in model 5a-b) is a dichotomous variable taking the value of 0 and 1 for range and point management earnings forecasts, respectively.
ERROR	The natural logarithm of the absolute value of the difference between forecasted and actual earnings per share deflated by the share price at the beginning of the financial year.
BIAS	The natural logarithm of the transformed difference between the forecasted and actual earnings per share deflated by the share price at the beginning of the financial year. Untabulated results show that the minimum of forecast bias, which is measured by the differences between the forecasted and actual earnings per share deflated by share price at the beginning of the financial year, is -1.287. Therefore, forecast bias is added by 1.5 before taking the natural logarithm.
Independent Variables	
REFORM	A dichotomous variable taking the value of 1 if the current financial year ends in the post-reform period and 0 otherwise.
ANALYST	A dichotomous variable taking the value of 1 if the firm is followed by analysts and 0 otherwise.
H	The fitted value of the Herfindahl index of concentration of top five largest shareholders (*OWNCON*).
H^2	*H* square.
BRDINDPR	The residual value of the *BRDINDP* factor.
BRDSIZEACR	The residual value of the *BRDSIZEAC* factor.
BRDAC_INDPR	The residual value of the *BRDAC_INPD* factor.
BRDAC_SIZER	The residual value of the *BRDAC_SIZE* factor.
BRDAC_MEETR	The residual of the *BRDAC_MEET* factor.
BRDAC_ACCEXPR	The residual value of the *BRDAC_ACCEXP* factor.
ECSIGN	A dichotomous variable taking the value of 1 for a positive current financial year earnings per share change and 0 otherwise.
BAD	A dichotomous variable taking the value of 1 if the management earnings forecast indicates an expected negative change in the current year earnings and 0 otherwise.
GOOD	A dichotomous variable taking the value of 1 if the management earnings forecast indicates an expected positive change in the current year earnings and 0 otherwise.
ECHANGE	The natural logarithm of the absolute value of the percentage change in earnings per share deflated by share price at the beginning of the financial year.
SIZE	The natural logarithm of the total assets at the end of the current financial year.
CROSSLIST	A dichotomous variable taking the value of 1 if the firm is cross-listed on a foreign exchange and 0 otherwise.
MB	The natural logarithm of the market value of equity divided by the book value of equity at the end of the current financial year.
MEFORDER	The order of the management earnings forecasts.
NREVENT	A dichotomous variable taking the value of 1 if the management earnings forecast is released through a non-routine announcement and 0 otherwise.
IMR	The Inverse Mills Ratio based on Model 1a – *FORECAST1*, which is included to account for the self-selection bias inherent in analysing data that is conditional on a management earnings forecast being issued.

Table 1
Sample Selection Procedure

Selecting Criteria	Number of Observations
Sample Firms	
Total firms listed in the Events section of the NZX database as at 17 September 2008	317
Less firms listed on the Events section of the NZX database not covered by the NZX database	(113)
Less firms listed on the NZAX	(31)
Less firms not issuing at least 5 annual reports since being listed on the NZSX or firms with missing market announcements	(48)
Total firms in the final sample	125
Sample Firm-years	
Total firm-years in the final sample	897[1]
Total firm-years in the sub-sample	265[2]
Sample Management Earnings Forecasts	
Total market announcements in the final sample	32,690
Less market announcements not containing management earnings forecasts	(31,608)
Total management earnings forecasts in the final sample	1,082
Total range and point management earnings forecasts in the final sample	449
Total management earnings forecasts in the sub-sample.	350
Total range and point management earnings forecasts in the sub-sample	190

[1] The total number of firm-years includes all firm-years with financial reporting dates ending between 31 January 1998 and 31 December 2007.

[2] Among these 897 firm-years, there are 265 firm-years where firms fully disclosed the level of independence, size, number of meetings and level of accounting expertise on boards of directors and audit committees in their annual reports.

Table 2
Correlation Matrix for Board Structure Indicators

Panel A: Full Sample

	CEOCHAIR	*BRDINDP*	*BRDSIZE*
BRDINDP	0.325 0.000**		
BRDSIZE	0.143 0.000**	0.134 0.000**	
AC	0.070 0.036*	0.120 0.000**	0.220 0.000**

Panel B: Sub-sample

	CEOCHAIR	*BRDINDP*	*BRDSIZE*	*BRDMEET*	*BRDACCEXP*	*ACINDP*	*ACSIZE*	*ACMEET*
BRDINDP	0.254 0.000**							
BRDSIZE	0.205 0.001**	0.108 0.079^						
BRDMEET	0.115 0.062^	0.021 0.730	-0.016 0.790					
BRDACCEXP	0.151 0.014*	0.051 0.411	-0.019 0.758	0.051 0.409				
ACINDP	0.216 0.000**	0.397 0.000**	0.123 0.046*	0.059 0.338	0.141 0.021*			
ACSIZE	0.095 0.122	0.098 0.110	0.437 0.000**	-0.021 0.735	0.111 0.071^	-0.002 0.977		
ACMEET	0.200 0.001**	0.056 0.363	0.317 0.000**	0.288 0.000**	-0.148 0.016*	-0.003 0.961	0.089 0.147	
ACACCEXP	0.199 0.001**	0.158 0.010*	0.076 0.219	0.082 0.186	0.758 0.000**	0.126 0.040*	-0.050 0.420	-0.104 0.090^

^, * and ** denote significance at the 0.1, 0.05 and 0.01 levels, respectively (two-tailed). Pearson, point-biserial and Phi correlation coefficients are followed by p-value. See section 3 for definitions of board structure indicators.

Table 3
Board Structure Factors Identified in Exploratory Principal Component Factor

Factor	Factor Name	Board Structure Indicators	Factor Loadings
Panel A: Full Sample			
1	*BRDINDP* (Board independence)	*CEOCHAIR* (Separate CEO and Chairman)	0.823
		BRDINDP (Non-executive directors on the board)	0.794
2	*BRDSIZEAC* (Board size and audit committee)	*BRDSIZE* (Board size)	0.738
		AC (Audit committee)	0.813
Panel B: Sub-sample			
1	*BRDAC_INDP* (Board and audit committee independence)	*CEOCHAIR* (Separate CEO and Chairman)	0.461
		BRDINDP (Non-executive directors on the board)	0.810
		ACINDP (Non-executive directors on the audit committee)	0.801
2	*BRDAC_SIZE* (Board and audit committee size)	*BRDSIZE* (Board size)	0.825
		ACSIZE (Audit committee size)	0.827
3	*BRDAC_MEET* (Board and audit committee meeting)	*BRDMEET* (Board meeting)	0.803
		ACMEET (Audit committee meeting)	0.750
4	*BRDAC_ACCEXP* (Board and audit committee accounting expertise)	*BRDACCEXP* (Board accounting expertise)	0.935
		ACACCEXP (Audit committee accounting expertise)	0.919

Table 4
Descriptive Statistics – Firm Years and Management Earnings Forecasts

	Full Sample		Sub-sample	
	Frequency Mean	Percentage Median	Frequency Mean	Percentage Median
Panel A: Firm-years				
Non pre-empted and pre-empted firm-years				
Non pre-empted firm-years	386	43.03%	114	43.02%
Pre-empted firm-years	511	56.97%	151	56.98%
Routine pre-empted and non-routine pre-empted firm-years				
Routine pre-empted firm-years	320	35.67%	83	31.32%
Non-routine pre-empted firm-years	191	21.29%	68	25.66%
Qualitative pre-empted and quantitative (open-ended, range and point) pre-empted firm-years				
Qualitative pre-empted firm-years	212	23.63%	43	16.23%
Quantitative pre-empted firm-years	299	33.33%	108	40.75%
Number of management earnings forecasts per firm-years				
0	386	43.03%	114	43.02%
1	190	21.18%	51	19.25%
2	157	17.50%	43	16.23%
3	104	11.59%	34	12.83%
4	42	4.68%	10	3.77%
5	13	1.45%	10	3.77%
6	3	0.33%	1	0.38%
7	1	0.11%	1	0.38%
8	1	0.11%	1	0.38%
Number of non-routine management earnings forecasts per firm-years				
0	706	78.71%	197	74.34%
1	138	15.38%	46	17.36%
2	39	4.35%	14	5.28%
3	12	1.34%	6	2.26%
4	0	0.00%	0	0.00%
5	1	0.11%	1	0.38%
6	1	0.11%	1	0.38%
Number of quantitative management earnings forecasts per firm-years				
0	598	66.67%	157	59.25%
1	136	15.16%	41	15.47%
2	85	9.48%	32	12.08%
3	48	5.35%	21	7.92%
4	22	2.45%	7	2.64%
5	5	0.56%	5	1.89%
6	2	0.22%	1	0.38%
7	1	0.11%	1	0.38%
Panel B: Management Earnings Forecasts				
Forecast horizon	184	168	180	155
Forecast precision				
Qualitative	500	46.21%	116	33.14%
Open-ended	133	12.29%	44	12.57%
Range	149	13.77%	90	25.71%
Point	300	27.73%	100	28.57%
Forecast error	0.051	0.004	0.017	0.003
Forecast bias	0.034	0	0.004	0

Table 5
Descriptive Statistics – Corporate Governance Characteristics

	Frequency/Mean	Percentage/Median
Panel A: Full sample		
REFORM (post-reform)	523	58.31%
ANALYST (followed by analysts)	410	45.71%
OWNCON	0.185	0.122
CEOCHAIR (separate CEO and Chairman)	806	89.86%
BRDINDP	0.820	0.833
BRDSIZE	6.065	6
AC (audit committee)	790	88.07%
Panel B: Sub-sample		
REFORM (post-reform)	189	71.32%
ANALYST (followed by analysts)	176	66.42%
OWNCON	0.206	0.148
CEOCHAIR (separate CEO and Chairman)	234	88.30%
BRDINDP	0.857	0.857
BRDSIZE	6.913	6
BRDMEET	10.472	10
BRDACCEXP	0.265	0.250
ACINDP	0.970	1
ACSIZE	3.472	3
ACMEET	3.743	3
ACACCEXP	0.400	0.333

Table 6
Predicted Signs for the Coefficients on Independent Variables

	Model 1 FORECAST1	*Model 1 FORECAST2*	*Model 2 FREQUENCY1*	*Model 2 FREQUENCY2*	*Model 3 HORIZON*	*Model 4a FORECAST3*	*Model 4b FREQUENCY3*	*Model 4c PRECISION*	*Model 5a ERROR*	*Model 5b BIAS*
REFORM	+	+	+	+	+	+	+	+	-	-
ANALYST	+	+	+	+	+	+	+	+	-	-
H	+	+	+	+	+	+	+	+	-	-
H^2	-	-	-	-	-	-	-	-	+	+
BRDINDPR (full sample)	+	+	+	+	+	+	+	+	-	-
BRDSIZEACR (full sample)	+	+	+	+	+	+	+	+	-	-
BRDAC_INDPR (sub-sample)	+	+	+	+	+	+	+	+	-	-
BRDAC_SIZER (sub-sample)	+	+	+	+	+	+	+	+	-	-
BRDAC_MEETR (sub-sample)	+	+	+	+	+	+	+	+	-	-
BRDAC_ACCEXPR (sub-sample)	+	+	+	+	+	+	+	+	-	-
ECSIGN	?	?	?	?		?	?			
BAD					?			?	?	?
GOOD					?			?	?	?
ECHANGE	+	+	+	+	+	+	+	+	+	?
SIZE	+	+	+	+	+	+	+	+	-	-
CROSSLIST	?	?	?	?	?	?	?	?	?	?
MB	?	?	?	?	?	?	?	?	?	?
MEFORDER					-					
NREVENT								+		
HORIZON								-	+	?
POINT									+	?
IMR					?			?	?	?

See section 3 for definitions of independent variables.

Table 7
Regression Analysis for Full Sample Firm-years and Management Earnings Forecasts

	Model 1 *FORECAST1*	Model 1 *FORECAST2* Comparison 1/0	Model 1 *FORECAST2* Comparison 2/0	Model 2 *FREQUENCY1*	Model 2 *FREQUENCY2*	Model 3 *HORIZON*	Model 4a *FORECAST3*	Model 4b *FREQUENCY3*	Model 4c *PRECISION*	Model 5a *ERROR*	Model 5b *BIAS*
Variable	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*t*-statistic)	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Intercept	-3.175	-5.503	-4.291	-2.372	-2.521	372.962		-3.009		-39.935	0.091
	(-4.090**)	(-3.750**)	(-3.450**)	(-4.160**)	(-2.750**)	(1.380)		(-3.750**)		(-3.780**)	(0.630)
REFORM	0.382	0.169	1.126	0.485	1.227	-16.081	0.443	0.945	0.795	2.664	0.044
	(4.180**)	(1.260)	(6.970**)	(7.060**)	(7.360**)	(-0.700)	(5.330**)	(8.880**)	(2.320*)	(2.880**)	(3.460**)
ANALYST	0.208	0.217	0.367	0.268	0.255	0.547	0.305	0.472	0.389	1.884	0.014
	(1.950*)	(1.390^)	(2.110*)	(3.620**)	(1.690*)	(0.040)	(3.200**)	(4.560**)	(2.040*)	(3.720**)	(2.010*)
H	21.091	32.095	26.143	15.181	9.056	285.871	20.82	16.242	39.991	300.200	1.740
	(2.390**)	(1.840*)	(1.870*)	(2.410**)	(0.990)	(0.210)	(2.600**)	(1.810*)	(1.980*)	(5.540**)	(2.350*)
H^2	-74.437	-106.396	-97.527	-57.744	-43.481	-1097.663	-79.746	-63.49	-137.899	-1095.165	-6.620
	(-2.290*)	(-1.780*)	(-1.870*)	(-2.570**)	(-1.210)	(-0.230)	(-2.710**)	(-2.010*)	(-1.950*)	(-5.770**)	(-2.550**)
BRDINDPR	0.117	0.158	0.131	0.141	0.041	2.519	0.114	0.211	0.290	1.107	0.004
	(2.580**)	(2.370**)	(1.650^)	(3.730**)	(0.560)	(0.320)	(2.710**)	(3.710**)	(2.450**)	(3.500**)	(1.040)
BRDSIZEACR	-0.054	-0.158	0.147	-0.030	0.212	-4.393	-0.044	0.061	0.000	-0.323	-0.008
	(-1.020)	(-2.050*)	(1.470^)	(-0.760)	(2.280*)	(-0.970)	(-0.920)	(1.030)	(0.000)	(-1.640^)	(-2.820**)
ECSIGN	0.058	0.250	-0.209	0.0160	-0.358		0.037	-0.035			
	(0.650)	(1.910^)	(-1.440)	(0.260)	(-2.890**)		(0.470)	(-0.410)			
BAD						-45.920			-0.194	-0.620	-0.003
						(-6.200**)			(-1.760^)	(-2.530*)	(-1.020)
GOOD						-8.226			-0.598	0.096	0.000
						(-1.300)			(-6.550**)	(0.410)	(-0.130)
ECHANGE	0.050	0.011	0.158	0.036	0.212	-3.750	0.049	0.042	0.056	0.751	0.006
	(1.870*)	(0.280)	(3.460**)	(1.880*)	(5.200**)	(-1.140)	(1.990*)	(1.590^)	(1.160)	(6.150**)	(3.740**)
SIZE	0.103	0.157	0.108	0.076	0.047	-3.442	0.075	0.046	0.066	0.368	0.006
	(3.820**)	(3.900**)	(2.350*)	(3.890**)	(1.180)	(-0.550)	(3.030**)	(1.740*)	(0.710)	(1.540^)	(1.700*)
CROSSLIST	-0.577	-0.914	-0.504	-0.246	-0.138	33.526	-0.379	0.126	-0.203	-3.714	-0.046
	(-4.270**)	(-4.460**)	(-2.290*)	(-2.560*)	(-0.740)	(0.980)	(-3.060**)	(1.030)	(-0.400)	(-2.880**)	(-2.620**)
MB	0.065	0.058	0.153	0.020	0.099	-3.408	0.089	0.141	0.156	0.388	0.001
	(1.210)	(0.730)	(1.710^)	(0.490)	(1.220)	(-0.630)	(1.800^)	(2.580*)	(1.940^)	(1.910^)	(0.360)
MEFORDER						-49.680					
						(-20.560**)					
NREVENT									0.639		
									(6.610**)		
HORIZON									-0.001	0.003	0.000
									(-3.130**)	(3.100**)	(1.510)
POINT										-0.608	0.004
										(-2.900**)	(1.500)
IMR						-59.964			2.141	15.531	0.172
						(-0.590)			(1.410)	(3.890**)	(3.150**)

Estimated Cutpoint 1						2.515		5.308		
Estimated Cutpoint 2						3.177		5.691		
Estimated Cutpoint 3								6.132		
Pseudo R^2	0.081		0.062	0.114		0.063	0.108	0.094		
Adjusted R^2					0.333				0.254	0.118
Model χ^2	99.170	153.850	174.940	146.500		120.610	235.880	253.490		
F-statistic					39.580				11.190	5.010
p-value	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**	0.000**
N	897	897	897	897	897	897	897	1,082	449	449

^, * and ** denotes significance at the 0.1, 0.05 and 0.01 levels. One-tailed (two-tailed) test is used when coefficient sign is predicted (not predicted). See section 3 for model details and definitions of dependent and independent variables.

Table 8
Regression Analysis for Sub-sample Firm-years and Management Earnings Forecasts

	Model 1 *FORECAST1*	Model 1 *FORECAST2* Comparison 1/0	Model 1 *FORECAST2* Comparison 2/0	Model 2 *FREQUENCY1*	Model 2 *FREQUENCY2*	Model 3 *HORIZON*	Model 4a *FORECAST3*	Model 4b *FREQUENCY3*	Model 4c *PRECISION*	Model 5a *ERROR*	Model 5b *BIAS*
Variable	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*t*-statistic)	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*z*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Intercept	4.309	0.414	9.211	1.719	1.730	410.540		0.650	0.616	-9.580	0.394
	(0.970)	(0.060)	(1.300)	(1.670^)	(0.960)	(3.870**)		(0.470)	(1.560^)	(-3.500**)	(12.320**)
REFORM	0.557	0.398	1.541	0.631	1.124	17.850	0.602	1.190	0.507	-0.360	-0.026
	(2.910**)	(1.420^)	(4.050**)	(4.240**)	(3.510**)	(0.660)	(3.400**)	(5.330**)	(1.860*)	(-0.410)	(-2.520**)
ANALYST	0.387	0.181	1.052	0.389	0.623	2.875	0.523	0.694	-3.640	0.569	-0.022
	(2.000*)	(0.630)	(3.190**)	(2.860**)	(2.210*)	(0.150)	(2.990**)	(3.930**)	(-0.170)	(0.930)	(-3.060**)
H	-67.178	-37.161	-143.891	-35.674	-42.377	-1112.966	-52.019	-37.300	17.358	140.751	2.208
	(-1.280)	(-0.430)	(-1.720*)	(-3.190**)	(-2.340*)	(-0.740)	(-1.430^)	(-2.450**)	(0.250)	(3.040**)	(4.080**)
H^2	194.444	101.445	431.777	117.700	142.721	2906.435	147.037	136.918	-0.068	-538.915	-7.356
	(1.200)	(0.390)	(1.670*)	(2.830**)	(2.020*)	(0.610)	(1.280)	(2.490**)	(-0.530)	(-3.730**)	(-4.360**)
BRDAC_INDPR	0.145	0.169	0.192	0.103	0.158	-4.716	0.098	0.092	0.152	0.699	-0.008
	(1.730*)	(1.340^)	(1.290^)	(1.520^)	(1.110)	(-0.530)	(1.260)	(1.050)	(0.630)	(2.610**)	(-2.460**)
BRDAC_SIZER	0.372	0.485	0.534	0.337	0.398	9.061	0.334	0.399	0.024	0.073	-0.019
	(3.730**)	(3.300**)	(3.150**)	(5.150**)	(2.950**)	(0.540)	(3.680**)	(4.800**)	(0.140)	(0.140)	(-3.110**)
BRDAC_MEETR	0.258	0.222	0.528	0.317	0.508	13.692	0.217	0.379	-0.093	0.320	-0.013
	(2.690**)	(1.510^)	(3.290**)	(5.070**)	(4.400**)	(1.120)	(2.470**)	(4.830**)	(-1.190)	(0.860)	(-3.090**)
BRDAC_ACCEXPR	0.074	0.082	0.066	0.146	0.172	10.559	0.056	0.091	0.616	0.184	-0.004
	(0.820)	(0.610)	(0.460)	(2.500**)	(1.570^)	(1.930*)	(0.680)	(1.260)	(1.560^)	(1.320^)	(-2.160*)
ECSIGN	0.123	0.345	-0.209	0.018	-0.470		0.049	-0.055			
	(0.720)	(1.360)	(-0.760)	(0.160)	(-2.210*)		(0.320)	(-0.400)			
BAD						-52.732			-0.409	-0.528	0.004
						(-3.960**)			(-2.150*)	(-1.770^)	(1.040)
GOOD						-7.569			-0.724	-0.564	0.000
						(-0.650)			(-4.470**)	(-2.020*)	(0.040)
ECHANGE	0.030	0.003	0.108	0.039	0.228	-2.987	0.020	0.040	-0.024	0.305	-0.001
	(0.560)	(0.030)	(1.200)	(1.100)	(3.360**)	(-0.890)	(0.420)	(0.920)	(-0.500)	(3.230**)	(-0.970)
SIZE	0.051	0.111	0.026	0.012	-0.024	-4.533	0.017	-0.019	-0.080	-0.126	-0.002
	(0.980)	(1.390^)	(0.300)	(0.340)	(-0.360)	(-1.010)	(0.350)	(-0.440)	(-1.250)	(-1.070)	(-1.560^)
CROSSLIST	-0.396	-0.768	-0.180	0.061	0.057	12.060	-0.200	0.419	0.288	-0.193	0.022
	(-1.760^)	(-2.200*)	(-0.490)	(0.400)	(0.200)	(0.550)	(-0.950)	(2.300*)	(0.930)	(-0.320)	(3.160**)
MB	0.152	0.285	0.151	0.140	-0.012	6.702	0.157	0.280	0.312	0.020	-0.013
	(1.410)	(1.740^)	(0.860)	(1.970*)	(-0.090)	(0.730)	(1.600)	(3.240**)	(2.340*)	(0.080)	(-4.510**)
MEFORDER						-47.466					
						(-12.560**)					
NREVENT									0.683		
									(4.230**)		
HORIZON									-0.002	0.004	0.000
									(-3.280**)	(3.570**)	(1.920^)
POINT										-1.103	0.000

									(-4.740**)	(0.070)
IMR					67.395			0.426	-0.068	-0.107
					(0.870)			(0.380)	(-0.030)	(-3.660**)
Estimated Cutpoint 1						-3.644		-1.439		
Estimated Cutpoint 2						-3.170		-0.982		
Estimated Cutpoint 3								-0.125		
Pseudo R^2	0.135		0.115	0.187		0.101	0.164	0.139		
Adjusted R^2					0.361				0.410	
Model χ^2	48.740	61.940	10..460	86.810		54.780	125.770	129.790		
F-statistic					13.310				8.710	0.152
p-value	0.000**	0.000**	0.000**	0.000**		0.000**	0.000**	0.000**	0.000**	0.000**
N	265	265	265	265	350	265	265	350	190	190

^, * and ** denotes significance at the 0.1, 0.05 and 0.01 levels. One-tailed (two-tailed) test is used when coefficient sign is predicted (not predicted). See section 3 for model details and definitions of dependent and independent variables.

Table 9
Sensitivity Analysis

ECHANGE_VOL (change in earnings per share volatility over the prior five financial years) included in all models	Hirst et al. (2008)	The *ECHANGE_VOL* coefficient is not significant in any model. Except for the *ECHANGE* coefficient losing its significance, other results are not different from the main findings. Correlation test shows that *ECHANGE_VOL* is highly positively correlated with *ECHANGE* which may explain the reduced significance of *ECHANGE*.
CAPITAL_RAISING (a dichotomous variable taking the value of 1 if the firm raises capital during the financial year and 0 otherwise) is included in models 1, 2 and 4a-c	Frankel et al. (1995)	The CAPITAL_RAISING coefficient is not significant in any model. Other results are not different from the main findings.
Dichotomous variables for six major industries: (1) materials, mining or energy, (2) technology, telecommunication or biotechnology, (3) financial services, (4) utilities, airports, airlines, ports or shipping, (5) manufacturing or healthcare and (6) consumer staples, are included in all models.	Hirst et al. (2008)	Firms in the materials, mining or energy industry and financial services industry were less likely to provide earnings forecasts (overall, non-routine and quantitative). Firms in the technology, telecommunication or biotechnology industry tended to provide earnings forecasts of longer horizons but their earnings forecasts were more optimistically biased. Firms in the utilities, airports, airlines, ports or shipping industry were more inclined to provide routine earnings forecasts. Firms in the manufacturing or healthcare industry and consumer staples industry were more likely to provide earnings forecasts (overall, non-routine and quantitative) and these earnings forecasts were issued more frequently. Other results are not different from the main findings.
All models are retested after dropping firm-years that fall within six months of the effective date of the reform (i.e. approximately 12 months around 1 December 2002).	Frijns et al. (2008) Dunstan et al. (2011)	The results are not different from the main findings.
White's heteroscedasticity standard errors are estimated for all models.	Dunstan et al. (2011)	The results are not different from the main findings.