

# Corporate governance and management earnings forecast behaviour

## Evidence from a low private litigation environment

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### Abstract

**Purpose** – The purpose 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.

**Design/methodology/approach** – The authors use 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. The authors effectively control the self-selection bias problem inherent in management earnings forecasts.

**Findings** – The findings provide strong evidence that corporate governance significantly influences management earnings forecast behaviour. Firms with effective corporate governance tend to forecast earnings and provide these earnings forecasts more frequently and precisely. Earnings forecasts issued by firms with more non-executive directors on the board are less optimistically biased. A possible interpretation of the findings is that effective corporate governance mechanisms are able to substitute for a private enforcement alternative.

**Originality/value** – The findings have value in informing governance choices in the absence of external disciplinary mechanisms such as private litigation.

**Keywords** Corporate governance, Management earnings forecasts, Private litigation

**Paper type** Research paper



### JEL classification – G14, K22

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## 1. Introduction

Management earnings forecasts represent one of the key disclosure mechanisms through which managers communicate 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 reduction of information asymmetry, lowering the cost of capital and improving investor confidence) has motivated a great deal of research investigating various aspects of management earnings forecasts.

The rich literature on management earnings forecasts includes analysis of firms' various motivations to issue earnings forecasts and the subsequent impact of this earnings forecast behaviour on the capital markets. There is significantly less theoretical and empirical evidence regarding how firms choose certain forecast characteristics over which management has the most control. 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 USA, where the private litigation risk is posited to be a primary determinant of management earnings forecast behaviour. The threat of private enforcement substitutes for corporate governance mechanisms as an effective tool to manage and supervise management activities including their earnings forecast behaviour (La-Porta *et al.*, 2006). The impact of corporate governance mechanisms on management earnings forecast behaviour depends 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. We argue that the incremental benefits of various corporate governance mechanisms could be stronger and/or more easily identifiable in a low private litigation environment.

New Zealand is a low private litigation environment with high litigation costs, heavy reliance on individual proof, low damage awards, prohibition on contingent fees and alternative funding and a prevalent anti-litigious culture (Dunstan *et al.*, 2011). Accordingly, New Zealand provides a unique setting in which to study the impact of corporate governance on management earnings forecast behaviour in the absence of feasible 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 by using a sample of 1,082 management earnings forecasts issued by 125 firms listed on the New Zealand Exchange (NZX) during financial reporting period from 31 January 1998 to 31 December 2007. Our results provide strong evidence that the four corporate governance mechanisms have a significant influence on management earnings forecast behaviour after effectively controlling for the self-selection bias inherent in management earnings forecasts. Specifically, firms monitored by effective corporate governance mechanisms are more inclined to pre-empt their earnings announcements with earnings forecasts (overall and non-routine) and provide these earnings forecasts more frequently and precisely. Earnings forecasts issued by firms with more non-executive directors on the board are less optimistically biased. We interpret our findings to indicate that effective corporate

governance mechanisms are more beneficial in monitoring corporate behaviour in circumstances where private enforcement is not a feasible alternative.

The remainder of our study is organised as follows. Section 2 summarises relevant 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 Section 5 concludes.

## 2. Literature review, institutional background and hypothesis development

The management earnings forecast literature suggests that managers' decision to provide earnings forecasts can involve significant benefits, as well as costs, and managers 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 also assist firms to reduce litigation and reputation costs (Skinner, 1994, 1997; Field *et al.*, 2005). Management earnings forecasts further facilitate better clarity and investor understanding (Graham *et al.*, 2005).

Other researchers have identified the costs associated with disclosing management earnings forecasts, such as proprietary information, litigation and reputation costs (Francis *et al.*, 1994; Bamber and Cheon, 1998; Baginski *et al.*, 2004). Specifically, firms with high litigation risk are 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.

La-Porta *et al.* (2006) propose that the strength of private litigation is an integral aspect of the investor protection environment. A jurisdiction that features a strong culture of private litigation provides a natural monitoring mechanism for shareholders to prevent potential opportunistic behaviour by management. 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 (2012) investigates the relationship between the proportion of outside directors and management earnings forecast behaviour across two legal regimes with unequal private litigation costs – the USA 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 where low private litigation prevails.

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). Within the New Zealand context, we propose three external corporate governance mechanisms (continuous disclosure regulatory reform[1], analyst following[2] and ownership concentration[3]) and one internal corporate governance mechanism (board structure). Following Chapple and Truong (2015), we choose board size, board independence, audit committee independence and board gender diversity as key characteristics of the board related to monitoring efficiency.

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[4]. Therefore, the hypotheses regarding forecast likelihood and frequency are stated below.

### 2.1 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).

### 2.2 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 are more likely to provide timelier and more precise earnings forecasts (Baginski *et al.*, 2002; Frost, 2004). While US firms tend to provide more pessimistic earnings forecasts to pre-empt litigation risk (Skinner, 1994), Japanese firms consistently issue over-optimistic earnings forecasts as they face no obvious legal sanctions (Kato *et al.*, 2009).

An informative and credible management earnings forecast is expected to be timely, precise (smaller forecast error) and accurate (less optimistically biased) (King *et al.*, 1990; Tinaikar, 2012). 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 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.

### 2.3 Forecast horizon

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

### 2.4 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.

### 2.5 Forecast accuracy

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

*H5b.* 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 11-year period encompassing all market announcements made by firms regarding the financial years between 31 January 1998 and 31 December 2007[5]. 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. Details regarding the sample selection process are presented in [Table I](#).

### 3.2 Data sources

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 located 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 regarding the classifications are presented in [Table II](#) – Panel A.

### 3.4 Measures of four corporate governance mechanisms

*3.4.1 Continuous disclosure regulatory reform.* The statutory-backed continuous disclosure reform came into effect on 1 December 2002 under the Securities Markets Amendment Act

Selection criteria	No. of observations
<i>Sample firms</i>	
Total firms listed in the Events section of the NZX database as at 17 September 2008 (including delisted firms)	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 five annual reports since being listed on the NZSX or firms with missing market announcements	48
Total firms	125
<i>Sample firm-years</i>	
Total firm-years	897 <sup>a</sup>
<i>Sample management earnings forecasts</i>	
Total market announcements	32,690
Less market announcements not containing management earnings forecasts	31,608
Total management earnings forecasts	1,082
Total range and point management earnings forecasts	449
<b>Note:</b> <sup>a</sup> The total number of firm-years includes all firm-years with financial reporting dates ending between 31 January 1998 and 31 December 2007	

**Table I.**  
Sample selection  
procedure

2002. Therefore, 1 December 2002 is 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.

**3.4.2 Analyst following.** In New Zealand, less than 50 percent of NZX-listed firms are followed by analysts (Dunstan *et al.*, 2009). Accordingly, whether a firm is followed by analysts is used as a proxy for the analyst following of each firm.

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

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

A two-stage least squares method is used to address the concern regarding the endogenous relationship between ownership concentration and management earnings forecast behaviour[6] 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[7].

**3.4.4 Board structure.** Following Chapple and Truong (2015), we measure the monitoring effectiveness of the board by using the following board characteristics:

- **Board size:** Board size is measured by the number of directors on the board.
- **Board independence:** Board independence is measure by the separation of chief executive officer (CEO) and chairman and the percentage of non-executive directors on the board.

*Panel A: 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 prospects 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 prospects 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 the 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 \$1m" or "we are certain that the net income for this year will be lower than \$2m")
Range	Forecast contains a numerical range of the firm's expected earnings performance (e.g. "the net profit for this year will be between \$1m and \$2m")
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 \$1.5m")
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

*Panel B: variable definitions*

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

**Table II.**  
Classification of  
management  
earnings forecasts  
and variable  
definitions

*(continued)*

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. <i>POINT</i> (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 the 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
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 ( <i>OWNCON</i> )
$H^2$	$H$ square
BRDSIZE	The number of directors on the board
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
AUCOM	An ordered variable taking the value of 1 if the firm formally establishes an audit committee, 2 if the formally established audit committee comprises a majority of non-executive directors and 0 otherwise
BRDGENDIV	The % of female directors on the board
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 the 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 IMR based on Model <i>FORECAST1</i> , 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 II.



- *Audit committee independence*: Audit committee independence is measured by the existence of a formal audit committee and whether the formal audit committee comprises a majority of non-executive directors.
- *Board gender diversity*: Board gender diversity is measured by the percentage of female directors on the board.

### 3.5 Hypotheses 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 firm-specific attributes, forecast-specific characteristics and self-selection bias. The model specifications for 897 firm-years and 1,082 management earnings forecasts are presented in Table III. Models 1, 2, 3, 4a-c and 5a-b are used to test *H1*, *H2*, *H3*, *H4a-H4c* and *H5a-H5b*, respectively.

The definitions of the dependent and independent variables are presented in Table II – Panel B.

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 in Models 5a-b as control variables.

Unlike the study conducted by Dunstan *et al.* (2011), which also examines management earnings forecast behaviour in New Zealand, our study includes 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 compared to any prior ones, *MEFORDER* is included in Model 3 as a control variable.

Dunstan *et al.* (2011) also shows that management earnings forecasts released through non-routine announcements tend 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 may be a self-selection bias inherent in testing the horizon, precision and accuracy of management earnings forecasts. The inverse Mills ratio (*IMR*) is included in Models 3, 4c and 5a-b as a control variable. Following Heckman (1979), the *IMR* is estimated based on Model 1, the probit model estimating the likelihood of firms issuing management earnings forecasts.

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 winsorized is low, at the level of 5 per cent of the sample observations.

Model 1	$FORECAST1_{i,t} = a_0 + a_1 REFORM_{i,t} + a_2 ANALYST_{i,t} + a_3 H_{i,t} + a_4 H^2_{i,t} + a_5 BRDSIZE_{i,t}$ $+ a_6 CEOCHAIR_{i,t} + a_7 BRDINDP_{i,t} + a_8 AUCOM_{i,t} + a_9 BRDGENDIV_{i,t} + a_{10} ECSIGN_{i,t}$ $+ a_{11} ECHANGE_{i,t} + a_{12} SIZE_{i,t} + a_{13} CROSSLIST_{i,t} + a_{14} MB_{i,t} + \alpha_{i,t}$ $FORECAST2_{i,t} = b_0 + b_1 REFORM_{i,t} + b_2 ANALYST_{i,t} + b_3 H_{i,t} + b_4 H^2_{i,t} + b_5 BRDSIZE_{i,t}$ $+ b_6 CEOCHAIR_{i,t} + b_7 BRDINDP_{i,t} + b_8 AUCOM_{i,t} + b_9 BRDGENDIV_{i,t} + b_{10} ECSIGN_{i,t}$ $+ b_{11} ECHANGE_{i,t} + b_{12} SIZE_{i,t} + b_{13} CROSSLIST_{i,t} + b_{14} MB_{i,t} + \beta_{i,t}$
Model 2	$FREQUENCY1_{i,t} = c_0 + c_1 REFORM_{i,t} + c_2 ANALYST_{i,t} + c_3 H_{i,t} + c_4 H^2_{i,t} + c_5 BRDSIZE_{i,t}$ $+ c_6 CEOCHAIR_{i,t} + c_7 BRDINDP_{i,t} + c_8 AUCOM_{i,t} + c_9 BRDGENDIV_{i,t} + c_{10} ECSIGN_{i,t}$ $+ c_{11} ECHANGE_{i,t} + c_{12} SIZE_{i,t} + c_{13} CROSSLIST_{i,t} + c_{14} MB_{i,t} + \gamma_{i,t}$ $FREQUENCY2_{i,t} = d_0 + d_1 REFORM_{i,t} + d_2 ANALYST_{i,t} + d_3 H_{i,t} + d_4 H^2_{i,t} + d_5 BRDSIZE_{i,t}$ $+ d_6 CEOCHAIR_{i,t} + d_7 BRDINDP_{i,t} + d_8 AUCOM_{i,t} + d_9 BRDGENDIV_{i,t}$ $+ d_{10} ECSIGN_{i,t} + d_{11} ECHANGE_{i,t} + d_{12} SIZE_{i,t} + d_{13} CROSSLIST_{i,t} + d_{14} MB_{i,t} + \delta_{i,t}$
Model 3	$HORIZON_{i,t} = e_0 + e_1 REFORM_{i,t} + e_2 ANALYST_{i,t} + e_3 H_{i,t} + e_4 H^2_{i,t} + e_5 BRDSIZE_{i,t}$ $+ e_6 CEOCHAIR_{i,t} + e_7 BRDINDP_{i,t} + e_8 AUCOM_{i,t} + e_9 BRDGENDIV_{i,t} + e_{10} BAD_{i,t}$ $+ e_{11} GOOD_{i,t} + e_{12} ECHANGE_{i,t} + e_{13} SIZE_{i,t} + e_{14} CROSSLIST_{i,t} + e_{15} MB_{i,t}$ $+ e_{16} MEFORDER_{i,t} + e_{17} IMR_{i,t} + \epsilon_{i,t}$
Model 4a	$FORECAST3_{i,t} = f_0 + f_1 REFORM_{i,t} + f_2 ANALYST_{i,t} + f_3 H_{i,t} + f_4 H^2_{i,t} + f_5 BRDSIZE_{i,t}$ $+ f_6 CEOCHAIR_{i,t} + f_7 BRDINDP_{i,t} + f_8 AUCOM_{i,t} + f_9 BRDGENDIV_{i,t} + f_{10} ECSIGN_{i,t}$ $+ f_{11} ECHANGE_{i,t} + f_{12} SIZE_{i,t} + f_{13} CROSSLIST_{i,t} + f_{14} MB_{i,t} + \zeta_{i,t}$
Model 4b	$FREQUENCY3_{i,t} = g_0 + g_1 REFORM_{i,t} + g_2 ANALYST_{i,t} + g_3 H_{i,t} + g_4 H^2_{i,t} + g_5 BRDSIZE_{i,t}$ $+ g_6 CEOCHAIR_{i,t} + g_7 BRDINDP_{i,t} + g_8 AUCOM_{i,t} + g_9 BRDGENDIV_{i,t}$ $+ g_{10} ECSIGN_{i,t} + g_{11} ECHANGE_{i,t} + g_{12} SIZE_{i,t} + g_{13} CROSSLIST_{i,t} + g_{14} MB_{i,t} + \eta_{i,t}$
Model 4c	$PRECISION_{i,t} = h_0 + h_1 REFORM_{i,t} + h_2 ANALYST_{i,t} + h_3 H_{i,t} + h_4 H^2_{i,t} + h_5 BRDSIZE_{i,t}$ $+ h_6 CEOCHAIR_{i,t} + h_7 BRDINDP_{i,t} + h_8 AUCOMD_{i,t} + h_9 BRDGENDIV_{i,t} + h_{10} BAD_{i,t}$ $+ h_{11} GOOD_{i,t} + h_{12} ECHANGE_{i,t} + h_{13} SIZE_{i,t} + h_{14} CROSSLIST_{i,t} + h_{15} MB_{i,t}$ $+ h_{16} NREVENT_{i,t} + h_{17} HORIZON_{i,t} + h_{18} IRM_{i,t} + \theta_{i,t}$

**Table III.**  
(continued) Model specifications

Table III.

Model 5a	$ERROR_{i,t} = i_0 + i_1 REFORM_{i,t} + i_2 ANALYST_{i,t} + i_3 H_{i,t} + i_4 H^2_{i,t} + i_5 BRDSIZE_{i,t}$ $+ i_6 CEOCHAIR_{i,t} + i_7 BRDINDP_{i,t} + i_8 AUCOM_{i,t} + i_9 BRDGENDIV_{i,t} + i_{10} BAD_{i,t}$ $+ i_{11} GOOD_{i,t} + i_{12} ECHANGE_{i,t} + i_{13} SIZE_{i,t} + i_{14} CROSSLIST_{i,t} + i_{15} MB_{i,t} + i_{16} POINT_{i,t}$ $+ i_{17} HORIZON_{i,t} + i_{18} IRM_{i,t} + \epsilon_{i,t}$
Model 5b	$BIAS_{i,t} = j_0 + j_1 REFORM_{i,t} + j_2 ANALYST_{i,t} + j_3 H_{i,t} + j_4 H^2_{i,t} + j_5 BRDSIZE_{i,t}$ $+ j_6 CEOCHAIR_{i,t} + j_7 BRDINDP_{i,t} + j_8 AUCOM_{i,t} + j_9 BRDGENDIV_{i,t} + j_{10} BAD_{i,t}$ $+ j_{11} GOOD_{i,t} + j_{12} ECHANGE_{i,t} + j_{13} SIZE_{i,t} + j_{14} CROSSLIST_{i,t} + j_{15} MB_{i,t} + j_{16} POINT_{i,t}$ $+ j_{17} HORIZON_{i,t} + j_{18} IRM_{i,t} + \kappa_{i,t}$

#### 4. Results

##### 4.1 Descriptive statistics

Table IV describes the nature and extent of the sample firm-years and management earnings forecasts, as well as corporate governance characteristics.

Panel A in Table IV indicates that among the final sample of 897 firm-years, there are 511 firm-years (56.97 per cent) during 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 per cent) and 191 (21.29 per cent) firm-years where earnings announcements were pre-empted by only routine management earnings forecasts and by at least one non-routine management earnings forecast, respectively. Also, 212 (23.63 per cent) earnings announcements were pre-empted by exclusively qualitative management earnings forecasts and 299 (33.33 per cent) 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 eight overall, six non-routine and seven quantitative earnings forecasts.

Panel B in Table IV describes the horizon, precision (error) and accuracy (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 US firms and a little shorter than those with an average forecast horizon of 188 days issued by Canadian firms, as documented by Baginski *et al.* (2002). While the proportion of the qualitative management earnings forecasts remains at a high level of 46.21 per cent, open-ended, range and point management earnings forecasts are only 12.29, 13.77 and 27.73 per cent of the total number of management earnings forecasts, respectively. The percentage of qualitative management earnings forecasts is far higher than those reported in the USA (11.2 per cent) and Canada (11 per cent) (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, respectively. The mean of forecast error and bias is much larger than the mean of US forecast error (0.022) and forecast bias (0.018), as documented by Ajinkya *et al.* (2005).

The descriptive statistics for corporate governance characteristics are provided in Table IV – Panel C. Among 897 firm-years, 523 firm-years (58.31 per cent) are related to the

	Frequency (median)	Full sample mean (%) SD
<i>Panel A: firm-years</i>		
Non-pre-empted and pre-empted firm-years		
Non-pre-empted firm-years	386	43.03
Pre-empted firm-years	511	56.97
Routine pre-empted and non-routine pre-empted firm-years		
Routine pre-empted firm-years	320	35.67
Non-routine pre-empted firm-years	191	21.29
Qualitative pre-empted and quantitative (open-ended, range and point) pre-empted firm-years		
Qualitative pre-empted firm-years	212	23.63
Quantitative pre-empted firm-years	299	33.33
Number of management earnings forecasts per firm-years		
0	386	43.03
1	190	21.18
2	157	17.50
3	104	11.59
4	42	4.68
5	13	1.45
6	3	0.33
7	1	0.11
8	1	0.11
Number of non-routine management earnings forecasts per firm-years		
0	706	78.71
1	138	15.38
2	39	4.35
3	12	1.34
4	0	0.00
5	1	0.11
6	1	0.11
Number of quantitative management earnings forecasts per firm-years		
0	598	66.67
1	136	15.16
2	85	9.48
3	48	5.35
4	22	2.45
5	5	0.56
6	2	0.22
7	1	0.11
<i>Panel B: management earnings forecasts</i>		
Forecast horizon	184 (168)	97.04
Forecast precision		
Qualitative	500	46.21
Open-ended	133	12.29
Range	149	13.77
Point	300	27.73
Forecast error	0.051 (0.004)	0.439
Forecast bias	0.034 (0.000)	0.440
<i>Panel C: corporate governance mechanisms</i>		
REFORM (post-reform)	523	58.31
ANALYST (followed by analysts)	410	45.71
OWNCON	0.185 (0.122)	0.175
BRDSIZE	6.065 (6)	1.887
BRDINDP	0.820 (0.833)	0.185
AUCOM (formally established audit committee)	108	12.04
AUCOM (formally established audit committee comprising a majority of non-executive directors)	682	76.03
BRDGENDIV	0.052 (0.000)	0.106

**Notes:** frequency and % are provided for categorical variables. Mean (median) and standard deviation are provided for continuous variables

**Table IV.**  
Descriptive statistics

post-reform period and 410 firm-years (45.71 per cent) are followed by analysts. The mean ownership concentration is 0.185, which is considered to be high according to the concentration benchmark proposed by [Brown and Warren-Boulton \(1988\)](#). There are 806 firm-years (89.86 per cent) having separate CEO and Chairman and 790 firm-years (88.07 per cent) with a formally established audit committee. The means for board independence and board size are 0.820 and 6.065, respectively. There are 76.03 per cent of firm-years where there exists a formal audit committee comprising a majority of non-executive directors. On average, approximately 5 per cent of directors on the board are female directors.

4.2 Multivariate results

[Tables V](#) and [VI](#) present the regression results regarding the likelihood, frequency and qualitative characteristics (horizon, precision and accuracy) of management earnings forecasts.

4.2.1 Continuous disclosure regulatory reform. The REFORM coefficient is positively significant in FORECAST1, FORECAST2, FREQUENCY1, FREQUENCY2, FORECAST3, FREQUENCY3, ERROR and BIAS models. 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-H4c. Firms tend to provide forecasts with larger error and optimistically biased forecasts in the post-reform period; therefore, H5a-H5b are not supported. The REFORM coefficient is not significant in the HORIZON model, thus not supporting H3.

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 because of an increase in continuous disclosure enforcement in Australia. However,

Variable	FORECAST1 Coefficient (z-statistic)	FORECAST2 Comparison 1/0 Coefficient (z-statistic)	FORECAST2 Comparison 2/0 Coefficient (z-statistic)	FREQUENCY1 Coefficient (z-statistic)	FREQUENCY2 Coefficient (z-statistic)
REFORM	0.389 (4.020***)	0.218 (1.540*)	1.036 (6.090***)	0.480 (6.590***)	1.077 (6.300***)
ANALYST	0.191 (1.770**)	0.198 (1.260)	0.343 (1.940**)	0.263 (3.550***)	0.235 (1.550*)
H	21.674 (2.460***)	30.479 (2.000**)	26.276 (1.780**)	15.370 (2.450***)	5.680 (0.590)
H <sup>2</sup>	-77.515 (-2.370***)	-103.301 (-1.910**)	-99.175 (-1.830**)	-59.608 (-2.650***)	-31.838 (-0.860)
BRDSIZE	0.023 (0.780)	0.024 (0.540)	0.052 (1.060)	0.015 (0.730)	0.045 (1.120)
CEOCHAIR	0.461 (2.930***)	0.601 (2.570***)	0.583 (2.090**)	0.689 (4.600***)	0.373 (1.320*)
BRDINDP	-0.047 (-0.180)	0.009 (0.020)	-0.240 (-0.530)	-0.119 (-0.610)	-0.393 (-0.970)
AUCOM	0.004 (0.060)	-0.103 (-0.990)	0.279 (1.990**)	0.024 (0.410)	0.428 (2.730***)
BRDGENDIV	0.857 (2.010**)	0.641 (1.020)	1.868 (2.830***)	0.489 (1.710**)	1.938 (3.980***)
ECSIGN	0.077 (0.860)	0.273 (2.070**)	-0.185 (-1.270)	0.024 (0.380)	-0.328 (-2.630***)
ECHANGE	0.052 (1.940**)	0.011 (0.290)	0.166 (3.640***)	0.036 (1.890**)	0.211 (5.240***)
SIZE	0.079 (2.540***)	0.140 (3.010***)	0.033 (0.640)	0.056 (2.600***)	-0.030 (-0.720)
CROSSLIST	-0.609 (-4.460***)	-0.948 (-4.580***)	-0.571 (-2.560**)	-0.272 (-2.790***)	-0.194 (-1.020)
MB	0.054 (1.000)	0.048 (0.600)	0.131 (1.450)	-0.002 (-0.060)	0.067 (0.830)
Intercept	-3.274 (-4.060***)	-5.564 (-4.080***)	-3.964 (-2.960***)	-2.648 (-4.430***)	-1.867 (-1.900*)
Pseudo R <sup>2</sup>	0.087			0.067	0.123
Model χ <sup>2</sup>	104.870***	156.170***		186.980***	158.170***
N	882	882	882	882	882

**Table V.**  
Likelihood and  
frequency of  
management  
earnings forecasts

**Notes:** \*, \*\* and \*\*\* denote significance at 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

Variable	HORIZON Coefficient (t-statistic)	FORECAST3 Coefficient (z-statistic)	FREQUENCY3 Coefficient (z-statistic)	PRECISION Coefficient (z-statistic)	ERROR Coefficient (t-statistic)	BIAS Coefficient (t-statistic)
REFORM	-2.187 (-0.110)	0.441 (5.030***)	0.908 (8.040***)	0.235 (0.780)	2.051 (2.570***)	0.042 (3.810***)
ANALYST	8.984 (0.870)	0.292 (3.040***)	0.466 (4.480***)	0.103 (0.660)	1.499 (3.750***)	0.011 (1.940***)
H	1.157,142 (0.940)	21.552 (2.670***)	15.394 (1.640*)	13.386 (0.750)	287,266 (5.940***)	1.869 (2.760***)
F <sup>2</sup>	-4.097,894 (-0.940)	-83,646 (-2.810***)	-61,131 (-1.860**)	-46,276 (-0.700)	-1,054,190 (-6.190***)	-7.082 (-2.970***)
BRDIZE	-3.574 (-1.710**)	0.002 (0.090)	-0.001 (-0.040)	-0.033 (-1.060)	0.232 (3.280***)	0.001 (0.160)
CEOCHAIR	44.313 (1.570*)	0.319 (2.190**)	0.464 (2.260**)	-0.188 (-0.440)	2.467 (2.120**)	0.033 (2.040**)
BRDINDP	-11.581 (-0.660)	0.193 (0.800)	0.581 (1.980**)	0.936 (3.490***)	1.951 (2.660***)	-0.022 (-2.180**)
AUCOM	-4.349 (-0.970)	0.040 (0.620)	0.269 (2.740***)	0.181 (2.510***)	-0.006 (-0.020)	0.006 (1.820***)
BRDGENDIV	-69.759 (-1.520*)	0.887 (2.340**)	0.759 (1.910**)	-0.359 (-0.320)	7.897 (4.650***)	0.070 (2.930***)
ECSIGN	-44.943 (-6.090***)	0.054 (0.670)	-0.017 (-0.200)	-0.202 (-1.810*)	-0.625 (-2.630***)	-0.003 (-0.960)
BAD	-6.615 (-1.040)			-0.615 (-6.640***)	0.091 (0.400)	0.001 (0.270)
GOOD	-2.319 (-0.780)	0.050 (2.010**)	0.041 (1.560*)	-0.017 (-0.390)	0.738 (6.870***)	0.006 (4.280***)
ECHANGE	3.220 (0.720)	0.059 (2.080**)	0.009 (0.320)	-0.080 (-1.180)	0.036 (0.210)	0.005 (1.940***)
SIZE	13.334 (0.440)	-0.402 (-3.230***)	0.122 (0.990)	0.649 (1.410)	-3.387 (-2.970***)	-0.048 (-3.010***)
CROSSLIST	-0.339 (-0.070)	0.081 (1.630)	0.120 (2.160**)	0.046 (0.670)	0.215 (1.290)	0.001 (0.330)
MEFORDER	-49.731 (-20.610***)			0.668 (6.830***)		
NREVENT				-0.001 (-2.880***)	0.003 (3.570***)	0.001 (1.73*)
HORIZON	8.807 (0.100)			-0.360 (-0.280)	-0.582 (-2.850***)	0.004 (1.510)
POINT	1.39,885 (0.580)				13.459 (4.030***)	0.173 (3.700***)
IMR					-36.480 (-3.900***)	0.073 (0.560)
Intercept		2.779		-0.194		
Estimated Cutpoint 1		3.459		0.179		
Estimated Cutpoint 2				0.625		
Estimated Cutpoint 3		0.068	0.117	0.102	0.296	0.137
Pseudo R <sup>2</sup>						
Adjusted R <sup>2</sup>	0.347	129.360***	253.070***	270.390***		
Model χ <sup>2</sup>	34.370***				11.440***	4.940***
F-statistic	1.071	882	882	1.071	447	447
N						

Notes: \*, \*\*, and \*\*\* denote significance at 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 VI. Qualitative characteristics of earnings forecasts

Dunstan *et al.* (2011) report a marginal decline in forecast horizon and a significant improvement in forecast error in the post-reform period.

4.2.2 *Analyst following.* Tables V and VI present positive and significant coefficients in ANALYST in FORECAST1, FORECAST2, FREQUENCY1, FREQUENCY2, FORECAST3, FREQUENCY3, 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 are more inclined to provide more precise earnings forecasts; therefore, H4a-H4c are supported. However, these firms tend to provide earnings forecasts of larger error and with optimistic bias, which rejects H5a-H5b. There is no difference in forecast horizon of earnings forecasts issued by firms followed and not followed by analysts; therefore, H3 is not supported.

These findings are consistent with those reported by Chan *et al.* (2007) (the likelihood and frequency of overall and non-routine earnings forecasts), Tinaikar (2012) (forecast precision) and Karamanou and Vafeas (2005) (forecast error and bias).

4.2.3 *Ownership concentration.* The coefficient for  $H$  and  $H^2$  is significantly positive and negative in FORECAST1, FORECAST2, FREQUENCY1, FORECAST3, FREQUENCY3, ERROR and BIAS models. 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-H4c are supported. 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-H5b. Again, ownership concentration tends to have no impact on forecast horizon, which does not support H3.

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 forecast error and bias.

4.2.4 *Board structure.* Positive and significant coefficients were found for CEOCHAIR, BRDINDP, AUCOM and BRDGENDIV are reported in FORECAST1, FORECAST2, FREQUENCY1, FREQUENCY2, HORIZON, FORECAST3, FREQUENCY3 and PRECISION models, thus supporting H1, H2, H3 and H4a-H4c. The coefficients of BRDSIZE, CEOCHAIR, BRDINDP and BRDGENDIV are significantly positive in the ERROR model; therefore, H5a is not supported. The negative and significant coefficient of BRDINDP in the BIAS model supports H5b. The marginally significant coefficient of CEOCHAIR in the HORIZON model also partly supports H3.

Three aspects of board structure (board independence, audit committee independence and board gender diversity) are found to improve the likelihood that firms issue earnings forecasts (overall and non-routine), the frequency of these earnings forecasts (overall and non-routine), forecast horizon, precision and accuracy (less optimistic bias). Therefore, H1, H2, H3, H4a-H4c and H5b are supported.

These findings differ 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 US setting. Karamanou and Vafeas (2005) show that in the USA, more precise earnings forecasts are 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 greater discretion (Chan *et al.*, 2008).

Overall, it is apparent from the reported findings that firms monitored by effective corporate governance mechanisms are more inclined to pre-empt their earnings announcements with earnings forecasts (overall and non-routine) and provide these earnings forecasts more frequently and precisely. Earnings forecasts issued by firms with more non-executive directors on the board are less optimistically biased.

#### 4.3 Sensitivity analysis

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

### 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 financial reporting period from 31 January 1998 to 31 December 2007, 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 the self-selection bias problem inherent in management earnings forecasts. Firms monitored by effective corporate governance mechanisms are more inclined to pre-empt their earnings announcements with earnings forecasts (overall and non-routine) and provide these earnings forecasts more frequently and precisely. Earnings forecasts issued by firms with more non-executive directors on the board are less optimistically biased. It is reasonable to conclude that in New Zealand, a combination of external and internal corporate governance mechanisms effectively substitute for a private litigation alternative. Our findings are important for other low private litigation environments and for other high private litigation environments such as the USA, given the high economic and social costs of 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, distinct from prior literature, our findings provide strong evidence of the effectiveness of the monitoring role of these mechanisms. Third, we effectively control for the self-selection bias problem inherent in management earnings forecasts. Fourth, our study also departs from 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. Finally, our study contributes new knowledge to understanding how capital market information environments, such as Australia and New Zealand, are affected by mandatory continuous disclosure (Hsu, 2009; Matolcsy *et al.*, 2012; Russell, 2015a, 2015b; Ahmed *et al.*, 2017).



*BRDMEET* (the number of board meetings per year) and *BRDACCEXP* (the percentage of directors with accounting expertise) are included in all models for sub-sample of firms disclosing the number of board meetings and directors' accounting expertise

Interaction variables between external corporate governance mechanisms – *REFORM*, *ANALYST* and *H* and internal corporate governance mechanism – *BRDSIZE*, *CEOCHAIR*, *BRDINDP*, *AUCOM* and *BRDGENDIV* are included in all models

Address the potential multicollinearity problem

Address the potential endogeneity problem by conducting 2SLS model with three instrumental variables – *FIRMAGE* (firm age), *NOMCOM* (the existence of a formally established nomination committee) and *NOMCOMINDP* (the level of nomination committee independence) *ECHANGE\_VOL* (change in earnings per share volatility over the prior five financial years) is included in all models

*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

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

Vafeas (1999) and Carcello *et al.* (2002)

Firms in which the board of directors meet more frequently tend to provide more non-routine earnings forecasts and these forecasts tend to be less accurate or more optimistically biased

Chapple and Truong (2015)

The impact of board structure tends to be stronger in the post-regulatory reform period

Chapple and Truong (2015)

All variance inflation factors are well below 10

Results obtained are not different from the main findings

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*

Frankel *et al.* (1995)

The *CAPITAL\_RAISING* coefficient is not significant in any model. Other results are not different from the main findings

Hirst *et al.* (2008)

Firms in the materials, mining or energy industry and financial services industry are less likely to provide earnings forecasts (overall, non-routine and quantitative). Firms in the technology, telecommunication or biotechnology industry tend to provide earnings forecasts of longer horizons but their earnings forecasts are more optimistically biased. Firms in the utilities, airports, airlines, ports or shipping industry are more inclined to provide routine earnings forecasts.

**Table VII.**  
Sensitivity analysis

(continued)

<p>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)</p> <p>White's heteroscedasticity standard errors are estimated for all models</p>	<p><a href="#">Frijns et al. (2008)</a>, <a href="#">Dunstan et al. (2011)</a></p> <p><a href="#">Dunstan et al. (2011)</a></p>	<p>Firms in the manufacturing or healthcare industry and consumer staples industry are more likely to provide earnings forecasts (overall, non-routine and quantitative) and these earnings forecasts are issued more frequently</p> <p>Other results are not different from the main findings.</p> <p>The results are not different from the main findings</p> <p>The results are not different from the main findings</p>
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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 compare 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.

#### Notes

1. 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. 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](#)).
3. The theoretical debate on the benefits of concentrated ownership is divided into two competing hypotheses: the efficient-monitoring and the opportunistic hypotheses. 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 exercise their absolute controlling rights in the firm, exerting a powerful influence on managers to maximise their 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](#)).
4. 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, prohibition on contingent fees and litigation funding, and the prevalent anti-litigious culture (Dunstan *et al.*, 2011).

5. The financial year ending on 31 January 1998 is chosen as the starting year as it is the earliest financial year where the disclosure data are made available on the NZX database. The financial year ending on 31 December 2007 is selected as the ending year to avoid any contamination that may arise from further amendments to the continuous disclosure provisions under the Securities Markets Amendment Act 2002 that came into force on 29 February 2008. These amendments give the Securities Commission (now the Financial Markets Authority) 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 2010 case against Nuplex Industries Limited and its current and former directors for breaches of continuous disclosure requirements.
6. 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).
7. 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.

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